

1. General description

Silicon Carbide Schottky diode in a SMB plastic package, designed for high frequency switched-mode power supplies.



2. Features and benefits

- Highly stable switching performance
- High forward surge capability I_{FSM}
- Extremely fast reverse recovery time
- Superior in efficiency to Silicon Diode alternatives
- Reduced losses in associated MOSFET
- Reduced EMI
- Reduced cooling requirements
- RoHS compliant
- High junction operating temperature capability ($T_{j(max)} = 175\text{ °C}$)
- AEC-Q101 Qualified

3. Applications

- Gate driver boot-strap circuit
- Noise snubber
- Medical instruments
- LED / OLED drivers
- General power converters


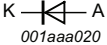
4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Notes	Values			Unit
Absolute maximum rating							
V _{RRM}	repetitive peak reverse voltage			1200			V
I _F	continuous forward current	T _{lead} ≤ 100 °C, DC; Fig. 2		2			A
T _j	junction temperature			175			°C
Symbol	Parameter	Conditions	Notes	Min	Typ	Max	Unit
Static characteristics							
V _F	forward voltage	I _F = 2 A; T _j = 25 °C; Fig. 5		-	1.42	1.60	V
		I _F = 2 A; T _j = 150 °C; Fig. 5		-	1.90	2.30	V
Dynamic characteristics							
Q _r	recovered charge	I _F = 2 A; dI _F /dt = 500 A/μs; V _R = 400 V; T _j = 25 °C; Fig. 7		-	4	-	nC

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode		
2	A	anode		

6. Ordering information

Table 3. Ordering information

Type number	Package name	Orderable part number	Packing method	Small packing quantity	Package version	Package issue date
WNSC2D021200MB	SMB	WNSC2D021200MB6J	Reel	3000	SMB	20-Feb-2017

7. Marking

Table 4. Marking codes

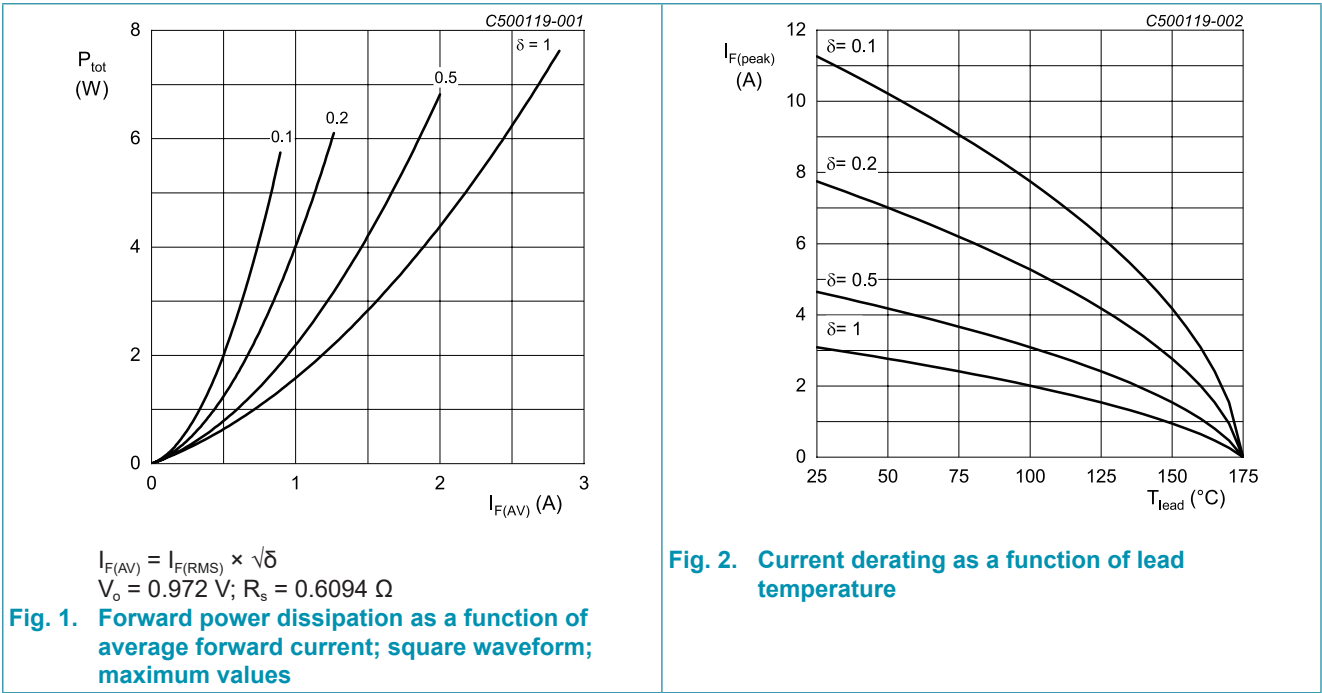
Type number	Marking codes
WNSC2D021200MB	2212GE

8. Limiting values

Table 5. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions	Notes	Values	Unit
V _{RRM}	repetitive peak reverse voltage			1200	V
V _{RWM}	crest working reverse voltage			1200	V
V _R	reverse voltage	DC		1200	V
I _F	continuous forward current	T _{lead} ≤ 100 °C, DC; Fig. 2		2	A
		T _{lead} ≤ 125 °C, DC; Fig. 2		1.5	A
		T _{lead} ≤ 25 °C, DC; Fig. 2		3.1	A
I _{FRM}	repetitive peak forward current	δ = 0.5; t _p = 25 μs; T _{lead} = 125 °C; square-wave pulse		2.4	A
I _{FSM}	non-repetitive peak forward current	t _p = 10 ms; T _{j(init)} = 25 °C; sine-wave pulse		26	A
		t _p = 10 μs; T _{j(init)} = 25 °C; square-wave pulse		200	A
I ² t	I ² t for fusing	sine-wave pulse; T _{j(init)} = 25 °C; t _p = 10 ms		3.38	A ² s
T _{stg}	storage temperature			-55 to 175	°C
T _j	junction temperature			-55 to 175	°C



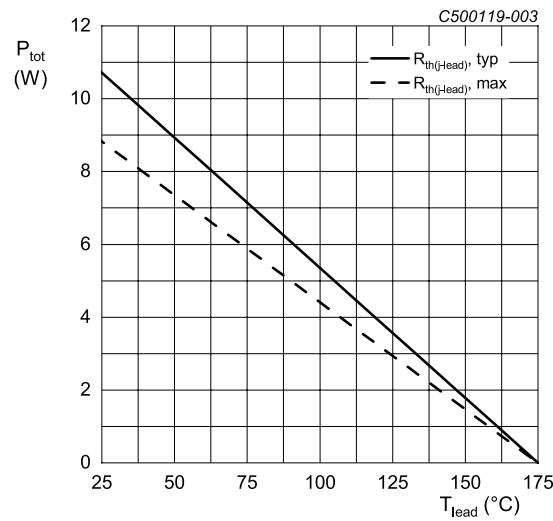


Fig. 3. Total power dissipation as a function of lead temperature

9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions	Notes	Min	Typ	Max	Unit
$R_{th(j-lead)}$	thermal resistance from junction to lead	with heatsink compound; Fig. 4		-	14	17	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient free air	in free air		-	90	-	K/W

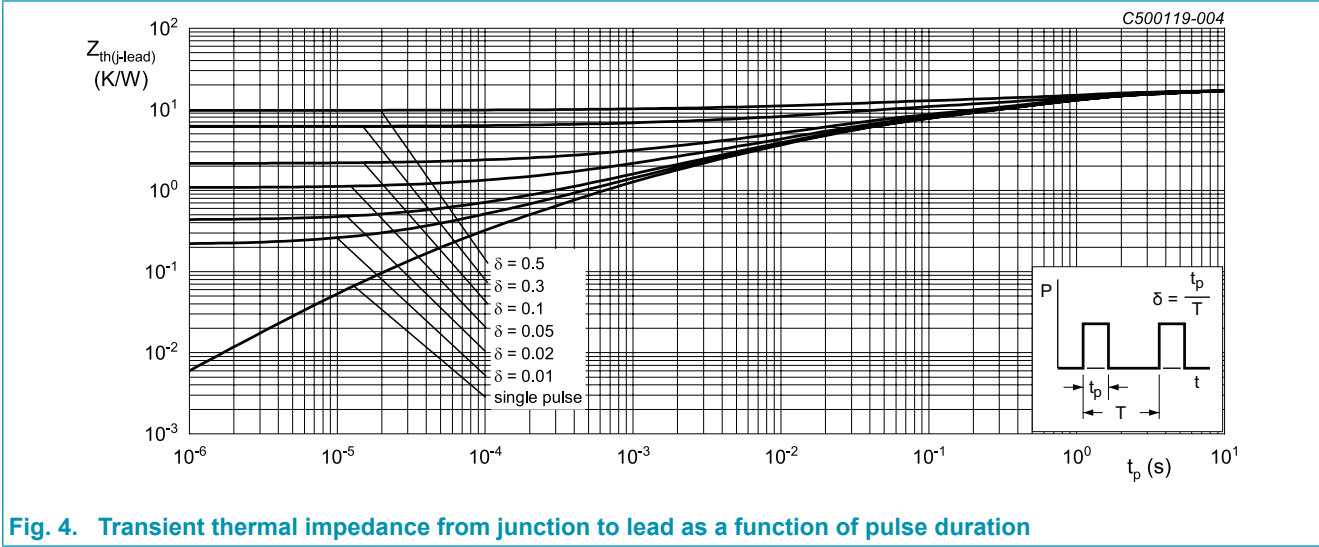
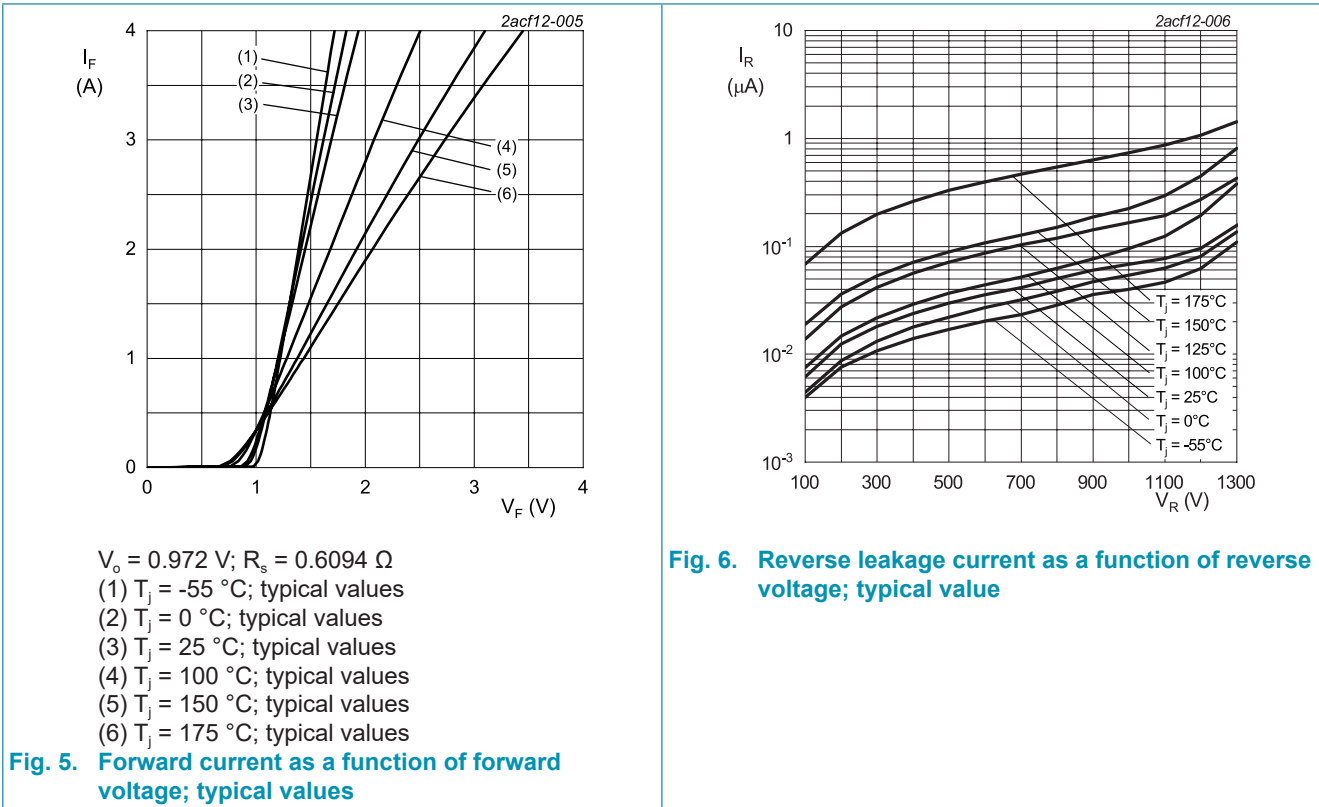


Fig. 4. Transient thermal impedance from junction to lead as a function of pulse duration

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Notes	Min	Typ	Max	Unit
Static characteristics							
V _F	forward voltage	I _F = 2 A; T _j = 25 °C; Fig. 5		-	1.42	1.60	V
		I _F = 2 A; T _j = 150 °C; Fig. 5		-	1.90	2.30	V
		I _F = 2 A; T _j = 175 °C; Fig. 5		-	2.00	2.50	V
I _R	reverse current	V _R = 1200 V; T _j = 25 °C; Fig. 6		-	0.5	10	μA
		V _R = 1200 V; T _j = 175 °C; Fig. 6		-	25	-	μA
Dynamic characteristics							
Q _r	recovered charge	I _F = 2 A; V _R = 400 V; dI _F /dt = 500 A/μs; T _j = 25 °C; Fig. 7		-	4	-	nC
C _d	diode capacitance	f = 1 MHz; V _R = 1 V; T _j = 25 °C		-	95	-	pF
		f = 1 MHz; V _R = 400 V; T _j = 25 °C		-	10	-	pF
		f = 1 MHz; V _R = 800 V; T _j = 25 °C		-	8	-	pF
E _{as}	non-repetitive avalanche energy	I _R = 2 A; L = 10 mH; T _{j(init)} = 25 °C		18	-	-	mJ



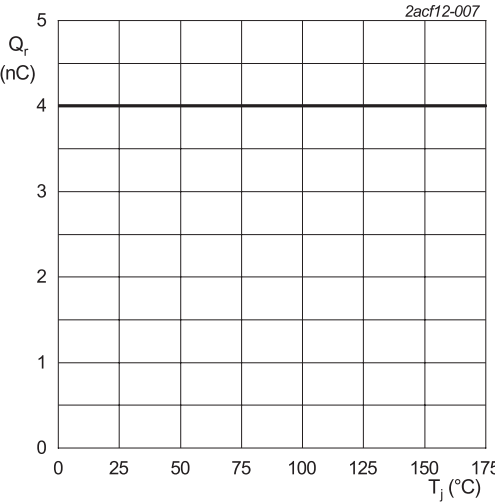
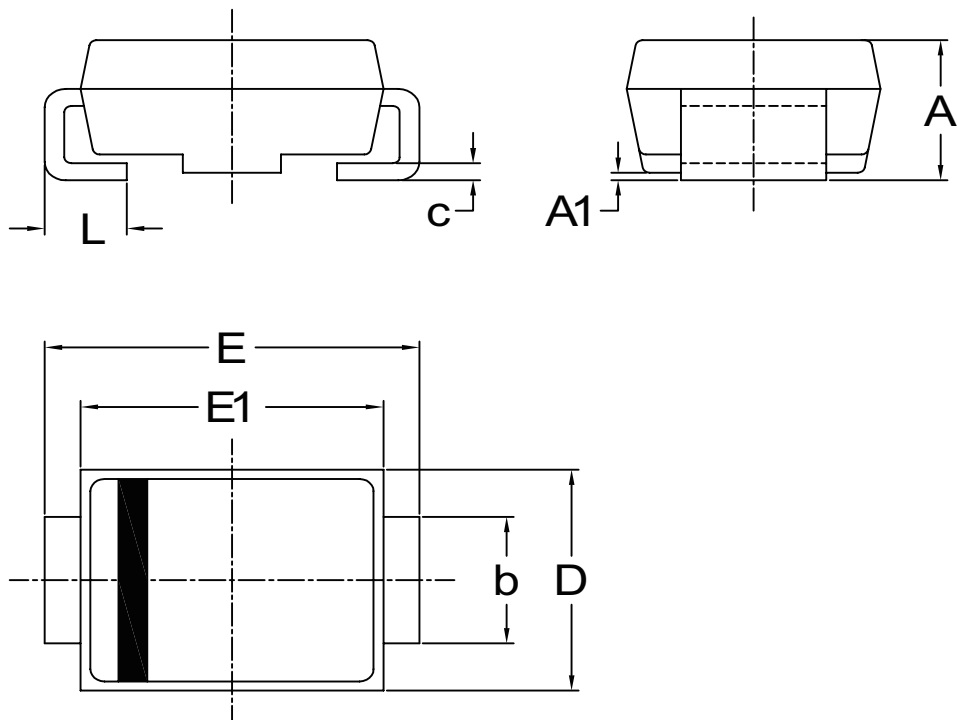


Fig. 7. Recovered charge as a function of junction temperature

11. Package outline



UNIT	A	A1	b	c	D	E	E1	L	
mm	Max	2.50	0.20	2.21	0.31	3.95	5.60	4.60	1.60
	Min	2.00	0.05	1.96	0.15	3.30	5.20	4.05	0.75

Remark: Dimensions D and E1 do not include mold flash.

12. Legal information

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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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