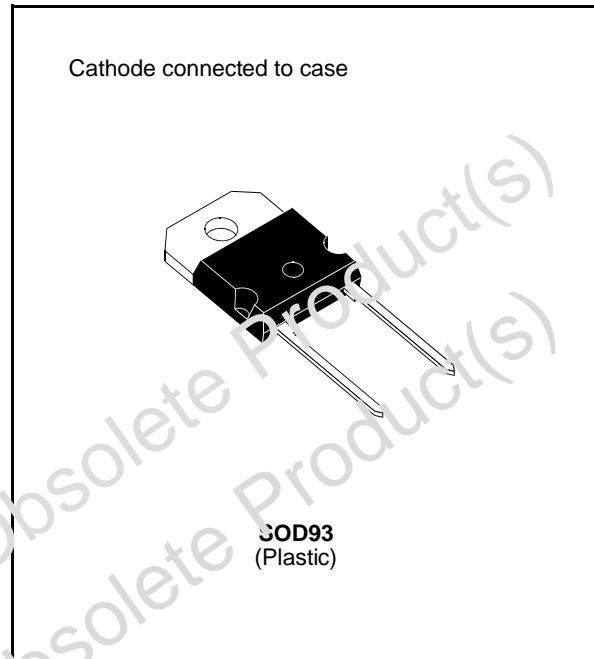


FAST RECOVERY RECTIFIER DIODE

- VERY HIGH REVERSE VOLTAGE CAPABILITY
- 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
- RECTIFIER IN S.M.P.S.

ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | | Value | Unit |
|--------------------|--|--------------------------------------|------------------------------|------------|
| V_{RRM} | Repetitive Peak Reverse Voltage | | 1000 | V |
| V_{RSM} | Non Repetitive Peak Reverse Voltage | | 1000 | V |
| I_{FRM} | Repetive Peak Forward Current | $t_p \leq 10\mu s$ | 375 | A |
| $I_F(RMS)$ | RMS Forward Current | | 70 | A |
| $I_F(AV)$ | Average Forward Current | $T_c = 85^\circ C$ $\delta = 0.5$ | 30 | A |
| I_{FSM} | Surge non Repetitive Forward Current | $t_p = 10ms$ Sinusoidal | 200 | A |
| P | Power Dissipation | $T_c = 85^\circ C$ | 60 | W |
| T_{stg} T_j | Storage and Junction Temperature Range | | - 40 to +150 - 40 to +150 | $^\circ C$ |

THERMAL RESISTANCE

| Symbol | Parameter | Value | Unit |
|---------------|---------------|-------|--------------|
| $R_{th(j-c)}$ | Junction-case | 1 | $^\circ C/W$ |

BYT 30P-1000

ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|--------|---------------------------|--------------------|------|------|------|---------------|
| I_R | $T_j = 25^\circ\text{C}$ | $V_R = V_{RRM}$ | | | 100 | μA |
| | $T_j = 100^\circ\text{C}$ | | | | 5 | mA |
| V_F | $T_j = 25^\circ\text{C}$ | $I_F = 30\text{A}$ | | | 1.9 | V |
| | $T_j = 100^\circ\text{C}$ | | | | 1.8 | |

RECOVERY CHARACTERISTICS

| Symbol | Test Conditions | | | Min. | Typ. | Max. | Unit |
|----------|--------------------------|---------------------|-------------------------------------|-------------------------|------|------|-------------|
| t_{rr} | $T_j = 25^\circ\text{C}$ | $I_F = 1\text{A}$ | $di_F/dt = -15\text{A}/\mu\text{s}$ | $V_R = 30\text{V}$ | | 65 | ns |
| | | $I_F = 0.5\text{A}$ | $I_R = 1\text{A}$ | $I_{rr} = 0.25\text{A}$ | | 70 | |

TURN-OFF SWITCHING CHARACTERISTICS (Without Series Inductance)

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|-----------|--------------------------------------|--|------|------|------|-------------|
| t_{IRM} | $di_F/dt = -120\text{A}/\mu\text{s}$ | $V_{CC} = 200\text{V}$ $I_F = 30\text{A}$ $L_p \leq 0.05\mu\text{H}$ $T_j = 100^\circ\text{C}$ See figure 11 | | | 200 | ns |
| | $di_F/dt = -240\text{A}/\mu\text{s}$ | | | 120 | | |
| I_{RM} | $di_F/dt = -120\text{A}/\mu\text{s}$ | | | | 19.5 | A |
| | $di_F/dt = -240\text{A}/\mu\text{s}$ | | | 22 | | |

TURN-OFF OVERVOLTAGE COEFFICIENT (With Series Inductance)

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|-----------------------------|--|--|------|------|------|------|
| $C = \frac{V_{RP}}{V_{CC}}$ | $T_j = 100^\circ\text{C}$ $di_F/dt = -30\text{A}/\mu\text{s}$ | $V_{CC} = 200\text{V}$ $I_F = I_{F(AV)}$ $L_p = 5\mu\text{H}$ See figure 12 | | | 4.5 | |

To evaluate the conduction losses use the following equation:

$$V_F = 1.47 + 0.010 I_F \quad P = 1.47 \times I_{F(AV)} + 0.010 I_{F(RMS)}^2$$

Figure 1. Low frequency power losses versus average current

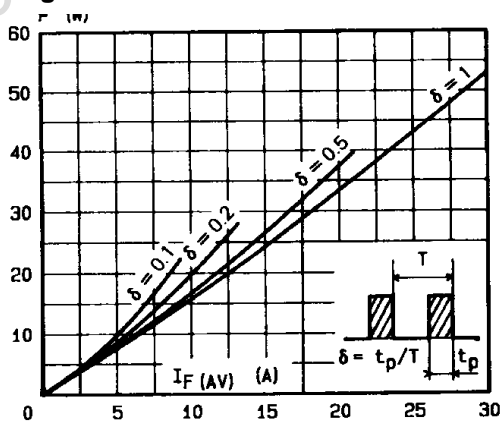


Figure 2. Peak current versus form factor

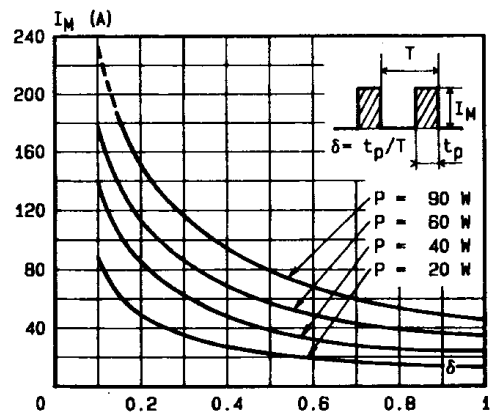


Figure 3. Non repetitive peak surge current versus overload duration

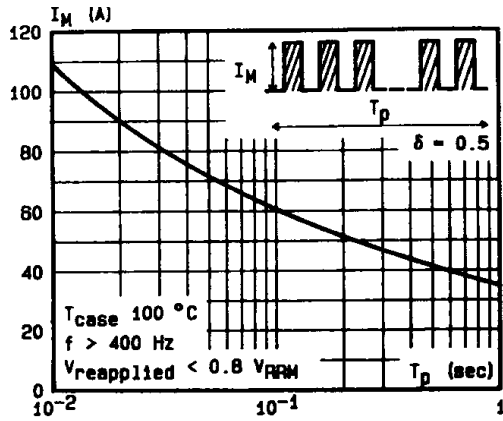


Figure 4. Thermal impedance versus pulse width

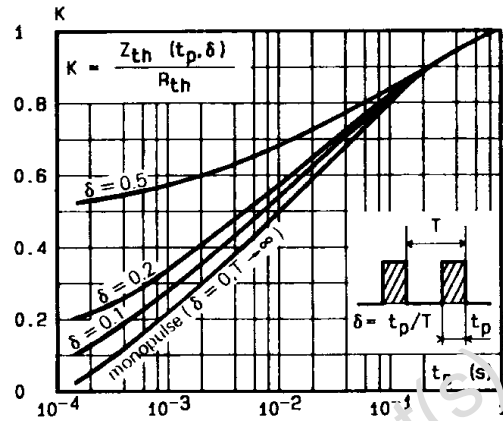


Figure 5. Voltage drop versus forward current

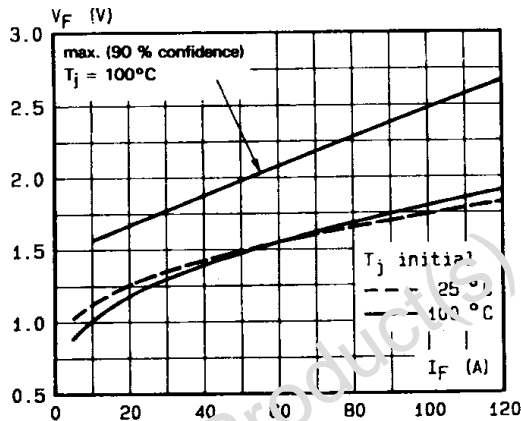


Figure 6. Recovery charge versus di_F/dt

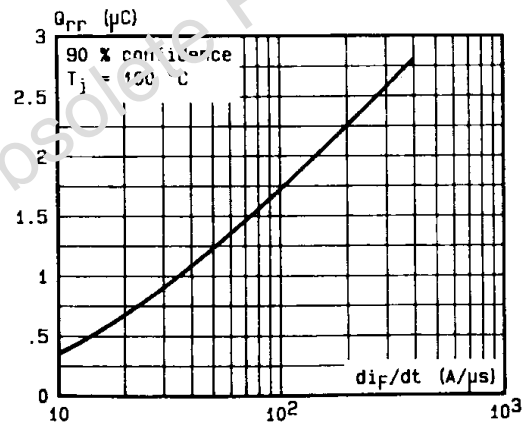


Figure 7. Recovery time versus di_F/dt

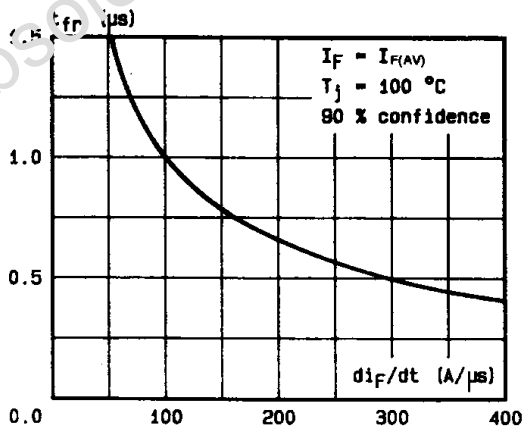


Figure 8. Peak reverse current versus di_F/dt

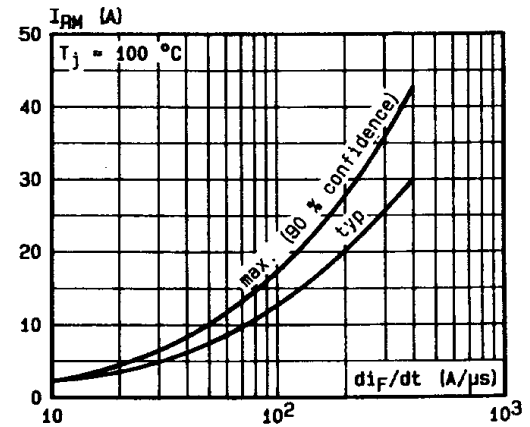


Figure 9. Peak forward voltage versus di_F/dt .

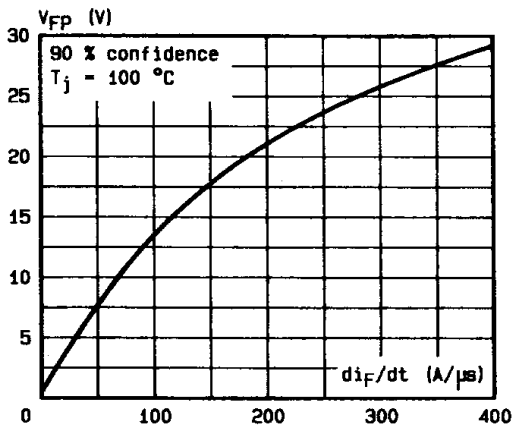


Figure 10. Dynamic parameters versus junction temperature.

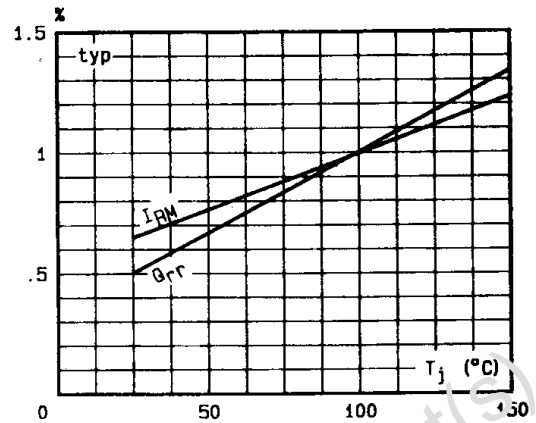


Figure 11. Turn-off switching characteristics (without series inductance).

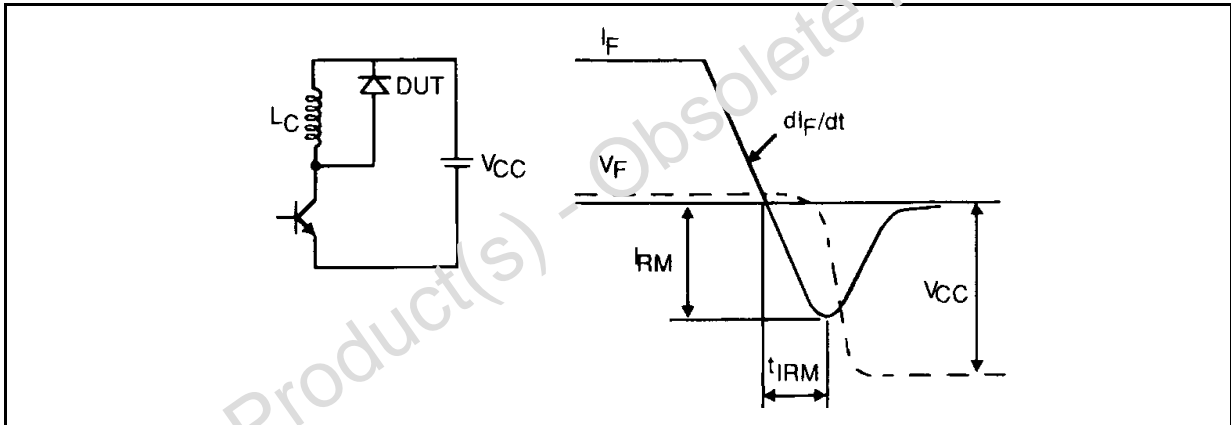
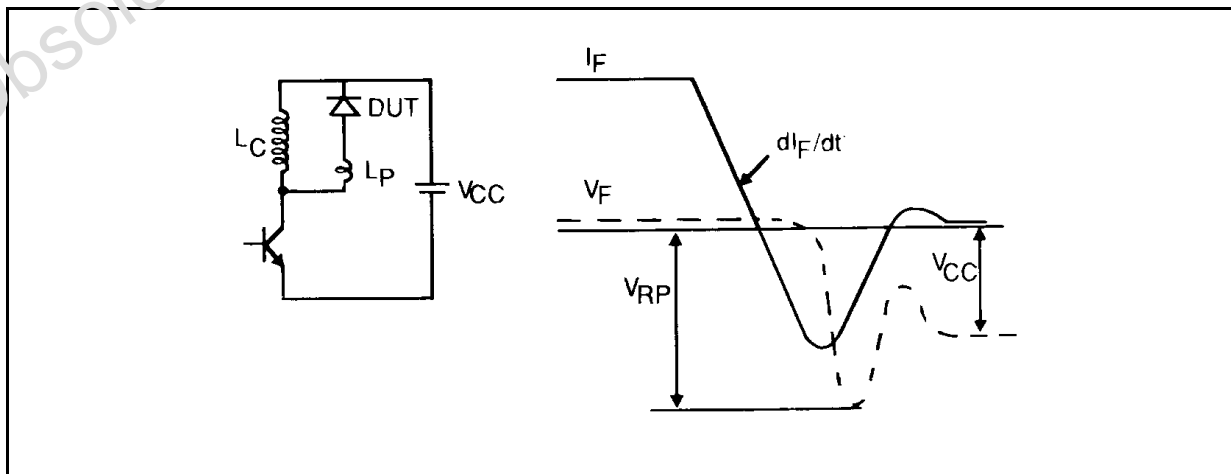
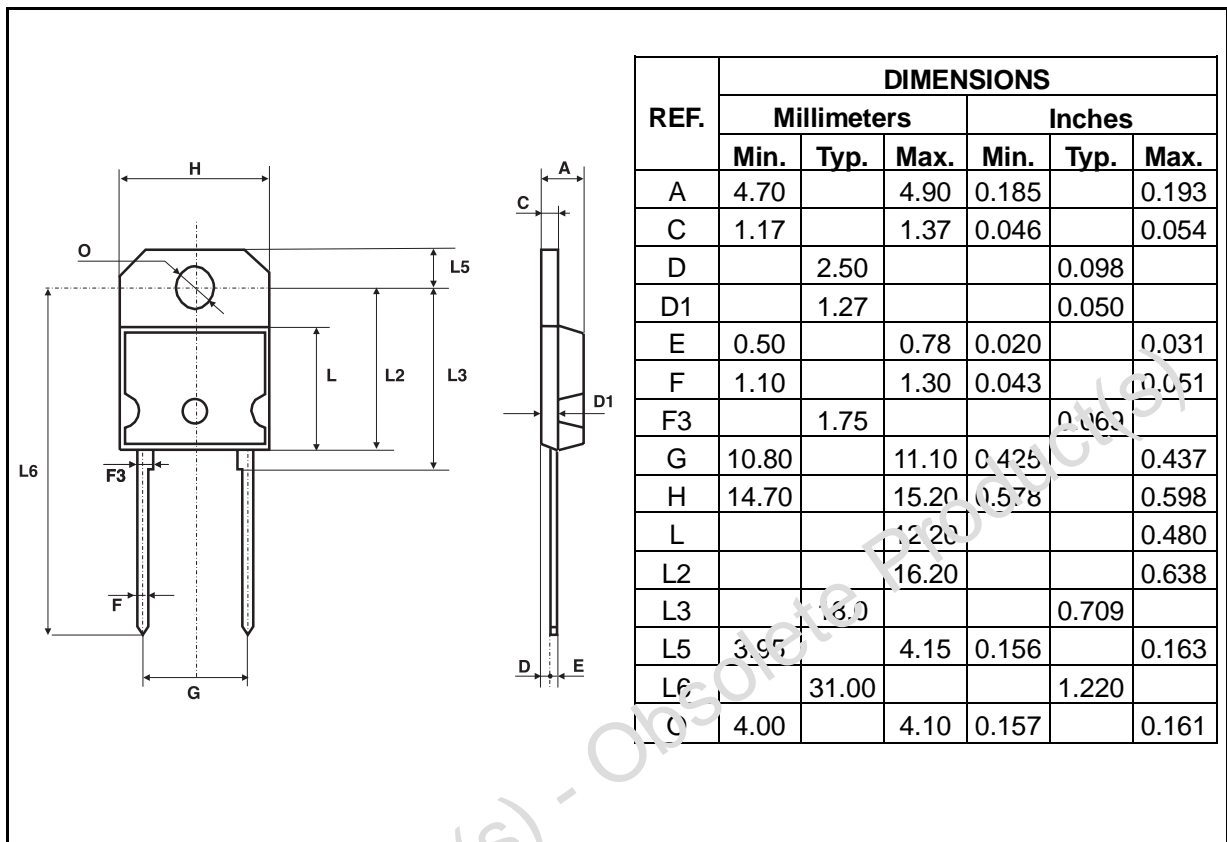


Figure 12. Turn-off switching characteristics (with series inductance)



PACKAGE MECHANICAL DATA
SOD93 Plastic



Cooling method: by conduction (method C)
Marking: type number
Weight: 4.3g
Recommended torque value: 80cm. N
Maximum torque value: 100cm. N

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