

Breakover diodes

BR211SM series

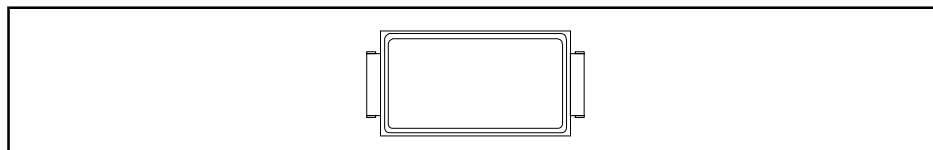
GENERAL DESCRIPTION

A range of bidirectional, breakover diodes in a two terminal, surface mounting, plastic envelope. These devices feature controlled breakover voltage and high holding current together with high peak current handling capability. Typical application is transient overvoltage protection in telecommunications equipment.

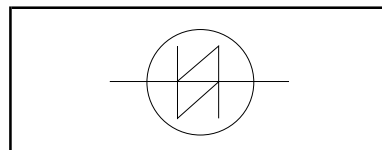
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MIN.	MAX.	UNIT
$V_{(BO)}$	BR211SM-140 to BR211SM-280 Breakover voltage	140	280	V
I_H	Holding current	150	-	mA
I_{TSM}	Non-repetitive peak current	-	40	A

OUTLINE - SOD106



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_D	Continuous voltage		-	75% of $V_{(BO)typ}$	V
I_{TSM1}	Non repetitive peak current	10/320 μ s impulse equivalent to 10/700 μ s, 1.6 kV voltage impulse (CCITT K17)	-	40	A
I_{TSM2}	Non repetitive on-state current	half sine wave; t = 10 ms; $T_j = 70^\circ\text{C}$ prior to surge	-	15	A
I^2t	I^2t for fusing	$t_p = 10$ ms	-	1.1	A ² s
dl_T/dt	Rate of rise of on-state current after $V_{(BO)}$ turn-on	$t_p = 10$ μ s	-	50	A/ μ s
P_{tot}	Continuous dissipation	$T_a = 25^\circ\text{C}$	-	1.2	W
P_{TM}	Peak dissipation	$t_p = 1$ ms; $T_a = 25^\circ\text{C}$	-	50	W
T_{stg}	Storage temperature		- 40	150	$^\circ\text{C}$
T_a	Operating ambient temperature	off-state	-	70	$^\circ\text{C}$
T_{vj}	Overload junction temperature	on-state	-	150	$^\circ\text{C}$

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-sp}$	Thermal resistance junction to solder point		-	-	12	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	pcb mounted; minimum footprint	-	100	-	K/W
$Z_{th\ j-a}$	Thermal impedance junction to ambient	$t_p = 1$ ms	-	2.62	-	K/W

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STATIC CHARACTERISTICS

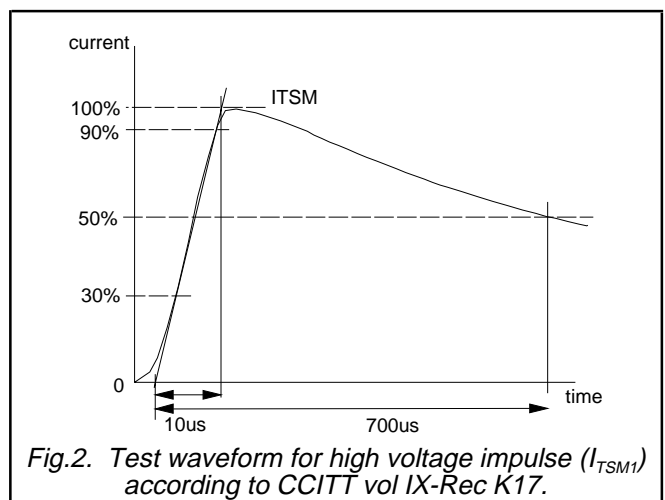
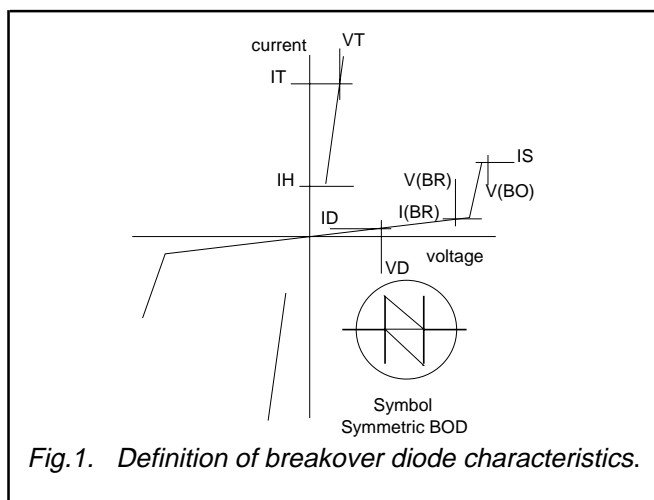
$T_j = 25\text{ }^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{TM}^1 $V_{(BR)}$ $V_{(BO)}$	On-state voltage Avalanche voltage (min) Breakover voltage (max)	$I_{TM} = 2\text{ A}$ $I_{(BR)} = 10\text{ mA}$ $I \leq I_S, t_p = 100\text{ }\mu\text{s}$ BR211SM-140 BR211SM-160 BR211SM-180 BR211SM-200 BR211SM-220 BR211SM-240 BR211SM-260 BR211SM-280	-	-	2.5	V
$S_{(pr)}$ I_H^2	Temperature coefficient of $V_{(BR)}$ Holding current	$T_j = 25\text{ }^\circ\text{C}$ $T_j = 70\text{ }^\circ\text{C}$	-	+0.1	-	%/K mA
I_S^3 I_D^4	Switching current Off-state current	$t_p = 100\text{ }\mu\text{s}$ $V_D = 85\% V_{(BR)min}, T_j = 70\text{ }^\circ\text{C}$	10	200	1000	mA μA

DYNAMIC CHARACTERISTICS

$T_j = 25\text{ }^\circ\text{C}$ unless otherwise stated

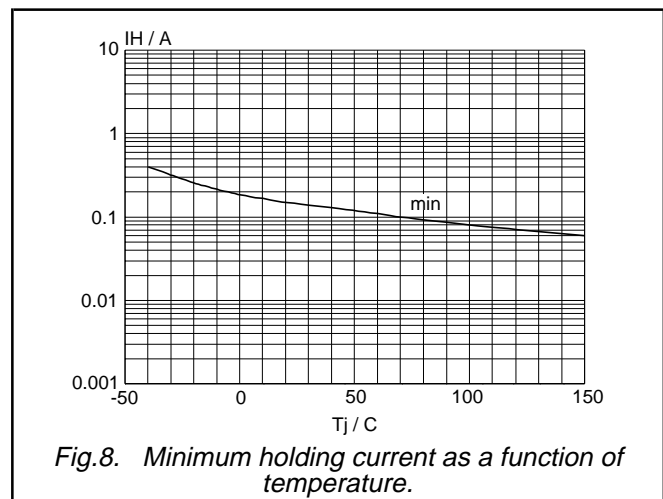
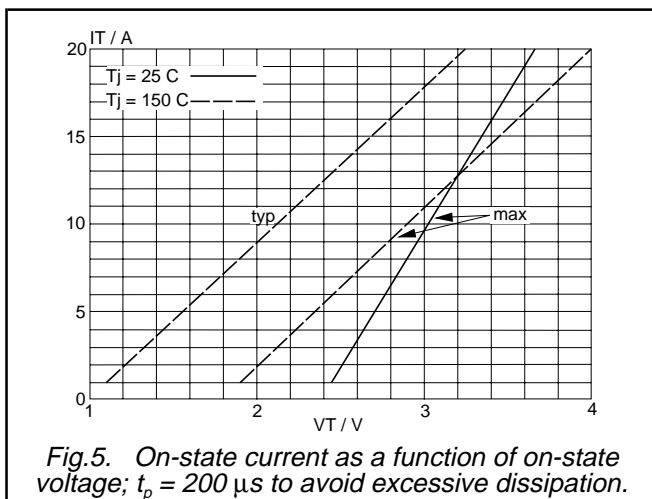
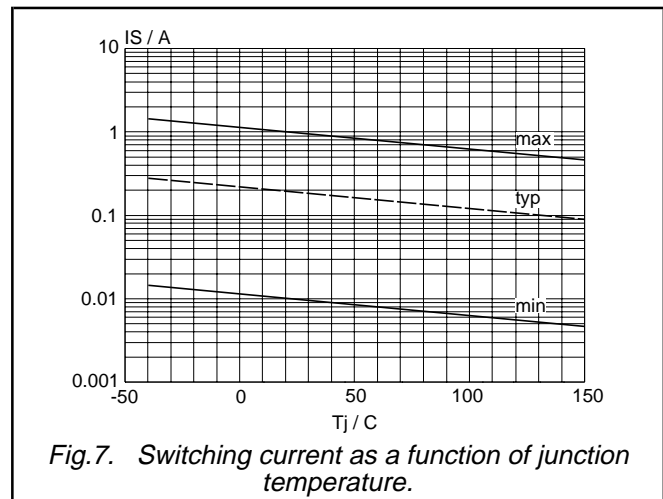
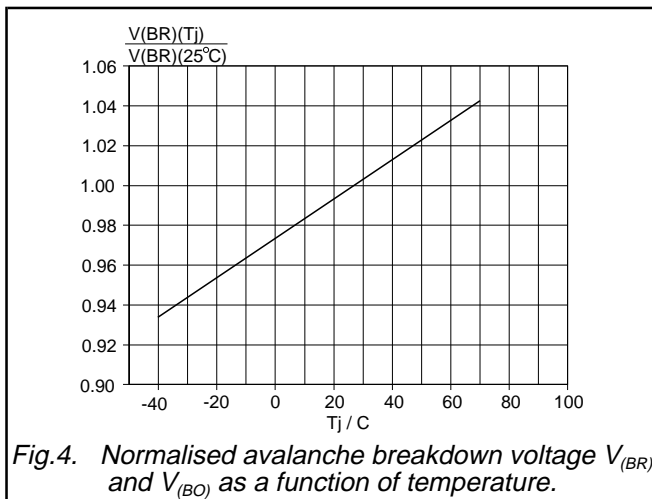
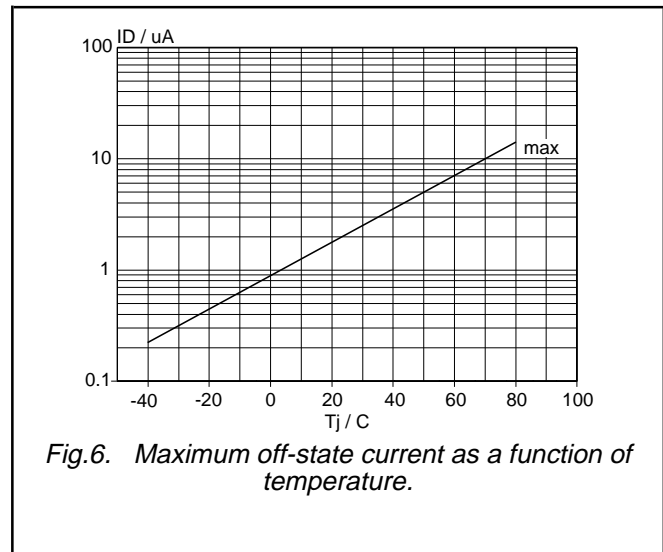
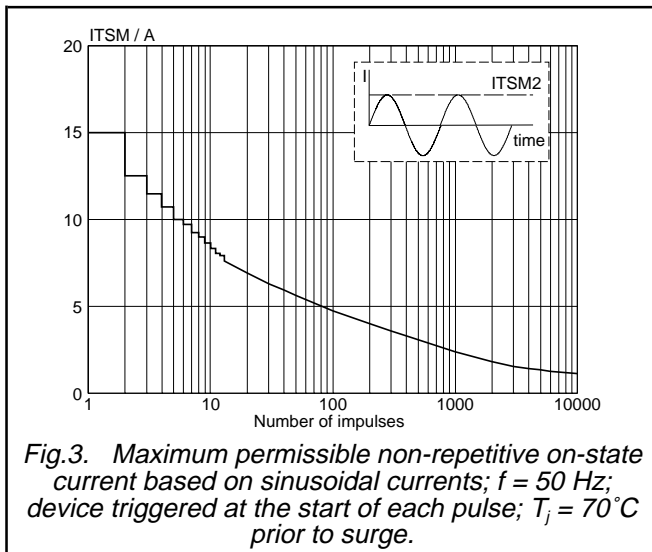
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
dV_D/dt	Linear rate of rise of off-state voltage that will not trigger any device	$V_{(DM)} = 85\% V_{(BR)min}, T_j = 70\text{ }^\circ\text{C}$	-	-	2000	V/ μs
C_j	Off-state capacitance	$V_D = 0\text{ V}; f = 1\text{ kHz to } 1\text{ MHz}$	-	-	100	pF



- 1 Measured under pulsed conditions to avoid excessive dissipation
- 2 The minimum current at which the diode will remain in the on-state
- 3 The avalanche current required to switch the diode to the on-state
- 4 Measured at maximum recommended continuous voltage. Relative humidity < 65%.

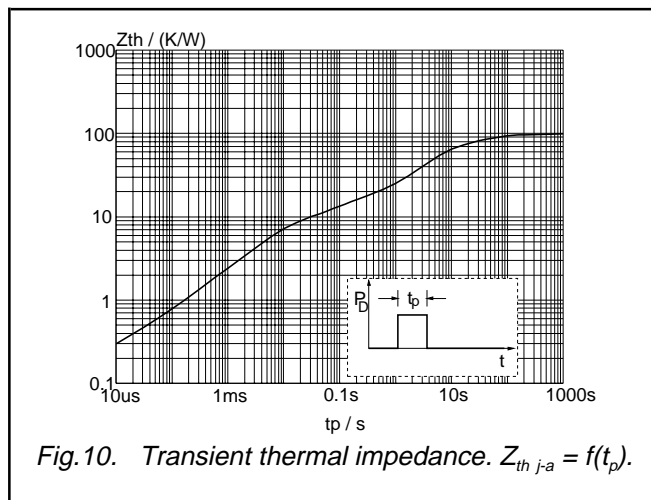
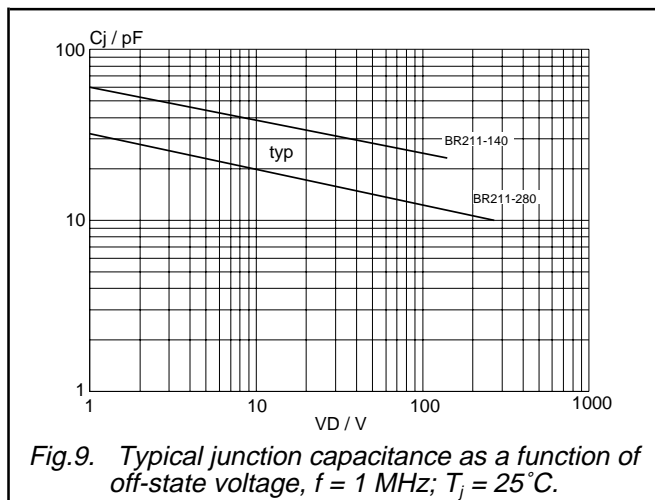
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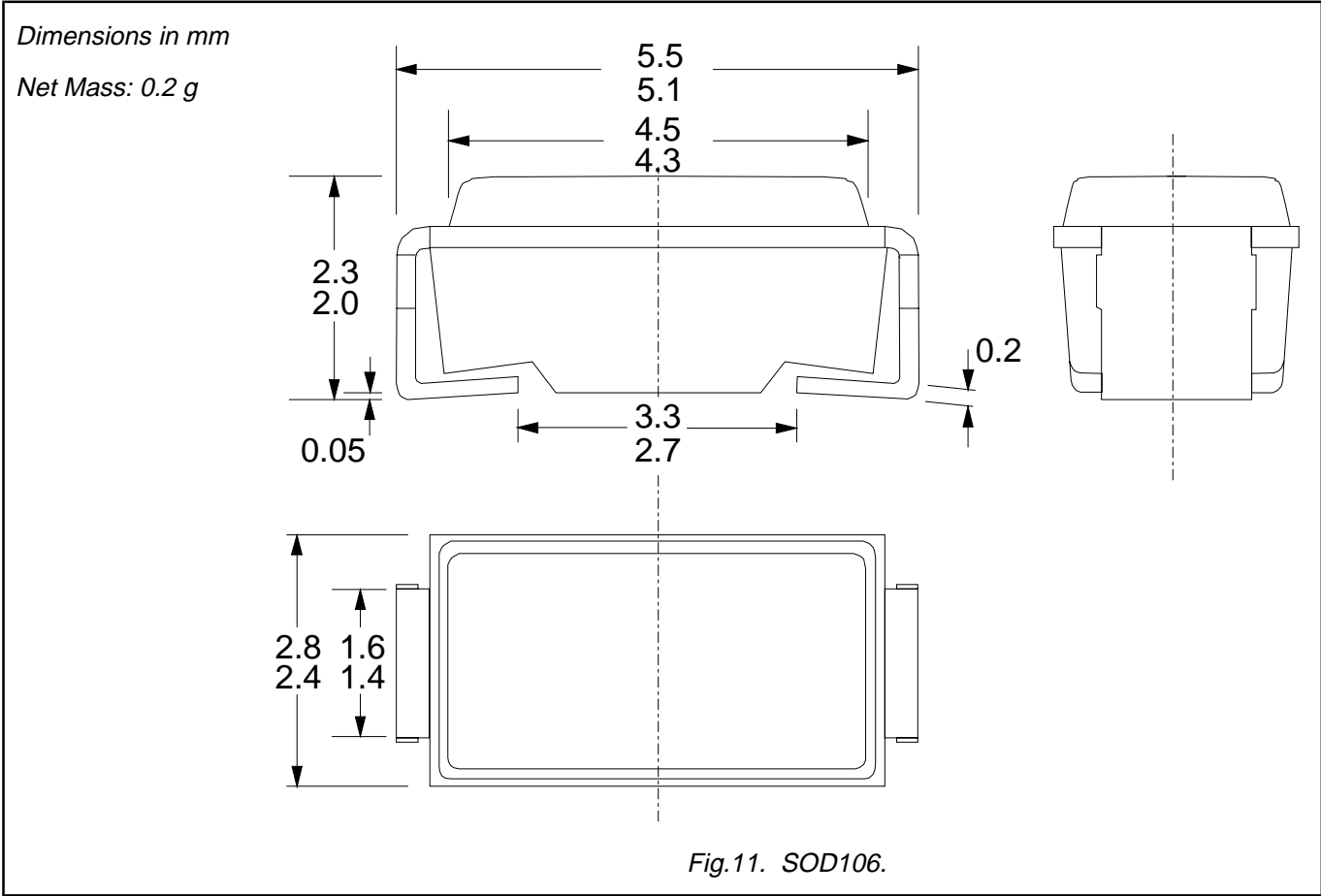


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MECHANICAL DATA



Notes

- 1. For mounting and soldering instructions refer to publication SC18 "SMD Footprint Design and Soldering Guidelines". Order code:9397 750 00505.

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DEFINITIONS

Data sheet status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
Limiting values	
Limiting values are given in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of this specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	
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