



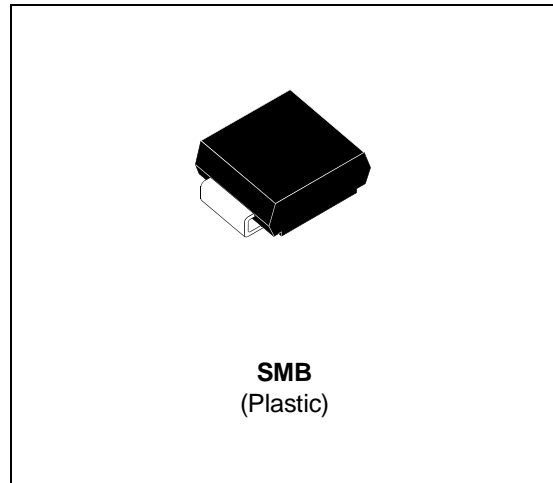
FAST RECOVERY RECTIFIER DIODES

FEATURES

- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING
- SURFACE MOUNT DEVICE

DESCRIPTION

Single high voltage rectifier suited for Switch Mode Power Supplies and other power converters.



ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | Unit |
|--------------------|---|---|--|
| $I_{F(RMS)}$ | RMS forward current | 10 | A |
| $I_{F(AV)}$ | Average forward current | $T_I=110^{\circ}\text{C}$ $\delta=0.5$ | A |
| I_{FSM} | Non repetitive surge peak forward current | $t_p=10\text{ms}$ sinusoidal | A |
| T_{stg} T_J | Storage and junction temperature range | - 40 to + 150 - 40 to + 150 | $^{\circ}\text{C}$ $^{\circ}\text{C}$ |

| Symbol | Parameter | Value | Unit |
|-----------|---------------------------------|-------|------|
| V_{RRM} | Repetitive peak reverse voltage | 400 | V |

THERMAL RESISTANCE

| Symbol | Parameter | Value | Unit |
|---------------|----------------|-------|-----------------------------|
| $R_{th(j-l)}$ | Junction-leads | 25 | $^{\circ}\text{C}/\text{W}$ |

SMBYT01

STATIC ELECTRICAL CHARACTERISTICS

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|----------|---------------------------|--------------------|------|------|------|---------------|
| V_F * | $T_j = 25^\circ\text{C}$ | $I_F = 1\text{ A}$ | | | 1.5 | V |
| | $T_j = 100^\circ\text{C}$ | | | 1.05 | 1.4 | |
| I_R ** | $T_j = 25^\circ\text{C}$ | $V_R = V_{RRM}$ | | | 10 | μA |
| | $T_j = 100^\circ\text{C}$ | | | 0.1 | 0.3 | mA |

Pulse test : * $t_p = 380\ \mu\text{s}$, $\delta < 2\%$

** $t_p = 5\ \text{ms}$, $\delta < 2\%$

RECOVERY CHARACTERISTICS

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|--------|--------------------------|---|------|------|------|------|
| trr | $T_j = 25^\circ\text{C}$ | $I_F = 0.5\text{A}$ $I_{rr} = 0.25\text{A}$ $I_R = 1\text{A}$ | | | 25 | ns |
| | | $I_F = 1\text{A}$ $di_F/dt = -15\text{A}/\mu\text{s}$ $V_R = 30\text{V}$ | | | 60 | |

TURN-OFF SWITCHING CHARACTERISTICS (Without serie inductance)

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|-----------|---|---|------|------|------|------|
| t_{IRM} | $V_{CC} = 200\text{V}$ $T_j = 100^\circ\text{C}$ | $I_F = 1\text{A}$ $L_p \leq 0.05\ \mu\text{H}$ $di_F/dt = -50\text{A}/\mu\text{s}$ | | 35 | 50 | ns |
| I_{RM} | | | | 1.5 | 2 | A |

To evaluate the conduction losses use the following equation :

$$P = 1.1 \times I_{F(AV)} + 0.25 \times I_{F(RMS)}^2$$

| | |
|--------------------|-----|
| Voltage (V) | 400 |
| Marking | B4 |

Laser marking
Logo indicates cathode

Fig. 1: Low frequency power losses versus average current.

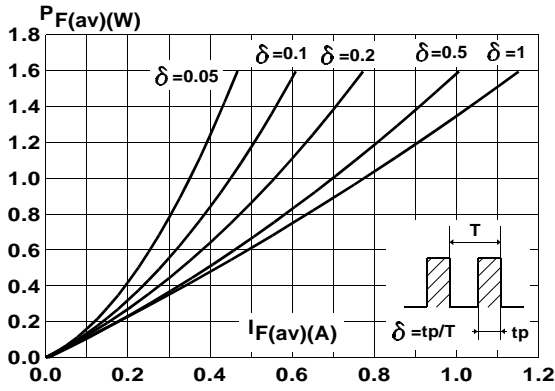


Fig. 2: Peak current versus form factor.

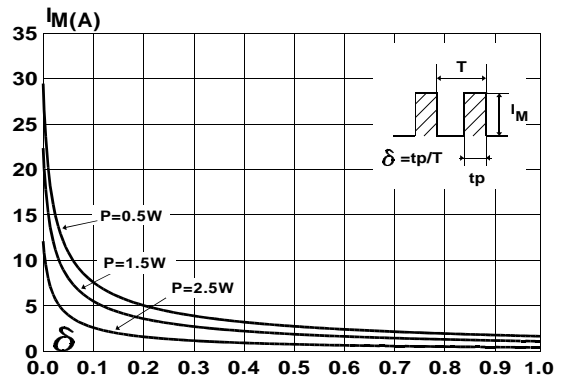


Fig. 3: Non repetitive surge peak forward current versus overload duration.

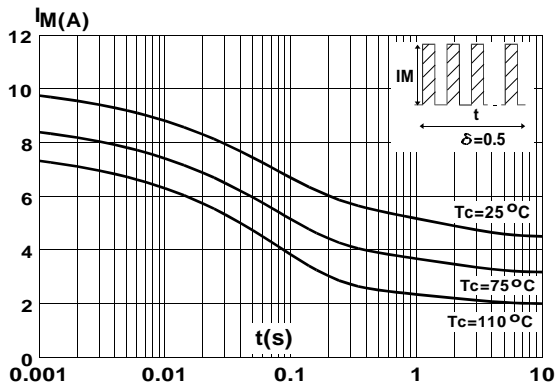


Fig. 4: Relative variation of thermal impedance junction to lead versus pulse duration.

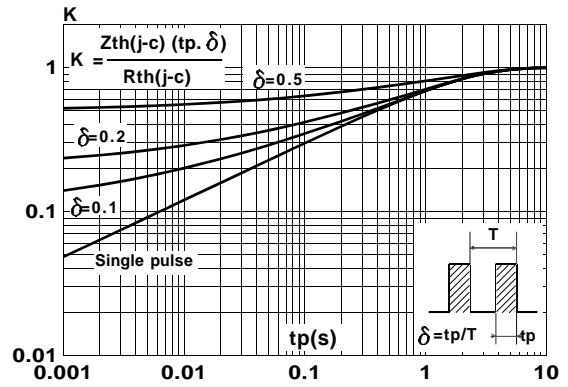


Fig. 5: Voltage drop versus forward current. (Maximum values)

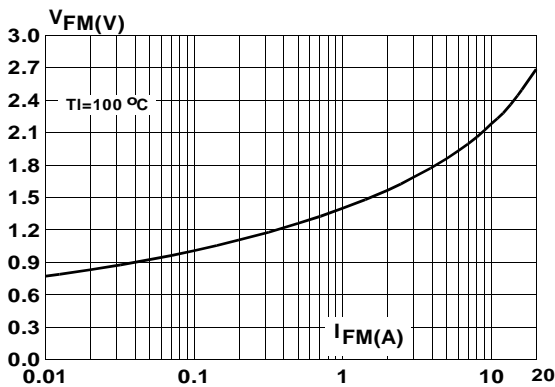


Fig. 6: Average current versus ambient temperature. (duty cycle : 0.5)

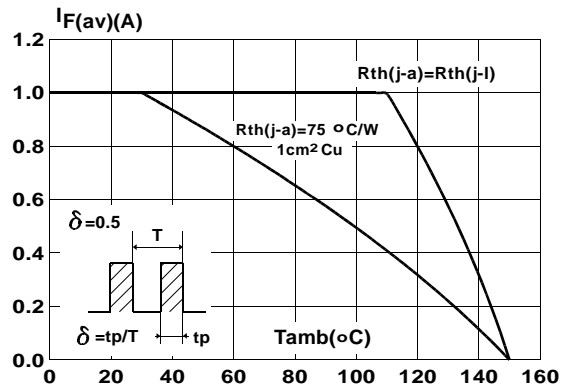


Fig. 7: Recovery time versus di_F/dt .

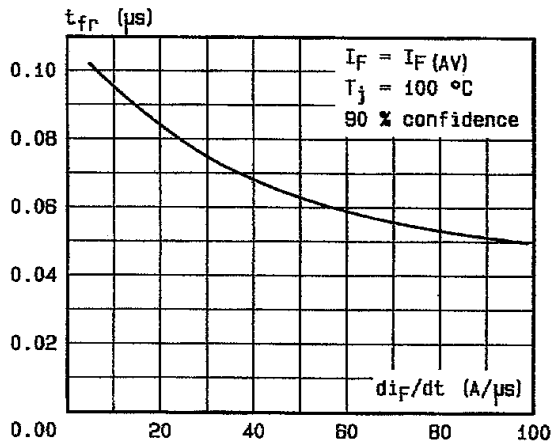


Fig. 9: Peak reverse current versus di_F/dt .

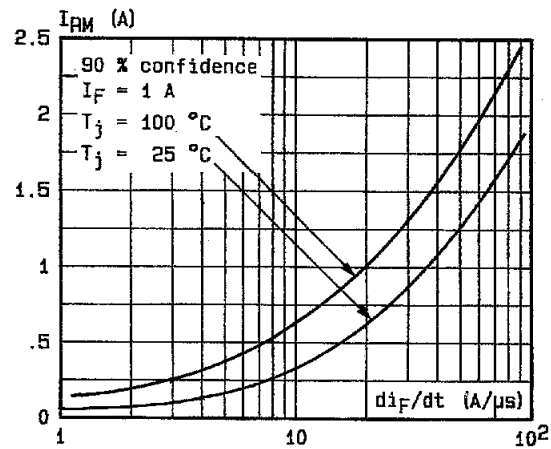


Fig. 11: Dynamic parameters versus junction temperature.

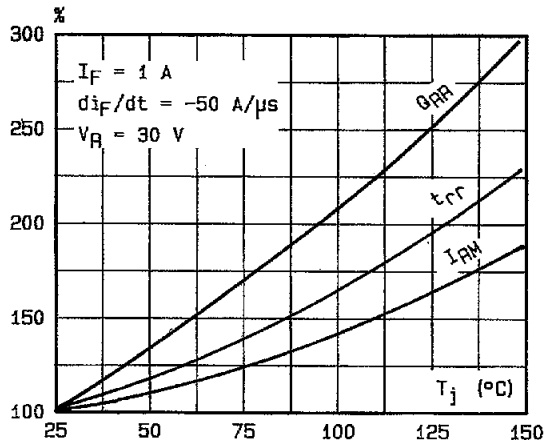


Fig. 8: Peak forward voltage versus di_F/dt .

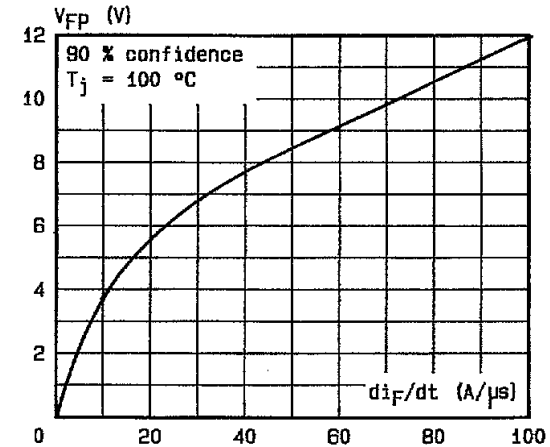


Fig. 10: Recovery charge versus di_F/dt . (typical values)

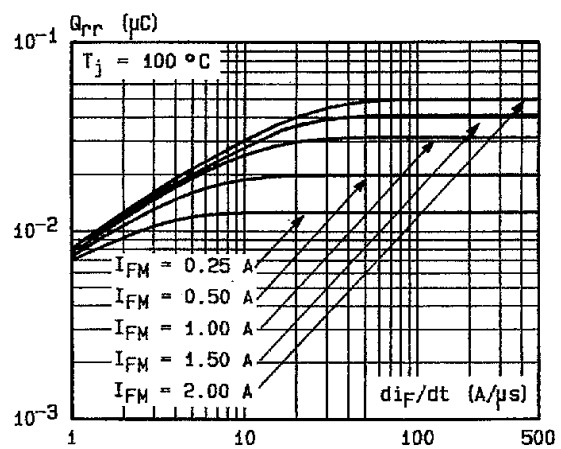
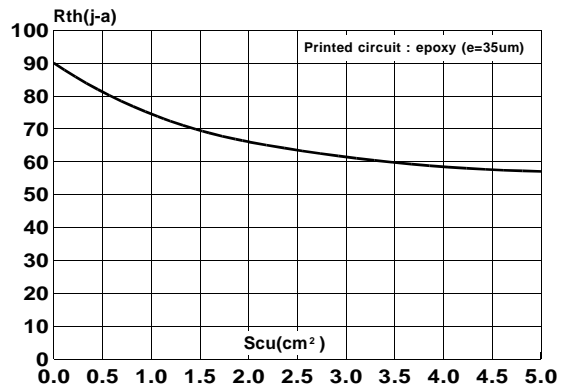
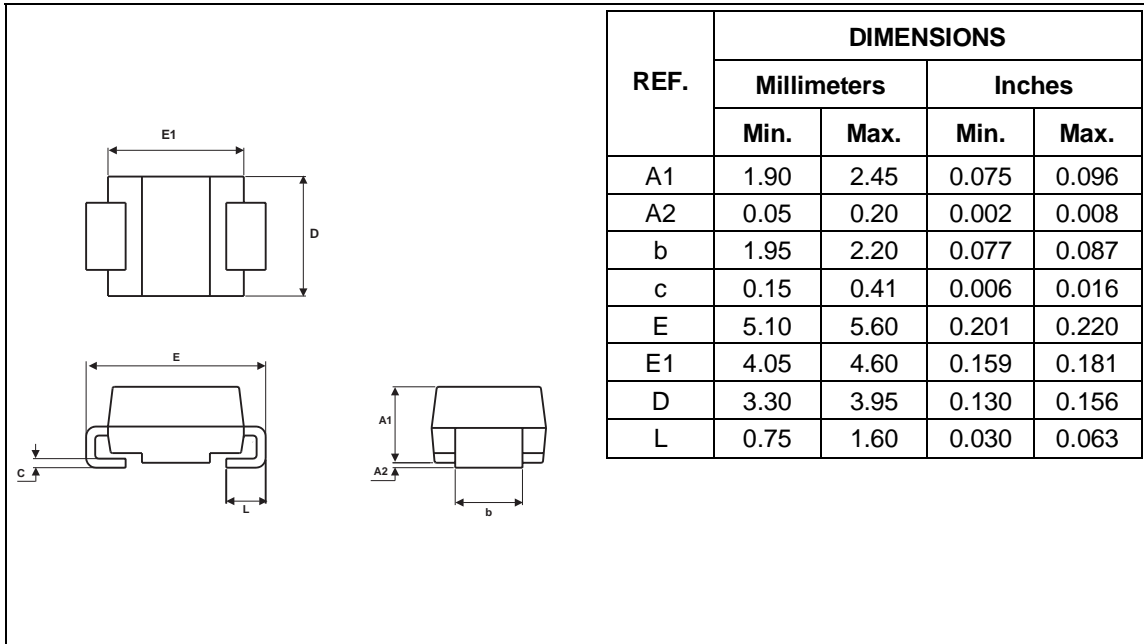


Fig. 12: Thermal resistance junction to ambient versus copper surface under each lead.

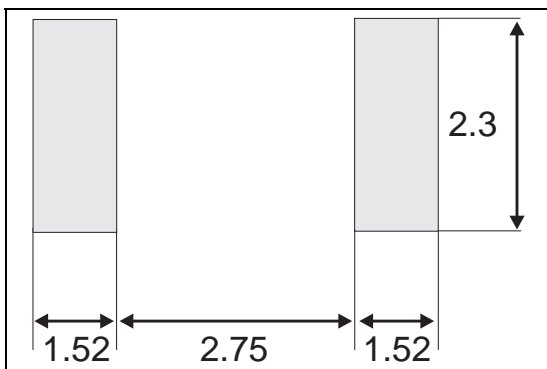


PACKAGE MECHANICAL DATA
SMB (Plastic)



FOOTPRINT DIMENSIONS (in millimeters)
SMB (Plastic)

- Laser marking
- Weight = 0.12 g.
- Logo indicates cathode



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