

# PSC10120L

1200 V, 10 A SiC Schottky diode in TO247 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 TO247 R2P (TO-247-2) 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

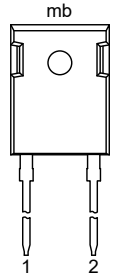
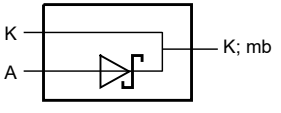
## 4. Quick reference data

Table 1. Quick reference data

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

## 5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode	 <p>TO-247-2 (SOT8022)</p>	 <p>aaa-033312</p>
2	A	anode		
mb	K	mounting base; connected to cathode		

## 6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
<a href="#">PSC10120L</a>	TO-247-2	Plastic, single-ended package (heatsink mounted, 1 mounting hole) (TO-247-2); 2 leads; 10.88 mm pitch; 20.95 mm x 15.94 mm x 5.02 mm body	<a href="#">SOT8022</a>

## 7. Marking

Table 4. Marking codes

Type number	Marking code
PSC10120L	PSC10120L

## 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	$T_j = 25\text{ °C}$	-	1200	V
$I_F$	forward current	$\delta = 1; T_c \leq 143\text{ °C}$	-	10	A
$I_{FSM}$	non-repetitive peak forward current	$t_p = 10\text{ }\mu\text{s}$ ; square wave; $T_c = 25\text{ °C}$	-	670	A
		$t_p = 10\text{ ms}$ ; half sine-wave; $T_c = 25\text{ °C}$	-	85	A
		$t_p = 10\text{ ms}$ ; half sine-wave; $T_c = 150\text{ °C}$	-	70	A
$\int i^2 dt$	$i^2 t$ value	$t_p = 10\text{ ms}$ ; $T_c = 25\text{ °C}$	-	36	A <sup>2</sup> s
		$t_p = 10\text{ ms}$ ; $T_c = 150\text{ °C}$	-	25	A <sup>2</sup> s
$P_{tot}$	total power dissipation	$T_c = 25\text{ °C}$	-	100	W
$T_j$	junction temperature		-55	175	°C
$T_{amb}$	ambient temperature		-55	175	°C
$T_{stg}$	storage temperature		-65	175	°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		-	1.2	1.5	K/W

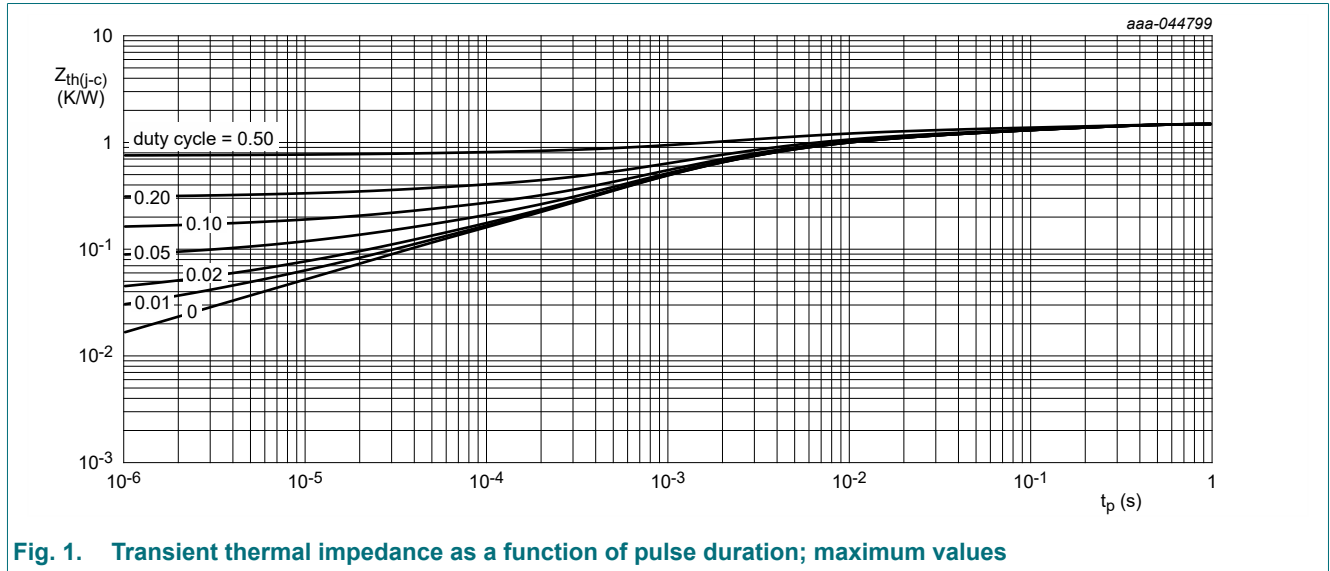


Fig. 1. Transient thermal impedance as a function of pulse duration; maximum values

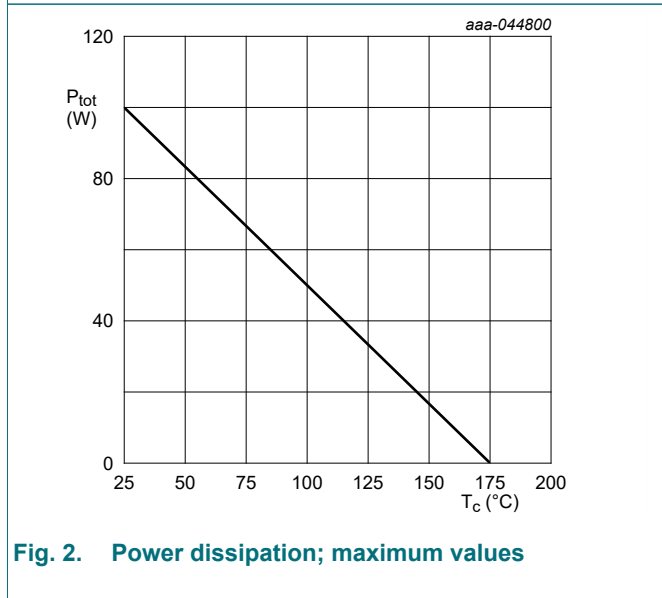


Fig. 2. Power dissipation; maximum values

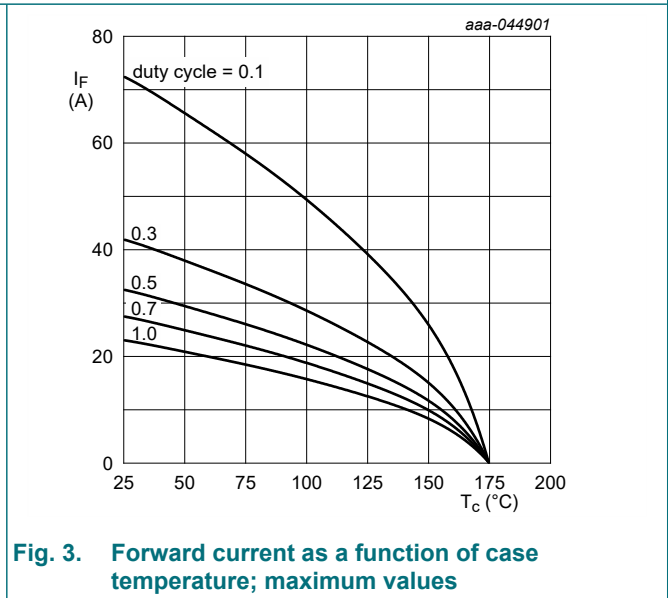
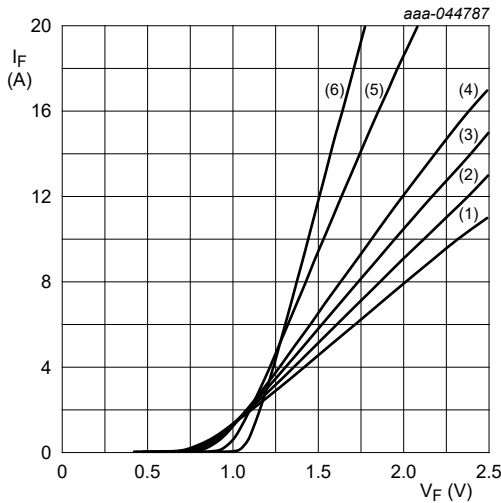


Fig. 3. Forward current as a function of case temperature; maximum values

## 10. Characteristics

Table 7. Characteristics

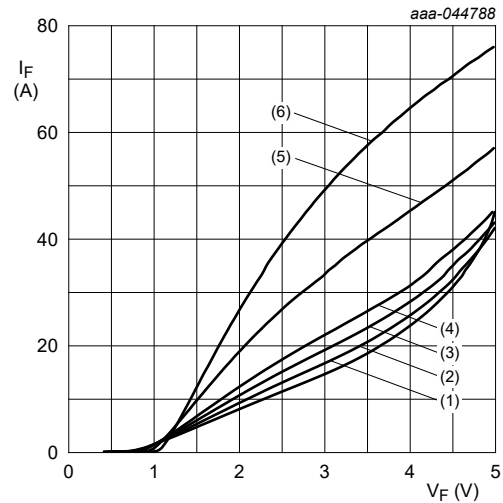
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static characteristics</b>						
$V_{DC}$	DC blocking voltage		1200	-	-	V
$V_F$	forward voltage	$I_F = 10\text{ A}; T_j = 25\text{ °C}$	-	1.5	1.8	V
		$I_F = 10\text{ A}; T_j = 150\text{ °C}$	-	2	2.6	V
$I_R$	reverse current	$V_R = 1200\text{ V}; T_j = 25\text{ °C}$	-	1	180	$\mu\text{A}$
		$V_R = 1200\text{ V}; T_j = 150\text{ °C}$	-	10	500	$\mu\text{A}$
<b>Dynamic characteristics</b>						
$C_d$	diode capacitance	$V_R = 1\text{ V}; f = 1\text{ MHz}; T_j = 25\text{ °C}$	-	600	-	pF
		$V_R = 800\text{ V}; f = 1\text{ MHz}; T_j = 25\text{ °C}$	-	35	-	pF
$Q_C$	total capacitive charge	$V_R = 800\text{ V}; dI_F/dt = 200\text{ A}/\mu\text{s}; I_F = 10\text{ A}; T_j = 25\text{ °C}$	-	44	-	nC



Pulsed condition:

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

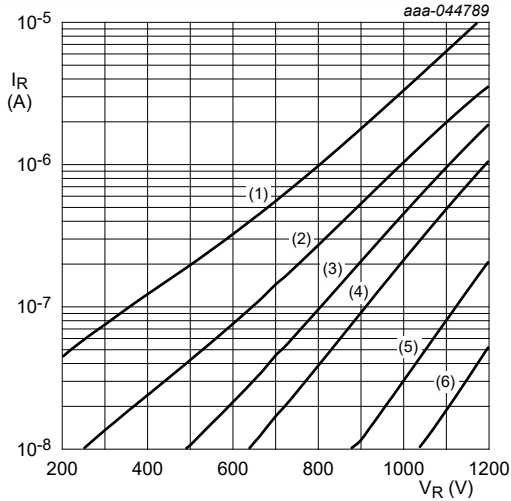
Fig. 4. Forward current as a function of forward voltage; typical values



Pulsed condition:

- (1)  $T_j = 175\text{ °C}$
- (2)  $T_j = 150\text{ °C}$
- (3)  $T_j = 125\text{ °C}$
- (4)  $T_j = 100\text{ °C}$
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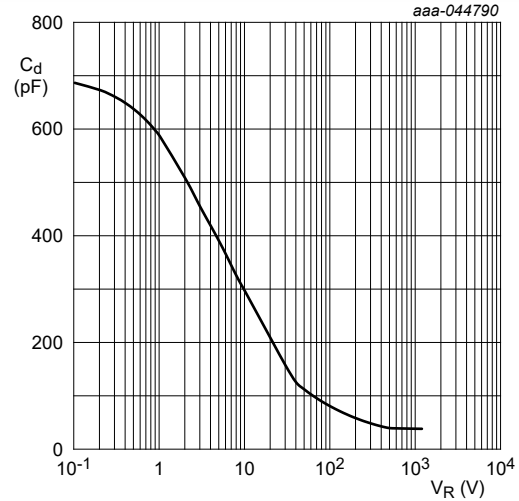
Fig. 5. Forward characteristics in surge current as a function of forward voltage; typical values



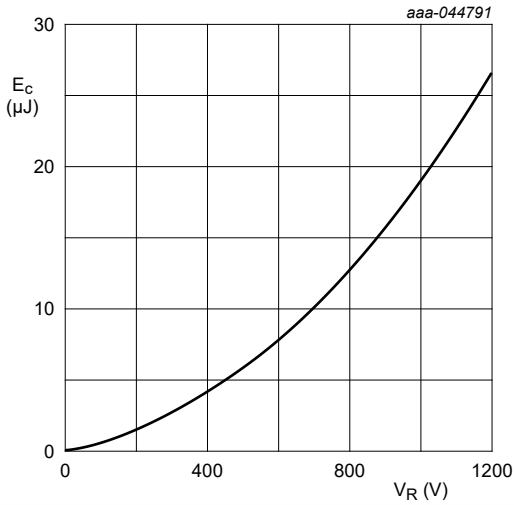
Pulsed condition:

- (1)  $T_j = 175\text{ °C}$
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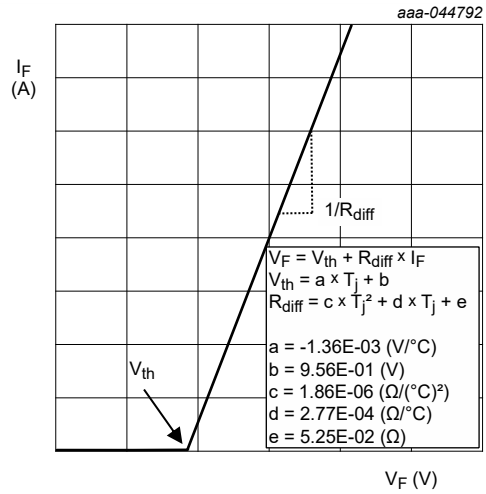
**Fig. 6. Reverse current as a function of reverse voltage; typical values**



**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**

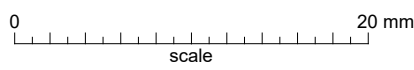
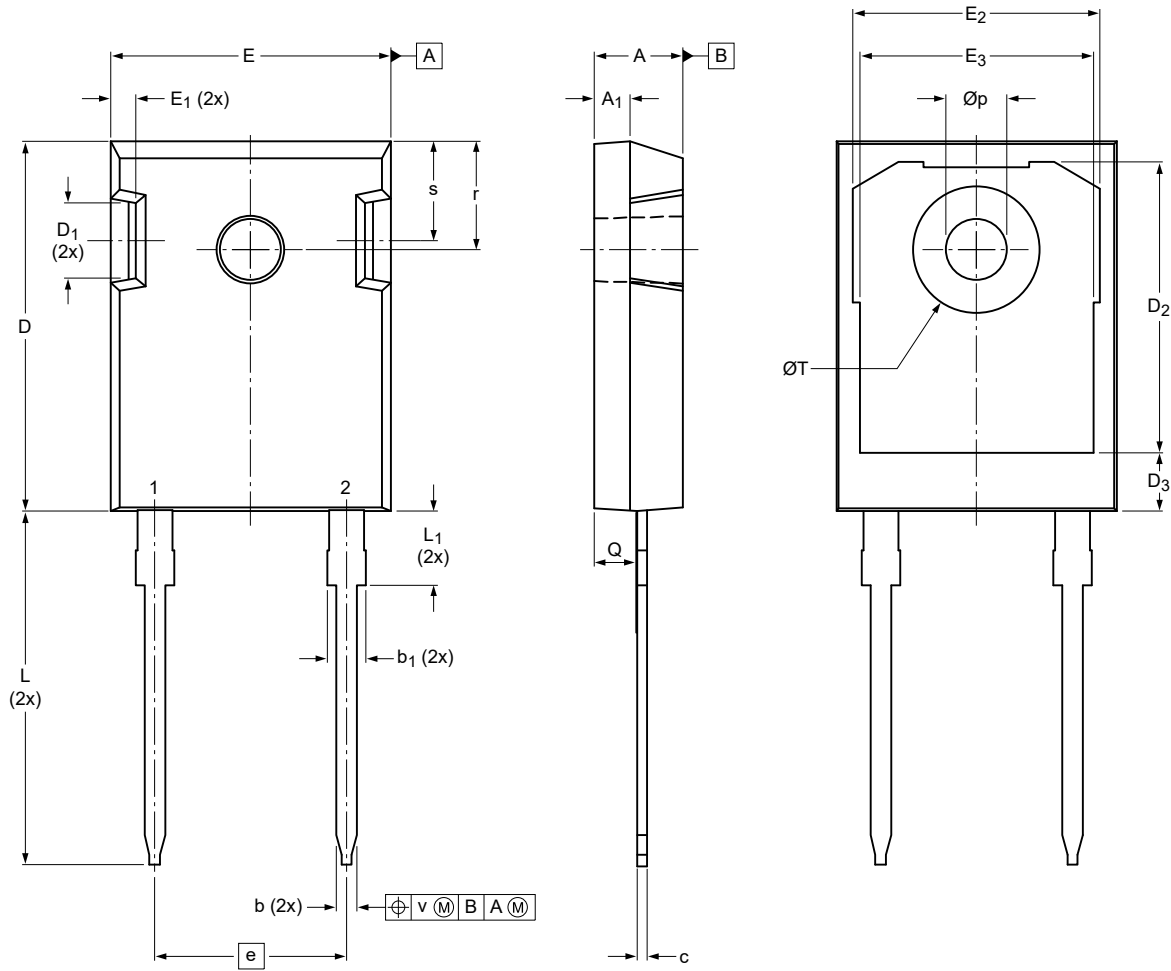


**Fig. 9. Simplified forward characteristics mode**

### 11. Package outline

Plastic, single-ended package (heatsink mounted, 1 mounting hole) (TO-247-2); 2 leads; 10.88 mm pitch; 20.95 mm x 15.94 mm x 5.02 mm body

SOT8022



Q	r	s	T	v
2.54	6.30	6.00	7.18	0.25
2.29	6.04	5.49	(REF.)	

Dimensions (mm are the original dimensions)

Unit	A	A <sub>1</sub>	b	b <sub>1</sub>	c	D	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	E	E <sub>1</sub>	E <sub>2</sub>	E <sub>3</sub>	e	L	L <sub>1</sub>	p
max	5.21	2.16	1.33	2.41	0.68	21.10	5.10	17.35	3.16	16.13	1.90	14.15	13.43	10.88	20.32	4.40	3.65
nom																	
min	4.83	1.91	1.07	1.91	0.55	20.80	3.68	16.25	2.86	15.75	1.00	13.10	12.38		19.81	4.10	3.51

sot8022\_po

Outline version	References			European projection	Issue date
	IEC	JEDEC	JEITA		
SOT8022		TO-247-2			21-02-10 21-11-03

Fig. 10. Package outline TO-247-2 (SOT8022)

## 12. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PSC10120L v.1	20260211	Product data sheet	-	-

## 13. 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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