



PSC10120K

1200 V, 10 A SiC Schottky diode in TO220 R2P

11 February 2026

Product data sheet

1. General description

Nexperia introduces leading edge Silicon Carbide (SiC) Schottky diode for ultra high performance, low loss, high efficiency power conversion applications. The SiC Schottky diode encapsulated in a Real-2-Pin TO220 R2P (TO-220-2) through-hole power plastic package offers temperature independent capacitive turn-off, zero recovery switching behavior combined with an outstanding figure-of-merit ($Q_C \times V_F$). The Merged PiN Schottky (MPS) diode improves the robustness expressed in a high I_{FSM} .

2. Features and benefits

- Zero forward and reverse recovery
- Temperature independent fast and smooth switching performance
- Outstanding figure of merit ($Q_C \times V_F$)
- High I_{FSM} capability
- High power density
- Reduced system costs
- System miniaturization
- Reduced EMI

3. Applications

- Switch Mode Power Supply (SMPS)
- AC-DC and DC-DC converter
- Battery charging infrastructure
- Server and telecom power supply
- Uninterruptible Power Supply (UPS)
- Photovoltaic inverters

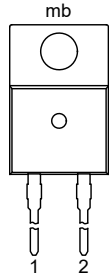
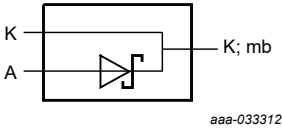
4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I_F	forward current	$\delta = 1$; $T_c \leq 143\text{ }^\circ\text{C}$	-	-	10	A
Static characteristics						
V_{DC}	DC blocking voltage		1200	-	-	V
Dynamic characteristics						
Q_C	total capacitive charge	$V_R = 800\text{ V}$; $di_F/dt = 200\text{ A}/\mu\text{s}$; $I_F = 10\text{ A}$; $T_j = 25\text{ }^\circ\text{C}$	-	44	-	nC

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode	 TO-220-2 (SOT8021)	 aaa-033312
2	A	anode		
mb	K	mounting base; connected to cathode		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PSC10120K	TO-220-2	Plastic, single-ended package (heatsink mounted, 1 mounting hole) (TO-220-2); 2 leads; 5.08 mm pitch; 15.3 mm x 10 mm x 4.4 mm body	SOT8021

7. Marking

Table 4. Marking codes

Type number	Marking code
PSC10120K	PSC10120K

8. Limiting values

Table 5. Limiting values
In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions		Min	Max	Unit
V_{RRM}	repetitive peak reverse voltage	$T_J = 25\text{ }^{\circ}\text{C}$		-	1200	V
I_F	forward current	$\delta = 1; T_c \leq 143\text{ }^{\circ}\text{C}$		-	10	A
I_{FSM}	non-repetitive peak forward current	$t_p = 10\text{ }\mu\text{s}$; square wave; $T_c = 25\text{ }^{\circ}\text{C}$		-	670	A
		$t_p = 10\text{ ms}$; half sine-wave; $T_c = 25\text{ }^{\circ}\text{C}$		-	85	A
		$t_p = 10\text{ ms}$; half sine-wave; $T_c = 150\text{ }^{\circ}\text{C}$		-	70	A
$\int i^2 dt$	$i^2 t$ value	$t_p = 10\text{ ms}$; $T_c = 25\text{ }^{\circ}\text{C}$		-	36	A ² s
		$t_p = 10\text{ ms}$; $T_c = 150\text{ }^{\circ}\text{C}$		-	25	A ² s
P_{tot}	total power dissipation	$T_c = 25\text{ }^{\circ}\text{C}$		-	102	W
T_J	junction temperature			-55	175	$^{\circ}\text{C}$
T_{amb}	ambient temperature			-55	175	$^{\circ}\text{C}$
T_{stg}	storage temperature			-65	175	$^{\circ}\text{C}$

9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{th(j-c)}$	thermal resistance from junction to case		-	1.11	1.46	K/W

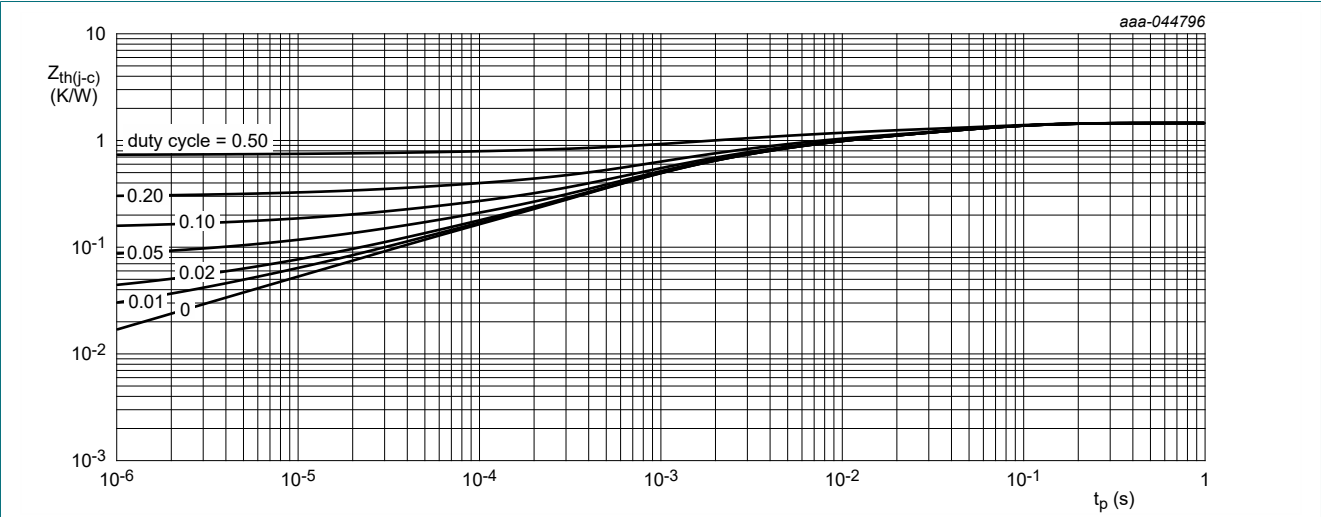


Fig. 1. Transient thermal impedance as a function of pulse duration; maximum values

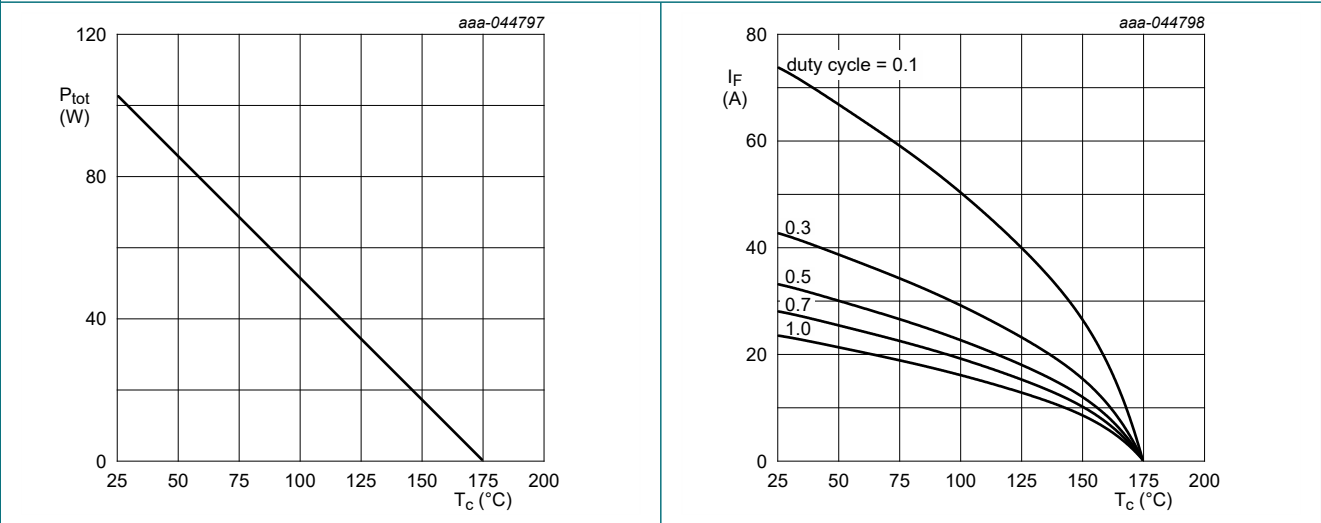


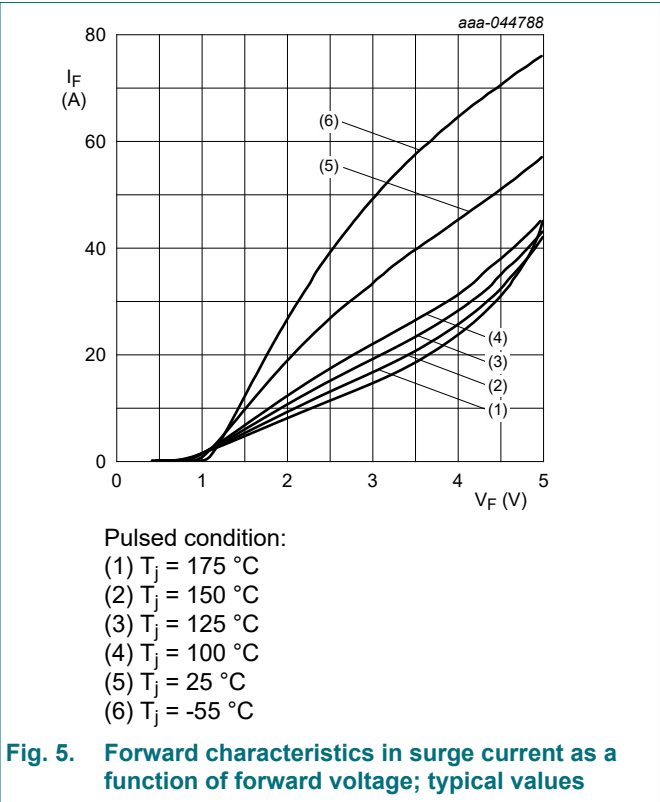
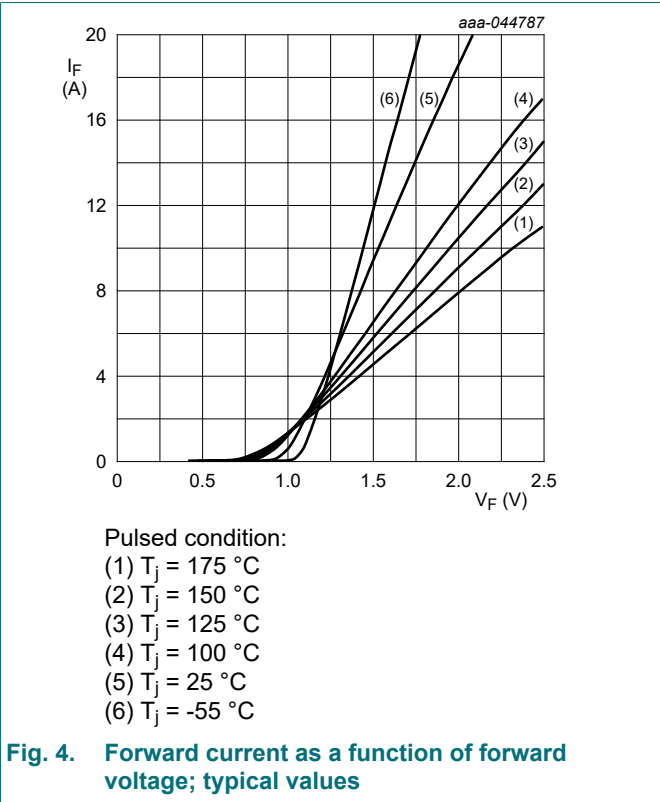
Fig. 2. Power dissipation; maximum values

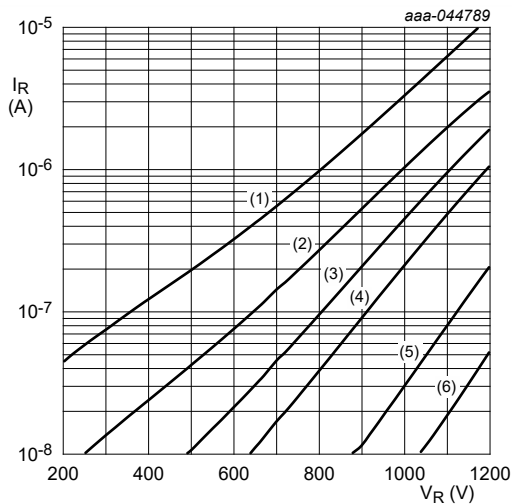
Fig. 3. Forward current as a function of case temperature; maximum values

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Static characteristics							
V _{DC}	DC blocking voltage			1200	-	-	V
V _F	forward voltage	I _F = 10 A; T _j = 25 °C		-	1.5	1.8	V
		I _F = 10 A; T _j = 150 °C		-	2	2.6	V
I _R	reverse current	V _R = 1200 V; T _j = 25 °C		-	1	180	μA
		V _R = 1200 V; T _j = 150 °C		-	10	500	μA
Dynamic characteristics							
C _d	diode capacitance	V _R = 1 V; f = 1 MHz; T _j = 25 °C		-	600	-	pF
		V _R = 800 V; f = 1 MHz; T _j = 25 °C		-	35	-	pF
Q _C	total capacitive charge	V _R = 800 V; dI _F /dt = 200 A/μs; I _F = 10 A; T _j = 25 °C		-	44	-	nC

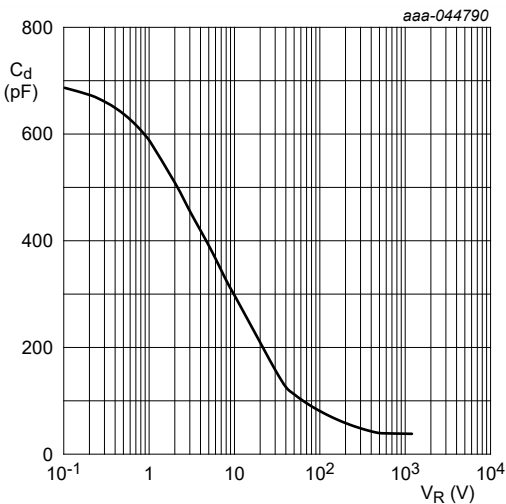




Pulsed condition:

- (1) $T_j = 175\text{ }^{\circ}\text{C}$
- (2) $T_j = 150\text{ }^{\circ}\text{C}$
- (3) $T_j = 125\text{ }^{\circ}\text{C}$
- (4) $T_j = 100\text{ }^{\circ}\text{C}$
- (5) $T_j = 25\text{ }^{\circ}\text{C}$
- (6) $T_j = -55\text{ }^{\circ}\text{C}$

Fig. 6. Reverse current as a function of reverse voltage; typical values



$f = 1\text{ MHz}$; $T_{\text{amb}} = 25\text{ }^{\circ}\text{C}$

Fig. 7. Diode capacitance as a function of reverse voltage; typical values

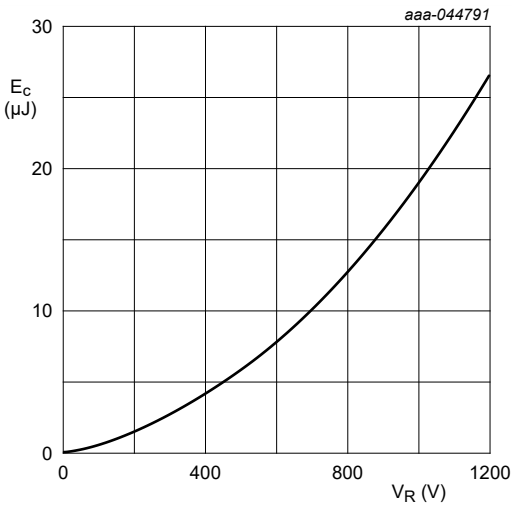


Fig. 8. Capacitance stored energy as a function of reverse voltage; typical values

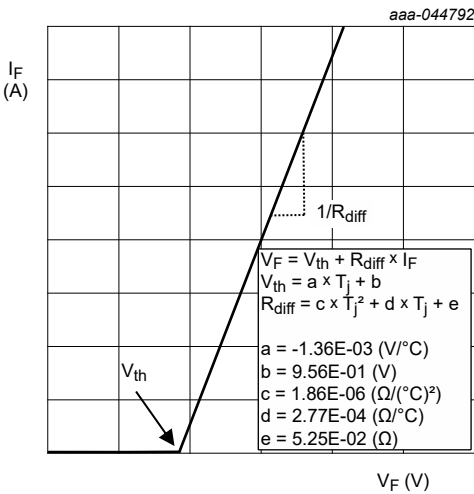


Fig. 9. Simplified forward characteristics mode

11. Test information

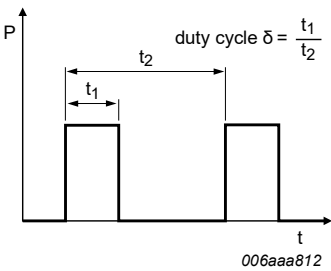


Fig. 10. Duty cycle definition

12. Package outline

Plastic, single-ended package (heatsink mounted, 1 mounting hole) (TO-220-2); 2 leads;
5.08 mm pitch; 15.3 mm x 10 mm x 4.4 mm body

SOT8021

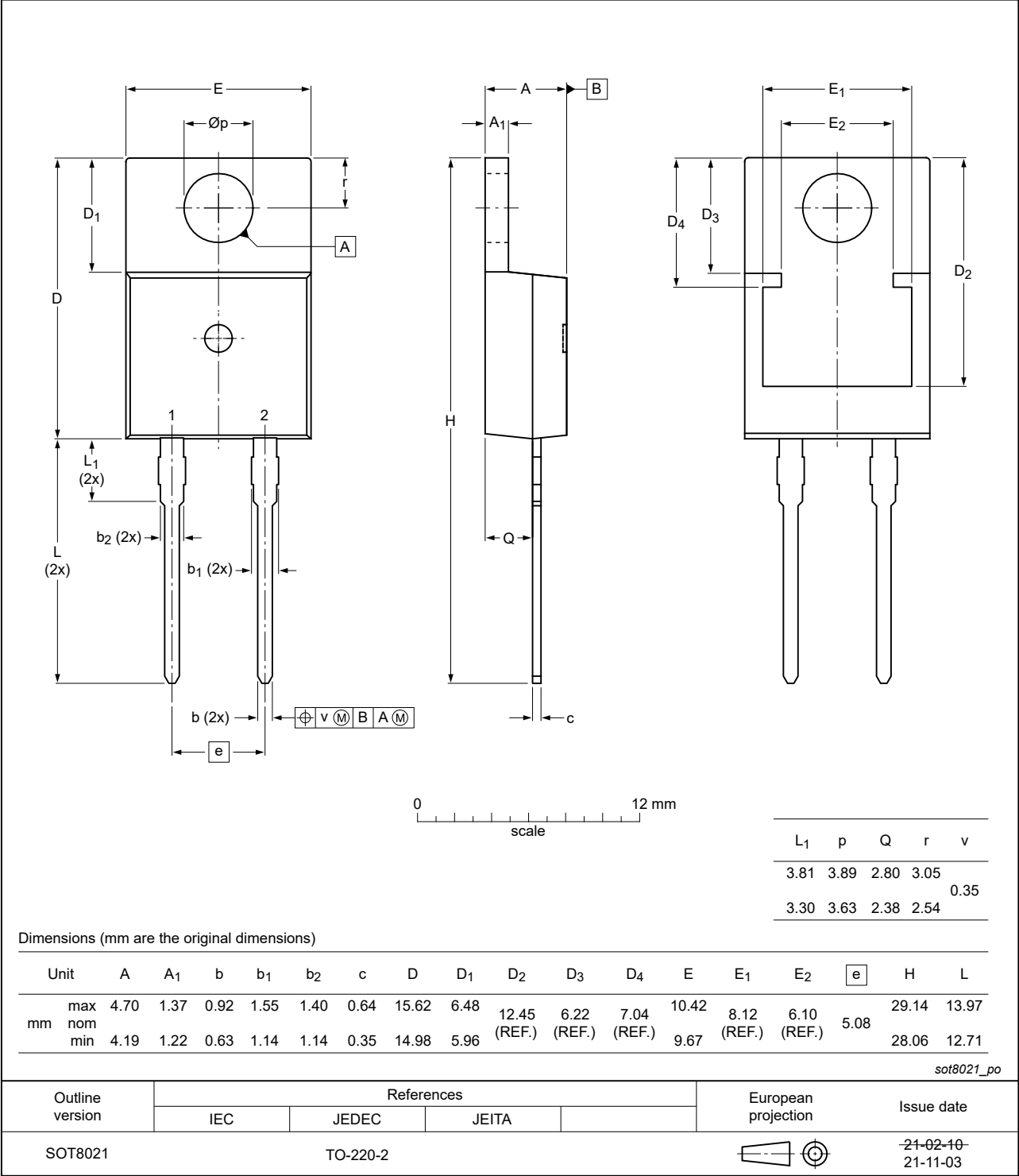


Fig. 11. Package outline TO-220-2 (SOT8021)

13. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PSC10120K v.1	20260211	Product data sheet	-	-

14. 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.

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- [2] The term 'short data sheet' is explained in section "Definitions".
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