

TOSHIBA

Small Signal and Logic Devices

Selection
Guide 2019



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1. MOSFETs

Over 500mA Series MOSFETs (Semi-Power Type)

Package Dimensions (unit: mm)

CST3C	CST3 (SOT-883)	CST3B	VESM (SOT-723)	UFM (SOT-323F)	ES6 (SOT-563)	UF6 (SOT-363F)	WCSP6C
Bottom View 	Bottom View 	Bottom View 					Bottom View 
0.8x0.6	1.0x0.6	1.2x0.8	1.2x1.2	2.0x2.1	1.6x1.6	2.0x2.1	1.5x1.0

P-Channel Single MOSFET

Package	Part Number	V _{oss} (V)	V _{ess} (V)	I _o (A)	R _{DS(ON)} max (mΩ)							Q _g typ. (nC)	Ciss typ. (pF)	Note	
					V _{GS} = -1.2V	V _{GS} = -1.5V	V _{GS} = -1.8V	V _{GS} = -2.5V	V _{GS} = -4V	V _{GS} = -4.5V	V _{GS} = -10V				
CST3C	SSM3J64CTC ☆	\$	-12	+/-10	-1.0	11300	1310	890	560	-	370	-	-	50	
	SSM3J65CTC ☆	\$	-20	+/-10	-0.7	11300	1550	1070	700	-	500	-	-	48	
CST3	SSM3J56ACT ☆	\$	-20	+/-8	-1.4	4000	900	660	480	-	390	-	1.6	100	
CST3B	SSM3J46CTB	\$	-20	+/-8	-2.0	-	250	178	133	-	103	-	4.7	290	
VESM	SSM3J66MFV ☆ #	\$	-20	+6/-8	-0.8	4000	900	660	480	-	390	-	1.6	100	
	SSM3J56MFV	\$	-20	+/-8	-0.8	4000	900	660	480	-	390	-	1.6	100	
WCSP6C	SSM6J771G	\$	-20	+/-12	-5.0	-	-	-	47.5	-	35	34.7(@-8V) 31(@-8.5V)	9.8	870	
ES6	SSM6J216FE	\$	-12	+/-8	-4.8	-	88.1	56	39.3	-	32	-	12.7	1040	
	SSM6J213FE	\$	-20	+/-8	-2.6	-	250	178	133	-	103	-	4.7	290	
	SSM6J215FE	\$	-20	+/-8	-3.4	-	154	104	79	-	59	-	10.4	630	
	SSM6J212FE	\$	-20	+/-8	-4.0	-	94	65.4	49	-	40.7	-	14.1	970	
	SSM6J207FE	\$	-30	+/-20	-1.4	-	-	-	491	-	251	-	137		
	SSM6J214FE	\$	-30	+/-12	-3.6	-	-	149.6	77.6	-	57	50	7.9	560	
UFM	SSM3J132TU	\$	-12	+/-6	-5.4	94	39	29	21	-	17	-	33	2700	
	SSM3J135TU	\$	-20	+/-8	-3.0	-	260	180	132	-	103	-	4.6	270	
	SSM3J145TU ☆ #	\$	-20	+6/-8	-3.0	-	260	180	132	-	103	-	4.6	270	
	SSM3J134TU	\$	-20	+/-8	-3.2	-	240	168	123	-	93	-	4.7	290	
	SSM3J144TU ☆ #	\$	-20	+6/-8	-3.2	-	240	168	123	-	93	-	4.7	290	
	SSM3J120TU ●	\$	-20	+/-8	-4.0	-	140	78	49	38	-	-	22.3	1484	⇒ SSM3J133TU
	SSM3J130TU	\$	-20	+/-8	-4.4	-	63.2	41.1	31	-	25.8	-	24.8	1800	
	SSM3J140TU ☆ #	\$	-20	+6/-8	-4.4	-	63.2	41.1	31	-	25.8	-	24.8	1800	
	SSM3J133TU	\$	-20	+/-8	-5.5	-	88.4	56	39.7	-	29.8	-	12.8	840	
	SSM3J143TU ☆ #	\$	-20	+6/-8	-5.5	-	88.4	56	39.7	-	29.8	-	12.8	840	
	SSM3J112TU #	\$	-30	+/-20	-1.1	-	-	-	-	790	-	390	-	86	
	SSM3J118TU #	\$	-30	+/-20	-1.4	-	-	-	-	480	-	240	-	137	
	SSM3J117TU #	\$	-30	+/-20	-2.0	-	-	-	-	225	-	117	-	280	
	UF6	SSM6J50TU #	\$	-20	+/-10	-2.5	-	-	205 (@-2V)	100	-	64	-	-	800
SSM6J422TU ☆ #		\$	-20	+6/-8	-4.0	-	99.6	67.8	51.4	-	42.7	-	12.8	840	
SSM6J412TU		\$	-20	+/-8	-4.0	-	99.6	67.8	51.4	-	42.7	-	12.8	840	
SSM6J424TU ☆ #		\$	-20	+6/-8	-6.0	-	54	36	26	-	22.5	-	23.1	1650	
SSM6J414TU		\$	-20	+/-8	-6.0	-	54	36	26	-	22.5	-	23.1	1650	
SSM6J402TU #		\$	-30	+/-20	-2.0	-	-	-	-	225	-	117	5.3	280	
SSM6J410TU #		\$	-30	+/-20	-2.1	-	-	-	-	393	-	216	2.9	120	
SSM6J401TU		\$	-30	+/-20	-2.5	-	-	-	-	145	-	73	16	730	

☆ New Products, ● Recommend Another New Product

AEC-Q101 qualified, \$ With protection Zener diode between gate and source

UDFN6B (SOT-1220)	SOT-23F	S-Mini (SOT-346)	TSOP6F (SOT-26F)
Bottom View 			
2.0x2.0	2.9x2.4	2.9x2.5	2.9x2.8

P-Channel Single MOSFET

Package	Part Number	V _{DS} (V)	V _{GS} (V)	I _D (A)	R _{DS(ON)} max (mΩ)							Q _g typ. (nC)	C _{iss} typ. (pF)	Note	
					V _{GS} = -1.2V	V _{GS} = -1.5V	V _{GS} = -1.8V	V _{GS} = -2.5V	V _{GS} = -4V	V _{GS} = -4.5V	V _{GS} = -10V				
UDFN6B	SSM6J512NU ☆	\$	-12	+/-10	-10.0	-	-	40.1	25.7	20.5 (@-3.6V)	18.7	16.2 (@-8V)	19.5	1400	
	SSM6J505NU	\$	-12	+/-6	-12.0	61	30	21	16	-	12	-	37.6	2700	
	SSM6J511NU ☆	\$	-12	+/-10	-14.0	-	-	19.2	13.5	11.5 (@-3.6V)	10	9.1 (@-8V)	47	3350	
	SSM6J503NU	\$	-20	+/-8	-6.0	-	89.6	57.9	41.7	-	32.4	-	12.8	840	
	SSM6J502NU	\$	-20	+/-8	-6.0	-	60.5	38.4	28.3	-	23.1	-	24.8	1800	
	SSM6J501NU	\$	-20	+/-8	-10.0	-	43	26.5	19	-	15.3	-	29.9	2600	
	SSM6J507NU ☆	\$	-30	+20/-25	-10.0	-	-	-	-	32	28	20	13.6	1150	
SOT-23F	SSM3J338R	\$	-12	+/-10	-6.0	-	-	45.3	27.9	21.9 (@-3.6V)	20.2	17.6 (@-8V)	19.5	1400	
	SSM3J327R	\$	-20	+/-8	-3.9	-	240	168	123	-	93	-	4.6	290	
	SSM3J377R ☆ #	\$	-20	+6/-8	-3.9	-	240	168	123	-	93	-	4.6	290	
	SSM3J331R	\$	-20	+/-8	-4.0	-	150	100	75	-	55	-	10.4	630	
	SSM3J371R ☆ #	\$	-20	+6/-8	-4.0	-	150	100	75	-	55	-	10.4	630	
	SSM3J328R ●	\$	-20	+/-8	-6.0	-	88.4	56	39.7	-	29.8	-	12.8	840	⇒ SSM3J355R
	SSM3J378R ☆ #	\$	-20	+6/-8	-6.0	-	88.4	56	39.7	-	29.8	-	12.8	840	
	SSM3J355R ☆	\$	-20	+/-10	-6.0	-	-	52.3	38.8	-	30.1	-	16.6	1030	
	SSM3J358R ☆	\$	-20	+/-10	-6.0	-	-	49.3	32.8	27.7 (@-3.6V)	25.3	22.1 (@-8V)	38.5	1331	
	SSM3J334R	\$	-30	+/-20	-4.0	-	-	-	-	136	105	71	5.9	280	
	SSM3J374R ☆ #	\$	-30	+10/-20	-4.0	-	-	-	-	136	105	71	5.9	280	
	SSM3J340R	\$	-30	+20/-25	-4.0	-	-	-	-	86	73	45	6.2	492	
	SSM3J332R	\$	-30	+/-12	-6.0	-	-	144	72	-	50	42	8.2	560	
	SSM3J372R ☆ #	\$	-30	+6/-12	-6.0	-	-	144	72	-	50	42	8.2	560	
	SSM3J356R ☆ #	\$	-60	+10/-20	-2.0	-	-	-	-	400	360	300	8.3	330	
SSM3J351R ☆ #	\$	-60	+10/-20	-3.5	-	-	-	-	184	164	134	15.1	660		
S-Mini	SSM3J325F	\$	-20	+/-8	-2.0	-	311	231	179	-	150	-	4.6	270	
	SSM3J375F ☆ #	\$	-20	+6/-8	-2.0	-	311	231	179	-	150	-	4.6	270	
	SSM3J352F ☆	\$	-20	+/-12	-2.0	-	-	443	199	-	136	110	5.1	210	
	SSM3J353F ☆	\$	-30	+20/-25	-2.0	-	-	-	-	274	232	150	3.4	159	
TSOP6F	SSM6J801R	\$	-20	+6/-8	-6.0	-	88.4	56	39.7	-	32.5	-	12.8	840	
	SSM6J808R ★	\$	-40	+10/-20	-7.0	-	-	-	-	41 typ.	T.B.D	24.2	1105		
	SSM6J811R ★	\$	-60	+10/-20	-4.0	-	-	-	-	T.B.D	200	150	T.B.D	490	

☆ New Products, ★ Under Development (The specification is subject to change without notice.), ● Recommend Another New Product
AEC-Q101 qualified, \$ With protection Zener diode between gate and source

CST3 (SOT-883)	CST3B	VESM (SOT-723)	SSM (SOT-416)	UFM (SOT-323F)	ES6 (SOT-563)	UF6 (SOT-363F)	UDFN6B (SOT-1220)	WCSP6C
Bottom View	Bottom View						Bottom View	Bottom View
1.0x0.6	1.2x0.8	1.2x1.2	1.6x1.6	2.0x2.1	1.6x1.6	2.0x2.1	2.0x2.0	1.5x1.0

N-Channel Single MOSFET

Package	Part Number	V _{oss} (V)	V _{ess} (V)	I _o (A)	R _{DS(ON)} max (mΩ)							Q _g typ. (nC)	Ciss typ. (pF)	Note
					V _{GS} = 1.2V	V _{GS} = 1.5V	V _{GS} = 1.8V	V _{GS} = 2.5V	V _{GS} = 4V	V _{GS} = 4.5V	V _{GS} = 10V			
CST3	SSM3K56CT ● \$	20	+/-8	0.8	-	840	480	300	-	235	-	1.0	55	⇒ SSM3K56ACT
	SSM3K56ACT ☆ \$	20	+/-8	1.4	-	840	480	300	-	235	-	1.0	55	
CST3B	SSM3K59CTB ☆ \$	40	+/-12	2.0	-	-	420	268	238(@3.6V) 231(@4.2V)	228	215 (@8V)	1.1	130	
VESM	SSM3K36MFV # \$	20	+/-10	0.5	-	1520	1140	850	-	660	630 (@5V)	1.23	46	
	SSM3K56MFV # \$	20	+/-8	0.8	-	840	480	300	-	235	-	1.0	55	
WCSP6C	SSM6K781G	12	+/-8	7.0	-	124	47.4	23.2	-	18	-	5.4	600	
SSM	SSM3K36FS ● # \$	20	+/-10	0.5	-	1520	1140	850	-	660	630 (@5V)	1.23	46	⇒ SSM3K56FS
	SSM3K56FS # \$	20	+/-8	0.8	-	840	480	300	-	235	-	1.0	55	
ES6	SSM6K204FE \$	20	+/-10	2.0	-	307	214	164	126	-	-	3.4	195	
	SSM6K211FE \$	20	+/-10	3.2	-	118	82	59	-	47	-	10.8	510	
	SSM6K24FE \$	30	+/-12	0.5	-	-	-	180	-	145	-	-	245	
	SSM6K208FE \$	30	+/-12	1.9	-	-	296	177	133	-	-	1.9	123	
	SSM6K202FE \$	30	+/-12	2.3	-	-	145	101	85	-	-	-	270	
	SSM6K217FE \$	40	+/-12	1.8	-	-	400	248	218(@3.6V) 211(@4.2V)	208	195 (@8V)	1.1	130	
UFM	SSM3K36TU # \$	20	+/-10	0.5	-	1520	1140	850	-	660	630 (@5V)	1.23	46	
	SSM3K62TU ☆ # \$	20	+/-8	0.8	432	139	89	68	-	57	-	2.0	177	
	SSM3K122TU # \$	20	+/-10	2.0	-	304	211	161	123	-	-	3.4	195	
	SSM3K121TU # \$	20	+/-10	3.2	-	140	93	63	48	-	-	5.9	400	
	SSM3K123TU # \$	20	+/-10	4.2	-	66	43	32	28	-	-	13.6	1010	
	SSM3K127TU # \$	30	+/-12	2.0	-	-	286	167	123	-	-	1.5	123	
	SSM3K116TU # \$	30	+/-12	2.2	-	-	-	135	-	100	-	-	245	
	SSM3K131TU # \$	30	+/-20	6.0	-	-	-	-	-	41.5	27.6	10.1	450	
	SSM3H137TU ☆ # \$	34	+/-20	2.0	-	-	-	-	295	280	240	3.0	119	Built-in Active Clamp Zener
	SSM3K2615TU ☆ # \$	60	+/-20	2.0	-	-	-	580 (@3.3V)	440	-	300	6.0	150	
	SSM3K341TU ☆ # \$	60	+/-20	6.0	-	-	-	-	69	51	36	9.3	550	Tch=175°C
SSM3K361TU ☆ # \$	100	+/-20	3.5	-	-	-	-	-	92	69	3.2	430	Tch=175°C	
UF6	SSM6K405TU \$	20	+/-10	2.0	-	307	214	164	126	-	-	3.4	195	
	SSM6K404TU # \$	20	+/-10	3.0	-	147	100	70	55	-	-	5.9	400	
	SSM6K403TU # \$	20	+/-10	4.2	-	66	43	32	28	-	-	16.8	1050	
	SSM6K406TU # \$	30	+/-20	4.4	-	-	-	-	-	38.5	25	12.4	490	
	SSM6K407TU # \$	60	+/-20	2.0	-	-	-	-	440	-	300	6.0	150	
UDFN6B	SSM6K504NU # \$	30	+/-20	9.0	-	-	-	-	-	26	19.5	4.8	620	
	SSM6K513NU ☆	30	+/-20	15.0	-	-	-	-	-	12	8.9	7.5	1130	
	SSM6K514NU ☆	40	+/-20	12.0	-	-	-	-	-	17.3	11.6	7.5	1110	
	SSM6K341NU ☆ \$	60	+/-20	6.0	-	-	-	-	69	51	36	9.3	550	Tch=175°C
	SSM6K361NU ☆ \$	100	+/-20	3.5	-	-	-	-	-	92	69	3.2	430	Tch=175°C

☆ New Products, ● Recommend Another New Product

AEC-Q101 qualified, \$ With protection Zener diode between gate and source

SOT-23F	TSOP6F (SOT-26F)
	
2.9x2.4	2.9x2.8

N-Channel Single MOSFET

Package	Part Number	V _{DS} (V)	V _{GS} (V)	I _D (A)	R _{DS(ON)} max (mΩ)							Q _g typ. (nC)	C _{iss} typ. (pF)	Note
					V _{GS} = 1.2V	V _{GS} = 1.5V	V _{GS} = 1.8V	V _{GS} = 2.5V	V _{GS} = 4V	V _{GS} = 4.5V	V _{GS} = 10V			
SOT-23F	SSM3K344R ☆ \$	20	+/-8	3.0	-	232	139	91	-	71	-	2.0	153	
	SSM3K345R ☆ \$	20	+/-8	4.0	-	108	74	45	-	33	-	3.6	410	
	SSM3K329R # \$	30	+/-12	3.5	-	-	289	170	126	-	-	1.5	123	
	SSM3K324R \$	30	+/-12	4.0	-	-	109	72	-	56	-	2.2	200	
	SSM3K376R ☆ # \$	30	+12/-8	4.0	-	-	109	72	-	56	-	2.2	200	
	SSM3K336R ☆ # \$	30	+/-20	3.0	-	-	-	-	-	140	95	1.7	126	
	SSM3K333R # \$	30	+/-20	6.0	-	-	-	-	-	42	28	3.4	436	
	SSM3K335R # \$	30	+/-20	6.0	-	-	-	-	-	56	38	2.7	340	
	SSM3K347R ☆ # \$	38	+/-20	2.0	-	-	-	-	480	410	340	2.5	86	Built-in Active Clamp Zener
	SSM3K337R # \$	38	+/-20	2.0	-	-	-	-	200	176	150	3.0	120	Built-in Active Clamp Zener
	SSM3K339R \$	40	+/-12	2.0	-	-	390	238	208(@3.6V) 201(@4.2V)	198	185(@8V)	1.1	130	
	SSM3K357R ☆ # \$	60	+/-12	0.65	-	-	-	2400(@3V)	-	1800(@5V)	-	1.5	43	Built-in Active Clamp Zener
	SSM3K2615R ☆ # \$	60	+/-20	2.0	-	-	-	580(@3.3V)	440	-	300	6.0	150	
	SSM3K318R ☆ # \$	60	+/-20	2.5	-	-	-	-	-	145	107	7.0	235	
	SSM3K341R ☆ # \$	60	+/-20	6.0	-	-	-	-	69	51	36	9.3	550	Tch=175°C
TSOP6F	SSM3K361R ☆ # \$	100	+/-20	3.5	-	-	-	-	-	92	69	3.2	430	Tch=175°C
	SSM6K818R ★ # \$	30	+/-20	15.0	-	-	-	-	-	12.5	8.9	7.5	1130	
	SSM6K809R ★ # \$	60	+/-20	6.0	-	-	-	-	62.7	44.2	36	9.3	550	
	SSM6K810R ★ # \$	100	+/-20	3.5	-	-	-	-	-	92	69	3.2	430	
	SSM6K819R ★ # \$	100	+/-20	10.0	-	-	-	-	-	36.4	25.8	8.5	1110	Tch=175°C

☆ New Products, ★ Under Development (The specification is subject to change without notice.)

AEC-Q101 qualified, \$ With protection Zener diode between gate and source

ES6 (SOT-563)	UF6 (SOT-363F)	US6 (SOT-363)	UDFN6 (SOT-1118)	TSOP6F (SOT-26F)
			Bottom View 	
1.6x1.6	2.0x2.1	2.0x2.1	2.0x2.0	2.9x2.8

Dual MOSFET

Package	Polarity	Part Number		V _{oss} (V)	V _{ess} (V)	I _o (A)	R _{DS(ON)} max (mΩ)							Q _g typ. (nC)	Ciss typ. (pF)	Note
							V _{GS} = 1.2V	V _{GS} = 1.5V	V _{GS} = 1.8V	V _{GS} = 2.5V	V _{GS} = 4V	V _{GS} = 4.5V	V _{GS} = 10V			
ES6	P-ch x 2	SSM6P41FE	\$	-20	+/-8	-0.72	-	1040	670	440	-	300	-	1.76	110	
	N-ch x 2	SSM6N36FE #	\$	20	+/-10	0.5	-	1520	1140	850	-	660	630(@5V)	1.23	46	
		SSM6N56FE ☆ #	\$	20	+/-8	0.8	-	840	480	300	-	235	-	1.0	55	
	N-ch + P-ch	SSM6L14FE	\$	20	+/-10	0.8	-	600	450	330	-	240	-	2.0	90	
		SSM6L14FE	\$	-20	+/-8	-0.72	-	1040	670	440	-	300	-	1.76	110	
		SSM6L36FE #	\$	20	+/-10	0.5	-	1520	1140	850	-	660	630 (@5V)	1.23	46	
		SSM6L36FE	\$	-20	+/-8	-0.33	-	3600	2700	1600 (@-2.8V)	-	1310	-	1.2	43	
SSM6L56FE ☆		\$	20	+/-8	0.8	-	840	480	300	-	235	-	1	55		
UDFN6	P-ch x 2	SSM6P47NU	\$	-20	+/-8	-4.0	-	242	170	125	-	95	-	4.6	290	
		SSM6P69NU ☆ #	\$	-20	+6/-12	-4.0	-	-	157	76	-	56	45	6.74	480	
		SSM6P49NU	\$	-20	+/-12	-4.0	-	-	157	76	-	56	45	6.74	480	
	N-ch x 2	SSM6N61NU ☆ #	\$	20	+/-8	4.0	-	108	74	45	-	33	-	3.6	410	
		SSM6N55NU #	\$	30	+/-20	4.0	-	-	-	-	-	64	46	2.5	280	
		SSM6N67NU ☆ #	\$	30	+12/-8	4.0	-	-	82	53	-	39.1	-	3.2	310	
		SSM6N68NU ☆ #	\$	30	+12/-8	4.0	-	-	180	117	-	84	-	1.8	129	
		SSM6N57NU	\$	30	+/-12	4.0	-	-	82	53	-	39.1	-	3.2	310	
		SSM6N58NU	\$	30	+/-12	4.0	-	-	180	117	-	84	-	1.8	129	
	N-ch + P-ch	SSM6L61NU	\$	20	+/-8	4.0	-	108	74	45	-	33	-	3.6	410	
	SSM6L61NU	\$	-20	+/-12	-4.0	-	-	157	76	-	56	45	6.74	480		
UF6	P-ch x 2	SSM6P54TU #	\$	-20	+/-8	-1.2	-	555	350	228	-	-	-	7.7	331	
		SSM6P39TU #	\$	-20	+/-8	-1.5	-	-	430	294	213	-	-	6.4	250	
		SSM6P40TU #	\$	-30	+/-20	-1.4	-	-	-	403	-	226	2.9	120		
	N-ch x 2	SSM6N36TU #	\$	20	+/-10	0.5	-	1520	1140	850	-	660	630(@5V)	1.23	46	
		SSM6N62TU #	\$	20	+/-8	0.8	456	173	120	98	-	85	-	2.0	177	
		SSM6N39TU #	\$	20	+/-10	1.6	-	247	190	139	119	-	-	7.5	260	
		SSM6N24TU #	\$	30	+/-12	0.5	-	-	180	-	145	-	-	-	245	
		SSM6N40TU #	\$	30	+/-20	1.6	-	-	-	-	182	-	122	5.1	180	
		SSM6L36TU #	\$	20	+/-10	0.5	-	1520	1140	850	-	660	630 (@5V)	1.23	46	
	N-ch + P-ch	SSM6L36TU	\$	-20	+/-8	-0.33	-	3600	2700	1600 (@-2.8V)	-	1310	-	1.2	43	
		SSM6L39TU #	\$	20	+/-10	1.6	-	247	190	139	119	-	-	7.5	260	
		SSM6L39TU	\$	-20	+/-8	-1.5	-	-	430	294	213	-	-	6.4	250	
		SSM6L12TU #	\$	30	+/-12	0.5	-	-	-	180	-	145	-	-	245	
SSM6L12TU		\$	-20	+/-12	-0.5	-	-	-	430	260	-	-	-	218		
US6	N-ch x 2	SSM6N43FU #	\$	20	+/-10	0.5	-	1520	1140	850	-	660	630(@5V)	1.23	46	
		SSM6N43FU	\$	-30	+/-20	-1.4	-	-	-	-	403	-	226	2.9	120	
TSOP6F	N-ch x 2	SSM6N357R ☆	\$	60	+/-12	0.65	-	-	-	2400 (@3V)	-	1800 (@5V)	-	1.5	43	Built-in Active Clamp Zener
		SSM6N815R ☆	\$	100	+/-20	2.0	-	-	-	-	180	142	103	3.1	290	
		SSM6N813R ☆ #	\$	100	+/-20	3.5	-	-	-	-	-	154	112	3.6	242	
	N-ch + P-ch	SSM6L807L ☆	\$	30	+12/-12	4	-	-	82	53	-	39.1	-	3.2	310	
		SSM6L807L	\$	-20	+12/-12	-4	-	-	157	76	-	56	-	6.74	480	
		SSM6L820L ☆ #	\$	30	+12/-8	4	-	-	82	53	-	39.1	-	3.2	310	
SSM6L820L	\$	-20	+6/-12	-4	-	-	157	76	-	56	-	6.74	480			

☆ New Products

AEC-Q101 qualified, \$ With protection Zener diode between gate and source

ESV (SOT-553)	UFV (SOT-353F)	UDFN6 (SOT-1118)
		
1.6x1.6	2.0x2.1	2.0x2.0

Bottom View

MOSFET with Diode

Package	Polarity	Part Number	V _{DS} (V)	V _{GS} (V)	I _D (A)	MOSFET								Diode				Note
						R _{DS(ON)} max (mΩ)							C _{iss} typ. (pF)	V _F (V)	I _O (A)	V _F max (V)		
						V _{GS} = 1.5V	V _{GS} = 1.8V	V _{GS} = 2.5V	V _{GS} = 4V	V _{GS} = 4.5V	V _{GS} = 5V	V _{GS} = 10V				@I _F (A)		
ESV	P-ch + SBD	SSM5G06FE	\$ -20	+/-10	-0.1	45000	-	12000	8000	-	-	-	11	12	0.1	0.5	0.1	
	N-ch + SBD	SSM5H06FE	\$ 20	+/-10	0.1	15000	-	4000	3000	-	-	-	9.3	12	0.1	0.5	0.1	
UFV	P-ch + SBD	SSM5G02TU	\$ -12	+/-12	-0.1	-	-	240	160	-	-	-	310	12	0.5	0.43	0.5	
		SSM5G09TU	\$ -12	+/-8	-1.5	-	-	200	130	-	-	-	550	12	0.5	0.43	0.5	
		SSM5G11TU	\$ -30	+/-20	-1.4	-	-	-	403	-	-	226	120	30(¥)	0.7(¥¥)	0.44	0.7(¥¥)	
	N-ch + SBD	SSM5H08TU	\$ 20	+/-12	1.5	-	-	220	160	-	-	-	125	20	0.5	0.43(typ.)	0.5	
		SSM5H01TU	\$ 30	+/-20	1.4	-	-	-	450	-	-	200	106	20	0.5	0.43(typ.)	0.5	
		SSM5H11TU	\$ 30	+/-20	1.6	-	-	-	182	-	-	122	180	30(¥)	0.7(¥¥)	0.44	0.7	
		SSM5H16TU	\$ 30	+/-12	1.9	-	-	296	177	133	-	-	-	123	30	0.8	0.55	0.8
	N-ch + Switching Diode	SSM5H90ATU	\$ 20	+/-10	2.4	-	-	89	65	-	-	-	200	80	0.1	1.2	0.1	
UDFN6	P-ch + SBD	SSM6G18NU	\$ -20	+/-8	-2.0	261	185	143	-	112	-	-	270	30	1	0.58	1	
	N-ch + SBD	SSM6H19NU	\$ 40	+/-12	2.0	-	390	238	208(@3.6V) 201(@4.2V)	198	-	185 (@8V)	130	40	0.5	0.57	0.5	

\$ With protection Zener diode between gate and source, ¥ V_{RSM}, ¥¥ I_{F(AV)}

Less than 500mA Series MOSFETs (Standard Type)

Package Dimensions (unit: mm)

CST3C	CST3 (SOT-883)	VESM (SOT-723)	SSM (SOT-416)	UFM (SOT-323F)	USM (SOT-323)	S-Mini (SOT-346)
Bottom View 	Bottom View 					
0.8x0.6	1.0x0.6	1.2x1.2	1.6x1.6	2.0x2.1	2.0x2.1	2.9x2.5

P-Channel Single MOSFET

Package	Part Number	V _{oss} (V)	V _{ess} (V)	I _o (A)	R _{DS(on)} max (Ω)							Note
					V _{es} = -1.2V	V _{es} = -1.5V	V _{es} = -1.8V	V _{es} = -2.5V	V _{es} = -4V	V _{es} = -4.5V	V _{es} = -10V	
CST3C	SSM3J35CTC ☆ \$	-20	+/-10	-0.25	20	4	2.9	2.1	-	1.4	-	
CST3	SSM3J35CT \$	-20	+/-10	-0.1	44	22	-	11	8	-	-	
	SSM3J15CT \$	-30	+/-20	-0.1	-	-	-	32	12	-	-	
VESM	SSM3J35MFV ● # \$	-20	+/-10	-0.1	44	22	-	11	8	-	-	⇒ SSM3J56MFV
	SSM3J16FV ● # \$	-20	+/-10	-0.1	-	45	-	12	8	-	-	⇒ SSM3J56MFV
	SSM3J56MFV ☆ \$	-20	+/-8	-0.8	4	0.9	0.66	0.48	-	0.39	-	
	SSM3J66MFV ☆ # \$	-20	+6/-8	-0.8	4	0.9	0.66	0.48	-	0.39	-	
	SSM3J35AMFV ☆ \$	-20	+/-10	-0.25	20	4	2.9	2.1	-	1.4	-	
	SSM3J15FV # \$	-30	+/-20	-0.1	-	-	-	32	12	-	-	
SSM	SSM3J35FS # \$	-20	+/-10	-0.1	44	22	-	11	8	-	-	
	SSM3J35AFS ☆ \$	-20	+/-10	-0.25	20	4	2.9	2.1	-	1.4	-	
	SSM3J36FS # \$	-20	+/-8	-0.33	-	3.6	2.7	1.6(@-2.8V)	-	1.31	-	
	SSM3J15FS # \$	-30	+/-20	-0.1	-	-	-	32	12	-	-	
UFM	SSM3J36TU # \$	-20	+/-8	-0.33	-	3.6	2.7	1.6(@-2.8V)	-	1.31	-	
USM	SSM3J16FU # \$	-20	+/-10	-0.1	-	45	-	12	8	-	-	
	SSM3J15FU # \$	-30	+/-20	-0.1	-	-	-	32	12	-	-	
	SSM3J09FU # \$	-30	+/-20	-0.2	-	-	-	6(@-3.3V)	4.2	-	2.7	
S-Mini	SSM3J15F # \$	-30	+/-20	-0.1	-	-	-	32	12	-	-	
	2SJ168 ● \$	-60	+/-20	-0.2	-	-	-	-	-	-	2	⇒ SSM3J168F
	SSM3J168F ☆ # \$	-60	+10/-20	-0.4	-	-	-	-	2	1.9	1.55	

☆ New Products, ● Recommend Another New Product
AEC-Q101 qualified, \$ With protection Zener diode between gate and source

1 MOSFETs

2 Tr./BRTs

3 Diodes

4 Linear ICs

5 Logics

6 Bus Switches

7 RF Devices

8 Packages

CST3C	CST3 (SOT-883)	VESM (SOT-723)	SSM (SOT-416)	USM (SOT-323)	SOT23 (SOT-23)	S-Mini (SOT-346)
Bottom View 	Bottom View 					
0.8x0.6	1.0x0.6	1.2x1.2	1.6x1.6	2.0x2.1	2.9x2.4	2.9x2.5

N-Channel Single MOSFET

Package	Part Number	V _{DS} (V)	V _{GS} (V)	I _D (A)	R _{DS(ON)} max (Ω)								Note
					V _{GS} = 1.2V	V _{GS} = 1.5V	V _{GS} = 1.8V	V _{GS} = 2.5V	V _{GS} = 4V	V _{GS} = 4.5V	V _{GS} = 5V	V _{GS} = 10V	
CST3C	SSM3K16CTC ☆	\$ 20	+/-10	0.2	-	5.6	4	3	-	2.2	-	-	
	SSM3K35CTC ☆	\$ 20	+/-10	0.25	9	3.1	2.4	1.6	-	1.1	-	-	
	SSM3K15ACTC ☆	\$ 30	+/-20	0.1	-	-	-	6	3.6	-	-	-	
	SSM3K72CTC ☆	\$ 60	+/-20	0.15	-	-	-	5.7(typ.)	-	4.7	4.4	3.9	
CST3	SSM3K16CT ●	\$ 20	+/-10	0.1	-	15	-	4	3	-	-	-	⇒ SSM3K37CT
	SSM3K35CT	\$ 20	+/-10	0.18	20	8	-	4	3	-	-	-	
	SSM3K37CT	\$ 20	+/-10	0.2	-	5.6	4.05	3.02	-	2.2	-	-	
	SSM3K15ACT	\$ 30	+/-20	0.1	-	-	-	6	3.6	-	-	-	
VESM	SSM3K72KCT ☆	\$ 60	+/-20	0.4	-	-	-	-	-	1.75	1.65	1.5	
	SSM3K16FV ● #	\$ 20	+/-10	0.1	-	15	-	4	3	-	-	-	⇒ SSM3K37MFV
	SSM3K35MFV #	\$ 20	+/-10	0.18	20	8	-	4	3	-	-	-	
	SSM3K37MFV	\$ 20	+/-10	0.25	-	5.6	4.05	3.02	-	2.2	-	-	
	SSM3K35AMFV ☆	\$ 20	+/-10	0.25	9	3.1	2.4	1.6	-	1.1	-	-	
	SSM3K15AMFV	\$ 30	+/-20	0.1	-	-	-	6	3.6	-	-	-	
SSM	SSM3K44MFV #	\$ 30	+/-20	0.1	-	-	-	7	4	-	-	-	
	SSM3K16FS ● #	\$ 20	+/-10	0.1	-	15	-	4	3	-	-	-	⇒ SSM3K37FS
	SSM3K35FS #	\$ 20	+/-10	0.18	20	8	-	4	3	-	-	-	
	SSM3K37FS	\$ 20	+/-10	0.2	-	5.6	4.05	3.02	-	2.2	-	-	
	SSM3K35AFS ☆	\$ 20	+/-10	0.25	9	3.1	2.4	1.6	-	1.1	-	-	
	SSM3K44FS #	\$ 30	+/-20	0.1	-	-	-	7	4	-	-	-	
	SSM3K15AFS	\$ 30	+/-20	0.1	-	-	-	6	3.6	-	-	-	
	SSM3K72CFS	\$ 60	+/-20	0.17	-	-	-	-	-	4.7	4.4	3.9	
USM	SSM3K72KFS ☆ #	\$ 60	+/-20	0.3	-	-	-	-	-	1.75	1.65	1.5	
	SSM3K16FU #	\$ 20	+/-10	0.1	-	15	-	4	3	-	-	-	
	SSM3K15AFU	\$ 30	+/-20	0.1	-	-	-	6	3.6	-	-	-	
	SSM3K48FU	\$ 30	+/-20	0.1	-	-	-	5.4	3.2	-	-	-	
	SSM3K09FU #	\$ 30	+/-20	0.4	-	-	-	1.7(@3.3V)	1.2	-	-	0.7	
	SSM3K17FU #	\$ 50	+/-7	0.1	-	-	-	40	20	-	-	-	
SOT23	SSM3K7002CFU ☆	\$ 60	+/-20	0.17	-	-	-	-	-	4.7	4.4	3.9	
	SSM3K7002KFU ☆ #	\$ 60	+/-20	0.4	-	-	-	-	-	1.75	1.65	1.5	
S-Mini	T2N7002AK ☆	\$ 60	+/-20	0.2	-	-	-	-	-	4.7	4.4	3.9	
	T2N7002BK ☆	\$ 60	+/-20	0.4	-	-	-	-	-	1.75	1.65	1.5	
S-Mini	SSM3K15F #	\$ 30	+/-20	0.1	-	-	-	7	4	-	-	-	
	SSM3K7002KF ☆ #	\$ 60	+/-20	0.4	-	-	-	-	-	1.75	1.65	1.5	

☆ New Products, ● Recommend Another New Product

AEC-Q101 qualified, \$ With protection Zener diode between gate and source

ESV (SOT-553)	ES6 (SOT-563)	USV (SOT-353)	UF6 (SOT-363F)	US6 (SOT-363)
				
1.6x1.6	1.6x1.6	2.0x2.1	2.0x2.1	2.0x2.1

Dual MOSFET

Package	Polarity	Part Number	V _{oss} (V)	V _{ess} (V)	I _D (A)	R _{DS(ON)} max (Ω)								Note
						V _{GS} = 1.2V	V _{GS} = 1.5V	V _{GS} = 1.8V	V _{GS} = 2.5V	V _{GS} = 4V	V _{GS} = 4.5V	V _{GS} = 5V	V _{GS} = 10V	
ESV	P-ch x2	SSM5P16FE	\$	-20	+/-10	-0.1	-	45	-	12	8	-	-	-
	N-ch x2	SSM5N16FE	\$	20	+/-10	0.1	-	15	-	4	3	-	-	-
		SSM5N15FE	\$	30	+/-20	0.1	-	-	-	7	4	-	-	-
ES6	P-ch x2	SSM6P35FE	# \$	-20	+/-10	-0.1	44	22	-	11	8	-	-	-
		SSM6P35AFE☆	\$	-20	+/-10	-0.25	20	4	2.9	2.1	-	1.4	-	-
		SSM6P36FE	# \$	-20	+/-8	-0.33	-	3.6	2.7	1.6(@2.8V)	-	1.31	-	-
		SSM6P15FE	# \$	-30	+/-20	-0.1	-	-	-	32	12	-	-	-
	N-ch x2	SSM6N16FE	● # \$	20	+/-10	0.1	-	15	-	4	3	-	-	-
		SSM6N35FE	# \$	20	+/-10	0.18	20	8	-	4	3	-	-	-
		SSM6N37FE	\$	20	+/-10	0.25	-	5.6	4.05	3.02	-	2.2	-	-
		SSM6N35AFE☆	\$	20	+/-10	0.25	9	3.1	2.4	1.6	-	1.1	-	-
		SSM6N44FE	# \$	30	+/-20	0.1	-	-	-	7	4	-	-	-
		SSM6N15AFE	\$	30	+/-20	0.1	-	-	-	6	3.6	-	-	-
		SSM6N7002BFE	\$	60	+/-20	0.2	-	-	-	-	-	3.3	2.6	2.1
	N-ch + P-ch	SSM6L35FE	# \$	20	+/-10	0.18	20	8	-	4	3	-	-	-
				-20	+/-10	-0.1	44	22	-	11	8	-	-	-
USV	P-ch x2	SSM5P15FU	\$	-30	+/-20	-0.1	-	-	-	32	12	-	-	-
	N-ch x2	SSM5N16FU	\$	20	+/-10	0.1	-	15	-	4	3	-	-	-
		SSM5N15FU	\$	30	+/-20	0.1	-	-	-	7	4	-	-	-
UF6	P-ch x2	SSM6P36TU	# \$	-20	+/-8	-0.33	-	3.6	2.7	1.6(@2.8V)	-	1.31	-	-
US6	P-ch x2	SSM6P35FU	# \$	-20	+/-10	-0.1	44	22	-	11	8	-	-	-
		SSM6P35AFU☆	\$	-20	+/-10	-0.25	20	4	2.9	2.1	-	1.4	-	-
		SSM6P15FU	# \$	-30	+/-20	-0.1	-	-	-	32	12	-	-	-
	N-ch x2	SSM6N16FU	● \$	20	+/-10	0.1	-	15	-	4	3	-	-	-
		SSM6N35FU	# \$	20	+/-10	0.18	20	8	-	4	3	-	-	-
		SSM6N35AFU☆	\$	20	+/-10	0.25	9	3.1	2.4	1.6	-	1.1	-	-
		SSM6N37FU	\$	20	+/-10	0.25	-	5.6	4.05	3.02	-	2.2	-	-
		SSM6N48FU	\$	30	+/-20	0.1	-	-	-	5.4	3.2	-	-	-
		SSM6N44FU	# \$	30	+/-20	0.1	-	-	-	7	4	-	-	-
		SSM6N15AFU	\$	30	+/-20	0.1	-	-	-	6	3.6	-	-	-
		SSM6N09FU	\$	30	+/-20	0.4	-	-	-	1.7(@3.3V)	1.2	-	-	0.7
		SSM6N17FU	# \$	50	+/-7	0.1	-	-	-	40	20	-	-	-
		SSM6N7002CFU☆	\$	60	+/-20	0.17	-	-	-	-	-	4.7	4.4	3.9
		SSM6N7002KFU☆	# \$	60	+/-20	0.3	-	-	-	-	-	1.75	1.65	1.5
	N-ch + P-ch	SSM6L35FU	# \$	20	+/-10	0.18	20	8	-	4	3	-	-	-
				-20	+/-10	-0.1	44	22	-	11	8	-	-	-
		SSM6L09FU	\$	30	+/-20	0.4	-	-	-	1.7(@3.3V)	1.2	-	-	0.7
				-30	+/-20	-0.2	-	-	-	6(@-3.3V)	4.2	-	-	2.7

☆ New Products, ● Recommend Another New Product
AEC-Q101 qualified, \$ With protection Zener diode between gate and source

■ Part Naming Conventions

Small-Signal MOSFET SSM Series

Ex) SSM 3 K 329 R
 ① ② ③ ④ ⑤

① Small-Signal MOSFET

② Pin count

③ Polarity and internal configuration

K: N-channel, single

J: P-channel, single

N: N-channel, dual

P: P-channel, dual

L: N-channel and P-channel (dual)

E: N-channel and P-channel (pre-wired as a load switch)

H: N-channel and SBD

G: P-channel and SBD

Q: PNP and P-channel

④ Serial number of the products

⑤ Package

3-pin F: S-Mini

FU: USM

FS: SSM

FV: VESM

TU: UFM

CT: CST3

CTB: CST3B

CTC: CST3C

R: SOT-23F

5-pin F: SMV

FU: USV

FE: ESV

TU: UFV

6-pin G: WCSP6C

R: TSOP6F

FU: US6

FE: ES6

TU: UF6

NU: UDFN6/UDFN6B

2. Bipolar Transistors

General-Purpose Transistors

Package Dimensions (unit: mm)

Classification	V _{CE0} (V)	I _c (mA)	CST3 (SOT-883)		VESM (SOT-723)		SSM (SOT-416)	
			Bottom View					
								
			1.0x0.6		1.2x1.2		1.6x1.6	
Part Number								
			NPN	PNP	NPN	PNP	NPN	PNP
General Purpose	50	100	2SC6026CT	2SA2154CT				
	50	150			2SC6026MFV #	2SA2154MFV #	2SC4738 #	2SA1832 #

Classification	$ V_{CE0} $ (V)	$ I_C $ (mA)	USM (SOT-323)		UFM (SOT-323F)		S-Mini (SOT-346)		SOT23 (SOT-23)	
										
			2.0x2.1	2.0x2.1	2.9x2.5	2.9x2.4				
			Part Number							
			NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP
General Purpose	30	500		2SA1588 #				2SA1182 #		
	50	150	2SC4116 #	2SA1586 #			2SC2712 #	2SA1162 #		
		200							TMBT3904 ☆	TMBT3906 ☆
	50	500					2SC3325 # TTC1949 ☆	2SA1313 #		
							TTA1713 ☆			
Low Noise	120	100	2SC4117 #	2SA1587 #			2SC2713 #	2SA1163 #		
							2SC3324	2SA1312		
Low Saturation	15	800						2SA1362 #		
Muting	20	300	2SC4213				2SC3326 #			
High Current	20	2500				2SA2215 #				
	25	800					2SC3265 #	2SA1298 #		
	50	1000			2SC6135 #					
	50	1700				2SA2195 #				
	50	2500			2SC6100 #					
High Breakdown	300	100						2SA1721		
	600	50					2SC6105			

☆ New Products
AEC-Q101 qualified

Classification	$ V_{CE0} $ (V)	$ I_C $ (mA)	ESV (SOT-553)	USV (SOT-353)	SMV (SOT-25)			
			 1.6x1.6	 2.0x2.1	 2.9x2.8			
			Part Number					
			PNP+NPN	NPNx2	PNPx2	NPNx2	PNPx2	PNP+NPN
General Purpose	50	150	HN4B01JE 	2SC4944 	2SA1873 	2SC4207 	2SA1618 	
					HN4A56JU 			
Low Noise	120	100				HN4C06J 	HN4A06J 	HN4B06J 
						HN4C51J 	HN4A51J 	
High Current	25	800					HN4A08J 	

Classification	$ V_{CE0} $ (V)	$ I_C $ (mA)	ES6 (SOT-563)			US6 (SOT-363)			SM6 (SOT-26)		
			 1.6x1.6			 2.0x2.1			 2.9x2.8		
			Part Number								
			NPNx2	PNPx2	PNP+NPN	NPNx2	PNPx2	PNP+NPN	NPNx2	PNPx2	PNP+NPN
General Purpose	50	150	HN1C01FE # 	HN1A01FE # 	HN1B04FE # 	HN1C01FU # 	HN1A01FU # 	HN1B01FU # 	HN1C01F 	HN1A01F 	HN1B01F 
						HN2C01FU 	HN2A01FU 	HN1B04FU # 			
						HN3C56FU 		HN3B02FU 			
	50	500							HN1C07F 	HN1A07F 	
High Current	15	800								HN1A02F 	
Muting	20	300				HN1C03FU # 			HN1C03F 		

AEC-Q101 qualified

Bias Resistor Built-in Transistors (BRTs)

Package Dimensions (unit: mm)

		V_{CE0} (V)	I_{CL} (mA)	Resistance		VESM (SOT-723)		SSM (SOT-416)		USM (SOT-323)		S-Mini (SOT-346)	
													
						1.2x1.2		1.6x1.6		2.0x2.1		2.9x2.5	
													
						R1 (typ.) (kΩ)	R2 (typ.) (kΩ)	NPN	PNP	NPN	PNP	NPN	PNP
Part Number													
50	100	4.7	4.7	RN1101MFV #	RN2101MFV #	RN1101 #	RN2101 #	RN1301 #	RN2301 #	RN1401 #	RN2401 #		
		10	10	RN1102MFV #	RN2102MFV #	RN1102 #	RN2102 #	RN1302 #	RN2302 #	RN1402 #	RN2402 #		
		22	22	RN1103MFV #	RN2103MFV #	RN1103 #	RN2103 #	RN1303 #	RN2303 #	RN1403 #	RN2403 #		
		47	47	RN1104MFV #	RN2104MFV #	RN1104 #	RN2104 #	RN1304 #	RN2304 #	RN1404 #	RN2404 #		
		2.2	47	RN1105MFV #	RN2105MFV #	RN1105 #	RN2105 #	RN1305 #	RN2305 #	RN1405 #	RN2405 #		
		4.7	47	RN1106MFV #	RN2106MFV #	RN1106 #	RN2106 #	RN1306 #	RN2306 #	RN1406 #	RN2406 #		
		10	47	RN1107MFV #	RN2107MFV #	RN1107 #	RN2107 #	RN1307 #	RN2307 #	RN1407 #	RN2407 #		
		22	47	RN1108MFV #	RN2108MFV #	RN1108 #	RN2108 #	RN1308 #	RN2308 #	RN1408 #	RN2408 #		
		47	22	RN1109MFV #	RN2109MFV #	RN1109 #	RN2109 #	RN1309 #	RN2309 #	RN1409 #	RN2409 #		
		4.7	∞	RN1110MFV #	RN2110MFV #	RN1110 #	RN2110 #	RN1310 #	RN2310 #	RN1410 #	RN2410 #		
		10	∞	RN1111MFV #	RN2111MFV #	RN1111 #	RN2111 #	RN1311 #	RN2311 #	RN1411 #	RN2411 #		
		22	∞	RN1112MFV #	RN2112MFV #	RN1112 #	RN2112 #	RN1312 #	RN2312 #	RN1412 #	RN2412 #		
		47	∞	RN1113MFV #	RN2113MFV #	RN1113 #	RN2113 #	RN1313 #	RN2313 #	RN1413 #	RN2413 #		
		1	10	RN1114MFV #	RN2114MFV #	RN1114 #	RN2114 #	RN1314 #	RN2314 #	RN1414 #	RN2414 #		
		2.2	10	RN1115MFV #	RN2115MFV #	RN1115 #	RN2115 #	RN1315 #	RN2315 #	RN1415 #	RN2415 #		
		4.7	10	RN1116MFV #	RN2116MFV #	RN1116 #	RN2116 #	RN1316 #	RN2316 #	RN1416 #	RN2416 #		
		10	4.7	RN1117MFV #	RN2117MFV #	RN1117 #	RN2117 #	RN1317 #	RN2317 #	RN1417 #	RN2417 #		
		47	10	RN1118MFV #	-	RN1118	-	RN1318	RN2318	RN1418 #	RN2418 #		
		1	∞	RN1119MFV #	RN2119MFV #	-	-	-	-	-	-		
		100	100	RN1130MFV #	RN2130MFV #	-	-	-	-	-	-		
		100	∞	RN1131MFV #	RN2131MFV #	-	-	-	-	-	-		
		200	∞	RN1132MFV	RN2132MFV	-	-	-	-	-	-		

V_{CE0} (V)		I_{CL} (mA)		Resistance		SOT23 (SOT-23)	
							
						2.9x2.4	
NPN	PNP						
		R1 (typ.) (kΩ)	R2 (typ.) (kΩ)	Part Number			
50	100	4.7	4.7	TDTC143E	TDTA143E		
		10	10	TDTC114E	TDTA114E		
		22	22	TDTC124E	TDTA124E		
		47	47	TDTC144E	TDTA144E		
		2.2	47	TDTC123J	TDTA123J		
		4.7	47	TDTC143Z	TDTA143Z		
		10	47	TDTC114Y	TDTA114Y		

	V_{CE0} (V)	I_C (mA)	Resistance		S-Mini (SOT-346)	
						
					2.9x2.5	
						
					R1 (typ.) (kΩ)	R2 (typ.) (kΩ)
				Part Number		
50	800	1	1	RN1421	RN2421	
		2.2	2.2	RN1422	RN2422	
		4.7	4.7	RN1423	RN2423	
		10	10	RN1424	RN2424	
		0.47	10	RN1425	RN2425	
		1	10	RN1426	RN2426	
		2.2	10	RN1427	RN2427	

#AEC-Q101 qualified

1 MOSFETs

2 Tr./BRTs

3 Diodes

4 Linear ICs

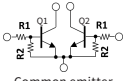
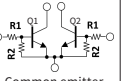
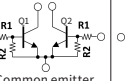
5 Logics

6 Bus Switches

7 RF Devices

8 Packages

Package Dimensions (unit: mm)

		V_{ce0} (V)	I_c (mA)	Resistance		ESV (SOT-553)		USV (SOT-353)		SMV (SOT-25)			
						 1.6x1.6		 2.0x2.1		 2.9x2.8			
						 Common emitter		 Common emitter		 Common emitter		 Common emitter	
						R1 (typ.) (kΩ)	R2 (typ.) (kΩ)	NPNx2	PNPx2	NPNx2	PNPx2	NPNx2	PNPx2
Part Number													
50	100	4.7	4.7	RN1701JE	RN2701JE	RN1701 #	RN2701 #	RN1501	RN2501				
		10	10	RN1702JE	RN2702JE	RN1702 #	RN2702 #	RN1502	RN2502				
		22	22	RN1703JE	RN2703JE	RN1703 #	RN2703 #	RN1503	RN2503				
		47	47	RN1704JE	RN2704JE	RN1704 #	RN2704 #	RN1504	RN2504				
		2.2	47	RN1705JE	RN2705JE	RN1705 #	RN2705 #	RN1505	RN2505				
		4.7	47	RN1706JE	RN2706JE	RN1706 #	RN2706 #	RN1506	RN2506				
		10	47	RN1707JE	RN2707JE	RN1707 #	RN2707 #	RN1507	RN2507				
		22	47	RN1708JE	RN2708JE	RN1708 #	RN2708 #	RN1508	-				
		47	22	RN1709JE	RN2709JE	RN1709 #	RN2709 #	RN1509	-				
		4.7	∞	RN1710JE	RN2710JE	RN1710 #	RN2710 #	RN1510	RN2510				
		10	∞	RN1711JE	RN2711JE	RN1711 #	RN2711 #	RN1511	RN2511				
		22	∞	-	RN2712JE	-	-	-	-				
		47	∞	-	RN2713JE	-	-	-	-				
		1	10	-	-	-	RN2714	-	-				

				ES6 (SOT-563)			
	V_{ce0} (V)	I_c (mA)	Resistance	 1.6x1.6			
				 Point symmetrical			
				R1 (typ.) (kΩ)	R2 (typ.) (kΩ)	R1 (typ.) (kΩ)	R2 (typ.) (kΩ)
				Part Number			
50	100	4.7	4.7	RN1901FE #	RN2901FE #	RN4901FE #	RN4981FE #
		10	10	RN1902FE #	RN2902FE #	RN4902FE #	RN4982FE #
		22	22	RN1903FE #	RN2903FE #	RN4903FE #	RN4983FE #
		47	47	RN1904FE #	RN2904FE #	RN4904FE #	RN4984FE #
		2.2	47	RN1905FE #	RN2905FE #	RN4905FE #	RN4985FE #
		4.7	47	RN1906FE #	RN2906FE #	RN4906FE #	RN4986FE #
		10	47	RN1907FE #	RN2907FE #	RN4907FE #	RN4987FE #
		22	47	RN1908FE #	RN2908FE #	RN4908FE #	RN4988FE #
		47	22	RN1909FE #	RN2909FE #	RN4909FE #	RN4989FE #
		4.7	∞	RN1910FE #	RN2910FE #	RN4910FE #	RN4990FE #
		10	∞	RN1911FE #	RN2911FE #	RN4911FE #	RN4991FE #
		2.2/22	47/47	-	-	RN49A1FE	-

AEC-Q101 qualified

$ V_{ce0} $ (V)		$ I_c $ (mA)		US6 (SOT-363)					
				Resistance					
				 2.0x2.1					
				 Point symmetrical	 Point symmetrical	 Point symmetrical	 Point symmetrical	 Parallel	 Parallel
		R1 (typ.) (kΩ)	R2 (typ.) (kΩ)	Part Number					
50	100	4.7	4.7	RN1901 #	RN2901 #	RN4901 #	RN4981 #	RN1961	RN2961
		10	10	RN1902 #	RN2902 #	RN4902 #	RN4982 #	RN1962	RN2962
		22	22	RN1903 #	RN2903 #	RN4903 #	RN4983 #	RN1963	RN2963
		47	47	RN1904 #	RN2904 #	RN4904 #	RN4984 #	RN1964	RN2964
		2.2	47	RN1905 #	RN2905 #	RN4905 #	RN4985 #	RN1965	RN2965
		4.7	47	RN1906 #	RN2906 #	RN4906 #	RN4986 #	-	-
		10	47	RN1907 #	RN2907 #	RN4907 #	RN4987 #	-	RN2967
		22	47	RN1908 #	RN2908 #	RN4908 #	RN4988 #	RN1968	-
		47	22	RN1909 #	RN2909 #	RN4909 #	RN4989 #	-	RN2969
		4.7	∞	RN1910 #	RN2910 #	RN4910 #	RN4990 #	RN1970	-
		10	∞	RN1911 #	RN2911 #	RN4911 #	-	RN1971	RN2971
		47	∞	-	-	-	-	-	-
		2.2/22	47/47	-	-	RN49A1	-	-	-
		47/2.2	47/47	-	-	-	RN49A2	-	-

$ V_{ce0} $ (V)		$ I_c $ (mA)		SM6 (SOT-26)		
				Resistance		
				 2.9x2.8		
				 Point symmetrical	 Point symmetrical	 Point symmetrical
		R1 (typ.) (kΩ)	R2 (typ.) (kΩ)	Part Number		
50	100	4.7	4.7	RN1601	RN2601	RN4601
		10	10	RN1602	RN2602	RN4602
		22	22	RN1603	RN2603	RN4603
		47	47	RN1604	RN2604	RN4604
		2.2	47	RN1605	RN2605	RN4605
		4.7	47	RN1606	RN2606	RN4606
		10	47	RN1607	RN2607	RN4607
		22	47	RN1608	RN2608	RN4608
		47	22	RN1609	-	RN4609
		4.7	∞	RN1610	RN2610	RN4610
		10	∞	RN1611	-	RN4611
		22	∞	-	-	RN4612
		22/10	22/10	-	-	RN46A1

3. Diodes

■ Schottky Barrier Diodes (SBDs)

Features	Absolute Maximum Ratings		Electrical Characteristics (Ta=25°C)						SL2 (SOD-962)	CL2E	CST2 (SOD-882)	SOD-923	CST2B	
									Bottom View	Bottom View	Bottom View		Bottom View	
	V_R / V_{RM}^* (V)	I_O (A)	V_F			I_S max (μ A)		C_T typ. (pF)						
		typ. (V)	max (V)	@ I_F (A)		@ V_R (V)			0.62x0.32	1.0x0.6	1.0x0.6	1.0x0.6	1.2x0.8	
High- V_R and I_O	60	1.0	0.56	0.62	1.0	40	60	130						
	40	2.0	0.47	0.51	2.0	60	40	300						
			0.4	0.47	2.0	300	40	290						
		1.5	0.57	0.63	1.5	50	40	130						
			0.59	0.64	1.5	25	40	130						
		40*	1.0	to 0.63	to 0.70	1.0	20	40	74					CBS10F40 ☆
	0.5		0.74	0.81	0.5	15	40	28			CTS05F40 ☆			
	1.5		0.47	0.55	1.5	200	40	170						
	1.0		to 0.48	to 0.55	1.0	150	40	120					CBS10S40	
	0.5		0.56	0.60	0.5	50	40	42			CTS05S40			
	30	2.0	0.40	0.47	2.0	60	30	380						
			0.34	0.41	2.0	500	30	390						
		1.0	0.43	0.50	1.0	50	30	170						
		0.8	0.40	0.45	0.8	50	30	170						
		0.5	0.38	0.45	0.5	50	30	to 120					CBS05F30	
	30*	0.5	0.38	0.47	0.5	100	20	-						
		1.5	0.39	-	1.5	500	30	200						
		1.0	0.37	0.45	1.0	500	30	135					CBS10S30	
		0.5	0.41	0.47	0.5	300	30	55			CTS05S30			
Standard	40	0.1	0.54	0.60	0.1	5	40	11						
			0.56	0.62	0.1	5	40	15			1SS417CT	1SS417		
	30	0.2	0.52	0.60	0.2	5	30	to 17			CTS520 ☆			
			0.45	0.50	0.2	30	30	to 26			CTS521 ☆			
		0.1	0.38	0.50	0.1	50	30	15			1SS416CT	1SS416		
			0.51	0.62	0.1	0.7	30	8.2	DSR01S30SL ☆					
	20	0.3	0.38	0.45	0.3	50	20	46						
			0.42	0.50	0.2	50	20	20						
		0.2	0.42	0.50	0.2	50	20	20						
10	0.1	0.35	0.50	0.1	20	10	20							
Low- I_S High Speed	20	0.05	0.50	0.55	0.05	0.5	20	3.9			1SS413CT	1SS413		
	40	1.0	0.52	0.57	1.0	25	40	130		CLS10F40 ☆				

☆ New Products, ★ Under Development (The specification is subject to change without notice.)
AEC-Q101 qualified

	CST2C (SOD-963)	ESC (SOD-523)	USC (SOD-323)	US2H (SOD-323HE)	Electrical Characteristics (Ta=25°C)						Absolute Maximum Ratings		Features
	Bottom View 				V _F			I _R max (μA)	C _T typ. (pF)	V _R /V _{RM} * (V)	I _O (A)		
	1.6x0.8	1.6x0.8	2.5x1.25	2.5x1.4	typ. (V)	max (V)	@I _R (A)	@V _R (V)					
				CUHS10F60 ☆	0.56	0.62	1.0	40	60	130	60	1.0	High-V _R and I _O
				CUHS20F40 ★	0.47	0.51	2.0	60	40	300	40	2.0	
				CUHS20S40 ★	0.4	0.47	2.0	300	40	290			
				CUHS15F40 ☆	0.57	0.63	1.5	50	40	130			
CCS15F40 ☆					0.59	0.64	1.5	25	40	130			
			CUS10F40 ☆		to 0.63	to 0.70	1.0	20	40	74	40*	1.0	
			CUS05F40 ☆		0.74	0.81	0.5	15	40	28		0.5	
CCS15S40			CUS15S40		0.47	0.55	1.5	200	40	170		1.5	
			CUS10S40		to 0.48	to 0.55	1.0	150	40	120		1.0	
			CUS05S40		0.56	0.60	0.5	50	40	42	0.5		
			CUHS20F30 ★		0.40	0.47	2.0	60	30	380	30	2.0	
			CUHS20S30 ★		0.34	0.41	2.0	500	30	390			
			CUS10F30		0.43	0.50	1.0	50	30	170		1.0	
			CUS08F30		0.4	0.45	0.8	50	30	170		0.8	
			CUS05F30		0.38	0.45	0.5	50	30	to 120	0.5		
			CUS551V30		0.38	0.47	0.5	100	20	-	0.5		
CCS15S30			CUS15S30		0.39	-	1.5	500	30	200	1.5		
			CUS10S30		0.37	0.45	1.0	500	30	135	30*	1.0	
			CUS05S30		0.41	0.47	0.5	300	30	55	0.5		
		CES388 #	CUS357 ☆ #		0.54	0.60	0.1	5	40	11	40	0.1	
					0.56	0.62	0.1	5	40	15			
		CES520 ☆ #	CUS520 ☆ #		0.52	0.60	0.2	5	30	to 17	30	0.2	
		CES521 ☆	CUS521 ☆ #		0.45	0.50	0.2	30	30	to 26			
					0.38	0.50	0.1	50	30	15			
					0.51	0.62	0.1	0.7	30	8.2			
					0.41	0.50	0.1	50	30	9.3	20	0.3	
			1SS404 #		0.38	0.45	0.3	50	20	46			
		1SS424			0.42	0.50	0.2	50	20	20		0.2	
		1SS389 #	1SS367 #		0.35	0.50	0.1	20	10	20	10	0.1	
		1SS405 #	1SS406 #		0.50	0.55	0.05	0.5	20	3.9	20	0.05	Low-I _R High Speed
					0.52	0.57	1.0	25	40	130	40	1.0	

Schottky Barrier Diodes (SBDs)

Features	Absolute Maximum Ratings		Electrical Characteristics (Ta=25°C)						VESM (SOT-723)	SSM (SOT-416)	USM (SOT-323)	S-Mini (SOT-346)	SOT-23 (SOT-23)	
	V _R / V _{RM} * (V)	I _O (A)	V _F			I _R max (μA)	C _T typ. (pF)							
			typ. (V)	max (V)	@I _F (A)									
High-V _F and I _O	30	1.0	0.47	0.57	1.0	50	30	120	1.2x1.2	1.6x1.6	2.0x2.1	2.9x2.5	2.9x2.4	
Standard	40	0.1	0.54	0.6	0.1	5	40	18			1SS322 	1SS294 		
										1SS393 	1SS392 			
										1SS396 				
			0.56	0.62	0.1	5	40	15	1SS423 					
	30	0.2	0.45	0.58	0.1	2	25	trr= 1.5ns @I _F =10 mA					TBAT54 ☆ 	
										TBAT54C ☆ 				
										TBAT54S ☆ 				
										TBAT54A ☆ 				
			0.1	0.38	0.5	0.1	50	30	15	1SS422 				
	20	0.3	0.38	0.45	0.3	50	20	46			1SS401 			
		0.2	0.36	0.42	0.2	50	20	46						
	10	0.1	0.35	0.5	0.1	20	10	20			1SS395 	1SS394 		
									1SS385FV 	1SS385 	1SS378 	1SS377 		
											1SS372 	1SS374 		
Low-I _R High Speed	20	0.05	0.5	0.55	0.05	0.5	20	3.9						
	10	0.05	0.63	1	0.05	0.5	10	3.2				1SS321 # 		

☆ New Products, # AEC-Q101 qualified

	USQ (SOT-343)	SMQ (SOT-24)	ESV (SOT-553)	UFV (SOT-353)	US6 (SOT-363)	SM6 (SOT-26)	Electrical Characteristics (Ta=25°C)						Absolute Maximum Ratings		Features
							V _F			I _R max (μA)	@V _R (V)	C _T typ. (pF)	V _R / V _{RM} * (V)	I _O (A)	
	2.0x2.1	2.9x2.9	1.6x1.6	2.0x2.1	2.0x2.1	2.9x2.8	typ. (V)	max (V)	@I _F (A)						
				CVJ10F30 			0.47	0.57	1.0	50	30	120	30	1.0	High-V _{FE} and I _O
	1SS383 	1SS319 	HN2S02JE 		HN2S02FU 		0.54	0.6	0.1	5	40	18	40	0.1	
							0.56	0.62	0.1	5	40	15			
							0.45	0.58	0.1	2	25	trr= 1.5ns @I _F =10 mA	30	0.2	
														0.38	0.5
							0.38	0.45	0.3	50	20	46	20	0.3	
					HN2S04FU 		0.36	0.42	0.2	50	20	46		0.2	
	1SS384 				HN2S01FU 	HN2S01F 	0.35	0.5	0.1	20	10	20	10	0.1	
	1SS402 				HN2S03FU 		0.5	0.55	0.05	0.5	20	3.9	20	0.05	Low-I _{FE} High Speed
							0.63	1	0.05	0.5	10	3.2	10	0.05	

Switching Diodes

Absolute Maximum Ratings		Electrical Characteristics (Ta=25°C)		CST2 (SOD-882)	SOD-923	ESC (SOD-523)	USC (SOD-323)	CST3 (SOT-883)	VESM (SOT-723)	SSM (SOT-416)	USM (SOT-323)	SOT23 (SOT-23)	
V _R (V)	I _o (mA)	C _i typ. (pF)	trr typ. (ns)	Bottom View				Bottom View					
													
				1.0x0.6	1.0x0.6	1.6x0.8	2.5x1.25	1.0x0.6	1.2x1.2	1.6x1.6	2.0x2.1	2.9x2.4	
30	100	3	-										
80	80	0.5	1.6							1SS362 			
	100	0.3	1.6		1SS427								
		0.5	1.6	1SS387CT		1SS387 #	1SS352 #						
		0.9	1.6					1SS361CT 	1SS361FV # 	1SS361 # 	1SS301 # 		
									1SS362FV # 		1SS302A # 		
		2	-			1SS307E ☆ #							
		2.2	1.6										
		3.0	-							1SS360 # 	1SS300 # 		
		Q1/2=0.9 Q3/4=2.2	1.6										
	215	0.9	1.6									TBAS16 ☆ 	
												TBAW56 ☆ 	
100	150	0.9	4 (max)									BAV99W ☆ 	
	215	0.9	4 (max)									BAV70 ☆ 	
	215	0.9	3 (max)									BAV99 ☆ 	
	250	0.35	3 (max)			BAS516 ☆	BAS316 ☆						
200	100	1.5	10				1SS403 #				1SS370 		
			60 (max)			1SS403E ☆							
			30										
400	100	2.5	0.5								1SS397 		

☆ New Products, # AEC-Q101 qualified

	S-Mini (SOT-346)	USQ (SOT-343)	SMQ (SOT-24)	ESV (SOT-553)	USV (SOT-353)	SMV (SOT-25)	ES6 (SOT-563)	US6 (SOT-363)	SM6 (SOT-26)	Electrical Characteristics (Ta=25°C)		Absolute Maximum Ratings	
	 2.9x2.5	 2.0x2.1	 2.9x2.9	 1.6x1.6	 2.0x2.1	 2.9x2.8	 1.6x1.6	 2.0x2.1	 2.9x2.8	C _T typ. (pF)	t _{rr} typ. (ns)	V _R (V)	I _O (mA)
	1SS307 									3	-	30	100
								HN2D01FU # 	HN2D01F 	0.5	1.6	80	80
								HN2D02FU # 		0.3	1.6		
				HN2D01JE 						0.5	1.6		
	1SS184 # 				HN4D02JU 	1SS309 				0.9	1.6	80	100
	1SS226 # 						HN1D02FE 	HN1D02FU # 	HN1D02F 				
	1SS196 # 												
	1SS193 # 												
		1SS382 	1SS272 							2	-	80	100
	1SS190 # 				HN4D01JU 	1SS308 							
	1SS187 # 						HN1D01FE 	HN1D01FU # 	HN1D01F 				
	1SS181 # 												
	1SS379 # 									3.0	-	80	100
								HN1D03FU # 	HN1D03F 	Q1/2=0.9 Q3/4=2.2	1.6		
										0.9	1.6		
										0.9	4 (max)		
										0.9	4 (max)	100	150
										0.9	3 (max)		215
										0.35	3 (max)		215
	1SS250 									1.5	10	200	100
											60 (max)		
			1SS306 								30		
	1SS398 		1SS399 						HN2D03F 	2.5	0.5	400	100

■ TVS Diodes (ESD Protection Diodes)

Application	Absolute Maximum Ratings		Electrical Characteristics (Ta=25°C)				SL2 (SOD-962)	CST2 (SOD-882)	CST2C (SOD-963)	SOD-923	ESC (SOD-523)	USC (SOD-323)	VESM (SOT-723)	
							Bottom View	Bottom View	Bottom View					
							0.62x0.32 	1.0x0.6 	1.6x0.8 	1.0x0.6 	1.6x0.8 	2.5x1.25 	1.2x1.2 	
	V _{ESD} IEC61000 -4.2 (kV)	I _{pp} tp=8/20μs (A)	V _{RWM} max (V)	C _T typ. (pF)	R _{DYN} typ. (Ω)									
Bi-directional	USB3.1/ Thunderbolt/ RF antenna (NFC)	±20	2.5	3.3	0.3	0.5	DF2B5M5SL ☆							
		±20	2.5	5.0	0.3	0.5	DF2B6M5SL ☆							
		±20	2.0	3.6	0.2	0.5 to 0.8	DF2B5M4SL ☆	DF2B5M4CT ☆						
		±20	2.0	5.5	0.2	0.5 to 0.8	DF2B6M4SL ☆	DF2B6M4CT ☆						
		±15	1.0	11.0	0.2	0.65	DF2B12M4SL ☆							
		±15	0.5	18.5	0.2	0.2	DF2B20M4SL ☆							
		±15	0.5	24.0	0.2	0.2	DF2B26M4SL ☆							
		±12	2.5	5.5	0.1	0.7	DF2B7M3SL							
		±12	2.0	5.0	0.2	1.0	DF2B7M2SL							
		±12	2.5	5.5	0.2	1.0								
		±8	-	5.0	0.2	1.0								
		±12	2.5	5.0	0.3	0.8		DF2B6.8M1ACT						
		±8	-	5.0	0.3	0.9								
		±8	-	8.0	0.3	2.5		DF2B12M1CT						
	USB2.0	±10	1.5	5.5	1.5	0.25	DF2B6USL ☆							
Uni-directional	General Purpose/ Audio/ SIM Card	±30	4.0	5.5	8.5	0.2	DF2B7ASL ☆	DF2B7ACT ☆		DF2B7AFS ☆	DF2B7AE ☆	DF2B7AFU ☆		
		±17	3.0	5.3	6	0.3	DF2B7SL							
		±8	-	5.0	15	-					DF2B6.8E #			
	Automotive's CAN/LIN	±30	2.5	12	9	0.8						DF2B18FU ☆ #		
		±25	3.0	24	9	1.1						DF2B29FU ☆ #		
		±20	2.5	28	6.5	1.5						DF2B36FU ☆ #		
	USB3.1/ Thunderbolt/ RF antenna (NFC)	±20	2.0	3.6	0.35	0.3	DF2S5M4SL ☆	DF2S5M4CT ☆						
		±20	2.0	5.5	0.35	0.3	DF2S6M4SL ☆	DF2S6M4CT ☆						
	USB2.0	±20	2.5	3.3	0.6	0.3	DF2S5M5SL ☆							
		±20	2.5	5.0	0.6	0.3	DF2S6M5SL ☆							
		±12	3.0	5.0	to 0.5	0.35	DF2S7MSL			DF2S6.8MFS				
		±8	-	5.0	0.5	-							DF3D6.8MFV	
		±8	-	5.0	1.6	0.3		DF2S6.8UCT		DF2S6.8UFS				
		±8	-	5.0	2.5 (max)	-								
		±8	-	19	1.6	0.5		DF2S24UCT						
	General Purpose/ Audio/ SIM Card	±30	2.5	1.5	45	0.2	DF2S5.1ASL ☆							
		±30	2.5	3.5	40	0.25	DF2S5.6ASL ☆							
		±30	2.5	5.0	32	0.3	DF2S6.2ASL ☆							
		±30	2.5	5.0	25	0.5	DF2S6.8ASL ☆							
		±30	2.5	6.5	20	0.8	DF2S8.2ASL ☆							
	Power Supply USB_V _{bus}	±30	10	5.5	90	0.23		DF2S6P1CT ☆						
		±30	8	10	42	0.23		DF2S12P1CT ☆						
		±30	7	13	40	0.23		DF2S14P1CT ☆						
		±30	5.5	21	25	0.23		DF2S23P1CT ☆						
		±30	80	5.5	600	0.08			DF2S6P2CTC ☆			DF2S6P2FU ☆		
		±30	75	10	350	0.08			DF2S12P2CTC ☆			DF2S12P2FU ☆		
		±30	50	12.6	270	0.08			DF2S14P2CTC ☆			DF2S14P2FU ☆		
		±30	14	21	160	0.13			DF2S23P2CTC ☆			DF2S23P2FU ☆		

☆ New Products
AEC-Q101 qualified

	SSM (SOT-416)	USM (SOT-323)	ES6 (SOT-563)	DFN5	DFN6	DFN10	Electrical Characteristics (Ta=25°C)			Absolute Maximum Ratings		Application							
				Bottom View 	Bottom View 	Bottom View 													
	1.6x1.6	2.0x2.1	1.6x1.6	1.3x0.8	1.25x1.0	2.5x1.0							V_{RWM} max (V)	C_t typ. (pF)	R_{DYN} typ. (Ω)	V_{ESD} IEC61000 -4.2 (kV)	I_{PP} tp= 8/20μs (A)	USB3.1/ Thunderbolt/ RF antenna (NFC)	Bi-directional
							3.3	0.3	0.5	±20	2.5								
							5.0	0.3	0.5	±20	2.5								
				DF5G5M4N ☆	DF6D5M4N ☆	DF10G5M4N ☆	3.6	0.2	0.5 to 0.8	±20	2.0								
				DF5G6M4N ☆	DF6D6M4N ☆	DF10G6M4N ☆	5.5	0.2	0.5 to 0.8	±20	2.0								
							11.0	0.2	0.65	±15	1.0								
							18.5	0.2	0.2	±15	0.5								
							24.0	0.2	0.2	±15	0.5								
							5.5	0.1	0.7	±12	2.5								
							5.0	0.2	1.0	±12	2.0								
				DF5G7M2N			5.5	0.2	1.0	±12	2.5								
							5.0	0.2	1.0	±8	-								
					DF6D7M1N	DF10G7M1N	5.0	0.3	0.8	±12	2.5								
							8.0	0.3	2.5	±8	-								
			DF6D6UFE ☆				5.5	1.5	0.25	±10	1.5	USB2.0							
							5.5	8.5	0.2	±30	4.0	General Purpose/ Audio/ SIM Card							
							5.3	6	0.3	±17	3.0								
							5.0	15	-	±8	-								
		DF3D18FU ☆ #					12	9	0.8	±30	2.5	Automotive's CAN/LIN							
		DF3D29FU ☆ #					24	9	1.1	±25	3.0								
		DF3D36FU ☆ #					28	6.5	1.5	±20	2.5								
							3.6	0.35	0.3	±20	2.0	USB3.1/ Thunderbolt/ RF antenna (NFC)	USB2.0						
							5.5	0.35	0.3	±20	2.0								
							3.3	0.6	0.3	±20	2.5								
							5.0	0.6	0.3	±20	2.5								
	DF3D6.8MS						5.0	to 0.5	0.35	±12	3.0								
							5.0	0.5	-	±8	-								
		DF3A6.8UFU					5.0	1.6	0.3	±8	-								
							5.0	2.5 (max)	-	±8	-								
							19	1.6	0.5	±8	-	General Purpose/ Audio/ SIM Card							
							1.5	45	0.2	±30	2.5								
							3.5	40	0.25	±30	2.5								
							5.0	32	0.3	±30	2.5								
							5.0	25	0.5	±30	2.5								
							6.5	20	0.8	±30	2.5								
							5.5	90	0.23	±30	10	Power Supply USB_V _{BUS}							
							10	42	0.23	±30	8								
							13	40	0.23	±30	7								
							21	25	0.23	±30	5.5								
							5.5	600	0.08	±30	80								
							10	350	0.08	±30	75								
							12.6	270	0.08	±30	50								
							21	160	0.13	±30	14								

■ TVS Diodes (ESD Protection Diodes)

Package Dimensions (unit: mm)

Application	Absolute Maximum Ratings	Electrical Characteristics (Ta=25°C)			CST2 (SOD-882)	SOD-923	USC (SOD-323)
					Bottom View		
					1.0x0.6	1.0x0.6	2.5x1.25
	V _{ESD} IEC61000 -4-2 (kV)	V _Z min (V)	C _T typ. (pF)	Z _Z max (Ω)			
Uni-directional General-Purpose/ SIM Card/ Power-Supply	±30	4.8	45	70		DF2S5.1FS	
	±30	5.3	40	30	DF2S5.6CT	DF2S5.6FS	
	±30	5.8	32	30	DF2S6.2CT	DF2S6.2FS	
	±30	6.4	25	30	DF2S6.8CT	DF2S6.8FS	
	±30	7.7	20	30	DF2S8.2CT	DF2S8.2FS	
	±30	9.4	16	30		DF2S10FS	
	±20	11.4	15	10 (typ.)			DF2S12FU
	±20	11.4	15	25		DF2S12FS	
	±12	15.3	10	35	DF2S16CT	DF2S16FS	
	±12	18.8	9	to 55	DF2S20CT	DF2S20FS	
	±10	22.8	8.5	70		DF2S24FS	
	±8	28	7.2	75	DF2S30CT		
	±8	28	7	150		DF2S30FS	

Application	Absolute Maximum Ratings	Electrical Characteristics (Ta=25°C)			CST3 (SOT-883)	VESM (SOT-723)	USM (SOT-323)	S-Mini (SOT-346)	ESV (SOT-553)	USV (SOT-353)	SMV (SOT-25)	US6 (SOT-363)
					Bottom View							
					1.0x0.6	1.2x1.2	2.0x2.1	2.9x2.5	1.6x1.6	2.0x2.1	2.9x2.8	2.0x2.1
	V _{ESD} IEC61000 -4-2 (kV)	V _Z min (V)	C _T typ. (pF)	Z _Z max (Ω)								
Uni-directional General-Purpose/ SIM Card/ Power-Supply	±8	5.3	8	50			DF3A5.6LFU		DF5A5.6LJE	DF5A5.6LFU		
	±8	5.3	8	3 (typ.)		DF3A5.6LFV#						
	±8	5.9	6.5	50		DF3A6.2LFV#	DF3A6.2LFU		DF5A6.2LJE	DF5A6.2LFU		
	±8	6.5	to 6	50	DF3A6.8LCT	DF3A6.8LFV#	DF3A6.8LFU		DF5A6.8LJE	DF5A6.8LFU	DF5A6.8LF	
	±15	3.4	52	130					DF5A3.6CJE	DF5A3.6CFU		
	±30	5.3	29	40					DF5A5.6CJE	DF5A5.6CFU		
	±30	5.8	25	30					DF5A6.2CJE	DF5A6.2CFU		
	±25	6.4	23	25					DF5A6.8CJE	DF5A6.8CFU		
	±30	3.1	115	130	DF3A3.3CT	DF3A3.3FV#	DF3A3.3FU		DF5A3.3JE	DF5A3.3FU	DF5A3.3F	
	±30	3.4	110	130	DF3A3.6CT	DF3A3.6FV#	DF3A3.6FU		DF5A3.6JE	DF5A3.6FU	DF5A3.6F	
	±30	5.3	65	40	DF3A5.6CT	DF3A5.6FV#	DF3A5.6FU	DF3A5.6F	DF5A5.6JE	DF5A5.6FU	DF5A5.6F	
	±30	5.8	55	30	DF3A6.2CT	DF3A6.2FV#	DF3A6.2FU	DF3A6.2F	DF5A6.2JE	DF5A6.2FU	DF5A6.2F	
	±30	6.4	45	25	DF3A6.8CT	DF3A6.8FV#	DF3A6.8FU	DF3A6.8F	DF5A6.8JE	DF5A6.8FU	DF5A6.8F	DF6A6.8FU

AEC-Q101 qualified

Part Naming Conventions

Diode (JEITA Registration Products)

1 S S 181

Serial number: JEITA registration number.

The kind of diode

S: Diode of general-purpose use, detection use, frequency conversion use, and switching use
V: Variable capacitance and PIN diode

S stands for Semiconductor

The value that subtracted 1 from the total number of terminals

Schottky Barrier Diodes New Naming Conventions

CU S 05 F 30 A

Revision or function category (A to Z)

Voltage rating

ex.) 30: 30V

Device type

ex.) S: Super Low-voltage F: Low-voltage, R: Low-leakage

Current rating

ex.) 05: 0.5A

Pin count

ex.) S: 2pin

Package

ex.) CU: USC, CE: ESC, CB: CST2B, CE: CL2E

Old Naming Conventions

DS F 07 S 30 A U

Package style: This letter shows the package style.

Revision

Voltage rating

ex.) 30: 30V, 15: 15V

Circuit configuration and number of pins

Current rating

ex.) 07: 0.7A, 10: 1A

Device feature: This letter shows the feature of a device.

F: Low forward voltage type.
R: Low leakage current type.

DS stands for Toshiba Schottky barrier diode.

TVS Diodes (ESD Protection Diodes)

DF 5 A 6.2 L FU

Package suffix

Series name

ex.) L: Ultra-high-speed

Clamp voltage (V_{cm})

Internal configuration

ex.) A: Common anode

Pin count

Note) The digit 7 denotes a 6-pin package

Toshiba TVS Diodes (ESD Protection Diodes)

4. Linear ICs

Low Dropout Regulators (LDO)

Package Dimensions (unit: mm)

WCSP4E	WCSP4F	WCSP4	SDFN4	DFN4	DFN5B	ESV (SOT-553)	UFV (SOT-353F)	SMV (SOT-25)	WCSP6F
Bottom View	Bottom View	Bottom View	Bottom View	Bottom View	Bottom View				Bottom View
0.645x0.645	0.645x0.645	0.79x0.79	0.8x0.8	1.0x1.0	1.2x1.2	1.6x1.6	2.0x2.1	2.9x2.8	1.2x0.8

CMOS LDO Regulators

Series Name / Part Number	Package	V _{OUT} (typ.) (V)	V _{IN} (V)	I _{OUT} (mA)	I _B (typ.) (μA)	Function								Control pin connection
						Over current protection	Auto discharge	Fast load transient response circuit	Thermal shutdown	Inrush current protection	Under voltage lockout	High PSRR	Soft start	
TCR2DGxxx	WCSP4	1.2 to 3.6	2.0 to 5.5	200	45	✓		✓	✓	✓		✓		Pull down
TCR2ENxxx	SDFN4	1.0 to 3.6	1.5 to 5.5	200	35	✓	✓	✓						Pull down
TCR2LNxxx		0.8 to 3.6	1.5 to 5.5	200	1	✓	✓							Pull down
TCR2EExxx	ESV	1.0 to 5.0	1.5 to 5.5	200	35	✓	✓	✓						Pull down
TCR2LExxx		0.8 to 3.6	1.5 to 5.5	200	1	✓	✓							Pull down
TCR2EFxxx	SMV	1.0 to 5.0	1.5 to 5.5	200	35	✓	✓	✓						Pull down
TCR2LFxxx		0.8 to 3.6	1.5 to 5.5	200	1	✓	✓							Pull down
TCR3DGxxx ☆	WCSP4E	1.0 to 4.5	1.75 to 5.5	300	65	✓	✓	✓	✓	✓				Pull down
TCR3DMxxx	DFN4	1.0 to 4.5	1.75 to 5.5	300	65	✓	✓	✓	✓	✓				Pull down
TCR3DFxxx	SMV	1.0 to 4.5	1.8 to 5.5	300	65	✓	✓	✓	✓	✓				Pull down
TCR3UGxxxA ☆	WCSP4F	0.8 to 5.0	1.5 to 5.5	300	0.34	✓	✓	✓	✓	✓			✓	Pull down
TCR3UGxxxB ☆			1.5 to 5.5	300	0.34	✓		✓	✓	✓			✓	Pull down
TCR3UMxxx ☆	DFN4	0.8 to 5.0	1.5 to 5.5	300	0.34	✓	✓	✓	✓				✓	Pull down
TCR4DGxxx ☆	WCSP4E	1.0 to 4.5	2.0 to 5.5	420	65	✓	✓	✓	✓	✓				Pull down
TCR5BMxxxA ☆	DFN5B	0.8 to 3.6	V _{OUT} +V _{DO} to V _{BIAS}	500	19	✓	✓	✓	✓	✓	✓	✓	✓	Pull down
TCR8BMxxxA ☆		0.8 to 3.6	V _{OUT} +V _{DO} to V _{BIAS}	800	20	✓	✓	✓	✓	✓	✓	✓	✓	Pull down
TCR13AGADJ ☆	WCSP6F	0.55 to 3.6 adjustable	V _{OUT} +0.1V to V _{BIAS}	1300	56	✓	✓	✓	✓	✓	✓	✓	✓	Pull down
TCR15AGxxx ☆	WCSP6F	0.65 to 3.6	V _{OUT} +V _{DO} to V _{BIAS}	1500	25	✓	✓	✓	✓	✓	✓	✓	✓	Pull down
TCR15AGADJ ☆	WCSP6F	0.6 to 3.6 adjustable	V _{OUT} +V _{DO} to V _{BIAS}	1500	25	✓	✓	✓	✓	✓	✓	✓	✓	Pull down

Bipolar LDO Regulators

Series Name	Package	V _{OUT} (typ.) (V)	V _{IN} (V)	I _{OUT} (mA)	I _B (typ.) (μA)	Function					Control pin connection
						Over current protection	Auto discharge	Fast load transient response circuit	Thermal shutdown		
TAR5SxxU	UFV	1.5 to 5.0	2.4 to 15	200	170	✓				✓	
TAR5Sxx	SMV	1.5 to 5.0	2.4 to 15	200	170	✓				✓	
TAR5SBxx						✓				✓	

FET driver ICs with OVP function

Part Number	Package	Operating voltage range (V)	Input quiescent current (ON state)	Gate drive voltage (1)	Gate drive voltage (2)	Function					Control pin connection (Active Level)	Note
						Inrush current reduction	Thermal shutdown	Over voltage protection	Auto discharge	Under voltage lockout	Reverse current block	
TCK401G ☆	WCSP6E	2.3 to 28	121μA typ. @V _{IN} =5V	4.0V typ. @V _{IN} =3V	6.5V typ. @V _{IN} =5V	✓		✓ (Over 28V)	✓		Option (with external Back to Back MOSFET)	Pull down (H) Pull down (L)
TCK402G ☆												

☆ New Products

Load Switch ICs

Package Dimensions (unit: mm)

WCSP4D	WCSP4C	SMV (SOT-25)	WCSP6C	WCSP6E	WCSP9	WCSP16C	DFN4A
Bottom View 	Bottom View 		Bottom View 	Bottom View 	Bottom View 	Bottom View 	Bottom View 
0.79x0.79	0.9x0.9	2.9x2.8	1.5x1.0	1.2x0.8	1.5x1.5	1.9x1.9	1.2x1.2

Part Number	Package	Operating voltage range (V)	Output current (A)	R _{DS(on)} (1) typ. (mΩ)	R _{DS(on)} (2) typ. (mΩ)	Function						Note			
						Inrush current reduction (Slew Rate control)	Thermal shutdown	Over current protection	Auto discharge	Under voltage lockout	Reverse current block		Control pin connection (Active Level)		
TCK106AG	WCSP4D	1.1 to 5.5	1	176	34	✓						Pull down (H)			
TCK107AG				@1.1V, -0.2A	@5.0V, -0.5A	✓			✓			Pull down (H)			
TCK108AG						✓			✓			Open (L)			
TCK106AF ☆				223	63	✓						Pull down (H)			
TCK107AF ☆				@1.1V, -0.2A	@5.0V, -0.5A	✓			✓			Pull down (H)			
TCK108AF ☆						✓			✓			Open (L)			
TCK111G	WCSP6C		3	8.5	8.3	✓	✓				True Reverse Current Blocking	Pull down (H)			
TCK112G				@1.1V, -1.5A	@5.0V, -1.5A	✓	✓		✓			Pull down (H)			
TCK22921G ☆	WCSP6E		1.1 to 5.5	2	136	25	4.5μs			✓		✓	Pull down(H)		
TCK22922G ☆							666μs			✓		✓	✓	Pull down(H)	
TCK22923G ☆							1364μs			✓		✓	✓	Pull down(H)	
TCK22925G ☆							3380μs			✓		✓	✓	Pull down(H)	
TCK22971G ☆		4.5μs									✓	✓	Pull down(H)		
TCK22972G ☆		666μs									✓	✓	Pull down(H)		
TCK22973G ☆		1364μs									✓	✓	Pull down(H)		
TCK22974G ☆		3380μs									✓	✓	Pull down(H)		
TCK22975G ☆		666μs									✓	✓	Open(L)		
TCK22910G ☆	WCSP6E	1.1 to 5.5	2	179	31	1400μs	✓			✓	True Reverse Current Blocking	Open(L)			
TCK22911G ☆						1400μs	✓		✓	✓		Open(L)			
TCK22912G ☆						1400μs	✓		✓	✓		Pull down(H)			
TCK22913G ☆						1400μs	✓		✓	✓		Pull down(H)			
TCK22946G ☆	WCSP6E	1.1 to 5.5	0.4	179	31	50μs	✓	400mA	✓	✓	True Reverse Current Blocking	Pull down (H)			
TCK22951G ☆						50μs	✓	740mA	✓	✓		Pull down (H)			
TCK2065G ☆						50μs	✓	1110mA	✓	✓		Pull down (H)			
TCK1024G ☆						50μs	✓	1540mA	✓	✓		Pull down (H)			
TCK22891G ☆						50μs	✓	400mA	✓	✓		Pull down (H)			
TCK22892G ☆						50μs	✓	740mA	✓	✓		Pull down (H)			
TCK22893G ☆						50μs	✓	1110mA	✓	✓		Pull down (H)			
TCK22894G ☆						50μs	✓	1540mA	✓	✓		Pull down (H)			
TCK206G	WCSP4C		0.75 to 3.6	2	18.4	18.1	✓					✓	Pull down (H)		
TCK207G					@0.75V, -1.5A	@3.3V, -1.5A	✓			✓		✓	Pull down (H)		
TCK208G							✓			✓		✓	Open (L)		
TCK207AN ★	DFN4A					21.5	21.5	✓					✓	Pull down (H)	
				@0.75V, -1.5A	@3.3V, -1.5A	✓			✓						

Power Multiplexer ICs

Part Number	Package	Operating voltage range (V)	Output current (A)	R _{DS(on)} (1) typ. (mΩ) @T _a =25°C	R _{DS(on)} (2) max. (mΩ) @T _a =-40 to 85°C	Function							Note
						Inrush current reduction	Thermal shutdown	Over voltage lockout	Auto discharge	Under voltage lockout	Reverse current block	Control pin connection (Active Level)	
TCK301G	WCSP9	2.3 to 28	3	73 @ 4.5V, -1.0A	140 @ 4.5V, -1.0A	✓	✓	6.6V			✓	Pull up (H)	Single input Single output
TCK302G						✓	✓	10.5V			✓		
TCK303G						✓	✓	15.5V			✓		
TCK304G						✓	✓	6.6V		✓	✓	Pull down (L)	
TCK305G						✓	✓	10.5V		✓	✓		
TCK321G	WCSP16C	2.3 to 36	2	98 @ 4.5V, -1.0A	170 @ 4.5V, -1.0A	✓	✓	V _{INA} =V _{INB} =12V			✓	Pull down	Dual input Single output
TCK322G						✓	✓	V _{INA} =V _{INB} =15V			✓		
TCK323G						✓	✓	V _{INA} =V _{INB} =15V			✓		

☆ New Products, ★ Under Development (The specification is subject to change without notice.)

① MOSFETs

② Tr./BRTs

③ Diodes

④ Linear ICs

⑤ Logics

⑥ Bus Switches

⑦ RF Devices

⑧ Packages

■ Operational Amplifiers, Comparators and Magnetic Sensors

Package Dimensions (unit: mm)

MP6C	USV (SOT-353)	UFV (SOT-353F)	SMV (SOT-25)	US8 (SOT-765)	SM8 (SOT-505)	SOT-23F
Bottom View						
	1.45x1.0	2.0x2.1	2.0x2.1	2.9x2.8	2.0x3.1	2.9x4.0
					2.9x4.0	2.9x2.4

Operational Amplifiers

	Type Package	Bipolar		CMOS				
		Standard	Low Noise Wide Band	Low Voltage Operation	Standard	Low I _{DD}	Low Noise	Ultra Low Noise
Single	USV			TC75S51FU	TC75S54FU	TC75S55FU		
	UFV						TC75S63TU	TC75S67TU ☆
	SMV	TA75S01F	TA75S558F	TC75S51F	TC75S54F	TC75S55F		
Dual	US8			TC75W51FK	TC75W54FK	TC75W55FK		
	SM8	TA75W01FU	TA75W558FU	TC75W51FU	TC75W54FU	TC75W55FU		
Maximum Rating	V _{CC} ,V _{EE} /V _{DD} , V _{SS}	±6 or 12V	±18V	7.0V	7.0V	7.0V	6.0V	6.0V
Electrical Characteristics	I _{CC} / I _{DD}	to 0.8mA@Single to 1.2mA@Dual	to 4.0mA@Single to 6.0mA@Dual	to 150μA@Single to 400μA@Dual	to 200μA@Single to 400μA@Dual	to 20μA@Single to 40μA@Dual	to 650μA	to 700μA
	I _{sink}	20mA	40mA		700μA	450μA	1.5mA (min)	2.0mA (typ.)
	I _{source}	40mA	40mA		200μA	20μA	1.5mA (min)	2.0mA (typ.)
	G _v	100dB	100dB	70dB	70dB	70dB	100dB	100dB
	V _{NI}		2.5μVrms				7.8nV/√Hz	6.0nV/√Hz
	Slew rate		1.0V/μs	0.5V/μs	0.7V/μs	0.08V/μs	1.0V/μs	1.0V/μs
	f _r	0.3MHz	3.0MHz	0.6MHz	0.9MHz	0.16MHz	3.5MHz	3.5MHz

Comparators

	Package	Type	Bipolar	CMOS				
			Standard	Push pull			Open drain	
				Full-range input/output	Low I _{DD}	High speed	Low I _{DD}	High speed
Single	MP6C							
	USV			TC75S70L6X				
	SMV	TA75S393F		TC75S56FU	TC75S57FU	TC75S58FU	TC75S59FU	
Dual	US8			TC75W56FK	TC75W57FK	TC75W58FK	TC75W59FK	
	SM8	TA75W393FU		TC75W56FU	TC75W57FU	TC75W58FU	TC75W59FU	
Maximum Rating	V _{CC} ,V _{EE} /V _{DD} , V _{SS}	±18 or 36V	±3 or 6V	±3.5 or 7V	±3.5 or 7V	±3.5 or 7V	±3.5 or 7V	
Electrical Characteristics	I _{CC} / I _{DD}	to 0.8mA@Single to 2mA@Dual	to 35μA	to 22μA@Single to 44μA@Dual	to 220μA@Single to 440μA@Dual	to 22μA@Single to 44μA@Dual	to 220μA@Single to 440μA@Dual	
	I _{sink}	16mA	18mA	25mA	25mA	25mA	25mA	
	I _{source}		15mA	21mA	21mA			
	G _V	200V/mV		94dB	94dB	94dB	94dB	
	t _{rip} , t _{PLH}	1.3μs	400ns	680ns	140ns	800ns	200ns	

Magnetic Sensors

			TCS40DPR	TCS40DLR	TCS30DPU ☆	TCS30DLU ☆	TCS30SPU ☆	TCS30NPU ☆
			Push pull	Open drain	Push pull	Open drain	Push pull	
Package			SOT-23F		UFV			
Detective Polarity			S&N		S&N		S	N
Electrical Characteristics	Supply Voltage		2.3 to 5.5 V		2.3 to 3.6 V			
	Magnetic Flux Density	Operating Point (V _{CC} = 2.3to3.6 V)	B _{ON} = 3.4 mT (typ.)		B _{ON} = 1.8 mT (typ.)			
		Releasing Point (V _{CC} = 2.3to3.6 V)	B _{OFF} = 2.0 mT (typ.)		B _{OFF} = 0.8 mT (typ.)			
		Hysteresis (V _{CC} = 2.3to5.0 V)	B _H = 1.4 mT (typ.)		B _H = 1.0 mT (typ.)			
	Supply Current *	Average Current (V _{CC} = 2.3V)	7.3 μA (typ.)		8.5 μA (typ.)			
	Operating Frequency (V _{CC} = 2.3to5.0 V)		25Hz(typ.)		25Hz(typ.)			

* Supply current is pulsed periodically by internal circuit.

☆ New Products

5. Logic Devices

One-Gate Logic (L-MOS)

Package Dimensions (unit: mm)

VHS Series

General Specification	
Supply voltage range	: 2.0V to 5.5V
Output current	: $\pm 8\text{mA}$ (@ $V_{CC}=4.5\text{V}$)
Propagation delay time	: 3.7nsec typ. (@ $V_{CC}=5.0\text{V}$)
Quiescent supply current	: $2\mu\text{A max}$ (@ $V_{CC}=5.5\text{V}$, $T_a=25^\circ\text{C}$)

USV (SOT-353)	SMV (SOT-25)	US8 (SOT-765)	SM8 (SOT-505)
			
2.0x2.1	2.9x2.8	2.0x3.1	2.9x4.0

Function		Part Number					
		Single-gate				Multi-gate	
		USV		SMV		US8	SM8
Gates/ Buffers	NAND	-	TTL Input	-	TTL Input		
		TC7SH00FU †	TC7SET00FU †	TC7SH00F †	TC7SET00F †	TC7WH00FK †	TC7WH00FU
	AND	TC7SH08FU †	TC7SET08FU †	TC7SH08F †	TC7SET08F †	TC7WH08FK †	TC7WH08FU
		Open-drain	TC7SH09FU †		TC7SH09F †		
	NOR	TC7SH02FU †	TC7SET02FU †	TC7SH02F †	TC7SET02F †	TC7WH02FK †	TC7WH02FU
	OR	TC7SH32FU †	TC7SET32FU †	TC7SH32F †	TC7SET32F †	TC7WH32FK †	TC7WH32FU
	Exclusive-OR	TC7SH86FU †		TC7SH86F †			
	Inverter	TC7SH04FU †	TC7SET04FU †	TC7SH04F †	TC7SET04F †	TC7WH04FK †	TC7WH04FU
						Triple-gate	Triple-gate
		Unbuffered	TC7SHU04FU †		TC7SHU04F †	TC7WHU04FK †	TC7WHU04FU
	Schmitt					Triple-gate	Triple-gate
		TC7SH14FU †	TC7SET14FU †	TC7SH14F †	TC7SET14F †	TC7WH14FK †	TC7WH14FU
	Buffers	Schmitt	TC7SH17FU †	TC7SET17FU †	TC7SH17F †	TC7SET17F †	TC7WH17FU
						Triple-gate	Triple-gate
	Non-Inverter	TC7SH34FU †	TC7SET34FU †	TC7SH34F †	TC7SET34F †	TC7WH34FK †	TC7WH34FU
	3-state	Buffers	TC7SH125FU †	TC7SET125FU †	TC7SH125F †	TC7SET125F †	TC7WH125FU
D-Type Flip-Flop	Preset and Clear	TC7SH126FU †	TC7SET126FU †	TC7SH126F †	TC7SET126F †	TC7WH126FK †	TC7WH126FU
Multiplexers	Digital					TC7WH175FK †	TC7WH175FU

SHS Series

General Specification	
Supply voltage range	: 1.65V to 5.5V 1.8V to 5.5V
Output current	: $\pm 24\text{mA}$ (@ $V_{CC}=3.0\text{V}$)
Propagation delay time	: 2.4nsec typ. (@ $V_{CC}=3.3\text{V}$)
Quiescent supply current	: $1\mu\text{A max}$ (@ $V_{CC}=5.5\text{V}$, $T_a=25^\circ\text{C}$)

fSV (SOT-953)	ESV (SOT-553)	USV (SOT-353)	SMV (SOT-25)	US6 (SOT-363)	US8 (SOT-765)	SM8 (SOT-505)
						
1.0x1.0	1.6x1.6	2.0x2.1	2.9x2.8	2.0x2.1	2.0x3.1	2.9x4.0

Function		Part Number					
		Single-gate				Multi-gate	
Gates/ Buffers	Package	fSV	ESV	USV	SMV	US6	US8
	NAND	TC7SZ00AFS	TC7SZ00FE †	TC7SZ00FU †	TC7SZ00F †		TC7WZ00FK †
	AND	TC7SZ08AFS	TC7SZ08FE †	TC7SZ08FU †	TC7SZ08F †		TC7WZ08FK †
	NOR	TC7SZ02AFS	TC7SZ02FE †	TC7SZ02FU †	TC7SZ02F †		TC7WZ02FK †
	OR	TC7SZ32AFS	TC7SZ32FE †	TC7SZ32FU †	TC7SZ32F †		TC7WZ32FK †
	Exclusive-OR	TC7SZ86AFS	TC7SZ86FE †	TC7SZ86FU †	TC7SZ86F †		TC7WZ86FK †
	Inverter	TC7SZ04AFS	TC7SZ04FE †	TC7SZ04FU †	TC7SZ04F †	TC7PZ04FU †	TC7WZ04FK †
						Dual-gate	Triple-gate
		Unbuffered	TC7SZU04AFS	TC7SZU04FE †	TC7SZU04FU †	TC7SZU04F †	TC7WZU04FK †
	Open-drain						Triple-gate
		TC7SZ05AFS	TC7SZ05FE †	TC7SZ05FU †	TC7SZ05F †	TC7PZ05FU †	TC7WZ05FK †
	Schmitt						Triple-gate
		TC7SZ14AFS	TC7SZ14FE †	TC7SZ14FU †	TC7SZ14F †	TC7PZ14FU †	TC7WZ14FK †
	Buffers	Open-drain	TC7SZ07AFS	TC7SZ07FE †	TC7SZ07FU †	TC7SZ07F †	TC7WZ07FK †
		Schmitt	TC7SZ17AFS	TC7SZ17FE †	TC7SZ17FU †	TC7SZ17F †	TC7WZ17FK †
	Non-Inverter	TC7SZ34AFS	TC7SZ34FE †	TC7SZ34FU †	TC7SZ34F †	TC7PZ34FU †	TC7WZ34FK †
	3-state	Buffers	TC7SZ125AFS	TC7SZ125FE †	TC7SZ125FU †	TC7SZ125F †	TC7WZ125FK †
D-Type Flip-Flop	Preset and Clear	TC7SZ126AFS	TC7SZ126FE †	TC7SZ126FU †	TC7SZ126F †		TC7WZ126FK †
							TC7WZ126FU

† This device is compliant with the reliability requirements of AEC-Q100

7UL1Gxx Series

General Specification	
Supply voltage range	: 0.9V to 3.6V
Output current	: $\pm 8\text{mA}$ (@ $V_{CC}=3.0\text{V}$)
Propagation delay time	: 2.5nsec typ. (@ $V_{CC}=3.3\text{V}$)
Quiescent supply current	: $1\mu\text{A}$ max (@ $V_{CC}=3.6\text{V}$, $T_a=25^\circ\text{C}$)

fsv (SOT-953)	USV (SOT-353)
	
1.0x1.0	2.0x2.1

Function		Part Number	
		Single-gate	
	Package	fsv	USV
Gates/ Buffers	NOR Gate	7UL1G02FS ☆	7UL1G02FU ☆
	Inverter	7UL1G04FS ☆	7UL1G04FU ☆
	AND Gate	7UL1G08FS ☆	7UL1G08FU ☆
	Schmitt Buffer	7UL1G17FS ☆	
	OR Gate	7UL1G32FS ☆	7UL1G32FU ☆
	Buffer	7UL1G34FS ☆	7UL1G34FU ☆
	Exclusive-OR		7UL1G86FU ☆
	3-State Buffer(/G)		7UL1G125FU ★
	3-State Buffer(G)	7UL1G126FS ☆	7UL1G126FU ★

7UL1Txx Series

General Specification	
Supply voltage range	: 2.3V to 3.6V
Output level up to supply V_{CC} CMOS level	: 1.65V to 3.6V ($V_{CC} = 3.6\text{V}$)
Output level down to supply V_{CC} CMOS level	: 3.6V to 2.3V ($V_{CC} = 2.3\text{V}$)
Quiescent supply current	: $1\mu\text{A}$ max (@ $V_{CC}=3.6\text{V}$, $T_a=25^\circ\text{C}$)

USV (SOT-353)

2.0x2.1

Function		Part Number
		Single-gate
	Package	USV
Gates/ Buffers	NOR Gate	7UL1T02FU ☆
	AND Gate	7UL1T08FU ☆
	OR Gate	7UL1T32FU ☆
	Buffer	7UL1T34FU ★
	3-State Buffer(/G)	7UL1T125FU ★
	3-State Buffer(G)	7UL1T126FU ★

☆ New Products
★ Under Development

Standard Logic 74VHC Series, 74LCX Series (TSSOP14B/16B/20B Package Products)

Package Dimensions (unit: mm)

TSSOP14B	TSSOP16B	TSSOP20B
		
5.0x6.4	5.0x6.4	6.5x6.4

Features

- Compliant with the reliability requirements of AEC-Q100 Operating temperature: Available -40 to 125°C products († Operation temperature of this device is -40 to 85°C.)
- Compatible standard TSSOP package

Series name				VHC	VHCT (TTL Input)	VHCV (Schmitt Input)	VHC9 (Schmitt Input)	LCX
Characteristics and Features				Supply voltage range	2.0 to 5.5V	4.5 to 5.5V	1.8 to 5.5V	1.65V to 3.6V to 5.5V (OS and OT)
				Output current @V _{CC} =4.5V	±8mA		±16mA	±8mA
				Power down protection on inputs	Yes			Yes
				Power down protection on outputs	No	Yes		Yes
Function				Pin	No	Yes		Yes
Gate/ Buffer	NAND	Quad		14	74VHC00FT †	74VHCT00AFT †		74LCX00FT †
			Dual 4-input	14	74VHC20FT †			
			Open-drain	14	74VHC03FT †			
			Schmitt	14	74VHC132FT †			
	AND	Quad		14	74VHC08FT †	74VHCT08AFT †		74LCX08FT †
			Dual 4-input	14	74VHC21FT †			
	NOR	Quad		14	74VHC02FT †			74LCX02FT †
			Dual 4-input	14	74VHC27FT †			
	OR	Quad		14	74VHC32FT †	74VHCT32AFT †		74LCX32FT †
	Exclusive-OR	Quad		14	74VHC86FT †			74LCX86FT †
				14	74VHC04FT †	74VHCT04AFT †		74LCX04FT †
	Inverter	Hex		14	74VHC05FT †	74VHCV05FT †		74LCX05FT †
			Open-drain	14	74VHC14FT †	74VHCT14AFT †	74VHCV14FT †	74LCX14FT †
			Schmitt	14			74VHC9152FT †	
				20				
	Buffer	Hex		14		74VHCV17FT †		
			Open-drain	14		74VHCV07FT †		74LCX07FT †
		9-bit		20			74VHC9151FT †	
				20				
	3-state	Quad	Non-inverted	14	74VHC125FT †	74VHCT125AFT †		74LCX125FT †
				14	74VHC126FT †	74VHCT126AFT †		74LCX126FT †
		5-Bit Universal Schmitt Buffer		14			74VHC9125FT †	
				14			74VHCT9125AFT †	
		Octal	Inverted	20	74VHC240FT †	74VHCT240AFT †	74VHCV240FT †	74LCX240FT †
				20	74VHC540FT †	74VHCT540AFT †	74VHCV540FT †	74LCX540FT †
			Non-inverted	20	74VHC244FT †	74VHCT244AFT †	74VHCV244FT †	74LCX244FT †
				20	74VHC541FT †	74VHCT541AFT †	74VHCV541FT †	74LCX541FT †
		Universal Schmitt Buffer		20			74VHC9541FT †	
				20			74VHCT9541AFT †	
Flip-Flop	Transceiver	Octal		20	74VHC245FT †	74VHCT245AFT †	74VHCV245FT †	74LCX245FT †
		Dual		14	74VHC74FT †			74LCX74FT †
		Hex		16	74VHC174FT †			
	3-state	Octal		20	74VHC273FT †		74VHC9273FT †	74LCX273FT †
		Octal		20	74VHC374FT †		74VHCV374FT †	74LCX374FT †
				20	74VHC574FT †	74VHCT574AFT †	74VHCV574FT †	74LCX574FT †
Latch	3-state	Octal		20	74VHC373FT †		74VHCV373FT †	74LCX373FT †
				20	74VHC573FT †	74VHCT573AFT †	74VHCV573FT †	74LCX573FT †
Multi-vibrator		Dual		16	74VHC123AFT †			
				16	74VHC221AFT †			
Decoder	3 to 8 line	Single		16	74VHC138FT †	74VHCT138AFT †		74LCX138FT †
				16	74VHC238FT †			
	2 to 4 line	Dual		16	74VHC139FT †			
				16	74VHC164FT †			
Shift Register	8bit	S-in/P-out		14	74VHC165FT †			
			S-in/P-out, P-in/S-out	16			74VHC9164FT †	
			P-in/S-out	16	74VHC165FT †			
			3-state	16	74VHC595FT †		74VHC9595FT †	
Counter	Binary	Single 4bit with	Async. Clear	16	74VHC161FT †			
			Sync. Clear	16	74VHC163FT †			
		Dual	4bit	14	74VHC393FT †			
			14-stage	16	74VHC4020FT †			
		Single	12-stage	16	74VHC4040FT †			
				16	74VHC153FT †			
Multi-plexer	Digital	Dual-4ch.		16	74VHC157FT †			74LCX157FT †
		Quad-2ch.		20				74LCX257FT †
		Quad-2ch.		20				
	Analog	Single-8ch.		16	74VHC4051AFT †			
		Dual-4ch.		16	74VHC4052AFT †			
		Triple-2ch.		16	74VHC4053AFT †			
Other	Analog switch	Quad		14	74VHC4066AFT †			

†† This device is compliant with the reliability requirements of AEC-Q100
† Operation temperature is -40 to 85°C

① MOSFETs

② Tr./BRTs

③ Diodes

④ Linear ICs

⑤ Logics

⑥ Bus Switches

⑦ RF Devices

⑧ Packages

34

34

Standard Logic 74HC Series, TC4000B Series (SOIC14/16/20, SOP14/16/20 Package Products)

Package Dimensions (unit: mm)

SOIC14	SOIC16	SOIC20	SOP14	SOP16	SOP20
					
8.65x6.0	9.9x6.0	12.8x10.3	10.3x7.8	10.3x7.8	12.8x7.8

Series name				SOIC Package		SOP Package				
				HC	HCT (TTL Input)	HC	HCT (TTL Input)	Standard series		
Characteristics and Features		Supply voltage range		2.0 to 6.0V	4.5 to 5.5V	2.0 to 6.0V	4.5 to 5.5V	3V to 18V		
		Output current @Vcc=4.5V		±4 or ±6mA	±4 or ±6mA	±4 or ±6mA	±4 or ±6mA	±0.51mA (@Vcc=5V)		
		Power down protection on inputs		No		No		No		
		Power down protection on outputs		No		No		No		
Function			Pin	-	-	-	-	-		
Gate/ Buffer	NAND	Quad		14	74HC00D	74HCT00D	TC74HC00AF		TC4011BF	
			Dual 4-input Open-drain Schmitt	14	74HC03D		TC74HC20AF			
		AND	Quad		14	74HC132D		TC74HC132AF		TC4093BF
				Dual 4-input	14	74HC08D	74HCT08D	TC74HC08AF		TC4081BF
	NOR	Quad		14	74HC21D		TC74HC21AF			
	OR	Quad		14	74HC02D	74HCT02D	TC74HC02AF		TC4001BF	
	Exclusive-OR	Quad		14	74HC32D	74HCT32D	TC74HC32AF		TC4071BF	
		Hex		14	74HC86D				TC4030BF	
	Inverter	Hex		14	74HC04D	74HCT04D	TC74HC04AF	TC74HCT04AF	TC4069UBF	
				16	74HC4049D		TC74HC4049AF		TC4049BF	
		Buffer	Hex	Unbuffer	14	74HCU04D		TC74HCU04AF		
				Open-drain Schmitt	14	74HC05D		TC74HC05AF		
	3-state	Quad	Open-drain		14	74HC14D	74HCT14D	TC74HC14AF		TC4584BF
					16	74HC4050D		TC74HC4050AF		TC4050BF
			Non-inverted		14			TC74HC07AF		
					14	74HC125D		TC74HC125AF		
		Hex	Universal		14	74HC126D		TC74HC126AF		
					14			TC74HC365AF		
					14			TC74HC366AF		
			Octal	Inverted		20	74HC240D	74HCT240D	TC74HC240AF	TC74HCT240AF
					20	74HC540D	74HCT540D	TC74HC540AF	TC74HCT540AF	
		Non-inverted			20			TC74HC240AF		
					20	74HC244D	74HCT244D	TC74HC244AF	TC74HCT244AF	
		Transceiver	Octal	Inverted Non-inverted		20	74HC541D	74HCT541D	TC74HC541AF	TC74HCT541AF
					20			TC74HC640AF		
	Flip-Flop		Dual		14	74HC245D	74HCT245D	TC74HC245AF		
			Hex		16	74HC74D		TC74HC74AF		TC4013BF
			Octal		16	74HC174D				
		3-state	Octal		20	74HC175D		TC74HC175AF		
					20	74HC273D		TC74HC273AF		
				20	74HC273D		TC74HC273AF			
Latch	8-Bit Addressable Latch	Octal		20	74HC374D		TC74HC374AF			
				20	74HC574D		TC74HC574AF			
	3-state	Octal		20	74HC259D		TC74HC259AF			
				20	74HC373D		TC74HC373AF			
Multi-vibrator	Dual Monostable			20	74HC573D		TC74HC573AF			
				16	74HC123D		TC74HC123AF			
	Retriggerable	Retriggerable/Resetable		16			TC74HC423AF			
				16	74HC4538D		TC74HC4538AF		TC4538BF	
Decoder	3 to 8 line	Single		16			TC74HC42AF			
				16	74HC138D		TC74HC138AF			
				16	74HC238D					
				16	74HC237D					
	3 to 8 line / Latch	Dual		16	74HC139D					
				16						
Shift Register	BCD-to-Seven Segment Latch/Decoder/Driver	8bit		14	74HC164D				TC4511BF	
			S-in/P-out	16	74HC165D		TC74HC165AF		TC4021BF	
			P-in/S-out	16	74HC166D					
			P-in/S-out with Clear	16	74HC166D					
			With Output Register	16	74HC594D					
			Latch (3-state)	16	74HC595D		TC74HC595AF			
Counter	Binary	Dual	4bit	14	74HC393D				TC4094BF	
			Single	14-stage	16			TC74HC4020AF		TC4020BF
				12-stage	16			TC74HC4040AF		TC4040BF
			Single 14-Stage/Oscillator		16			TC74HC4060AF		
				Single Decade Counter/Divider		16				TC4017BF
			Dual Binary Up Counter		16				TC4520BF	
Multiplexer	Digital	Single 8-ch.	4bit		16		TC74HC7292AF			
				Single 8-ch.	16	74HC151D		TC74HC151AF		
				Single 8-ch.	16	74HC151D		TC74HC251AF		
				Dual 4-ch.	16	74HC153D		TC74HC153AF		
				Dual 4-ch.	16	74HC157D		TC74HC253AF		
				Quad 2-ch.	16	74HC157D		TC74HC157AF		
Analog	Single 8-ch.	4bit		16	74HC4051D	74HCT4051D	TC74HC4051AF		TC4051BF	
				16	74HC4052D	74HCT4052D	TC74HC4052AF		TC4052BF	
				16	74HC4053D	74HCT4053D	TC74HC4053AF	TC74HCT4053AF	TC4053BF	
				16	74HC4056D		TC74HC4056AF		TC4056BF	
Other	Analog switch	Quad		14	74HC4066D		TC74HC4066AF			

1 MOSFETs

2 Tr./BRTs

3 Diodes

4 Linear ICs

5 Logics

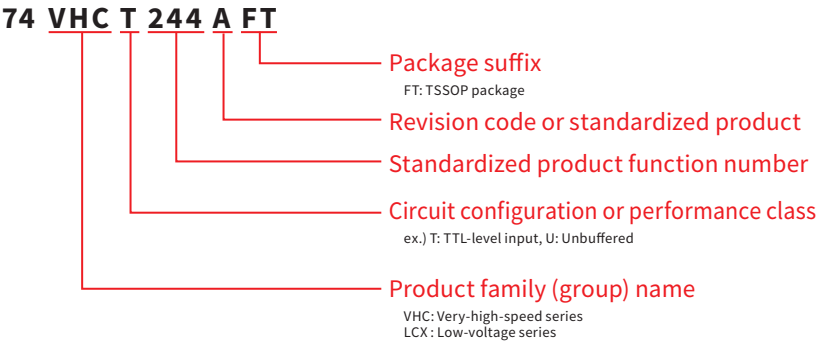
6 Bus Switches

7 RF Devices

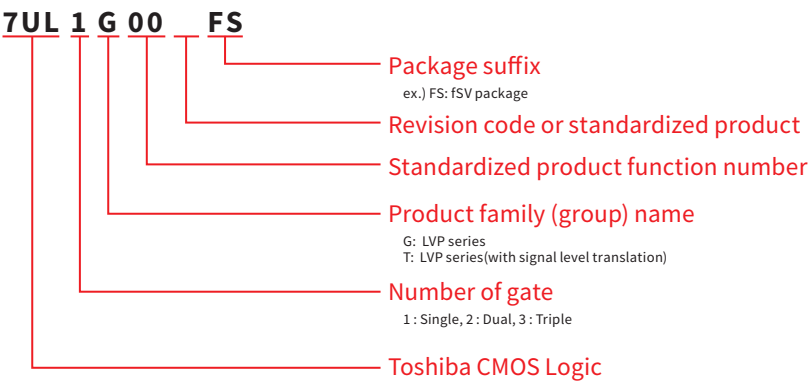
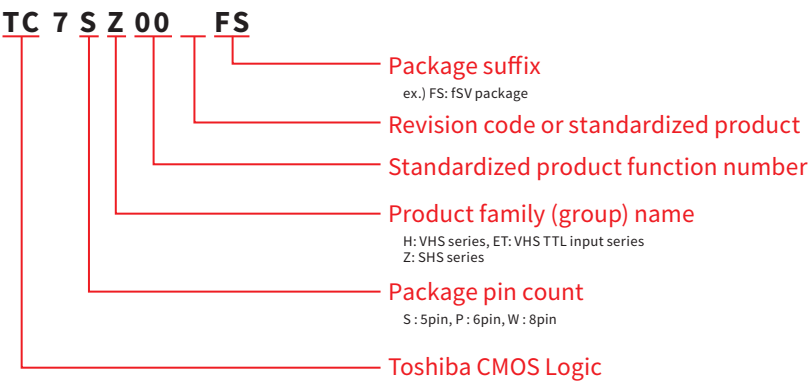
8 Packages

■ Part Naming Conventions

Standard Logic



One-Gate Logic



6. Bus Switches

High-Speed Transmission Type

Package Dimensions (unit: mm)

High-Speed Transmission Type

WCSP20	TQFN20
Bottom View 	Bottom View 
1.6x2.0	4.5x2.5

Recommended application	Part Number	Package	Number of lane	Specification			Pin Assignment	Switch function
				Supply Voltage Range	Band width @-3dB (typ.)	Quiescent Supply Current (max)		
PCI-ex 3.0, USB3.0 and others	TC7PCI3212MT	TQFN20	1lane	3.0 to 3.6V	11.5 GHz @V _{cc} =3.3V	500 uA @V _{cc} =3.6V		SPDT
	TC7PCI3215MT							
	TC7USB3212WBG	WCSP20	1lane	1.65 to 1.95V	8 GHz @V _{cc} =1.8V	200 uA @V _{cc} =1.95V		

for USB2.0 and others

UQFN10	TSSOP14
Bottom View 	
1.8x1.4	5.0x6.4

Recommended application	Part Number	Package	Number of circuit	Specification			Pin Assignment	Switch function				
				Supply Voltage Range	Band width @-3dB (typ.)	Quiescent Supply Current (max)						
USB2.0, MHL and others	TC7USB40MU	UQFN10	2	2.3 to 4.3V	1.5 GHz @V _{cc} =3.3V	1 uA @V _{cc} =4.3V		SPDT				
	TC7USB42MU											
	TC7USB40FT	TSSOP14										
	TC7USB42FT											

■ General Purpose Bus Switches

Package Dimensions (unit: mm)

USV (SOT-353)	MP6D	US6 (SOT-363)	US8 (SOT-765)	TSSOP14	TSSOP16	TSSOP20
	Bottom View 					
2.0x2.1	1.45x1.0	2.0x2.1	2.0x3.1	5.0x6.4	5.0x6.4	6.5x6.4

5V Bus Switch

Switch function	Part Number	Package	Number of circuit	Switch type	Specification			
					Supply Voltage Range	Switch I/O Capacitance @ Switch OFF (typ.)	Switch ON Resistance @V _{cc} =4.5V, V _{is} =0V (typ.)	Quiescent Supply Current (max)
SPST	TC7SB66CFU	USV	1	Pch+Nch	1.65 to 5.5V	5 pF @V _{cc} =5V	4 Ω @I _{is} =30mA	10 uA @V _{cc} =5.5V
	TC7SB67CFU							
	TC7WB66CFK	US8	2					
	TC7WB67CFK							
SPDT	TC7SB3157CFU	US6	1	Pch+Nch	1.65 to 5.5V	5 pF @V _{cc} =5V	4 Ω @I _{is} =30mA	10 uA @V _{cc} =5.5V
	TC7SB3157DL6X	MP6D						

Low-Voltage Bus Switch

Switch function	Part Number	Package	Number of circuit	Switch type	Specification			
					Supply Voltage Range	Switch I/O Capacitance	Switch ON Resistance @V _{CC} =3V, V _{IS} =0V (typ.)	Quiescent Supply Current
SPST	TC7SBL66CFU	USV	1	Pch+Nch	1.65 to 3.6V	3.5 pF @V _{CC} =3V	5.5 Ω @I _{IS} =30mA	10 uA @V _{CC} =3.6V
	TC7SBL384CFU						6 Ω @I _{IS} =30mA	
	TC7WBL3305CFK	US8	2				6 Ω @I _{IS} =30mA	
	TC7WBL3306CFK						6.5 Ω @I _{IS} =30mA	
	TC7MBL3125CFT	TSSOP14	4				6.5 Ω @I _{IS} =30mA	
	TC7MBL3126CFT							
TC7MBL3245CFT	TSSOP20	8						
SPDT	TC7MBL3257CFT	TSSOP16	4	Pch+Nch	1.65 to 3.6V	5 pF @V _{CC} =3V, A-port	8.5 Ω @I _{IS} =30mA	10 uA @V _{CC} =3.6V
SP4T	TC7MBL3253CFT	TSSOP16	2	Pch+Nch	1.65 to 3.6V	9 pF @V _{CC} =3V, A-port	9 Ω @I _{IS} =30mA	10 uA @V _{CC} =3.6V

■ Level Translation Function Type

UF6 (SOT-363F)	US8 (SOT-765)	TSSOP14	TSSOP20
			
2.0x2.1	2.0x3.1	5.0x6.4	6.5x6.4

Switch Function	Part Number	Package	Bit Count	Specification			
				Supply Voltage Range		Switch I/O Capacitance @ Switch OFF (Typ.)	Switch ON Resistance @V _{CCA} =3V, V _{CCB} =4.5V, V _{IS} =0V (max)
SPST	TC7SPB9306TU	UF6	1	1.65 to 5.0V	2.3 to 5.5V	7 pF @V _{CCA/B} =3.3V	8 mΩ @I _{IS} =30mA
	TC7SPB9307TU						
	TC7WPB9306FK	US8	2				
	TC7WPB9307FK						
	TC7QPB9306FT	TSSOP14	4				
	TC7QPB9307FT						
TC7MPB9307FT	TSSOP20	8					
SPDT	TC7MPB9326FT	TSSOP14	2				
	TC7MPB9327FT						

7. Radio-Frequency Devices

RF Diodes

Package Dimensions (unit: mm)

fSC	ESC (SOD-523)	USC (SOD-323)	S-Mini (SOT-346)
			
1.0x0.6	1.6x0.8	2.5x1.25	2.9x2.5

Variable Capacitance Diodes

Application	Part Number	Structure	Package	Absolute Maximum Ratings	Electrical Characteristics(Ta=25°C)						
					V _R (V)	C _T upper (pF)	@V _R (V)	C _T lower (pF)	@V _R (V)	C _T upper/ C _T lower	r _s typ. (Ω)
VCO	JDV2S10FS	Single	fSC	10	7.3 to 8.4	0.5	2.75 to 3.4	2.5	2.55	0.35	1
	1SV314	Single	ESC	10	7.3 to 8.4	0.5	2.75 to 3.4	2.5	2.5	0.35	1
	JDV2S07FS	Single	fSC	10	4.5	1	2	4	2.3	0.42	1
	1SV285	Single	ESC	10	4.5	1	2	4	2.3	0.42	1
	1SV277	Single	USC	10	4.5	1	2	4	2.3	0.42	1
	JDV2S09FS	Single	fSC	10	9.7 to 11.1	1	4.45 to 5.45	4	2.1	0.33	1
	1SV311	Single	ESC	10	9.7 to 11.1	1	4.45 to 5.45	4	2.1	0.28	1
	1SV310	Single	USC	10	9.7 to 11.1	1	4.45 to 5.45	4	2.1	0.28	1
	1SV281	Single	ESC	10	16	1	8	4	2.0	0.28	1
	1SV270	Single	USC	10	16	1	8	4	2.0	0.28	1
	1SV305	Single	ESC	10	18.3	1	6.1	4	3.0	0.27	1
	1SV304	Single	USC	10	18.3	1	6.1	4	3.0	0.27	1
	1SV323	Single	ESC	10	26.5 to 29.5	1	6 to 7.1	4	4.3	0.4	4
	1SV322	Single	USC	10	26.5 to 29.5	1	6 to 7.1	4	4.3	0.4	4
	1SV325	Single	ESC	10	44 to 49.5	1	9.2 to 12	4	4.3	0.4	4
	1SV324	Single	USC	10	44 to 49.5	1	9.2 to 12	4	4.3	0.4	4
	JDV2S36E	Single	ESC	10	44 to 49.5	1	5.4 to 7.3	6	7.5	0.4	4
	1SV280	Single	ESC	15	3.8 to 4.7	2	1.5 to 2.0	10	2.4	0.44	1
	1SV239	Single	USC	15	4.25	2	1.75	10	2.4	0.44	1
	JDV2S41FS	Single	fSC	15	14 to 16	2	5.5 to 6.5	10	2.5	0.2	5
	1SV279	Single	ESC	15	14 to 16	2	5.5 to 6.5	10	2.5	0.2	5
	1SV229	Single	USC	15	14 to 16	2	5.5 to 6.5	10	2.5	0.2	5
TV, CATV Tuner	1SV282	Single	ESC	34	35.5	2	2.85	25	12.5	0.6	5
	1SV262	Single	USC	34	35.5	2	2.85	25	12.5	0.6	5
FM Tuner	1SV228	Cathode com.	S-Mini	15	30.5	3	12.7	8	2.1 to 2.6	0.3	3

① MOSFETs

② Tr./BRTs

③ Diodes

④ Linear ICs

⑤ Logics

⑥ Bus Switches

⑦ RF Devices

⑧ Packages

RF Diodes

Package Dimensions (unit: mm)

SL2 (SOD-962)	fSC	CST2 (SOD-882)	ESC (SOD-523)	USC (SOD-323)	S-FLAT	VESM (SOT-723)	SSM (SOT-416)	USM (SOT-323)	S-Mini (SOT-346)
Bottom View		Bottom View							
0.62x0.32	1.0x0.6	1.0x0.6	1.6x0.8	2.5x1.25	1.6x3.5	1.2x1.2	1.6x1.6	2.0x2.1	2.9x2.5

Schottky Barrier Diodes

Feature	Part Number	Structure	Package	Absolute Maximum Ratings		Electrical Characteristics (Ta=25°C)					
				V _R (V)	I _F (mA)	V _F typ. (V)	@I _F (mA)	I _R max (μA)	@V _R (V)	C _T typ. (pF)	@V _R (V)
Low VF	JDH2S02SL	Single	SL2	10	10	0.24	1	25	0.5	0.25	0.2
	JDH2S02FS	Single	fSC	10	10	0.24	1	25	0.5	0.3	0.2
	JDH2S01FS	Single	fSC	4	25	0.25	2	25	0.5	0.6	0.2
Standard	1SS315	Single	USC	5	30	0.25	2	25	0.5	0.6	0.2
	1SS154	Single	S-Mini	6	30	0.5	10	0.5	5	0.8	0
	JDH3D01FV	Series	VESM	4	25	0.25	2	25	0.5	0.6	0.2
	JDH3D01S	Series	SSM	4	25	0.25	2	25	0.5	0.6	0.2
	1SS295	Series	S-Mini	4	30	0.25	2	25	0.5	0.6	0.2
	1SS271	Series	S-Mini	6	30	0.5	10	0.5	5	0.8	0

Switching Diodes

Feature	Part Number	Structure	Package	Absolute Maximum Ratings		Electrical Characteristics (Ta=25°C)					
				V _R (V)	I _F (mA)	V _F typ. (V)	@I _F (mA)	C _T typ. (pF)	@V _R (V)	r _s typ. (Ω)	@I _F (mA)
Standard PIN diode	JDP2S02AFS	Single	fSC	30	50	0.9	50	0.3	1	1	10
	JDP2S02ACT	Single	CST2	30	50	0.9	50	0.3	1	1	10
	1SV308	Single	ESC	30	50	0.95	50	0.3	1	1	10
	1SV307	Single	USC	30	50	0.95	50	0.3	1	1	10
	JDP3C02AU	Cathode com.	USM	30	50	0.89	50	0.28	1	1	10
	JDP2S04E	Single	ESC	50	50	0.95	50	0.25	50	3	10
	1SV271	Single	USC	50	50	0.93	50	0.25	50	3	10
	1SV128	Single	S-Mini	50	50	0.95	50	0.25	50	3	10
	1SV172	Series	S-Mini	50	50	0.95	50	0.25	50	3	10
High power PIN	JDP2S12CR	Single	S-FLAT	180	1,000	0.8	50	1	40	0.4	10
RF switching diode	1SS381	Single	ESC	30	100	0.85 (max)	2	0.7	6	0.6	2
	1SS314	Single	USC	30	100	0.85 (max)	2	0.7	6	0.5	2
	1SS364	Cathode com.	SSM	30	50	0.85 (max)	2	0.85	6	0.6	2
	1SS312	Cathode com.	USM	30	50	0.85 (max)	2	0.8	6	0.6	2
	1SS313	Anode com.	USM	30	50	0.85 (max)	2	0.8	6	0.6	2
	1SS268	Cathode com.	S-Mini	30	50	0.85 (max)	2	0.8	6	0.6	2
	1SS269	Anode com.	S-Mini	30	50	0.85 (max)	2	0.8	6	0.6	2

RF MOSFETs

Package Dimensions (unit: mm)

USQ (SOT-343)	SMQ (SOT-24)	PW-Mini	PW-X
			
2.0x2.1	2.9x2.9	4.6x4.2	6.1x6.3

Power MOSFETs

Application	Part Number	Package	Absolute Maximum Ratings			Electrical Characteristics(Ta=25°C)			
			V _{DS} (V)	I _D (A)	P _D (W)	P _D min (W)	Test Condition		
							V _{DS} (V)	f (MHz)	P _i (W)
UHF/VHF Professional radio Amateur radio	RFM08U9X	PW-X	36	5	20	7.5	9.6	520	0.5
	2SK3075	PW-X	30	5	20	7.5	9.6	520	0.5
	2SK3074	PW-Mini	30	1	3	0.63	9.6	520	0.02
	RFM12U7X	PW-X	20	4	20	11.5	7.2	520	1
	RFM07U7X	PW-X	16	3	20	7	7.2	520	0.5
	2SK3476	PW-X	20	3	20	7	7.2	520	0.5
	RFM01U7P	PW-Mini	20	1	3	1	7.2	520	0.1
	2SK3475	PW-Mini	20	1	3	0.63	7.2	520	0.02
	2SK2854	PW-Mini	10	0.5	0.5	0.2	6	849	0.02
FRS/GMRS	RFM06U3X ☆	PW-X	16	5	20	5	3.6	520	0.5
	RFM04U6P	PW-Mini	16	2	7	3.5	6.0	470	0.2
	2SK4037	PW-X	12	3	20	3.55	6.0	470	0.3
	2SK3078	PW-Mini	10	0.5	3	0.5	4.8	915	0.03
	2SK3079A	PW-X	10	3	20	2.24	4.5	470	0.1
	2SK3078A	PW-Mini	10	0.5	3	0.63	4.5	470	0.1
	2SK3756	PW-Mini	7.5	1	3	1.26	4.5	470	0.1
	RFM03U3P	PW-Mini	16	2.5	7	2.3	3.6	470	0.1
Driver amplifier	RFM00U7U	USQ	20	0.1	0.25	0.1	7.2	520	0.01
	2SK3077	USQ	10	0.1	0.25	0.032	4.8	915	0.001

Small signal MOSFETs

Application	Part Number	Package	Absolute Maximum Ratings		Electrical Characteristics(Ta=25°C)					
			V _{DS} (V)	I _D (mA)	G _{PS} typ. (dB)	NF typ. (dB)	Test Condition			
							V _{DS} (V)	I _D (mA)	V _{G2S} (V)	f (MHz)
VHF RF, MIX	3SK292	SMQ	12.5	30	26	1.4	6	10	4.5	500
	3SK294	USQ	12.5	30	26	1.4	6	10	4.5	500
UHF RF, MIX	3SK291	SMQ	12.5	30	22.5	1.5	6	10	4.5	800
	3SK293	USQ	12.5	30	22.5	1.5	6	10	4.5	800

☆ New Products

1 MOSFETs

2 Tr./BRTs

3 Diodes

4 Linear ICs

5 Logics

6 Bus Switches

7 RF Devices

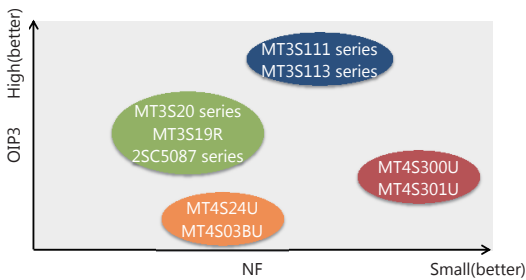
8 Packages

RF Transistors

Package Dimensions (unit: mm)

SSM (SOT-416)	USM (SOT-323)	UFM (SOT-323F)	S-Mini (SOT-346)	SOT-23F	PW-Mini	USQ (SOT-343)	SMQ (SOT-24)
							
1.6x1.6	2.0x2.1	2.0x2.1	2.9x2.5	2.9x2.4	4.6x4.2	2.0x2.1	2.9x2.9

Application	Part Number	Package	Absolute Maximum Ratings		Electrical Characteristics(Ta=25°C)										
			V _{CEO} (V)	I _C (mA)	f _r typ. (GHz)	Test Condition		S ₂₁ ² typ. (dB)	Test Condition			NF typ. (dB)	Test Condition		
						V _{CE} (V)	I _C (mA)		V _{CC} (V)	I _C (mA)	f (GHz)		V _{CC} (V)	I _C (mA)	f (GHz)
FM band Amplifier	2SC2714	S-Mini	30	20	0.55	6	1	23	6	1	0.1	2.5	6	1	0.1
	2SC4215	USM	30	20	0.55	6	1	23	6	1	0.1	2.0	6	1	0.1
	2SC4915	SSM	30	20	0.55	6	1	23	6	1	0.1	2.3	6	1	0.1
UHF band Amplifier and oscillator	MT3S16U	USM	5	60	4	3	10	5.5	3	30	1	2.4	2	5	1
	2SC5107	USM	10	30	6	5	5	11	5	5	1	-	-	-	-
	2SC5108	SSM	10	30	6	5	5	11	5	5	1	-	-	-	-
VHF/UHF band low noise amplifier	2SC5064	S-Mini	12	30	7	5	10	12	5	10	1	1.1	5	3	1
	2SC5065	USM	12	30	7	5	10	12	5	10	1	1.1	5	3	1
	2SC5066	SSM	12	30	7	5	10	12	5	10	1	1.1	5	3	1
	2SC5084	S-Mini	12	80	7	10	20	11	10	20	1	1.1	10	5	1
	2SC5085	USM	12	80	7	10	20	11	10	20	1	1.1	10	5	1
	2SC5086	SSM	12	80	7	10	20	11	10	20	1	1.1	10	5	1
	2SC5087	SMQ	12	80	7	10	20	13	10	20	1	1.1	10	5	1
	2SC5095	USM	10	15	10	6	7	13	6	7	1	1.4	6	3	1
LNA for GPS, Satellite radio and DAB Sys.	MT4S300U	USQ	4	50	26.5	3	20	16.9	3	20	2	0.55	3	10	2
	MT4S301U	USQ	4	35	27.5	3	15	18.1	3	15	2	0.57	3	7	2
LNA for TV tuner, Automotive TV tuner, FM tuner, DAB system and Low distortion application.	MT4S03BU	USQ	5	40	12	3	30	9	3	30	2	1.6	3	10	2
	MT4S24U	USQ	5	50	14.5	3	20	11.5	3	20	2	1.55	3	7	2
	2SC5087R	SMQ	12	80	8	10	30	13.5	10	30	1	1.1	10	7	1
	MT3S20TU	UFM	12	80	7	5	30	12	5	50	1	1.45	5	20	1
	MT3S20P	PW-Mini	12	80	7	5	30	11	5	50	1	1.45	5	20	1
	MT3S19R	SOT-23F	6	80	13.5	5	50	13	5	50	1	1.5	5	20	1
	MT3S111TU	UFM	6	100	10	5	30	12.5	5	30	1	0.85	5	30	1
	MT3S111	S-Mini	6	100	11.5	5	30	12	5	30	1	0.9	5	30	1
	MT3S111P	PW-Mini	6	100	8	5	30	10.5	5	30	1	0.95	5	30	1
	MT3S113TU	UFM	5.3	100	11.2	5	50	12.5	5	50	1	1.15	5	50	1
	MT3S113	S-Mini	5.3	100	12.5	5	50	11.8	5	50	1	1.15	5	50	1
	MT3S113P	PW-Mini	5.3	100	7.7	5	50	10.5	5	50	1	1.15	5	50	1



Part Naming Conventions

Radio-Frequency Diode (EIAJ registration products)

Ex) 1 S 5 181
① ② ③ ④

- ① The value that subtracted 1 from the total number of terminals
- ② S stands for Semiconductor
- ③ The kind of diode
This section shows the kind of the diode being used.
(It is omitted in certain cases.)
S: diode of general-purpose use, detection use,
frequency conversion use, and switching use
V: variable capacitance diode, PIN diode
Z: zener diode
- ④ Serial number

Radio-Frequency Diode (EIAJ un-registration products)

Ex) JD P 2 S 01 I
① ② ③ ④ ⑤ ⑥

- ① JD means High-frequency diode
- ② The kind of devices
This section shows the kind of the devices being used.
It is classified into H, P, S, and V by the devices being loaded.
H: schottky barrier diode
P: PIN diode
S: band switching diode
V: variable capacitance diode
- ③ The number of terminals
- ④ Internal connection
This section shows the kind of the internal connection of a product.
S: single
C: cathode common
P: parallel
- ⑤ Serial number
- ⑥ Package type

(No mark)	S-MINI
U	USC, USQ
T	TESC, TESQ
E	ESC
S	sESC
FS	fSC
CT	CST3, CST4
SC	SC2
FV	VESM

Radio-Frequency Transistor (Microwave transistor)

Ex) MT 3 S 03 A I
① ② ③ ④ ⑤ ⑥

- ① MT stands for Toshiba Microwave transistor
- ② The number of terminals
- ③ Internal connection
This section shows the kind of the internal connection of a product.
S: Single
C: Cascade arrangement
P: Parallel arrangement
L: Lateral arrangement
- ④ Serial number
- ⑤ Changes
The additional symbol which shows some changes
- ⑥ Package type

(No mark)	S-MINI, SMQ
U	USM, USQ, US6
S	SSM, sES6
T	TESM, TU6, TESQ
E	ES6
FS	fSM, fS6
CT	CST3

Radio-Frequency Power Transistor (EIAJ registration products)

Ex) 2 S C 2230 A
① ② ③ ④ ⑤

- ① The value that subtracted 1 from the total number of terminals
- ② S stands for Semiconductor
- ③ The kind of circuit
This section shows the kind of the circuit of a product.
It is classified into from A to K by the circuit being used.
A: a transistor of high-frequency and PNP structure
B: a transistor of low-frequency and PNP structure
C: a transistor of high-frequency and NPN structure
D: a transistor of low-frequency and NPN structure
J: a P-ch field effective transistor (FET)
K: an N-ch field effective transistor (FET)
- ④ Serial number
EIAJ registration numbers
- ⑤ Changes
The additional symbol which shows some changes.

Radio-Frequency Transistor (EIAJ registration products)

Ex) 2 S C 3547 B
① ② ③ ④ ⑤

- ① The value that subtracted 1 from the total number of terminals
- ② S stands for Semiconductor
- ③ The kind of circuit
This section shows the kind of the circuit of a product.
It is classified into form A to K by the circuit of a product.
A: a transistor of high-frequency and PNP structure
B: a transistor of low-frequency and PNP structure
C: a transistor of high-frequency and NPN structure
D: a transistor of low-frequency and NPN structure
J: a transistor of effective transistor (FET)
K: an Nch field effective transistor (FET)
- ④ Serial number
EIAJ registration numbers.
- ⑤ Changes
The additional symbol which shows some changes.

Radio-Frequency Power Transistor (RF-MOSFET)

Ex) RFM 07 U Z X
① ② ③ ④ ⑤

- ① RFM stands for Toshiba RF-MOSFET.
- ② This section shows the output power(W) of a product.
00: 0.1W
07: 7.0W
12: 11.5W
- ③ This section shows the operating frequency(MHz) of a product.
U: 400 to 520MHz
- ④ This section shows the operating voltage(V) of a product.
3: 3.6V
7: 7.2V
- ⑤ Package type
U: USQ
P: PW-MINI
X: PW-X

8. Device Packages

2 Pin packages

SL2 (SOD-962) (0.62x0.32)	CL2E (1.0x0.6)	SOD-923 (1.0x0.6)
Package dimension unit : mm 	Package dimension unit : mm 	Package dimension unit : mm
Land pattern example unit : mm 	Land pattern example unit : mm 	Land pattern example unit : mm
fSC (SOD-923) (1.0x0.6)	CST2 (SOD-882) (1.0x0.6)	CST2B (1.2x0.8)
Package dimension unit : mm 	Package dimension unit : mm 	Package dimension unit : mm
Land pattern example unit : mm 	Land pattern example unit : mm 	Land pattern example unit : mm
CST2C (SOD-963) (1.6x0.8)	ESC (SOD-523) (1.6x0.8)	USC (SOD-323) (2.5x1.25)
Package dimension unit : mm 	Package dimension unit : mm 	Package dimension unit : mm
Land pattern example unit : mm 	Land pattern example unit : mm 	Land pattern example unit : mm

3 Pin packages

US2H (SOD-323HE) (2.5x1.4)	S-FLAT™ (1.6x3.5)	CST3C (0.8x0.6)
Package dimension unit : mm 	Package dimension unit : mm 	Package dimension unit : mm
Land pattern example unit : mm 	Land pattern example unit : mm 	Land pattern example unit : mm
CST3 (SOT-883) (1.0x0.6)	CST3B (1.2x0.8)	VESM (SOT-723) (1.2x1.2)
Package dimension unit : mm 	Package dimension unit : mm 	Package dimension unit : mm
Land pattern example unit : mm 	Land pattern example unit : mm 	Land pattern example unit : mm
SSM (SOT-416) (1.6x1.6)	USM (SOT-323) (2.0x2.1)	UFM (SOT-323F) (2.0x2.1)
Package dimension unit : mm 	Package dimension unit : mm 	Package dimension unit : mm
Land pattern example unit : mm 	Land pattern example unit : mm 	Land pattern example unit : mm

3 Pin packages

S-Mini (SOT-346) (2.9x2.5)	SOT23 (SOT-23) (2.9x2.4)	SOT-23F (2.9x2.4)
Package dimension unit : mm 	Package dimension unit : mm 	Package dimension unit : mm
Land pattern example unit : mm 	Land pattern example unit : mm 	Land pattern example unit : mm

4 Pin packages

PW-Mini (4.6x4.2)	WCSP4E (0.645x0.645)	WCSP4F (0.645x0.645)
Package dimension unit : mm 	Package dimension unit : mm 	Package dimension unit : mm
Land pattern example unit : mm 	Land pattern example unit : mm 	Land pattern example unit : mm
WCSP4D (0.79x0.79)	WCSP4 (0.79x0.79)	WCSP4C (0.9x0.9)
Package dimension unit : mm 	Package dimension unit : mm 	Package dimension unit : mm
Land pattern example unit : mm 	Land pattern example unit : mm 	Land pattern example unit : mm

5 Pin packages

ESV (SOT-553) (1.6x1.6)	UFV (SOT-353F) (2.0x2.1)	USV (SOT-353) (2.0x2.1)
Package dimension unit : mm	Package dimension unit : mm	Package dimension unit : mm
Land pattern example unit : mm	Land pattern example unit : mm	Land pattern example unit : mm

6 Pin packages

SMV (SOT-25) (2.9x2.8)	WCSP6E (1.2x0.8)	WCSP6F (1.2x0.8)
Package dimension unit : mm	Package dimension unit : mm	Package dimension unit : mm
Land pattern example unit : mm	Land pattern example unit : mm	Land pattern example unit : mm

DFN6 (1.25x1.0)	MP6C (1.45x1.0)	MP6D (1.45x1.0)
Package dimension unit : mm	Package dimension unit : mm	Package dimension unit : mm
Land pattern example unit : mm	Land pattern example unit : mm	Land pattern example unit : mm

WCSP6C (1.5x1.0)	UDFN6 (SOT-1118) (2.0x2.0)	UDFN6B (SOT-1220) (2.0x2.0)
Package dimension unit : mm 	Package dimension unit : mm 	Package dimension unit : mm
Land pattern example unit : mm 	Land pattern example unit : mm 	Land pattern example unit : mm

ES6 (SOT-563) (1.6x1.6)	UF6 (SOT-363F) (2.0x2.1)	US6 (SOT-363) (2.0x2.1)
Package dimension unit : mm 	Package dimension unit : mm 	Package dimension unit : mm
Land pattern example unit : mm 	Land pattern example unit : mm 	Land pattern example unit : mm

8 Pin packages

SM6 (SOT-26) (2.9x2.8)	TSOP6F (SOT-26F) (2.9x2.8)	US8 (SOT-765) (2.0x3.1)
Package dimension unit : mm 	Package dimension unit : mm 	Package dimension unit : mm
Land pattern example unit : mm 	Land pattern example unit : mm 	Land pattern example unit : mm

8 Pin packages

SM8 (SOT-505) (2.9x4.0)	
Package dimension	unit : mm
Land pattern example	unit : mm

9 Pin packages

WCSP9 (1.5x1.5)	
Package dimension	unit : mm
Land pattern example	unit : mm

10 Pin packages

DFN10 (2.5x1.0)	
Package dimension	unit : mm
Land pattern example	unit : mm

14 Pin packages

UQFN10 (1.8x1.4)	
Package dimension	unit : mm
Land pattern example	unit : mm

US14 (4.0x4.0)	
Package dimension	unit : mm
Land pattern example	unit : mm

TSSOP14B (5.0x6.4)	
Package dimension	unit : mm
Land pattern example	unit : mm

16 Pin packages

SOIC14 (8.65x6.0)	
Package dimension	unit : mm
Land pattern example	unit : mm

SOP14 (10.3x7.8)	
Package dimension	unit : mm
Land pattern example	unit : mm

WCSP16C (1.9x1.9)	
Package dimension	unit : mm
Land pattern example	unit : mm

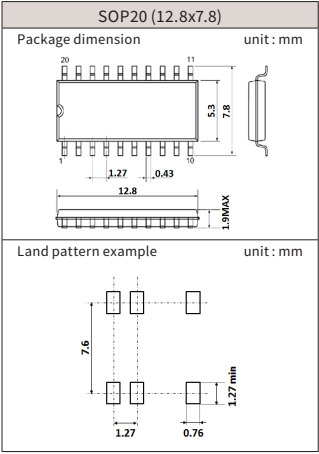
US16 (4.0x4.0)	TSSOP16B (5.0x6.4)	SOIC16 (9.9x6.0)
Package dimension unit : mm 	Package dimension unit : mm 	Package dimension unit : mm
Land pattern example unit : mm 	Land pattern example unit : mm 	Land pattern example unit : mm

20 Pin packages

SOP16 (10.3x7.8)	TQFN20 (4.5x2.5)	WCSP20 (1.6x2.0)
Package dimension unit : mm 	Package dimension unit : mm 	Package dimension unit : mm
Land pattern example unit : mm 	Land pattern example unit : mm 	Land pattern example unit : mm

US20 (5.0x4.0)	TSSOP20B (6.5x6.4)	SOIC20 (12.8x10.3)
Package dimension unit : mm 	Package dimension unit : mm 	Package dimension unit : mm
Land pattern example unit : mm 	Land pattern example unit : mm 	Land pattern example unit : mm

20 Pin packages



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