



NMUX27518-Q100

6-channel, 1-of-2 multiplexer and demultiplexer

Rev. 1 — 25 July 2025

Product data sheet

1. General description

The NMUX27518-Q100 is a bidirectional, 6-channel, 1:2 multiplexer-demultiplexer designed to operate from 1.08 V to 3.6 V. This device can handle both digital and analog signals, and can transmit signals up to V_{CC} in either direction. The NMUX27518-Q100 has two control pins (S0, S1), each controlling three 1:2 muxes at the same time, and an enable pin (EN) that put all outputs in high-impedance mode. The control pins are compatible with 1.8 V logic thresholds and are backward compatible with 2.5 V and 3.3 V logic thresholds.

This product has been qualified to the Automotive Electronics Council (AEC) standard Q100 (Grade 1) and is suitable for use in automotive applications.

2. Features and benefits

- Automotive product qualification in accordance with AEC-Q100 (Grade 1)
 - Specified from -40 °C to +125 °C
- Wide operating range: 1.08 V to 3.6 V
- Isolation in power-down mode, $V_{CC} = 0$ V
- Low-capacitance switches, 21.5 pF (typical)
- Bandwidth up to 500 MHz for high-speed rail-to-rail signal handling
- Crosstalk and isolation OFF-state: -62 dB
- 1.8 V logic compatible control inputs
- 3.6 V tolerant control inputs
- Latch-up performance exceeds 100 mA per JESD 78, Class II
- ESD protection:
 - HBM: ANSI/ESDA/JEDEC JS-001 class 2 exceeds 2 kV
 - CDM: ANSI/ESDA/JEDEC JS-002 class C3 exceeds 1.5 kV
 - IEC61000-4-2, level 3, contact discharge on all nYn pins exceeds ± 6 kV
- 24 pins TSSOP24 (7.8 x 4.4 x 1.1 mm body) and HWQFN24 (4 x 4 x 0.75 mm body) packages

3. Applications

- Electronic Control Unit
- qSPI memory multiplexing

4. Ordering information

Table 1. Ordering information

Type number	Package			
	Temperature range	Name	Description	Version
NMUX27518PW-Q100	-40 °C to +125 °C	TSSOP24	plastic thin shrink small outline package; 24 leads; body width 4.4 mm	SOT355-1
NMUX27518BY-Q100	-40 °C to +125 °C	HWQFN24	plastic thermal enhanced very very thin Quad Flat packages; no leads; 24 terminals; 0.5 mm pitch; 4 × 4 × 0.75 mm body	SOT8041-1

5. Marking

Table 2. Marking

Type number	Marking code
NMUX27518PW-Q100	NMUX27518
NMUX27518BY-Q100	M27518

6. Functional diagram

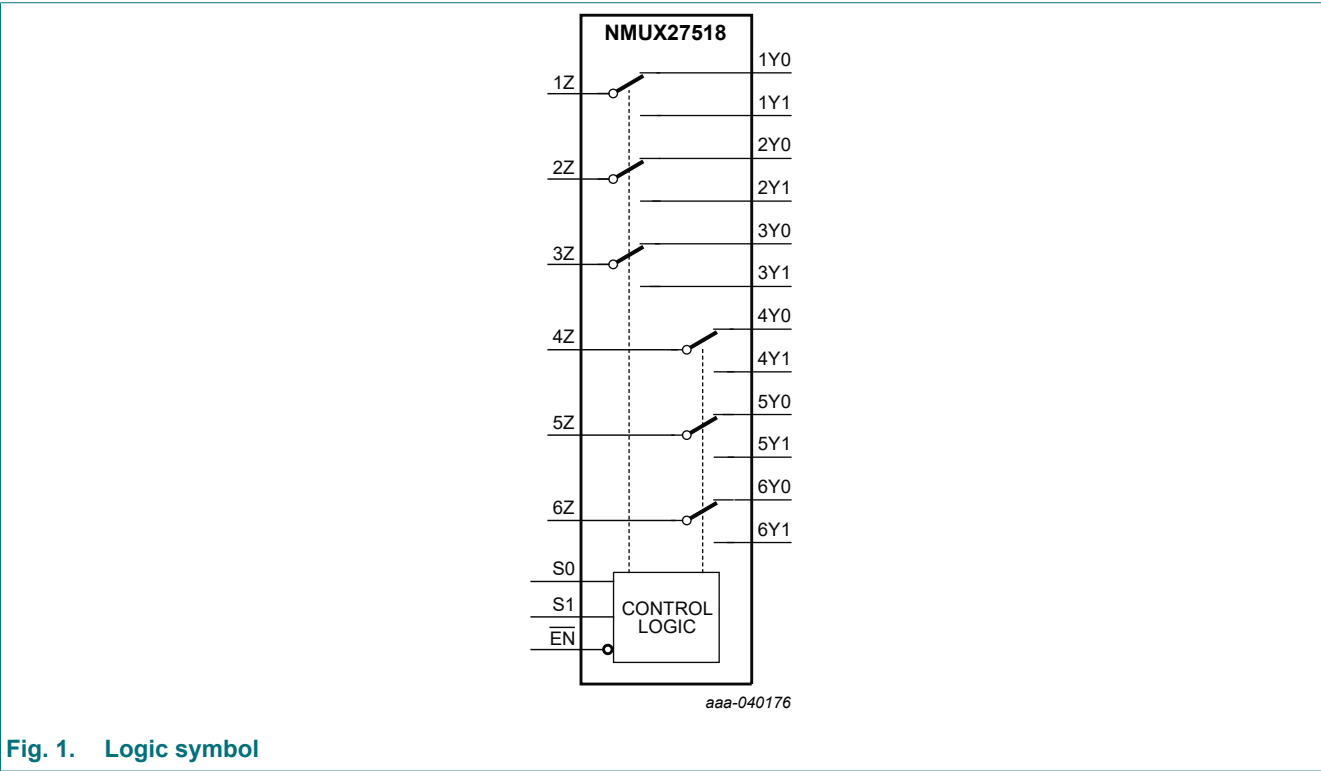
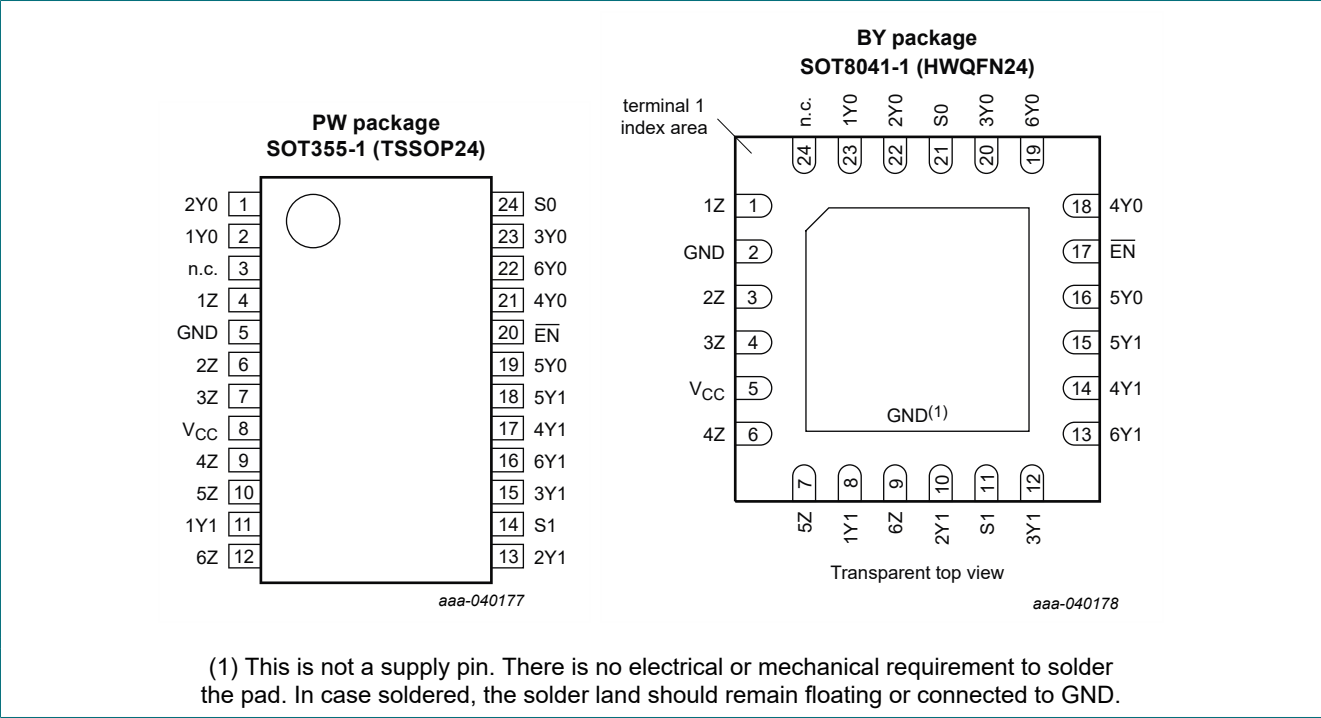


Fig. 1. Logic symbol

7. Pinning information

7.1. Pinning



7.2. Pin description

Table 3. Pin description

Symbol	Pin		Type	Description
	SOT355-1	SOT8041-1		
2Y0	1	22	I/O	Port 2 independent analog channel; normally closed
1Y0	2	23	I/O	Port 1 independent analog channel; normally closed
n.c.	3	24	open	not connected
1Z	4	1	I/O	Port 1 common analog channel
GND	5	2	power	ground (0 V)
2Z	6	3	I/O	Port 2 common analog channel
3Z	7	4	I/O	Port 3 common analog channel
V _{CC}	8	5	power	supply voltage
4Z	9	6	I/O	Port 4 common analog channel
5Z	10	7	I/O	Port 5 common analog channel
1Y1	11	8	I/O	Port 1 independent analog channel; normally open
6Z	12	9	I/O	Port 6 common analog channel
2Y1	13	10	I/O	Port 2 independent analog channel; normally open
S1	14	11	input	select input; do not leave this pin floating
3Y1	15	12	I/O	Port 3 independent analog channel; normally open
6Y1	16	13	I/O	Port 6 independent analog channel; normally open
4Y1	17	14	I/O	Port 4 independent analog channel; normally open

Symbol	Pin		Type	Description
	SOT355-1	SOT8041-1		
5Y1	18	15	I/O	Port 5 independent analog channel; normally open
5Y0	19	16	I/O	Port 5 independent analog channel; normally closed
EN	20	17	input	enable input (active Low); do not leave this pin floating
4Y0	21	18	I/O	Port 4 independent analog channel; normally closed
6Y0	22	19	I/O	Port 6 independent analog channel; normally closed
3Y0	23	20	I/O	Port 3 independent analog channel; normally closed
S0	24	21	input	select input; do not leave this pin floating

8. Functional description

8.1. Overview

The NMUX27518-Q100 is a general purpose, six-channel analog switch with a single pole that can be configured to select between one of two possible connection paths (SPDT). Each analog connection path is bi-directional, with similar electrical characteristics independent of the direction of signal propagation.

8.2. Key features

1.8 V Compatible digital logic thresholds

It is common for modern systems to operate control signals from lower voltage nodes such as 1.8 V, while operating their data signals at higher voltage nodes such as 3.3 V. To remove the requirements for a voltage translation device, the NMUX27518-Q100 digital control pins maintain 1.8 V logic compatible thresholds at higher operating voltages, up to 3.63 V. Please note that operating control pins at a lower voltage than the device operating voltage will increase the device supply current, as represented by the datasheet parameter ΔI_{CC} .

I_{off} protection circuitry of digital inputs

The NMUX27518-Q100 implements I_{off} protection circuitry on the digital control pins, isolating those pins from the internal circuits when the supply is unpowered (i.e., $V_{CC} = 0$ V). The ESD protection diodes on the digital input pins do not have a connection path to V_{CC} . If the digital input pins are biased when the V_{CC} pin is unpowered:

1. The high impedance of the digital input pins minimizes input current leakage.
2. The isolation between the digital input pins and the V_{CC} pin ensures no back-powering to the supply rail.

I_{off} protection circuitry of analog inputs/outputs

The NMUX27518-Q100 implements I_{off} protection circuitry on the analog switch pins, isolating those pins from the internal circuits when the supply is unpowered (i.e., $V_{CC} = 0$ V). The ESD protection diodes on the analog switch pins do not have a connection path to V_{CC} . If the analog switch pins are biased when the V_{CC} pin is unpowered:

1. The high impedance of the analog pins minimizes input current leakage.
2. The isolation between the analog pins and the V_{CC} pin ensures no back-powering to the supply rail.
3. The high impedance of the analog switch path itself minimizes signal coupling across the switch.

Support for high speed signals

The NMUX27518-Q100 switch bandwidth of 500 MHz reduces the degradation of output rise and fall times, while its 80 ps port skew helps to minimize erosion into the setup and hold time budget.

Function table

Table 4. Function table

H = HIGH voltage level; L = LOW voltage level; X = don't care; Z = high-impedance OFF-state

Control inputs			Analog channels					
EN	S0	S1	connection path 1Z	connection path 2Z	connection path 3Z	connection path 4Z	connection path 5Z	connection path 6Z
H	X	X	Hi-Z (all nYn and nZ pins are in high-impedance OFF-state)					
L	L	L	1Y0	2Y0	3Y0	4Y0	5Y0	6Y0
L	H	L	1Y1	2Y1	3Y1	4Y0	5Y0	6Y0
L	L	H	1Y0	2Y0	3Y0	4Y1	5Y1	6Y1
L	H	H	1Y1	2Y1	3Y1	4Y1	5Y1	6Y1

9. Limiting values

Table 5. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134). Voltages are referenced to GND (ground = 0 V).

Symbol	Parameter	Conditions	Min	Max	Unit
V _{CC}	supply voltage		-0.5	4.6	V
V _I	input voltage	$\overline{\text{EN}}$, S0, S1 [1]	-0.5	4.6	V
V _{SW}	switch voltage	nYn, nZ [2]	-0.5	4.6	V
I _{SW}	switch current	nYn, nZ; V _{SW} > -0.5 V or V _{SW} < V _{CC} + 0.5 V; T _{amb} = -40 °C to +85 °C	-50	50	mA
		nYn, nZ; V _{SW} > -0.5 V or V _{SW} < V _{CC} + 0.5 V; T _{amb} = -40 °C to +125 °C	-25	25	mA
I _I	input current	$\overline{\text{EN}}$, S0, S1	-30	30	mA
I _{CC}	supply current		-	100	mA
I _{GND}	ground current		-100	-	mA
T _{stg}	storage temperature		-65	+150	°C
T _j	junction temperature		-	+150	°C
P _{tot}	total power dissipation	T _{amb} = -40 °C to +125 °C [3][4]	-	500	mW

- [1] The minimum and maximum input voltage rating may be exceeded if the input clamping current rating is observed.
- [2] The minimum and maximum switch voltage rating may be exceeded if the switch clamping current rating is observed.
- [3] For SOT355-1 (TSSOP24) package: P_{tot} derates linearly with tbd mW/K above tbd °C.
- [4] For SOT8041-1 (HWQFN24) package: P_{tot} derates linearly with tbd mW/K above tbd °C.

10. ESD ratings

Table 6. ESD ratings

Symbol	Parameter	Conditions	Value	Unit
V _{ESD}	electrostatic discharge voltage	HBM: ANSI/ESDA/JEDEC JS-001 class 2	±2000	V
		CDM: ANSI/ESDA/JEDEC JS-002 class C3	±1500	V
		IEC61000-4-2, level 3, contact discharge on all nYn pins	±6000	V

11. Recommended operating conditions

Table 7. Recommended operating conditions

Symbol	Parameter	Conditions	Min	Max	Unit
V _{CC}	supply voltage		1.08	3.63	V
V _I	digital input voltage	EN, S0, S1	0	3.63	V
V _{SW}	analog switch input voltage	nZ, nYn	0	V _{CC}	V
		V _{CC} = 0 V	0	3.63	V
I _{SW}	analog switch continuous current	nZ, nYn	-50	50	mA
T _{amb}	ambient temperature		-40	+125	°C

12. Thermal characteristics

Table 8. Thermal characteristics

Symbol	Parameter	SOT8041-1 (HWQFN24)	SOT355-1 (TSSOP24)	Unit
R _{θJA}	Junction-to-ambient thermal resistance	31.58	81.0	°C/W
R _{θJC(top)}	Junction-to-case (top) thermal resistance	38.36	36.0	°C/W
Ψ _{JT}	Junction-to-top characterization parameter	1.88	2.3	°C/W

13. Static characteristics

Table 9. Static characteristics

At recommended operating conditions; Voltages are referenced to GND (ground 0 V); for test circuit see [Fig. 5](#).
V_{CC} = 1.08 V to 3.63 V, unless otherwise stated.

Symbol	Parameter	Conditions	25 °C			-40 °C to +125 °C		Unit
			Min	Typ	Max	Min	Max	
Supply Pin								
I _{CC}	supply current	EN, Sn inputs; V _I = GND or V _{CC}						
		V _{CC} = 3.3 V ± 10%	-	0.005	-	-	1.1	µA
		V _{CC} = 2.5 V ± 10%	-	0.004	-	-	1	µA
		V _{CC} = 1.8 V ± 10%	-	0.003	-	-	0.8	µA
		V _{CC} = 1.2 V ± 10%	-	0.002	-	-	0.7	µA
ΔI _{CC}	supply current increase	EN, Sn inputs = 1.8 V, V _{CC} = 3.3 V ± 10%	-	4	-	-	9	µA/input
		EN, Sn inputs = 1.2 V, V _{CC} = 1.8 V ± 10%	-	0.1	-	-	2	µA/input
Control pins								
V _{IH}	HIGH-level input voltage	V _{CC} = 3.3 V ± 10%	-	-	-	1.24	-	V
		V _{CC} = 2.5 V ± 10%	-	-	-	1.07	-	V
		V _{CC} = 1.8 V ± 10%	-	-	-	0.89	-	V
		V _{CC} = 1.2 V ± 10%	-	-	-	0.89	-	V
V _{IL}	LOW level input voltage	V _{CC} = 3.3 V ± 10%	-	-	-	-	0.66	V
		V _{CC} = 2.5 V ± 10%	-	-	-	-	0.56	V
		V _{CC} = 1.8 V ± 10%	-	-	-	-	0.46	V
		V _{CC} = 1.2 V ± 10%	-	-	-	-	0.35	V
I _I	input leakage current	V _I = 0 V, 1.8 V, or V _{CC}	-	-	-	-1	1	µA
C _I	input capacitance	V _I = 0 V or 1.8 V or V _{CC} ; f = 1 MHz	-	2	-	-	3	pF
Analog pins								
R _{ON(peak)}	ON resistance (peak)	V _I = 0 V to V _{CC} ; I _{SW} = 32 mA						
		V _{CC} = 3.3 V ± 10%	-	8	-	-	14	Ω
		V _{CC} = 2.5 V ± 10%	-	11	-	-	20	Ω
		V _{CC} = 1.8 V ± 10%	-	19	-	-	32	Ω
		V _{CC} = 1.2 V ± 10%	-	31	-	-	41	Ω
ΔR _{ON}	ON resistance matching	V _I = 0 V to V _{CC} ; I _{SW} = 32 mA						
		V _{CC} = 3.3 V ± 10%	-	0.2	-	-	1.0	Ω
		V _{CC} = 2.5 V ± 10%	-	0.2	-	-	1.0	Ω
		V _{CC} = 1.8 V ± 10%	-	0.6	-	-	3.2	Ω
		V _{CC} = 1.2 V ± 10%	-	0.5	-	-	19	Ω
R _{ON(flat)}	ON resistance (flatness)	V _I = 0 V to V _{CC} ; I _{SW} = 32 mA						
		V _{CC} = 3.3 V ± 10%	-	2	-	-	5	Ω
		V _{CC} = 2.5 V ± 10%	-	4	-	-	11	Ω
		V _{CC} = 1.8 V ± 10%	-	12	-	-	21	Ω
		V _{CC} = 1.2 V ± 10%	-	21	-	-	27	Ω

Symbol	Parameter	Conditions	25 °C			-40 °C to +125 °C		Unit
			Min	Typ	Max	Min	Max	
I _{S(OFF)}	OFF-state leakage current	nYn OFF						
		V _{CC} = 3.3 V ± 10%; V _I = 1 V; V _O = 2.97 V	-	0.2	-	-500	500	nA
		V _{CC} = 2.5 V ± 10%; V _I = 0.5 V; V _O = 2.25 V	-	0.2	-	-500	500	nA
		V _{CC} = 1.8 V ± 10%; V _I = 0.3 V; V _O = 1.62 V	-	0.2	-	-500	500	nA
		V _{CC} = 1.2 V ± 10%; V _I = 0.1 V; V _O = 1.08 V	-	0.1	-	500	500	nA
I _{D(OFF)}	OFF-state leakage current	nZ OFF						
		V _{CC} = 3.3 V ± 10%; V _I = 1 V; V _O = 2.97 V	-	0.2	-	-500	500	nA
		V _{CC} = 2.5 V ± 10%; V _I = 0.5 V; V _O = 2.25 V	-	0.2	-	-500	500	nA
		V _{CC} = 1.8 V ± 10%; V _I = 0.3 V; V _O = 1.62 V	-	0.2	-	-500	500	nA
		V _{CC} = 1.2 V ± 10%; V _I = 0.1 V; V _O = 1.08 V	-	0.1	-	500	500	nA
I _{S(ON)}	ON-state leakage current	nYn ON						
		V _{CC} = 3.3 V ± 10%; V _I = 1 V or 2.97 V; V _O = open	-	0.2	-	-500	500	nA
		V _{CC} = 2.5 V ± 10%; V _I = 0.5 V or 2.25 V; V _O = open	-	0.2	-	-500	500	nA
		V _{CC} = 1.8 V ± 10%; V _I = 0.3 V or 1.62 V; V _O = open	-	0.2	-	-500	500	nA
		V _{CC} = 1.2 V ± 10%; V _I = 0.1 V or 1.08 V; V _O = open	-	0.1	-	500	500	nA
I _{D(ON)}	ON-state leakage current	nZ ON						
		V _{CC} = 3.3 V ± 10%; V _I = 1 V or 2.97 V; V _O = open	-	0.2	-	-500	500	nA
		V _{CC} = 2.5 V ± 10%; V _I = 0.5 V or 2.25 V; V _O = open	-	0.2	-	-500	500	nA
		V _{CC} = 1.8 V ± 10%; V _I = 0.3 V or 1.62 V; V _O = open	-	0.2	-	-500	500	nA
		V _{CC} = 1.2 V ± 10%; V _I = 0.1 V or 1.08 V; V _O = open	-	0.1	-	500	500	nA
I _{S(POFF)}	power-OFF leakage current	nYn; V _{CC} = 0 V						
		V _I = 0 V to 3.63 V; V _O = 0 V	-	2.6	-	-1	6	μA
		V _I = 0 V to 3.63 V; V _O = 3.63 V to 0 V	-	2.6	-	-1	6	μA
		V _I = 0 V to 2.75 V; V _O = 0 V	-	1.4	-	-1	3	μA
		V _I = 0 V to 2.75 V; V _O = 2.75 V to 0 V	-	1.4	-	-1	3	μA
		V _I = 0 V to 1.98 V; V _O = 0 V	-	0.6	-	-1	1	μA
		V _I = 0 V to 1.98 V; V _O = 1.98 V to 0 V	-	0.6	-	-1	1	μA
		V _I = 0 V to 1.32 V; V _O = 0 V	-	0.1	-	-1	1	μA
		V _I = 0 V to 1.32 V; V _O = 1.32 V to 0 V	-	0.1	-	-1	1	μA

Symbol	Parameter	Conditions	25 °C			-40 °C to +125 °C		Unit
			Min	Typ	Max	Min	Max	
I _{D(POFF)}	power-OFF leakage current	nZ; V _{CC} = 0 V						
		V _I = 0 V to 3.63 V; V _O = 0 V	-	2.6	-	-1	11	µA
		V _I = 0 V to 3.63 V; V _O = 3.63 V to 0 V	-	2.6	-	-1	11	µA
		V _I = 0 V to 2.75 V; V _O = 0 V	-	1.4	-	-1	6	µA
		V _I = 0 V to 2.75 V; V _O = 2.75 V to 0 V	-	1.4	-	-1	6	µA
		V _I = 0 V to 1.98 V; V _O = 0 V	-	0.6	-	-1	6	µA
		V _I = 0 V to 1.98 V; V _O = 1.98 V to 0 V	-	0.5	-	-1	2	µA
		V _I = 0 V to 1.32 V; V _O = 0 V	-	0.1	-	-1	6	µA
		V _I = 0 V to 1.32 V; V _O = 1.32 V to 0 V	-	0.1	-	-1	1	µA

14. Dynamic characteristics

Table 10. Dynamic characteristics

At recommended operating conditions; voltages are referenced to GND (ground 0 V); V_{CC} = 1.08 V to 3.63 V, unless otherwise stated; for test circuit see Fig. 5.

Symbol	Parameter	Conditions	25 °C			-40 °C to +125 °C		Unit
			Min	Typ	Max	Min	Max	
Analog pins								
t _t	transition time between channels	Sn to nZ channel; nY0 = 0 V and nY1 = V _{CC} ; nY0 = V _{CC} and nY1 = 0 V; R _L = 50 Ω; C _L = 35 pF						
		V _{CC} = 3.3 V ± 10%	-	15	-	-	22	ns
		V _{CC} = 2.5 V ± 10%	-	18	-	-	26	ns
		V _{CC} = 1.8 V ± 10%	-	20	-	-	35	ns
		V _{CC} = 1.2 V ± 10%	-	37	-	-	75	ns
		Sn to nYn channel; nZ = V _{CC} ; R _L = 50 Ω; C _L = 35 pF						
		V _{CC} = 3.3 V ± 10%	-	16	-	-	22	ns
		V _{CC} = 2.5 V ± 10%	-	18	-	-	26	ns
		V _{CC} = 1.8 V ± 10%	-	22	-	-	35	ns
		V _{CC} = 1.2 V ± 10%	-	43	-	-	75	ns
t _{b-m}	break before make time	nZ; V _I = V _{CC} ; R _L = 50 Ω; C _L = 35 pF						
		V _{CC} = 3.3 V ± 10%	-	10	-	1	-	ns
		V _{CC} = 2.5 V ± 10%	-	11	-	1	-	ns
		V _{CC} = 1.8 V ± 10%	-	12	-	1	-	ns
		V _{CC} = 1.2 V ± 10%	-	19	-	1	-	ns

Symbol	Parameter	Conditions	25 °C			-40 °C to +125 °C		Unit
			Min	Typ	Max	Min	Max	
t _{en}	enable time	$\overline{\text{EN}}$ to nZ or nYn; V _I = V _{CC} ; R _L = 50 Ω; C _L = 35 pF; S1 = GND						
		V _{CC} = 3.3 V ± 10%	-	6	-	-	11	ns
		V _{CC} = 2.5 V ± 10%	-	8	-	-	14	ns
		V _{CC} = 1.8 V ± 10%	-	13	-	-	24	ns
		V _{CC} = 1.2 V ± 10%	-	32	-	-	78	ns
		$\overline{\text{EN}}$ to nZ or nYn; V _I = V _{CC} ; R _L = 50 Ω; C _L = 35 pF; S1 = V _{CC}						
		V _{CC} = 3.3 V ± 10%	-	6	-	-	10	ns
		V _{CC} = 2.5 V ± 10%	-	8	-	-	14	ns
		V _{CC} = 1.8 V ± 10%	-	11	-	-	23	ns
		V _{CC} = 1.2 V ± 10%	-	26	-	-	72	ns
t _{dis}	disable time	$\overline{\text{EN}}$ to nZ or nYn; V _I = V _{CC} ; R _L = 50 Ω; C _L = 35 pF; S1 = GND						
		V _{CC} = 3.3 V ± 10%	-	4	-	-	7	ns
		V _{CC} = 2.5 V ± 10%	-	5	-	-	8	ns
		V _{CC} = 1.8 V ± 10%	-	7	-	-	12	ns
		V _{CC} = 1.2 V ± 10%	-	32	-	-	69	ns
		$\overline{\text{EN}}$ to nZ or nYn; V _I = V _{CC} ; R _L = 50 Ω; C _L = 35 pF; S1 = V _{CC}						
		V _{CC} = 3.3 V ± 10%	-	9	-	-	11	ns
		V _{CC} = 2.5 V ± 10%	-	10	-	-	14	ns
		V _{CC} = 1.8 V ± 10%	-	12	-	-	22	ns
		V _{CC} = 1.2 V ± 10%	-	19	-	-	51	ns
t _{sk(P)}	port skew	between nZ pins; between nY0 pins; between nY1 pins; V _I = 0 V to V _{CC} , 1 MHz digital clock, 1 ns rise/fall time						
		V _{CC} = 3.3 V ± 10%	-	150	-	-	500	ps
		V _{CC} = 2.5 V ± 10%	-	130	-	-	500	ps
		V _{CC} = 1.8 V ± 10%	-	110	-	-	500	ps
Q _{inj}	charge injection	V _{gen} = 0 V; R _{gen} = 0 Ω; C _L = 0.1 nF						
		V _{CC} = 3.3 V	-	0.2	-	-	-	pC
		V _{CC} = 2.5 V	-	0.1	-	-	-	pC
		V _{CC} = 1.8 V	-	0.1	-	-	-	pC
		V _{CC} = 1.2 V	-	0.2	-	-	-	pC
α _{iso}	isolation (OFF-state)	R _L = 50 Ω; C _L = 5 pF; f = 10 MHz; V _{I(DC)} = 0.5 × V _{CC} ; V _{I(AC)} = 200 mV(p-p)						
		V _{CC} = 3.3 V	-	-59	-	-	-	dB
		V _{CC} = 2.5 V	-	-57	-	-	-	dB
		V _{CC} = 1.8 V	-	-54	-	-	-	dB
		V _{CC} = 1.2 V	-	-50	-	-	-	dB

Symbol	Parameter	Conditions	25 °C			-40 °C to +125 °C		Unit
			Min	Typ	Max	Min	Max	
Xtalk	crosstalk	between any two analog pins; $R_L = 50\ \Omega$; $C_L = 5\ \text{pF}$; $f = 10\ \text{MHz}$; $V_{I(\text{DC})} = 0.5 \times V_{CC}$; $V_{I(\text{AC})} = 200\ \text{mV(p-p)}$						
		$V_{CC} = 3.3\ \text{V}$	-	-58	-	-	-	dB
		$V_{CC} = 2.5\ \text{V}$	-	-58	-	-	-	dB
		$V_{CC} = 1.8\ \text{V}$	-	-58	-	-	-	dB
		$V_{CC} = 1.2\ \text{V}$	-	-58	-	-	-	dB
		between adjacent analog pins; $R_L = 50\ \Omega$; $C_L = 5\ \text{pF}$; $f = 10\ \text{MHz}$; $V_{I(\text{DC})} = 0.5 \times V_{CC}$; $V_{I(\text{AC})} = 200\ \text{mV(p-p)}$						
		$V_{CC} = 3.3\ \text{V}$	-	-65	-	-	-	dB
		$V_{CC} = 2.5\ \text{V}$	-	-65	-	-	-	dB
		$V_{CC} = 1.8\ \text{V}$	-	-65	-	-	-	dB
		$V_{CC} = 1.2\ \text{V}$	-	-65	-	-	-	dB
BW	bandwidth	$R_L = 50\ \Omega$; $C_L = 5\ \text{pF}$; $V_{I(\text{DC})} = 0.5 \times V_{CC}$; $V_{I(\text{AC})} = 200\ \text{mV(p-p)}$						
		$V_{CC} = 3.3\ \text{V}$	-	500	-	-	-	MHz
		$V_{CC} = 2.5\ \text{V}$	-	500	-	-	-	MHz
		$V_{CC} = 1.8\ \text{V}$	-	500	-	-	-	MHz
		$V_{CC} = 1.2\ \text{V}$	-	500	-	-	-	MHz
$C_{S(\text{OFF})}$	OFF-state capacitance	$nY_n\ \text{OFF}$; $V_I = 0.5 \times V_{CC}$; $f = 1\ \text{MHz}$						
		$V_{CC} = 3.3\ \text{V}$	-	8	-	-	-	pF
		$V_{CC} = 2.5\ \text{V}$	-	8	-	-	-	pF
		$V_{CC} = 1.8\ \text{V}$	-	8	-	-	-	pF
		$V_{CC} = 1.2\ \text{V}$	-	8	-	-	-	pF
$C_{D(\text{OFF})}$	OFF-state capacitance	$nZ\ \text{OFF}$; $V_I = 0.5 \times V_{CC}$; $f = 1\ \text{MHz}$						
		$V_{CC} = 3.3\ \text{V}$	-	13	-	-	-	pF
		$V_{CC} = 2.5\ \text{V}$	-	13	-	-	-	pF
		$V_{CC} = 1.8\ \text{V}$	-	14	-	-	-	pF
		$V_{CC} = 1.2\ \text{V}$	-	15	-	-	-	pF
$C_{S(\text{ON})}$	ON-state capacitance	$nY_n\ \text{ON}$; $V_I = 0.5 \times V_{CC}$; $f = 1\ \text{MHz}$						
		$V_{CC} = 3.3\ \text{V}$	-	22	-	-	-	pF
		$V_{CC} = 2.5\ \text{V}$	-	22	-	-	-	pF
		$V_{CC} = 1.8\ \text{V}$	-	23	-	-	-	pF
		$V_{CC} = 1.2\ \text{V}$	-	24	-	-	-	pF
$C_{D(\text{ON})}$	ON-state capacitance	$nZ\ \text{ON}$; $V_I = 0.5 \times V_{CC}$; $f = 1\ \text{MHz}$						
		$V_{CC} = 3.3\ \text{V}$	-	22	-	-	-	pF
		$V_{CC} = 2.5\ \text{V}$	-	22	-	-	-	pF
		$V_{CC} = 1.8\ \text{V}$	-	23	-	-	-	pF
		$V_{CC} = 1.2\ \text{V}$	-	24	-	-	-	pF
THD	total harmonic distortion	$R_L = 600\ \Omega$; $C_L = 50\ \text{pF}$; $f = 20\ \text{Hz} - 20\ \text{kHz}$						
		$V_{CC} = 3.3\ \text{V}$	-	0.46	-	-	-	%
		$V_{CC} = 2.5\ \text{V}$	-	0.29	-	-	-	%
		$V_{CC} = 1.8\ \text{V}$	-	0.28	-	-	-	%
		$V_{CC} = 1.2\ \text{V}$	-	0.98	-	-	-	%

14.1. Waveforms and test circuit

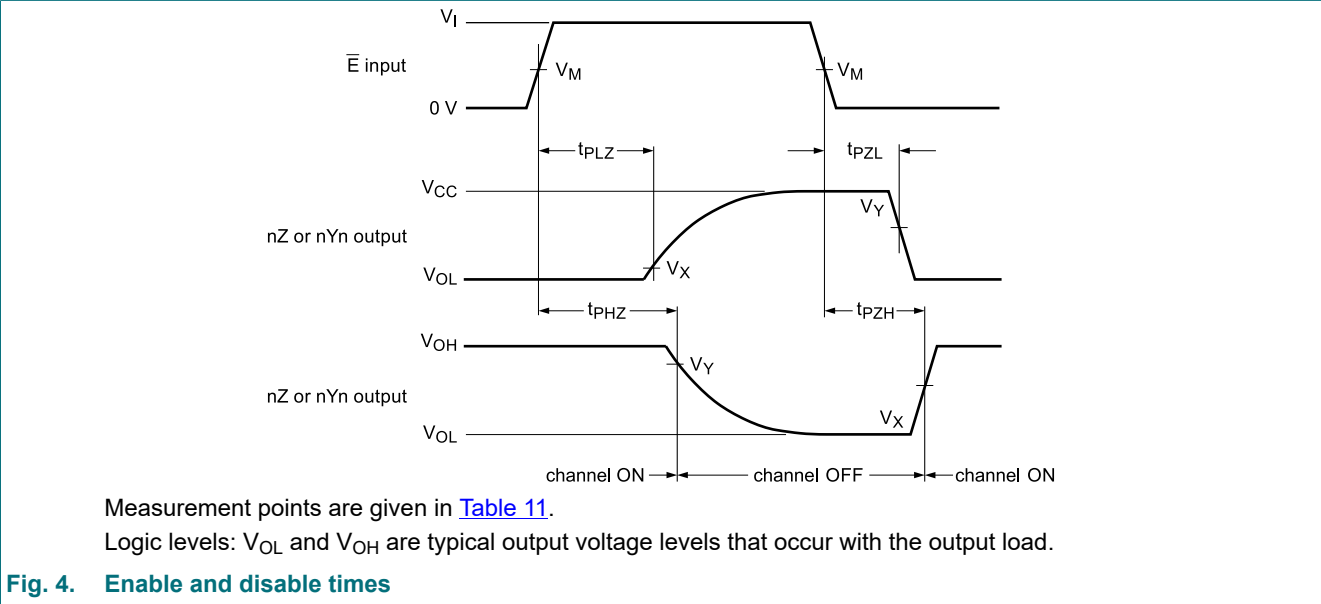
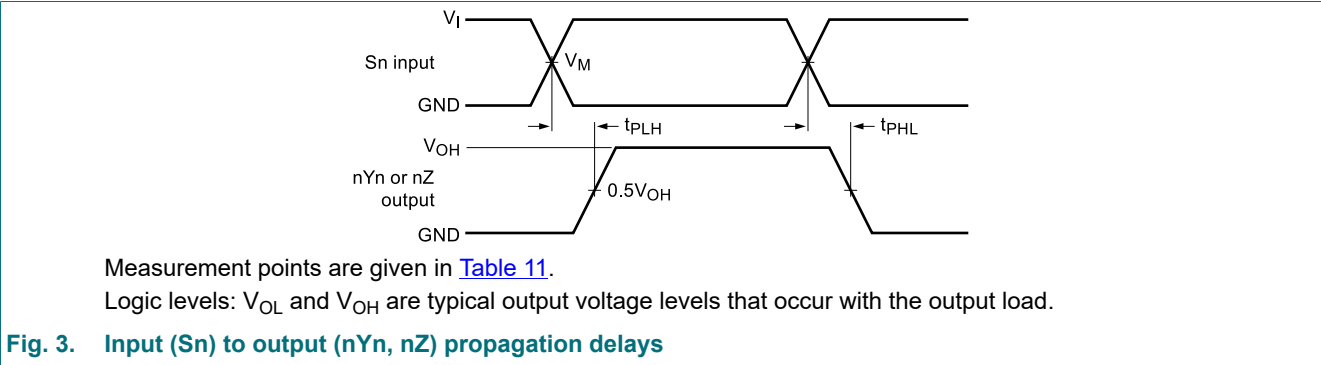
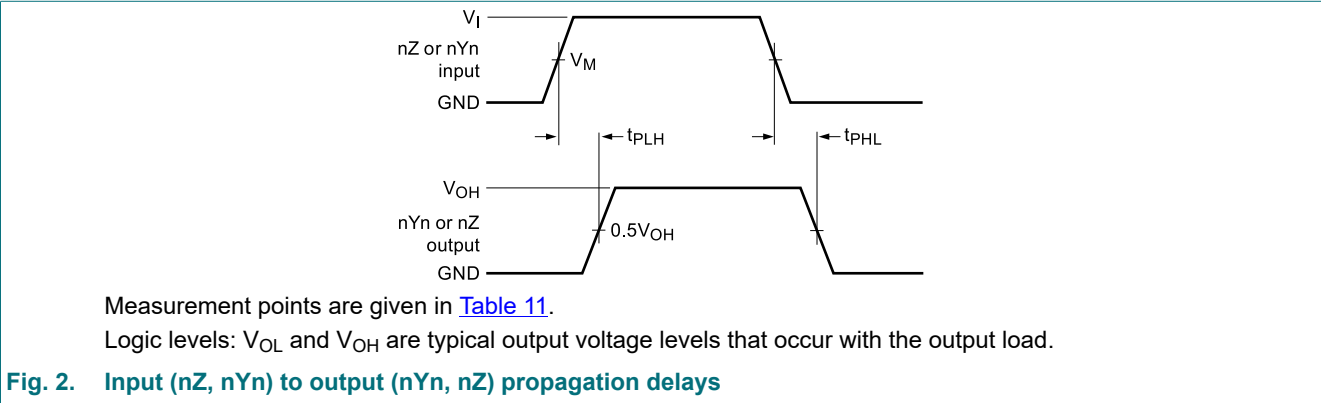


Table 11. Measurement points

Input		Output	
V_M	V_I	V_X	V_Y
$0.5 \times V_{CC}$	V_{CC}	$V_{OL} + 0.1(V_{CC} - V_{OL})$	$0.9 \times V_{OH}$

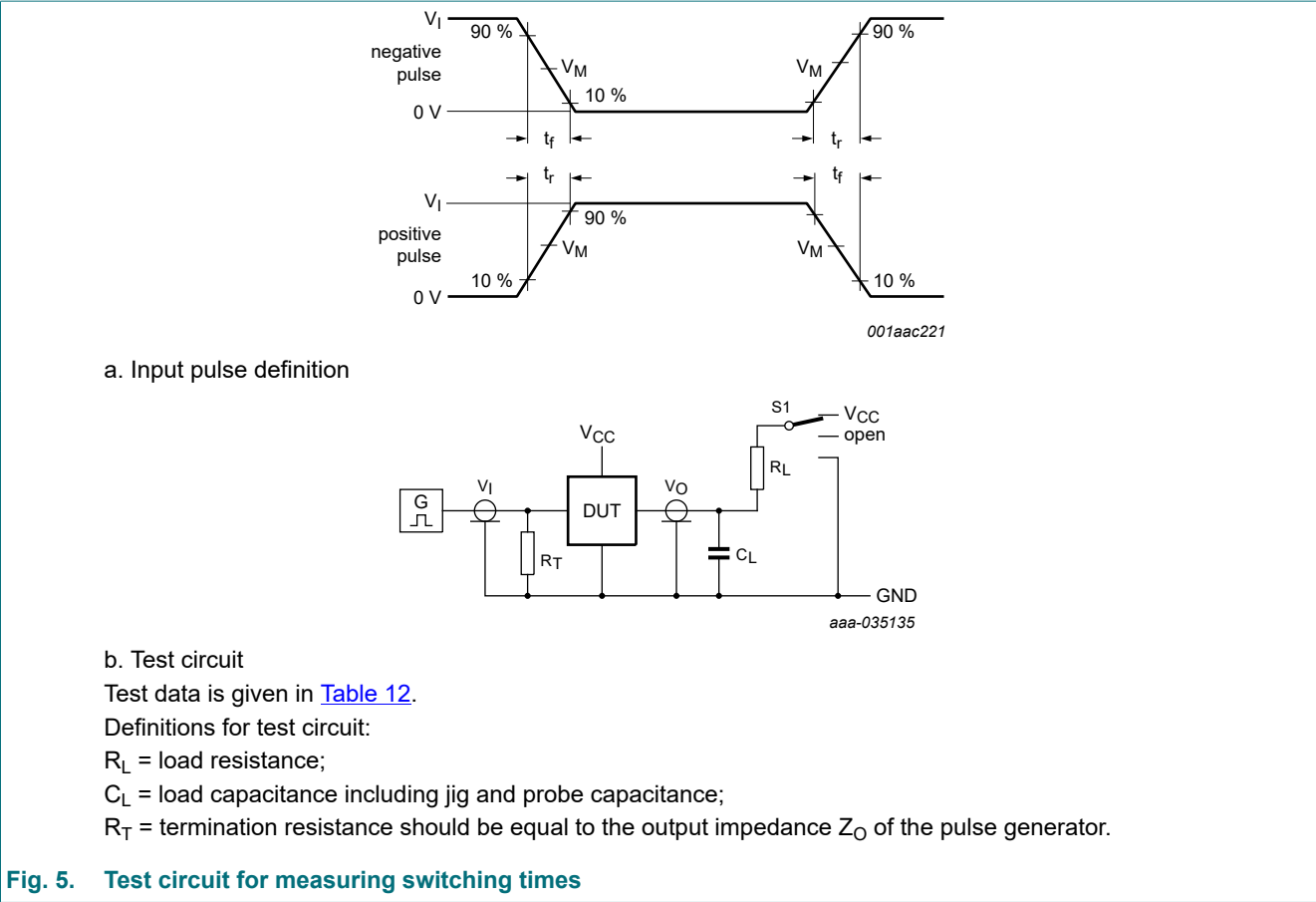


Fig. 5. Test circuit for measuring switching times

Table 12. Test data

Test	Input			Output		S1 position
	Control $\bar{E}$, Sn	Switch nYn (nZ)	t_r , t_f	Switch nZ (nYn)		
	V_I	V_I		C_L	R_L	
t_{PHL} , t_{PLH}	V_{CC}	V_{CC}	< 5 ns	50 pF	-	open
t_{PHZ} , t_{PZH}	V_{CC}	V_{CC}	< 5 ns	50 pF	10 k Ω	GND
t_{PLZ} , t_{PZL}	V_{CC}	V_{CC}	< 5 ns	50 pF	10 k Ω	V_{CC}

15. Package outline

TSSOP24: plastic thin shrink small outline package; 24 leads; body width 4.4 mm

SOT355-1

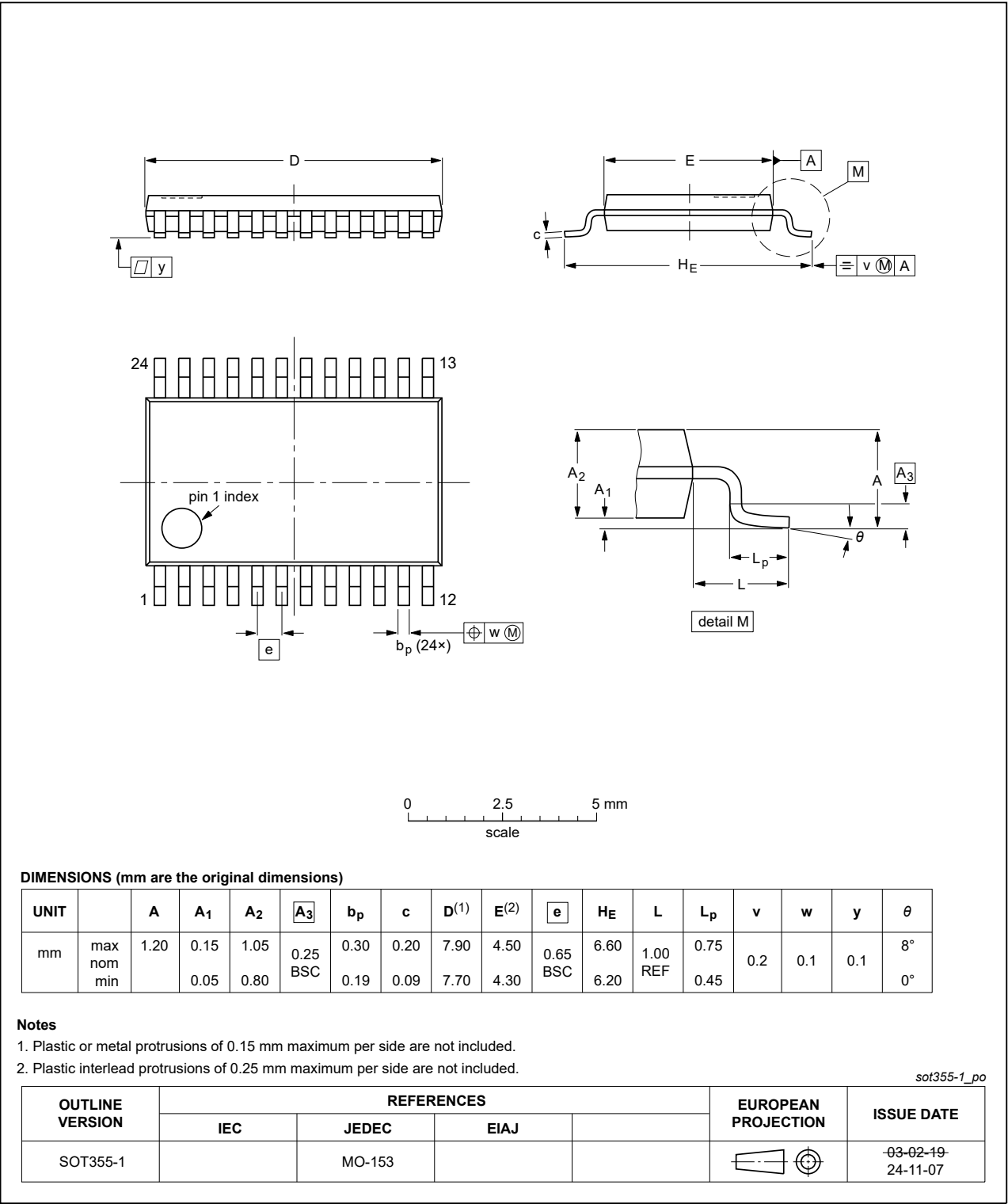


Fig. 6. Package outline SOT355-1 (TSSOP24)

HWQFN24: plastic thermal enhanced very very thin Quad Flat packages, no leads;
24 terminals; 0.5 mm pitch; 4 x 4 x 0.75 mm body

SOT8041-1

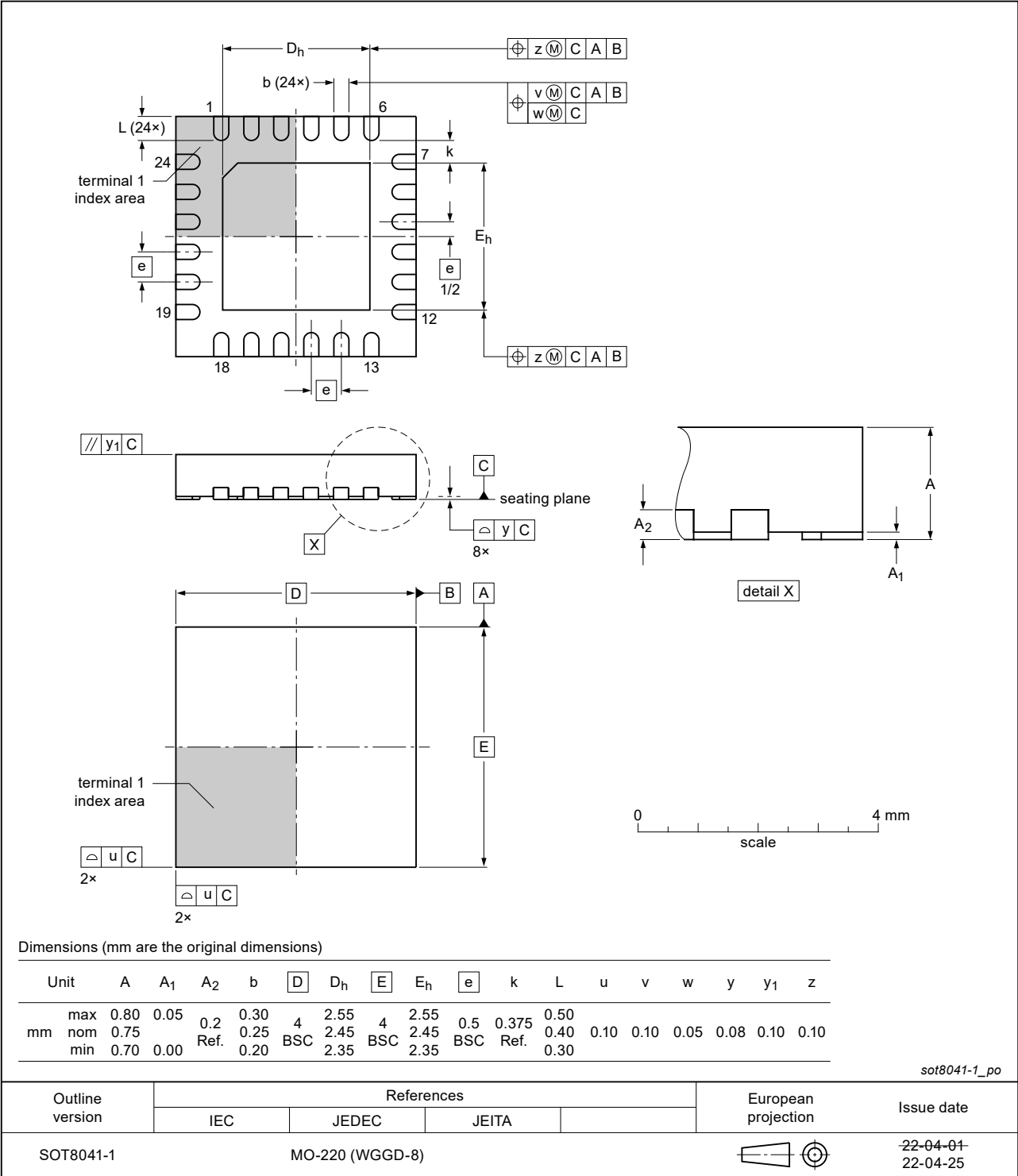


Fig. 7. Package outline SOT8041-1 (HWQFN24)

16. Abbreviations

Table 13. Abbreviations

Acronym	Description
CDM	Charged Device Model
CMOS	Complementary Metal-Oxide Semiconductor
DUT	Device Under Test
ESD	ElectroStatic Discharge
HBM	Human Body Model
qSPI	Quad Serial Peripheral Interface

17. Revision history

Table 14. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
NMUX27518_Q100 v. 1	20250725	Product data sheet	-	-

18. Legal information

Data sheet status

Document status [1][2]	Product status [3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

- [1] Please consult the most recently issued document before initiating or completing a design.
- [2] The term 'short data sheet' is explained in section "Definitions".
- [3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the internet at <https://www.nexperia.com>.

Definitions

Draft — The document is a draft version only. The content is still under internal review and subject to formal approval, which may result in modifications or additions. Nexperia does not give any representations or warranties as to the accuracy or completeness of information included herein and shall have no liability for the consequences of use of such information.

Short data sheet — A short data sheet is an extract from a full data sheet with the same product type number(s) and title. A short data sheet is intended for quick reference only and should not be relied upon to contain detailed and full information. For detailed and full information see the relevant full data sheet, which is available on request via the local Nexperia sales office. In case of any inconsistency or conflict with the short data sheet, the full data sheet shall prevail.

Product specification — The information and data provided in a Product data sheet shall define the specification of the product as agreed between Nexperia and its customer, unless Nexperia and customer have explicitly agreed otherwise in writing. In no event however, shall an agreement be valid in which the Nexperia product is deemed to offer functions and qualities beyond those described in the Product data sheet.

Disclaimers

Limited warranty and liability — Information in this document is believed to be accurate and reliable. However, Nexperia does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information. Nexperia takes no responsibility for the content in this document if provided by an information source outside of Nexperia.

In no event shall Nexperia be liable for any indirect, incidental, punitive, special or consequential damages (including - without limitation - lost profits, lost savings, business interruption, costs related to the removal or replacement of any products or rework charges) whether or not such damages are based on tort (including negligence), warranty, breach of contract or any other legal theory.

Notwithstanding any damages that customer might incur for any reason whatsoever, Nexperia's aggregate and cumulative liability towards customer for the products described herein shall be limited in accordance with the Terms and conditions of commercial sale of Nexperia.

Right to make changes — Nexperia reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.

Suitability for use in automotive applications — This Nexperia product has been qualified for use in automotive applications. Unless otherwise agreed in writing, the product is not designed, authorized or warranted to be suitable for use in life support, life-critical or safety-critical systems or

equipment, nor in applications where failure or malfunction of an Nexperia product can reasonably be expected to result in personal injury, death or severe property or environmental damage. Nexperia and its suppliers accept no liability for inclusion and/or use of Nexperia products in such equipment or applications and therefore such inclusion and/or use is at the customer's own risk.

Quick reference data — The Quick reference data is an extract of the product data given in the Limiting values and Characteristics sections of this document, and as such is not complete, exhaustive or legally binding.

Applications — Applications that are described herein for any of these products are for illustrative purposes only. Nexperia makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.

Customers are responsible for the design and operation of their applications and products using Nexperia products, and Nexperia accepts no liability for any assistance with applications or customer product design. It is customer's sole responsibility to determine whether the Nexperia product is suitable and fit for the customer's applications and products planned, as well as for the planned application and use of customer's third party customer(s). Customers should provide appropriate design and operating safeguards to minimize the risks associated with their applications and products.

Nexperia does not accept any liability related to any default, damage, costs or problem which is based on any weakness or default in the customer's applications or products, or the application or use by customer's third party customer(s). Customer is responsible for doing all necessary testing for the customer's applications and products using Nexperia products in order to avoid a default of the applications and the products or of the application or use by customer's third party customer(s). Nexperia does not accept any liability in this respect.

Limiting values — Stress above one or more limiting values (as defined in the Absolute Maximum Ratings System of IEC 60134) will cause permanent damage to the device. Limiting values are stress ratings only and (proper) operation of the device at these or any other conditions above those given in the Recommended operating conditions section (if present) or the Characteristics sections of this document is not warranted. Constant or repeated exposure to limiting values will permanently and irreversibly affect the quality and reliability of the device.

Terms and conditions of commercial sale — Nexperia products are sold subject to the general terms and conditions of commercial sale, as published at <http://www.nexperia.com/profile/terms>, unless otherwise agreed in a valid written individual agreement. In case an individual agreement is concluded only the terms and conditions of the respective agreement shall apply. Nexperia hereby expressly objects to applying the customer's general terms and conditions with regard to the purchase of Nexperia products by customer.

No offer to sell or license — Nothing in this document may be interpreted or construed as an offer to sell products that is open for acceptance or the grant, conveyance or implication of any license under any copyrights, patents or other industrial or intellectual property rights.

Export control — This document as well as the item(s) described herein may be subject to export control regulations. Export might require a prior authorization from competent authorities.

Translations — A non-English (translated) version of a document is for reference only. The English version shall prevail in case of any discrepancy between the translated and English versions.

Trademarks

Notice: All referenced brands, product names, service names and trademarks are the property of their respective owners.

Contents

1. General description..... 1

2. Features and benefits..... 1

3. Applications..... 1

4. Ordering information.....2

5. Marking.....2

6. Functional diagram.....2

7. Pinning information.....3

7.1. Pinning.....3

7.2. Pin description.....3

8. Functional description..... 4

8.1. Overview.....4

8.2. Key features..... 4

9. Limiting values..... 5

10. ESD ratings..... 6

11. Recommended operating conditions.....6

12. Thermal characteristics..... 6

13. Static characteristics.....7

14. Dynamic characteristics..... 9

14.1. Waveforms and test circuit..... 12

15. Package outline..... 14

16. Abbreviations..... 16

17. Revision history.....16

18. Legal information.....17

© Nexperia B.V. 2025. All rights reserved

For more information, please visit: <http://www.nexperia.com>

For sales office addresses, please send an email to: salesaddresses@nexperia.com

Date of release: 25 July 2025