



SMLPB SERIES

TRISIL™

MAIN APPLICATIONS

Any sensitive equipment requiring protection against lightning strikes:

- ANALOG AND DIGITAL LINE CARDS
- MAIN DISTRIBUTION FRAMES
- TERMINALS AND TRANSMISSION EQUIPMENT
- GMS-TUBE REPLACEMENT

DESCRIPTION

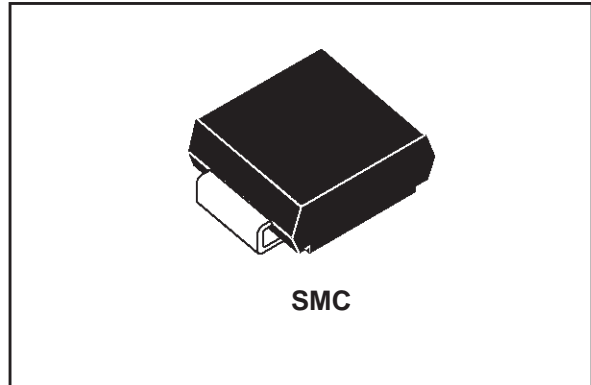
The SMLPBxx series has been designed to protect telecommunication equipment against lightning and transient induced by AC power lines.

FEATURES

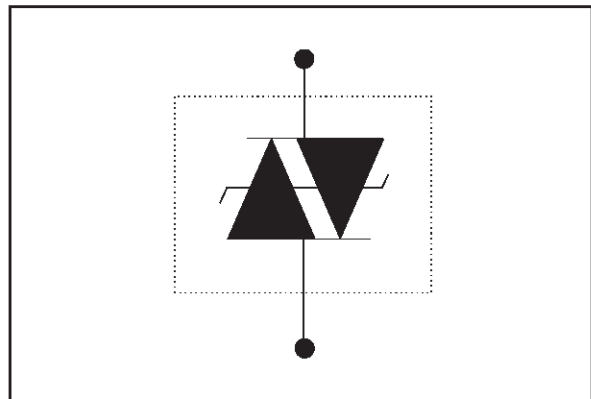
- BIDIRECTIONAL CROWBAR PROTECTION.
- BREAKDOWN VOLTAGE RANGE:
From 62 V To 270 V.
- HOLDING CURRENT: $I_H = 150 \text{ mA min}$
- REPETITIVE PEAK PULSE CURRENT :
 $I_{PP} = 100 \text{ A, } 10/1000 \mu\text{s}$.

BENEFITS

- NO AGEING AND NO NOISE
- IF DESTROYED, THE SMLPB FALLS INTO SHORT CIRCUIT, STILL ENSURING PROTECTION



SCHEMATIC DIAGRAM



| COMPLIES WITH THE FOLLOWING STANDARDS: | Peak Surge Voltage (V) | Voltage Waveform (μs) | Current Waveform (μs) | Admissible I_{pp} (A) | Necessary Resistor (Ω) |
|--|------------------------|------------------------------------|------------------------------------|-------------------------|---------------------------------|
| CCITT K20 | 4000 | 10/700 | 5/310 | 100 | - |
| VDE0433 | 4000 | 10/700 | 5/310 | 100 | - |
| VDE0878 | 4000 | 1.2/50 | 1/20 | 100 | - |
| IEC-1000-4-5 | level 4 | 10/700 | 5/310 | 100 | - |
| | level 4 | 1.2/50 | 8/20 | 100 | - |
| FCC Part 68, lightning surge type A | 1500 | 10/160 | 10/160 | 200 | - |
| | 800 | 10/560 | 10/560 | 100 | - |
| FCC Part 68, lightning surge type B | 100 | 5/320 | 5/320 | 25 | - |
| BELLCORE TR-NWT-001089 First level | 2500 | 2/10 | 2/10 | 500 | - |
| | 1000 | 10/1000 | 10/1000 | 100 | - |
| BELLCORE TR-NWT-001089 Second level | 500 | 2/10 | 2/10 | 500 | - |
| CNET I31-24 | 4000 | 0.5/700 | 0.8/310 | 100 | - |

SMTPBxxx

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25°C)

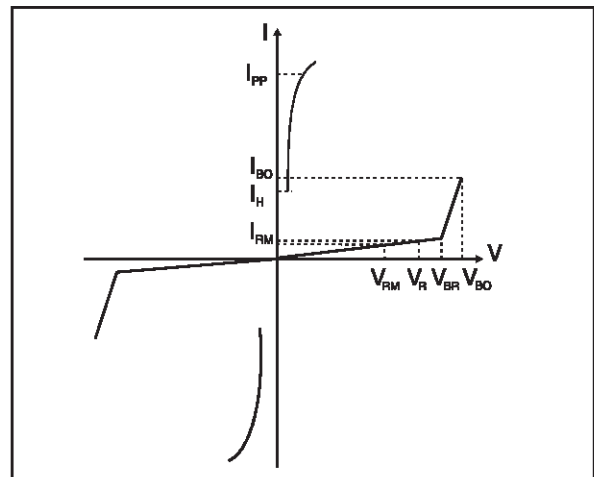
| Symbol | Parameter | | Value | Unit |
|------------------------------------|---|----------------------------------|------------------------|----------|
| P | Power dissipation | T _{lead} = 50 °C | 5 | W |
| I _{PP} | Peak pulse current | 10/1000 μs 8/20 μs 2/10 μs | 100 250 500 | A |
| I _{TSM} | Non repetitive surge peak on-state current | tp = 20 ms | 50 | A |
| dV/dt | Critical rate of rise of off-state voltage | V _{RM} | 5 | KV/μs |
| T _{stg} T _j | Storage temperature range Maximum junction temperature | | - 55 to + 150 + 150 | °C °C |
| T _L | Maximum lead temperature for soldering during 10 s. | | + 260 | °C |

THERMAL RESISTANCES

| Symbol | Parameter | Value | Unit |
|-----------------------|--|-------|------|
| R _{th} (j-l) | Junction to leads | 20 | °C/W |
| R _{th} (j-a) | Junction to ambient. On printed circuit with standard footprint dimensions. | 75 | °C/W |

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 |



| Type | Marking | I _{RM} @ V _{RM} | | I _R @ V _R | | V _{BO} @ I _{BO} | | I _H | C |
|----------|---------|-----------------------------------|-----|---------------------------------|-----|-----------------------------------|-----|----------------|---------------|
| | | max. | | max. note1 | | max. note2 | | min. note3 | typ. note4 |
| | Laser | μA | V | μA | V | V | mA | mA | pF |
| SMTPB62 | W07 | 2 | 56 | 50 | 62 | 82 | 800 | 150 | 160 |
| SMTPB68 | W11 | 2 | 61 | 50 | 68 | 90 | 800 | 150 | 160 |
| SMTPB120 | W21 | 2 | 108 | 50 | 120 | 160 | 800 | 150 | 140 |
| SMTPB200 | W31 | 2 | 180 | 50 | 200 | 267 | 800 | 150 | 130 |
| SMTPB270 | W43 | 2 | 243 | 50 | 270 | 360 | 800 | 150 | 120 |

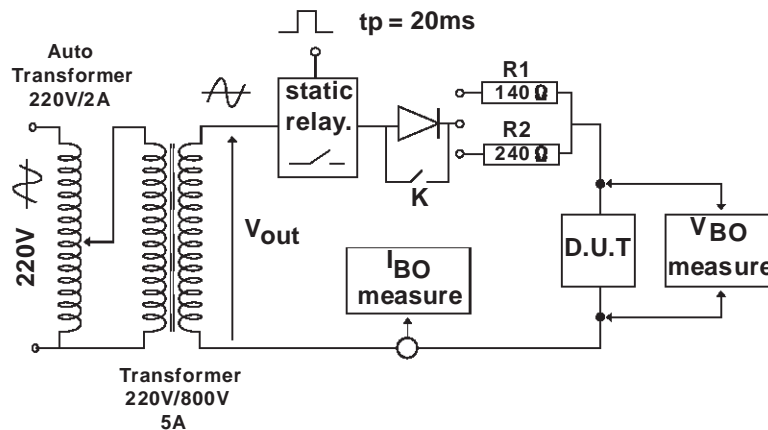
All parameters tested at 25°C, except where indicated.

Note 1: I_R measured at V_R guarantees V_{BRmin} ≥ V_R

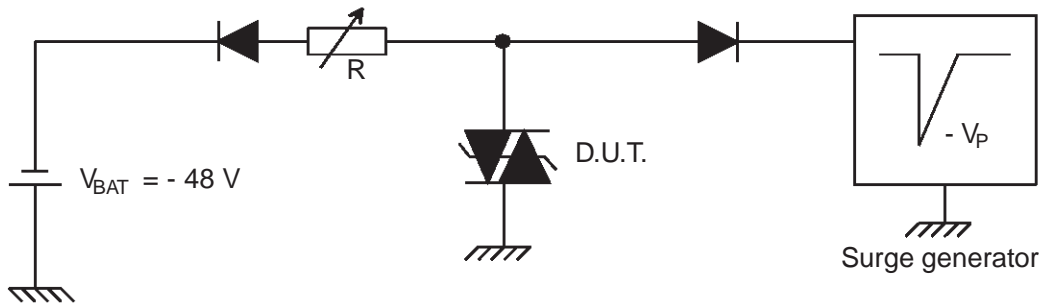
Note 2: Measured at 50 Hz (1 cycle) - See test circuit 1.

Note 3: See test circuit 2.

Note 4: V_R = 1V, F = 1MHz. Refer to fig 3 for C versus V_R.

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

- Pulse Test duration ($t_p = 20\text{ms}$):
 - 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-NOGO Test which allows to confirm the holding current (I_H) level in a functional test circuit.

TEST PROCEDURE :

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

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

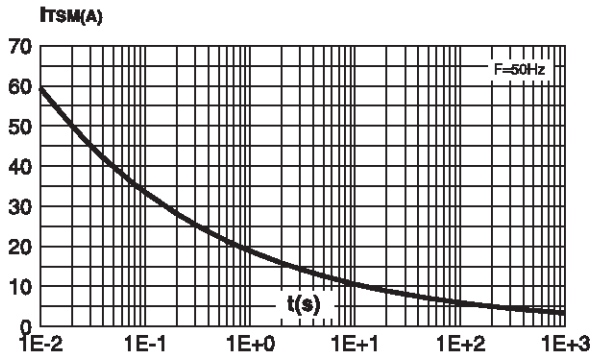


Fig. 2: Relative variation of holding current versus junction temperature.

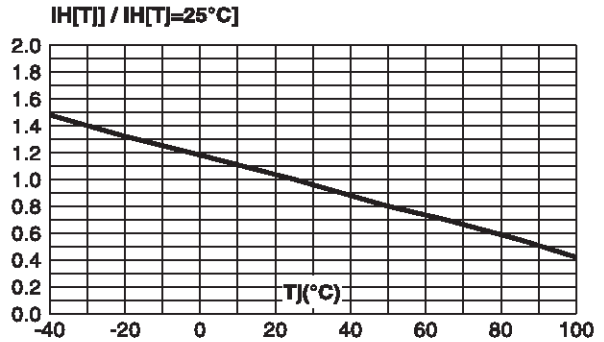


Fig. 3: Relative variation of junction capacitance versus reverse applied voltage (typical values). Note: For V_{RM} upper than 56V, the curve is extrapolated (dotted line).

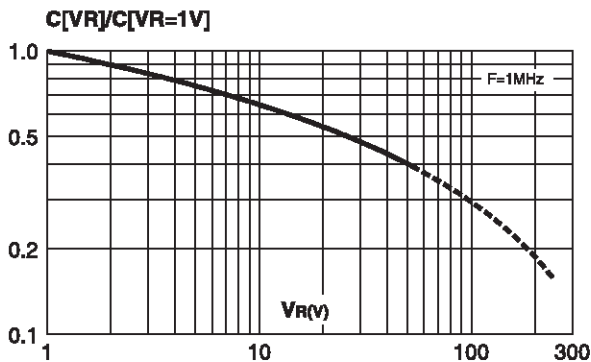


Fig. 4: On-state voltage versus on-state current (typical values).

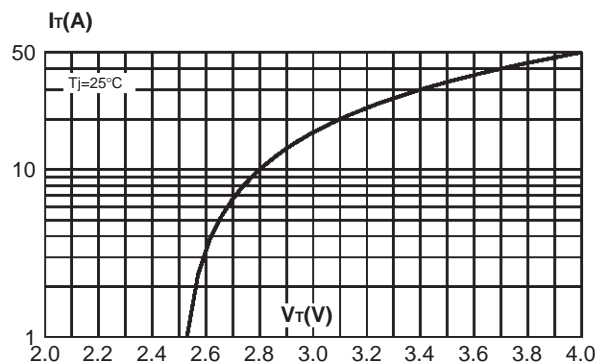
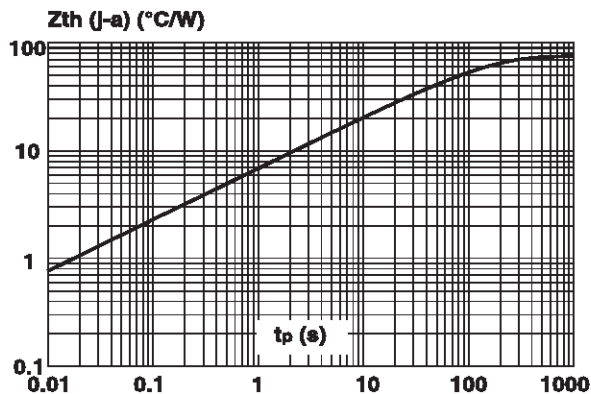
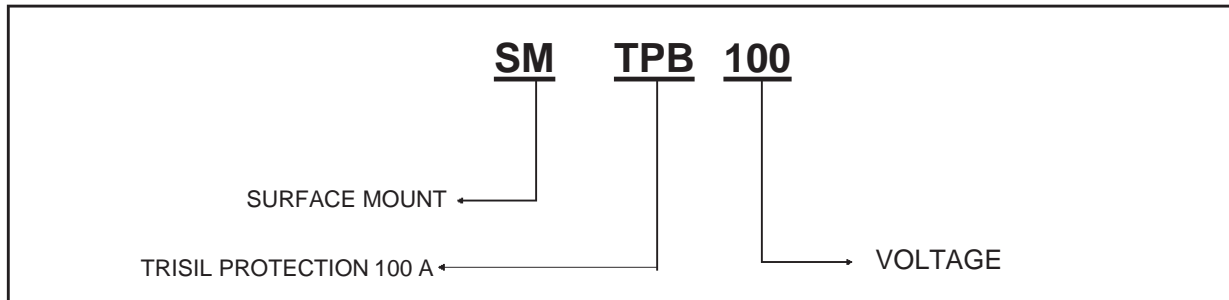


Fig. 5: Transient thermal impedance junction to ambient versus pulse duration (for FR4 PC Board with recommended pad layout).



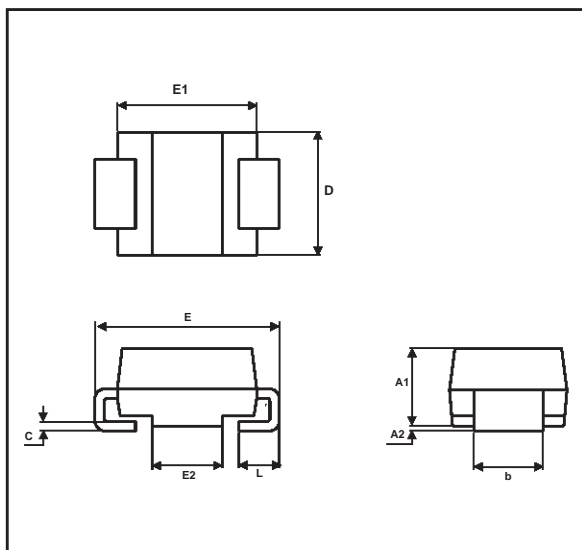
ORDER CODE



Marking : Logo, date code, type code.

PACKAGE MECHANICAL DATA.

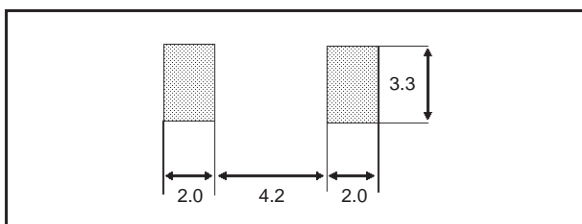
SMC



| REF. | DIMENSIONS | | | |
|------|-------------|------|--------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A1 | 1.90 | 2.45 | 0.075 | 0.096 |
| A2 | 0.05 | 0.20 | 0.002 | 0.008 |
| b | 2.90 | 3.2 | 0.114 | 0.126 |
| c | 0.15 | 0.41 | 0.006 | 0.016 |
| E | 7.75 | 8.15 | 0.305 | 0.321 |
| E1 | 6.60 | 7.15 | 0.260 | 0.281 |
| E2 | 4.40 | 4.70 | 0.173 | 0.185 |
| D | 5.55 | 6.25 | 0.218 | 0.246 |
| L | 0.75 | 1.60 | 0.030 | 0.063 |

FOOTPRINT DIMENSIONS (in millimeters)

SMC



Packaging : Standard packaging is in tape and reel

Weight : 0.25g.

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