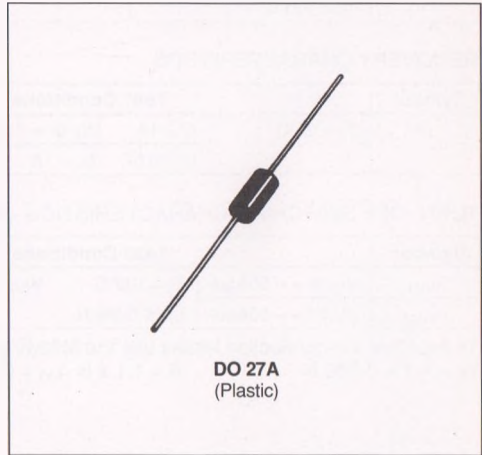


FAST RECOVERY RECTIFIER DIODES

FAST RECOVERY RECTIFIER

- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING



SUITABLE APPLICATIONS

- FREE WHEELING DIODE IN CONVERTERS AND MOTOR CONTROL CIRCUITS
- RECTIFIERS IN S.M.P.S.

ABSOLUTE RATINGS (limiting values)

| Symbol | Parameter | | Value | Unit |
|--------------------|--|--------------------------------------|---------------|------------|
| I_{FRM} | Repetitive Peak Forward Current | $t_p \leq 10\mu s$ | 60 | A |
| $I_{F(AV)}$ | Average Forward Current * | $T_a = 65^\circ C$ $\delta = 0.5$ | 3 | A |
| I_{FSM} | Surge non Repetitive Forward Current | $t_p = 10ms$ Sinusoidal | 60 | A |
| P | Power Dissipation * | $T_a = 65^\circ C$ | 4.2 | W |
| T_{stg} T_j | Storage and Junction Temperature Range | | - 40 to + 150 | $^\circ C$ |

| Symbol | Parameter | BYT 03- | | | Unit |
|-----------|-------------------------------------|---------|-----|-----|------|
| | | 200 | 300 | 400 | |
| V_{RRM} | Repetitive Peak Reverse Voltage | 200 | 300 | 400 | V |
| V_{RSM} | Non Repetitive Peak Reverse Voltage | 220 | 330 | 440 | V |

THERMAL RESISTANCE

| Symbol | Parameter | Value | Unit |
|---------------|-------------------|-------|--------------|
| $R_{th(j-a)}$ | Junction-ambient* | 20 | $^\circ C/W$ |

* On infinite heatsink with 10mm lead length

ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|--------|---------------------------|-------------------|------|------|------|---------------|
| I_R | $T_j = 25^\circ\text{C}$ | $V_R = V_{RRM}$ | | | 20 | μA |
| | $T_j = 100^\circ\text{C}$ | | | | 0.5 | mA |
| V_F | $T_j = 25^\circ\text{C}$ | $I_F = 3\text{A}$ | | | 1.5 | V |
| | $T_j = 100^\circ\text{C}$ | | | | 1.4 | |

RECOVERY CHARACTERISTICS

| Symbol | Test Conditions | | | Min. | Typ. | Max. | Unit |
|----------|--------------------------|--|--|------|------|------|------|
| t_{rr} | $T_j = 25^\circ\text{C}$ | $I_F = 1\text{A}$ $di_F/dt = -15\text{A}/\mu\text{s}$ $V_R = 30\text{V}$ | | | 55 | ns | |
| | | $I_F = 0.5\text{A}$ $I_R = 1\text{A}$ $I_{rr} = 0.25\text{A}$ | | | 25 | | |

TURN -OFF SWITCHING CHARACTERISTICS - Without Series Inductance

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|-----------|-------------------------------------|--|------|------|------|------|
| t_{IRM} | $di_F/dt = -50\text{A}/\mu\text{s}$ | $T_j = 100^\circ\text{C}$ $V_{CC} = 200\text{V}$ $I_F = 3\text{A}$ | | 35 | 50 | ns |
| I_{RM} | $di_F/dt = -50\text{A}/\mu\text{s}$ | $L_P \leq 0.05\mu\text{H}$ | | 1.5 | 2 | A |

To evaluate the conduction losses use the following equations :

$$V_F = 1.1 + 0.050 I_F$$

$$P = 1.1 \times I_F (AV) + 0.050 I_F^2 (RMS)$$

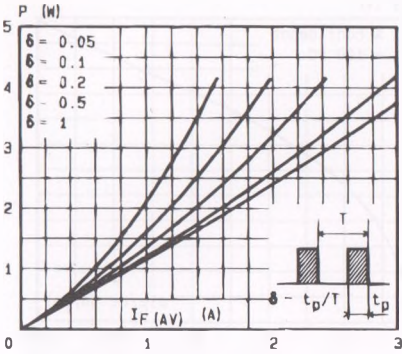


Fig. 1 - Maximum average power dissipation versus average forward current.

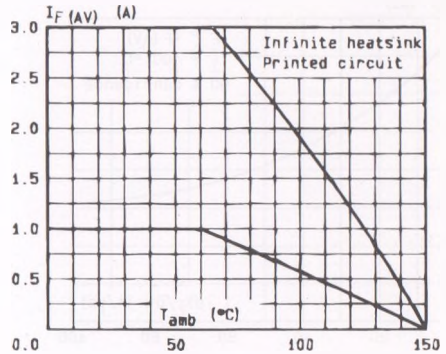


Fig. 2 - Average forward current versus ambient temperature.

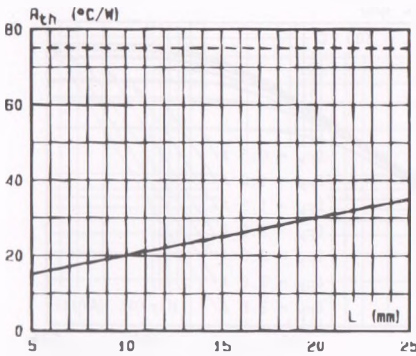


Fig. 3 - Thermal resistance versus lead length.

Mounting n°1
INFINITE HEATSINK

Mounting n°2
PRINTED CIRCUIT

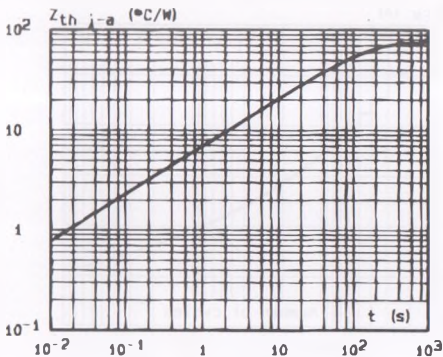
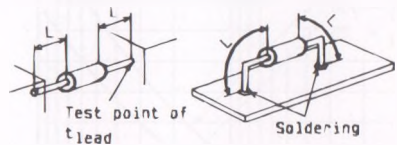


Fig. 4 - Transient thermal impedance junction-ambient for mounting n°2 versus pulse duration (L = 10 mm).

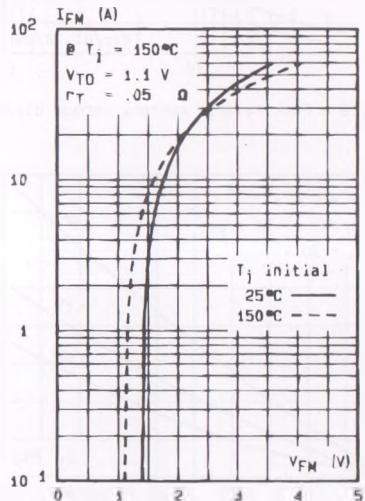


Fig. 5 - Peak forward current versus peak forward voltage drop (maximum values).

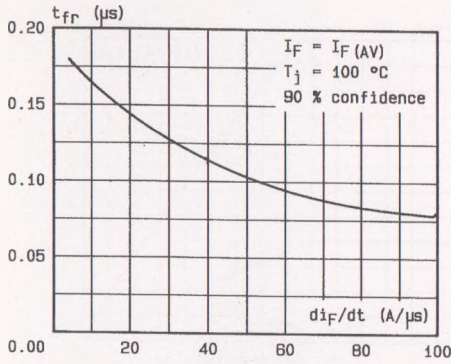


Fig.7 - Recovery time versus di_F/dt .

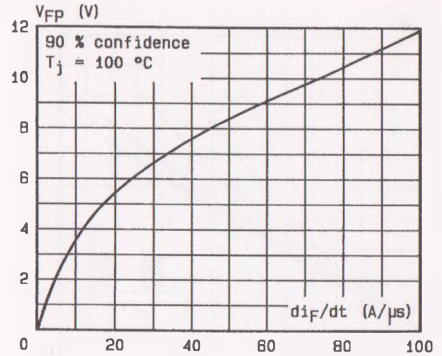


Fig.8 - Peak forward voltage versus di_F/dt .

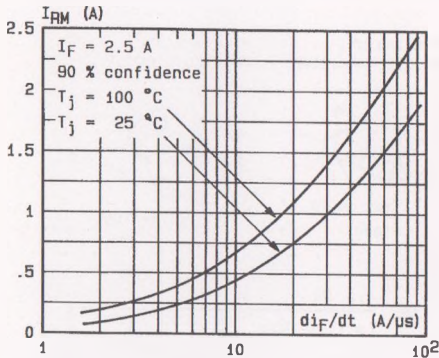


Fig.9 - Peak reverse current versus di_F/dt .

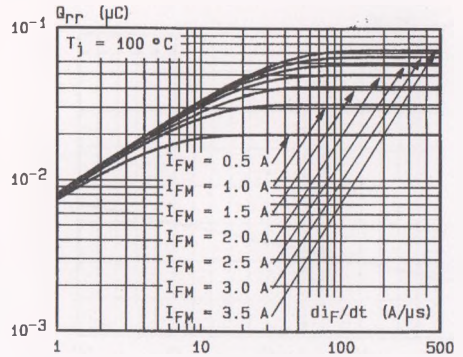


Fig.10 - Recovered charge versus di_F/dt (typical values).

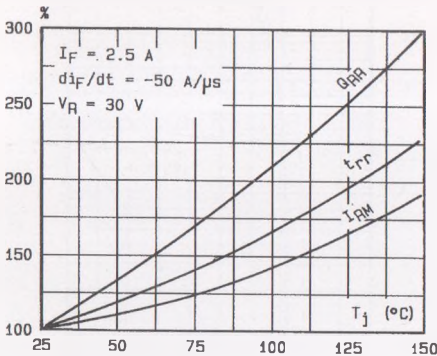


Fig.11 - Dynamic parameters versus junction temperature.

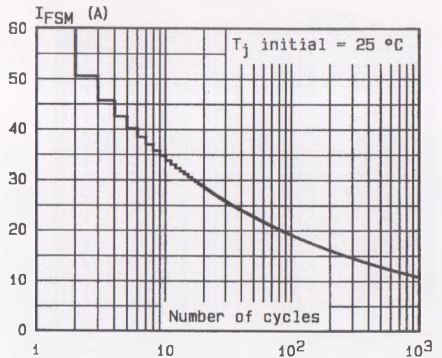


Fig.12 - Non repetitive surge peak current versus number of cycles