

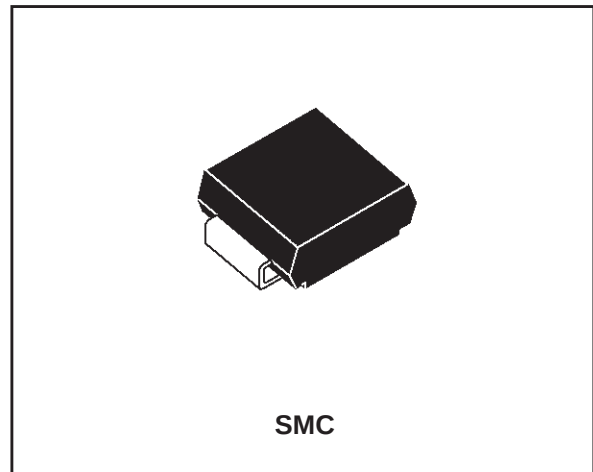


SMTHBT200

TRISILTM FOR LINE CARD PROTECTION

FEATURES

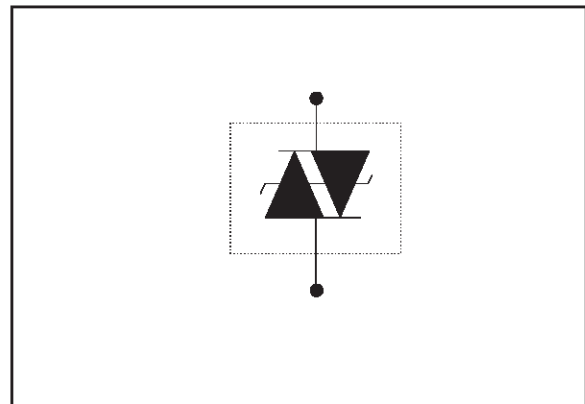
- BIDIRECTIONAL CROWBAR PROTECTION
- REPETITIVE PEAK PULSE CURRENT:
 $I_{PP} = 100 \text{ A (10/1000 }\mu\text{s)}$
- HOLDING CURRENT: $I_H = 150 \text{ mA}$
- BREAKDOWN VOLTAGE : 200V min
- BREAKOVER VOLTAGE : 265V max



DESCRIPTION

This protection device has been especially designed to protect subscriber line cards using SLICS without integrated ring generators. The SMTHBT200 device protects ring generator relays against transient

SCHEMATIC DIAGRAM



IN ACCORDANCE WITH THE FOLLOWING STANDARDS :

- CCITT K20:	10/700 μs	4 kV
	5/310 μs	100 A
- VDE 0433:	10/700 μs	4 kV
	5/310 μs	100 A
- VDE 0878:	1.2/50 μs	4 kV
	1/20 μs	100 A
- FCC Part 68:	2/10 μs	2.5 kV
BELL CORE TR-NWT-001089:	2/10 μs	500 A
- BELL CORE TR-NWT-000974:	10/1000 μs	1 kV
	10/1000 μs	100 A

SMTHBT200

THERMAL RESISTANCES

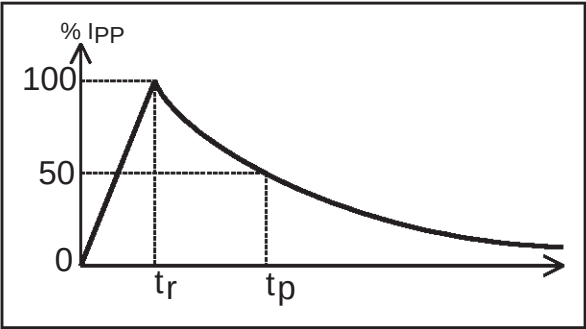
Symbol	Parameter	Value	Unit
$R_{th(j-l)}$	Junction to leads	10	°C/W
$R_{th(j-a)}$	Junction to ambient on printed circuit (with standard footprint dimensions)	75	°C/W

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25^{\circ}\text{C}$, unless otherwise specified)

Symbol	Parameter	Value	Unit
I_{pp}	Peak pulse current: 10/1000 μs (open circuit voltage waveform 10/1000 μs) 8/20 μs (open circuit voltage waveform 4kV 1.2/50 μs)	100 250	A A
I_{TSM}	Non repetitive surge peak on-state current $t_p = 20\text{ms}$	55	A
dV/dt	Critical rate of rise of off-state voltage V_{RM}	5	KV/ μs
T_L	Maximum lead temperature for soldering during 10s	260	°C
T_{stg} T_J	Storage temperature range Maximum junction temperature	- 55 to + 150 150	°C °C

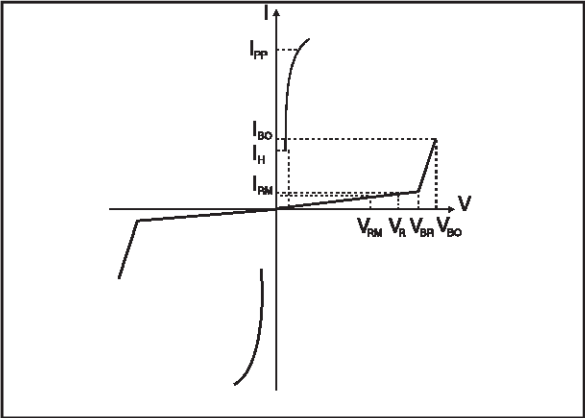
Note 1: Pulse waveform

10 / 1000 μs	$t_r = 10 \mu\text{s}$	$t_p = 1000 \mu\text{s}$
8 / 20 μs	$t_r = 8 \mu\text{s}$	$t_p = 20 \mu\text{s}$
5 / 310 μs	$t_r = 5 \mu\text{s}$	$t_p = 310 \mu\text{s}$
1 / 20 μs	$t_r = 1 \mu\text{s}$	$t_p = 20 \mu\text{s}$
2 / 10 μs	$t_r = 2 \mu\text{s}$	$t_p = 10 \mu\text{s}$



ELECTRICAL CHARACTERISTICS (T_{amb} = 25°C)

Symbol	Parameter
V _{RM}	Stand-off voltage
I _{RM}	Leakage current at stand-off voltage
V _R	Continuous Reverse voltage
V _{BR}	Breakdown voltage
V _{BO}	Breakover voltage
I _H	Holding current
I _{BO}	Breakover current
I _{PP}	Peak pulse current
C	Capacitance



STATIC PARAMETERS

Type	I _{RM} @ V _{RM} max.		I _R @ V _R max. note 1		V _{BO} max. max.		@ I _{BO} min. note 2	I _H min. note 3	C max. note 4
	μA	V	μA	V	V	mA	mA	mA	pF
SMTHBT200	10	180	50	200	265	150	800	150	150

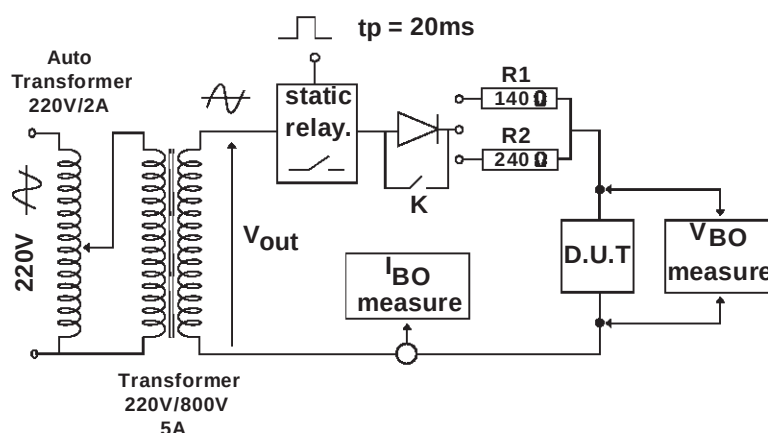
Note 2 : I_R measured at V_R guarantees V_{BR}>V_R

Note 2 : Measured at 50Hz, see test circuit 1.

Note 3 : See functional holding current test circuit 2.

Note 4 : V_R=1V bias, V_{RMS}=1V, F=1MHz.

TEST CIRCUIT 1 FOR I_{BO} and V_{BO} parameters:



TEST PROCEDURE :

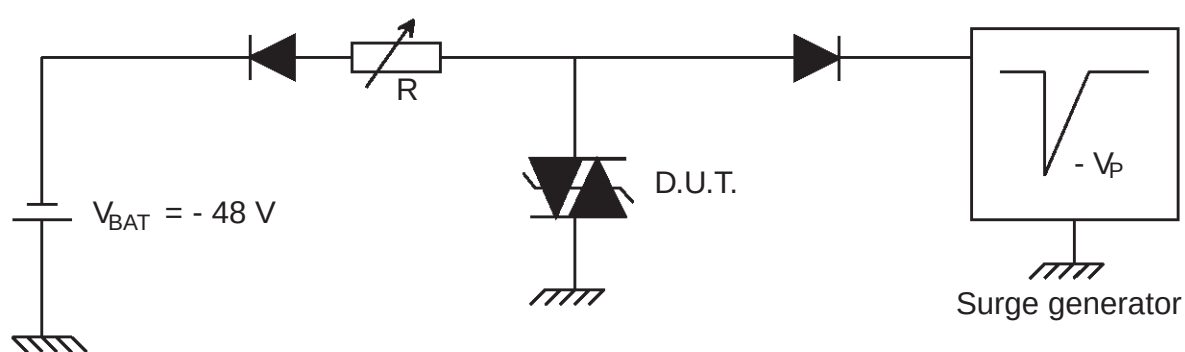
Pulse Test duration ($t_p = 20ms$):

- For Bidirectional devices = Switch K is closed
- For Unidirectional devices = Switch K is open.

V_{OUT} Selection

- Device with $V_{BO} < 200$ Volt
 - $V_{OUT} = 250 V_{RMS}$, $R_1 = 140 \Omega$.
- Device with $V_{BO} \geq 200$ Volt
 - $V_{OUT} = 480 V_{RMS}$, $R_2 = 240 \Omega$.

TEST CIRCUIT 2 for I_H parameter.



This is a GO-NO GO test which allows to confirm the holding current (I_H) level in a functional test circuit.

TEST PROCEDURE :

- Adjust the current level at the I_H value by short circuiting the D.U.T.
- Fire the D.U.T. with a surge current : $I_{pp} = 10A$, $10/1000 \mu s$.
- The D.U.T. will come back to the off-state within 50 ms max.

Fig 1 : Non repetitive surge peak on-state current versus overload duration (T_j initial = 25 °C).

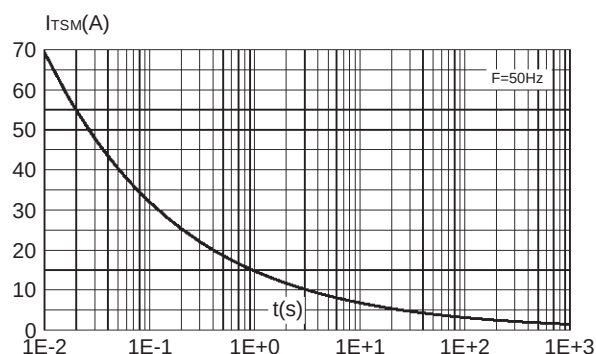


Fig 2 : On-state voltage versus on-state current (typical values).

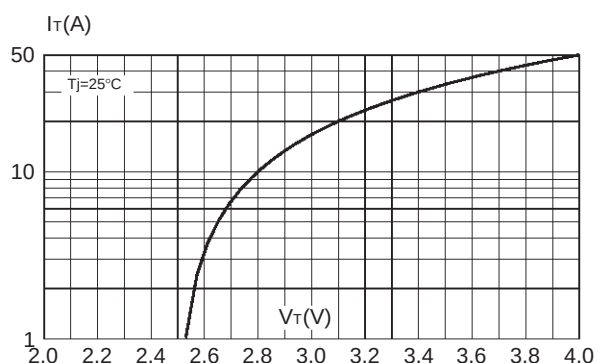


Fig 3 : Relative variation of holding current versus junction temperature.

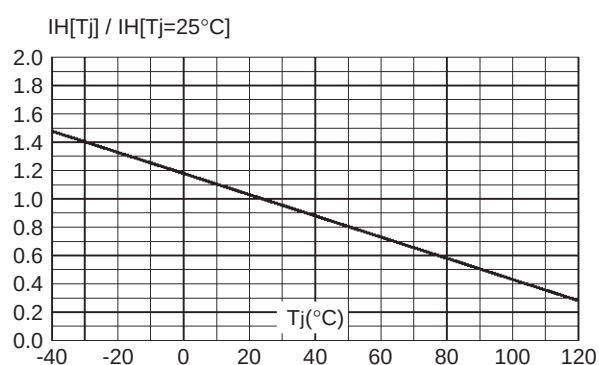


Fig 4 : Variation of thermal impedance junction to ambient versus pulse duration.

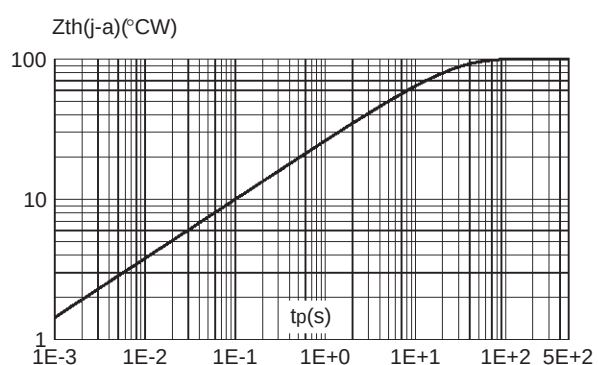
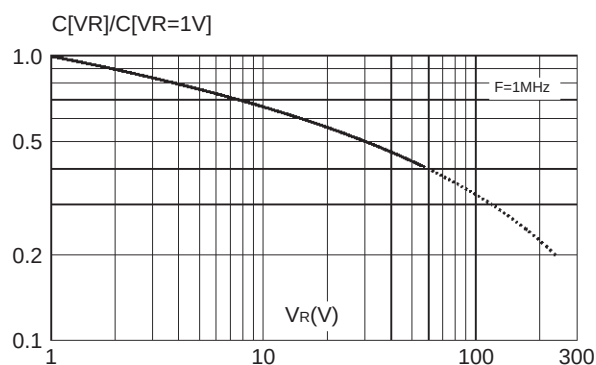


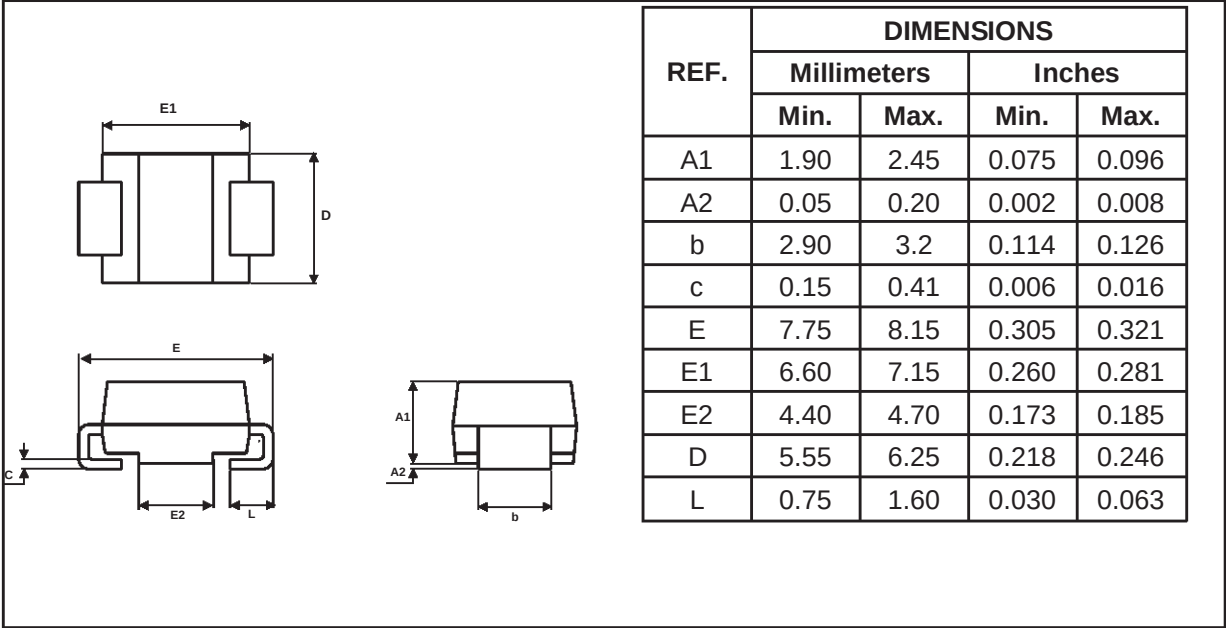
Fig 5 : Relative variation of junction capacitance versus reverse voltage applied (typical values).

Note : For V_{BR} upper than 62 V, the curve can be extrapolated (dotted line)



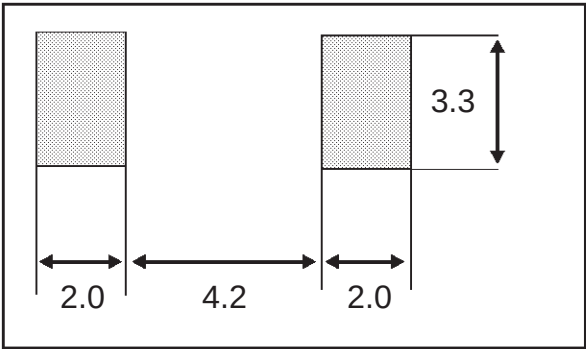
SMTHBT200

PACKAGE MECHANICAL DATA
SMC (Plastic)



FOOT PRINT (in millimeters)

Packaging : tape and reel



MARKING

Package	Type	Marking
SMC	SMTHBT200	WO4

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