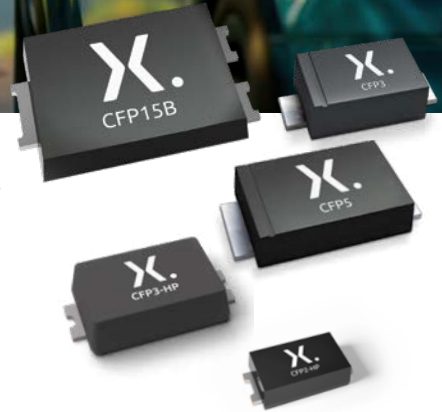


Clip-bond Flat Power (CFP) Package Strategy

Nexperia CFP packages enable space-saving PCB designs, without compromising on Total Power Dissipation (P_{tot}) of the Diode or BJT. CFP provides a true alternative for Diodes in legacy SMA/B/C packages and Power BJTs in DPAK. All CFP packages align with industry-standard dimensions (SOD123W, SOD128, etc). Ideal for automotive, industrial, consumer, and computing applications.



Why Package Strategy is Important

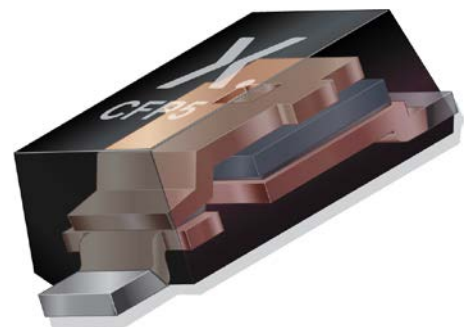
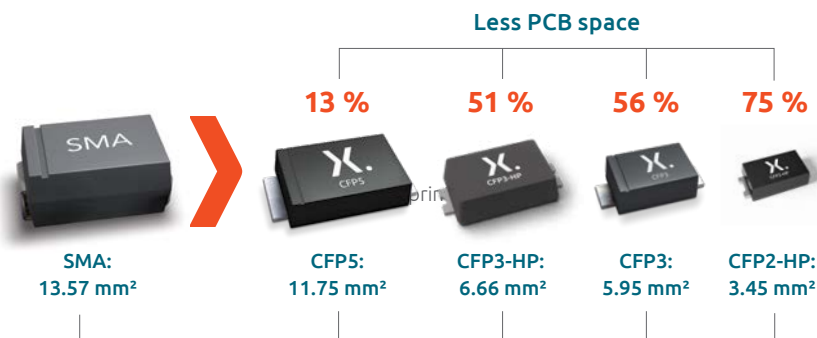
- › Global Power Diode & BJT demand is increasing
- › CFP capacity is increasing to support demand
- › SMA/B/C package capacity is not increasing
- › Carrying-over existing SMA/B/C or DPAK designs could lead to future supply issues
- › The industry is moving to CFP package types

CFP Portfolio & Malaysia Manufacturing Flow

- › Available in CFP3, CFP5, CFP15B, CFP2-HP, CFP3-HP
- › Recovery Rectifiers and Planar & Trench Schottkys
- › CFP15B can replace MJD-series BJTs (in DPAK)
- › CFP back-end manufacturing flow in Malaysia (COO)

CFP Package Features (vs. SMA/B/C):

- › CFP can replace legacy SMA/B/C packaged parts
- › Smaller Size and Height, yet more powerful
- › Solid Copper Clip Design has multiple benefits
- › High Reliability & Better Electrical Performance
- › Low Thermal Resistance - High Power Dissipation
- › Low Inductance - Better Switching & Less Parasitics
- › Optimized Lead Shapes for Optical Inspection (AOI)
- › AEC-Q101 qualified (2x AEC-Q101 reliability)
- › High Temperature: 175°C qualified
- › Board Level Reliability compliant
- › Free from delamination



Power Schottky rectifiers - clip-bond packages

Types in **bold** represent new products

					Automotive-qualified					
I _F max (A)	V _F max (V)	V _F max (mV) @ I _F max	I _R max (mA) @ V _R max	Package	CFP15 (SOT1289)	CFP15B (SOT1289B)	CFP5 (SOD128)	CFP3-HP (SOD123HP)	CFP3 (SOD123W)	CFP2-HP (SOD323HP)
				Size (mm)						
				P _{tot} (mW) @ 1 cm ²	2150	2150	1200	1300	1150	1200
				Optimization						
1	20	340	1	Low V _F					PMEG2010ER (-Q)	
		450	0.05	Low I _R					PMEG2010BER (-Q)	
		500	50	Low V _F						PMEG2010EXD (-Q)
	30	360	1.5	Low V _F			PMEG3010EP (-Q)		PMEG3010ER (-Q)	
		450	0.05	Low I _R			PMEG3010BEP (-Q)	PMEG3010EXE (-Q)	PMEG3010BER (-Q)	
		500	60	Low V _F						PMEG3010EXD (-Q)
	40	490	0.05	Low V _F			PMEG4010EP (-Q)	PMEG4010EXE (-Q)	PMEG4010ER (-Q)	
				Low V _F			PMEG4010ETP (-Q)		PMEG4010ETR (-Q)	
		460	0.022	Low V _F , Low Q _{rr}					PMEG40T10ER (-Q) ¹⁾	
	45	530	50	Low V _F						PMEG4010EXD (-Q)
		520	0.02	Low V _F , Low Q _{rr}						PMEG45T10EXD (-Q) ¹⁾
				Low V _F			PMEG6010EP (-Q)	PMEG6010EXE (-Q)	PMEG6010ER (-Q)	
	60	530	0.06	Low V _F					PMEG6010ETR (-Q)	
				Low V _F						PMEG6010EXD (-Q)
		580	50	Low V _F						
	70	590	0.0008	Low I _R , Low Q _{rr}			PMEG60T10ELP (-Q) ¹⁾			
		600	0.00065	Low I _R , Low Q _{rr}					PMEG60T10ELR (-Q) ¹⁾	
		640	0.0004	Low I _R , Low Q _{rr}						PMEG60T10ELXD (-Q) ¹⁾
	100	660	0.0003	Low I _R					PMEG6010ELR (-Q)	
		750	0.0009	Low I _R , Low Q _{rr}					PMEG100T10ELR (-Q) ¹⁾	
		770	0.00015	Low I _R					PMEG10010ELR (-Q)	
	120	780	0.00015	Low I _R				PMEG10010ELXE (-Q)		
		795	0.0005	Low I _R , Low Q _{rr}						PMEG100T10ELXD (-Q) ¹⁾
	20	520	0.05	Low I _R					PMEG2020CER (-Q)	
		580	50	Low V _F						PMEG2020EXD (-Q)
				Low V _F						
	30	360	3	Low V _F			PMEG3020EP (-Q)			
		420	1.5	Low V _F			PMEG3020CEP (-Q)		PMEG3020ER (-Q)	
		450	0.1	Low I _R			PMEG3020BEP (-Q)			
	40	520	0.05	Low I _R			PMEG3020DEP (-Q)		PMEG3020BER (-Q)	
				Low V _F				PMEG3020EXE (-Q)	PMEG3020CER (-Q)	
		580	60	Low V _F						PMEG3020EXD (-Q)
	45	490	0.1	Low V _F			PMEG4020EP (-Q)		PMEG4020ER (-Q)	
				Low V _F			PMEG4020ETP (-Q)		PMEG4020ETR (-Q)	
		570	0.05	Low I _R				PMEG4020EXE (-Q)	PMEG4020CER (-Q)	
	60	515	0.022	Low V _F , Low Q _{rr}			PMEG40T20EP (-Q) ¹⁾		PMEG40T20ER (-Q) ¹⁾	
		610	50	Low V _F						PMEG4020EXD (-Q)
				Low V _F						PMEG45T20EXD (-Q) ¹⁾
2	20	560	0.025	Low V _F , Low Q _{rr}						
				Low V _F						
		530	0.2	Low V _F			PMEG6020EP (-Q)		PMEG6020ER (-Q)	
	30			Low V _F			PMEG6020ETP (-Q)		PMEG6020ETR (-Q)	
		620	0.0012	Low I _R , Low Q _{rr}			PMEG60T20ELP (-Q) ¹⁾		PMEG60T20ELR (-Q) ¹⁾	
		650	0.06	Low I _R				PMEG6020EXE (-Q)	PMEG6020CER (-Q)	
	40	670	0.0007	Low I _R			PMEG6020AELP (-Q)		PMEG6020AELR (-Q)	
		700	0.00047	Low I _R , Low Q _{rr}						PMEG60T20ELXD (-Q) ¹⁾
		720	50	Low V _F						PMEG6020EXD (-Q)
	60	760	0.0003	Low I _R					PMEG6020ELR (-Q)	
		800	0.00125	Low I _R , Low Q _{rr}			PMEG100T20ELP (-Q) ¹⁾		PMEG100T20ELR (-Q) ¹⁾	
		770	0.0003	Low I _R			PMEG10020AELP (-Q)		PMEG10020AELR (-Q)	
	80	830	0.00015	Low I _R					PMEG10020ELR (-Q)	
		840	0.00015	Low I _R				PMEG10020ELXE (-Q)		
		880	0.0006	Low I _R , Low Q _{rr}						PMEG100T20ELXD (-Q) ¹⁾
	100	580	0.05	Low I _R					PMEG2030CER (-Q)	
		500	0.1	Low V _F			PMEG3030CEP (-Q)			
		580	0.05	Low I _R				PMEG3030EXE (-Q)	PMEG3030CER (-Q)	
	30	360	5	Low V _F			PMEG3030EP (-Q)			
		450	0.15	Low I _R		PMEG030V030EPE (-Q)	PMEG3030BEP (-Q)			
		490	0.12	Low V _F		PMEG040V030EPE (-Q)				
	40			Low V _F			PMEG4030EP (-Q)			
				Low V _F			PMEG4030ETP (-Q)			
		525	0.028	Low V _F , Low Q _{rr}			PMEG40T30EP (-Q) ¹⁾		PMEG40T30ER (-Q) ¹⁾	
	50	540	0.1	Low V _F			PMEG4030CEP (-Q)		PMEG4030ER (-Q)	
				Low V _F					PMEG4030ETR (-Q)	
		630	0.05	Low I _R				PMEG4030EXE (-Q)	PMEG4030CER (-Q)	
	60	520	0.12	Low V _F				PMEG4030AEXE (-Q)		
		480	0.044	Low V _F , Low Q _{rr}	PMEG045T030EPD ¹⁾					
		530	0.1	Low V _F		PMEG050V030EPE (-Q)				
	70	475	0.4	Low V _F			PMEG6030EVP (-Q)			
				Low V _F		PMEG060V030EPE (-Q)	PMEG6030EP (-Q)			
		530	0.2	Low V _F			PMEG6030ETP (-Q)			
	80			Low V _F						
		560	0.18	Low V _F				PMEG6030AEXE (-Q)		

¹⁾ Trench Schottky technology

Power Schottky rectifiers - clip-bond packages

Types in **bold** represent new products

					Automotive-qualified						
I _F max (A)	V _R max (V)	V _F max (mV) @ I _F max	I _R max (mA) @ V _R max	Package	CFP15 (SOT1289)	CFP15B (SOT1289B)	CFP5 (SOD128)	CFP3-HP (SOD123HP)	CFP3 (SOD123W)	CFP2-HP (SOD323HP)	
											
				Size (mm)	5.8 x 4.3 x 0.78	5.8 x 4.3 x 0.95	3.8 x 2.5 x 1.0	2.8 x 1.8 x 0.9	2.6 x 1.7 x 1.0	2.2 x 1.3 x 0.68	
				P _{tot} (mW) @ 1 cm ²	2150	2150	1200	1300	1150	1200	
Optimization											
3	60	600	0.15	Low V _F			PMEG6030CEP (-Q)				
		620	0.0018			PMEG60T030ELPE (-Q) ¹⁾	PMEG60T30ELP (-Q) ¹⁾		PMEG60T30ELR (-Q) ¹⁾		
		670	0.001	Low I _R			PMEG6030ELP (-Q)				
		750	0.0007	Low I _R			PMEG6030CELP (-Q)				
		760	0.06	Low I _R				PMEG6030EXE (-Q)	PMEG6030CER (-Q)		
	100	800	0.00175	Low I _R , Low Q _{rr}			PMEG100T30ELP (-Q) ¹⁾		PMEG100T30ELR (-Q) ¹⁾		
		770	0.00045	Low I _R			PMEG10030ELP (-Q)				
		710	0.0025	Low I _R , Low Q _{rr}		PMEG100T030ELPE (-Q) ¹⁾					
		850	0.0003	Low I _R			PMEG10030CELP (-Q)				
		620	0.0012	Low I _R , Low Q _{rr}		PMEG060T040CLPE (-Q) ¹⁾					
2x2	60	530	0.4	Low V _F			PMEG6045ETP (-Q)				
4.5	60	360	8	Low V _F			PMEG3050EP (-Q)				
		450	0.25	Low I _R			PMEG3050BEP (-Q)				
		500	0.15	Low V _F		PMEG030V050EPE (-Q)					
		560	0.1	Low V _F			PMEG3050CEP (-Q)				
		490	0.3	Low V _F			PMEG4050EP (-Q)				
	40		0.3	Low V _F			PMEG4050ETP (-Q)				
		520	0.12	Low V _F		PMEG040V050EPE (-Q)					
		525	0.041	Low V _F , Low Q _{rr}			PMEG40T50EP (-Q)1)				
		620	0.1	Low V _F			PMEG4050CEP (-Q)				
		490	0.3	Low V _F		PMEG045V050EPE (-Q)					
	45	525	0.044	Low V _F , Low Q _{rr}	PMEG045T050EPD ¹⁾						
		560	0.4	Low V _F		PMEG060V050EPE (-Q)					
		690	0.0018	Low I _R , Low Q _{rr}		PMEG060T050ELPE (-Q) ¹⁾	PMEG60T50ELP (-Q) ¹⁾				
		720	0.15	Low V _F			PMEG6050CEP (-Q)				
		780	0.001	Low I _R			PMEG6050ELP (-Q)				
	60	895	0.00175	Low I _R , Low Q _{rr}			PMEG100T50ELP (-Q) ¹⁾				
		810	0.0025	Low I _R , Low Q _{rr}		PMEG100T050ELPE (-Q) ¹⁾					
		880	0.00045	Low I _R			PMEG10050ELP (-Q)				
		620	0.0018	Low I _R , Low Q _{rr}		PMEG060T060CLPE (-Q) ¹⁾					
		6	100	840	0.00045	Low I _R	PMEG100V060EPE (-Q)				
	2x4	660	0.0018	Low I _R , Low Q _{rr}		PMEG060T080CLPE (-Q) ¹⁾					
		850	0.0005	Low I _R		PMEG100V080EPE (-Q)					
		810	0.004	Low I _R , Low Q _{rr}		PMEG100T080ELPE (-Q) ¹⁾					
	2x5	690	0.0018	Low I _R , Low Q _{rr}		PMEG060T100CLPE (-Q) ¹⁾					
		490	0.6	Low V _F		PMEG045V100EPE (-Q)					
		45	540	0.5	Low V _F		PMEG045V100EIPE (-Q)				
			545	0.08	Low V _F , Low Q _{rr}		PMEG045T100EPE (-Q) ¹⁾				
			560	0.7	Low V _F		PMEG060V100EPE (-Q)				
	100	850	0.0008	Low I _R		PMEG100V100EPE (-Q)					
		810	0.005	Low I _R , Low Q _{rr}		PMEG100T100ELPE (-Q) ¹⁾					
		810	0.006	Low I _R , Low Q _{rr}		PMEG100T120ELPE ¹⁾					
	12	100	570	1	Low V _F		PMEG045V150EPE (-Q)				
			550	0.1	Low V _F , Low Q _{rr}	PMEG045T150EPD ¹⁾					
			580		Low V _F , Low Q _{rr}	PMEG45T15EPD ¹⁾					
			570		0.098	Low V _F , Low Q _{rr}	PMEG045T150EIPD ¹⁾				
			570	1	Low V _F		PMEG050V150EPE (-Q)				
		50	550	0.1	Low V _F , Low Q _{rr}	PMEG050T150EPD ¹⁾					
			570	0.2	Low V _F , Low Q _{rr}	PMEG050T150EIPD ¹⁾					
			820	0.008	Low I _R , Low Q _{rr}		PMEG100T150ELPE ¹⁾				
			830	0.01	Low I _R , Low Q _{rr}		PMEG100T200ELPE ¹⁾				
20			100	830	0.01	Low I _R , Low Q _{rr}		PMEG100T200ELPE ¹⁾			

Four packages for the right space / performance ratio



CFP2-HP (SOD323HP)

2.2 x 1.3 x 0.68 mm*

R_{th(j-sp)} = 6 K/W



CFP3-HP (SOD123HP)

2.8 x 1.8 x 0.9 mm*

R_{th(j-sp)} = 6 K/W



CFP3 (SOD123W)

2.6 x 1.7 x 1.0 mm*

R_{th(j-sp)} = 18 K/W



CFP5 (SOD128)

3.8 x 2.5 x 1.0 mm*

R_{th(j-sp)} = 12 K/W



CFP15B (SOT1289B)

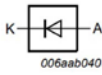
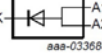
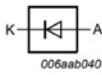
5.8 x 4.3 x 0.78 mm*

R_{th(j-sp)} = 3 K/W

*Body size (l x w x h)

Recovery rectifiers

Types in **bold** represent new products

							Automotive-qualified			
V_R max (V)	V_F max (V)	(@) I_F (A)	I_R max (μA)	(@) V_R (V)	trr max (ns)	Package	CFP2-HP (SOD323HP)	CFP3 (SOD123W)	CFP5 (SOD128)	CFP15B (SOT1289B)
						Size (mm)				
						P _{tot} (mW) @ 1cm ²	2.2 x 1.3 x 0.68	2.6 x 1.7 x 1.0	3.8 x 2.5 x 1.0	5.8 x 4.3 x 0.95
200	1.02	1	0.075	200	25		PNE20010EXD (-Q)			
		1	0.2	200	25			PNE20010ER (-Q)		
		2	0.2	200	25			PNE20020ER (-Q)		
		2	1	200	25				PNE20020EP (-Q)	
		3	1	200	30				PNE20030EP (-Q)	
		4	1	200	30				PNE20040EP (-Q)	
		5	1	200	30				PNE20050EP (-Q)	
		4	1	200	30					PNE20040EPE (-Q)
	0.93	6	1	200	30					PNE20060EPE (-Q)
		8	1	200	30					PNE20080EPE (-Q)
		10	1	200	30					PNE200100EPE (-Q)
		2x2	1	200	25					PNE20040CPE (-Q)
		2x3	1	200	30					PNE20060CPE (-Q)
		2x4	1	200	30					PNE20080CPE (-Q)
		2x5	1	200	30					PNE200100CPE (-Q)
		2x5	1	200	30					
400	1.1	1	1	400	1800			PNS40010ER		
	1.2	1	1	650	65			PNU65010ER (-Q)		
	1.2	1	1	650	65				PNU65010EP (-Q)	
	1.2	2	1	650	65				PNU65020EP (-Q)	
	1.2	3	1	650	70				PNU65030EP (-Q)	

General purpose power transistors

Types in **bold** represent new products

Package									DPAK (SOT428C)	CFP15B (SOT1289B)
Size (mm)										
P _{tot} (mW)									1750	2150
V _{CE0} (V)	I _C (A)	h _{FE} min	h _{FE} max	@ I _C (A)	@ V _{CE} (V)	f _T min MHz	Polarity	Automotive-qualified		
45	4	85	375	0,5	1	3	NPN	Yes	MJD148(-Q)	
50	2	120	360	0,5	2	65	NPN	Yes	MJD2873(-Q)	MJPE2873(-Q)
80	8	60	-	2	1	typ: 160	NPN	No	MJD44H11	MJPE44H11
				2	1	typ: 80	PNP	Yes	MJD45H11	MJPE44H11-Q
								No	MJD44H11A	MJPE45H11
								Yes	MJD45H11A	MJPE45H11-Q
100	3	25	-	1	4	3	NPN	No	MJD31C	MJPE31C
		120	-	0,02	60		NPN	Yes	MJD32C	MJPE31C-Q
		25	-	1	4		NPN	Yes	MJD31CA	MJPE31CH(-Q)*
		25	-	1	4		PNP	No	MJD31CH-Q*	MJPE32C
	6	30	-	0,3	4		PNP	Yes	MJD32CA	MJPE32C-Q
				0,3	4		NPN	Yes	MJD41C(-Q)	
				0,3	4		PNP	Yes	MJD42C(-Q)	
				0,3	4		PNP	Yes	MJD42C(-Q)	

* high gain version

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