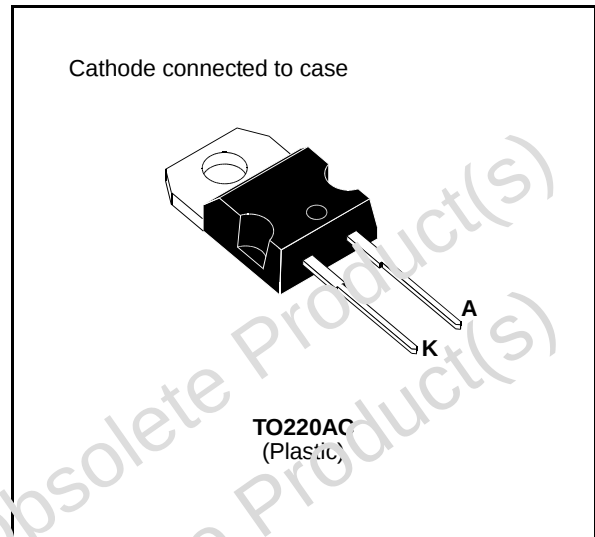


## FAST RECOVERY RECTIFIER DIODE

- VERY HIGH REVERSE VOLTAGE CAPABILITY
- VERY LOW REVERSES 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 RATINGS (limiting values)

| Symbol            | Parameter                              |                                       | Value                          | Unit       |
|-------------------|----------------------------------------|---------------------------------------|--------------------------------|------------|
| $V_{RRM}$         | Repetitive Peak Reverse Voltage        |                                       | 1000                           | V          |
| $V_{RSM}$         | Non Repetitive Peak Reverse Voltage    |                                       | 1000                           | V          |
| $I_{FRM}$         | Repetitive Peak Forward Current        | $t_p \leq 10\mu s$                    | 100                            | A          |
| $I_F(RMS)$        | RMS Forward Current                    |                                       | 16                             | A          |
| $I_F(AV)$         | Average Forward Current                | $T_c = 115^\circ C$<br>$\delta = 0.5$ | 8                              | A          |
| $I_{FSM}$         | Surge Non Repetitive Forward Current   | $t_p = 10ms$<br>Sinusoidal            | 50                             | A          |
| P                 | Power Dissipation                      | $T_c = 115^\circ C$                   | 17                             | W          |
| $T_{sj}$<br>$T_j$ | Storage and Junction Temperature Range |                                       | - 40 to + 150<br>- 40 to + 150 | $^\circ C$ |

### THERMAL RESISTANCE

| Symbol        | Parameter     | Value | Unit         |
|---------------|---------------|-------|--------------|
| $R_{th(j-c)}$ | Junction-case | 2     | $^\circ C/W$ |

**ELECTRICAL CHARACTERISTICS**
**STATIC CHARACTERISTICS**

| Symbol | Test Conditions           |                   | Min. | Typ. | Max. | Unit          |
|--------|---------------------------|-------------------|------|------|------|---------------|
| $I_R$  | $T_j = 25^\circ\text{C}$  | $V_R = V_{RRM}$   |      |      | 35   | $\mu\text{A}$ |
|        | $T_j = 100^\circ\text{C}$ |                   |      |      | 2    | $\text{mA}$   |
| $V_F$  | $T_j = 25^\circ\text{C}$  | $I_F = 8\text{A}$ |      |      | 1.9  | $\text{V}$    |
|        | $T_j = 100^\circ\text{C}$ |                   |      |      | 1.8  |               |

**RECOVERY CHARACTERISTICS**

| Symbol   | Test Conditions          |                     |                                     | Min.                    | Typ. | Max. | Unit        |
|----------|--------------------------|---------------------|-------------------------------------|-------------------------|------|------|-------------|
| $t_{rr}$ | $T_j = 25^\circ\text{C}$ | $I_F = 1\text{A}$   | $di_F/dt = -15\text{A}/\mu\text{s}$ | $V_R = 30\text{V}$      |      | 155  | $\text{ns}$ |
|          |                          | $I_F = 0.5\text{A}$ | $I_R = 1\text{A}$                   | $I_{rr} = 0.25\text{A}$ |      | 65   |             |

**TURN-OFF SWITCHING CHARACTERISTICS (Without Series Inductance)**

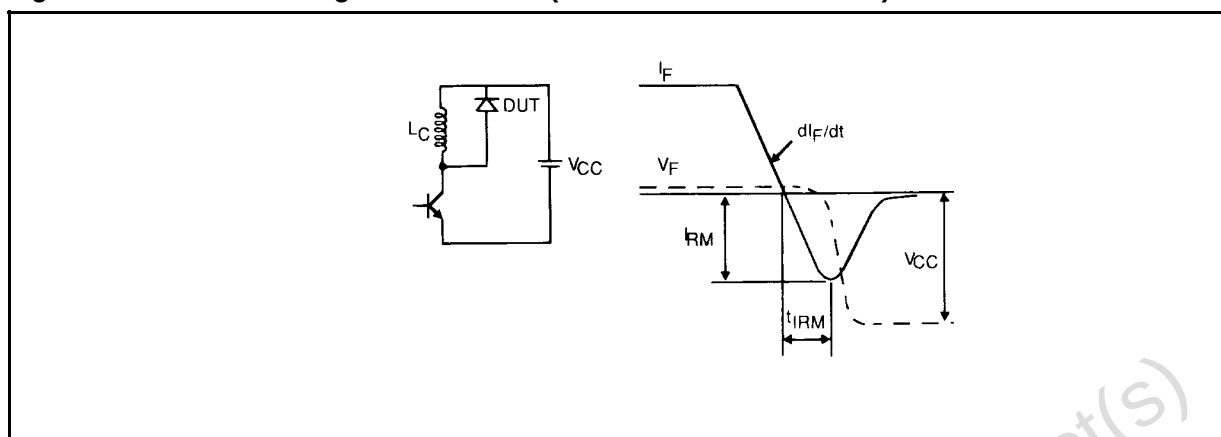
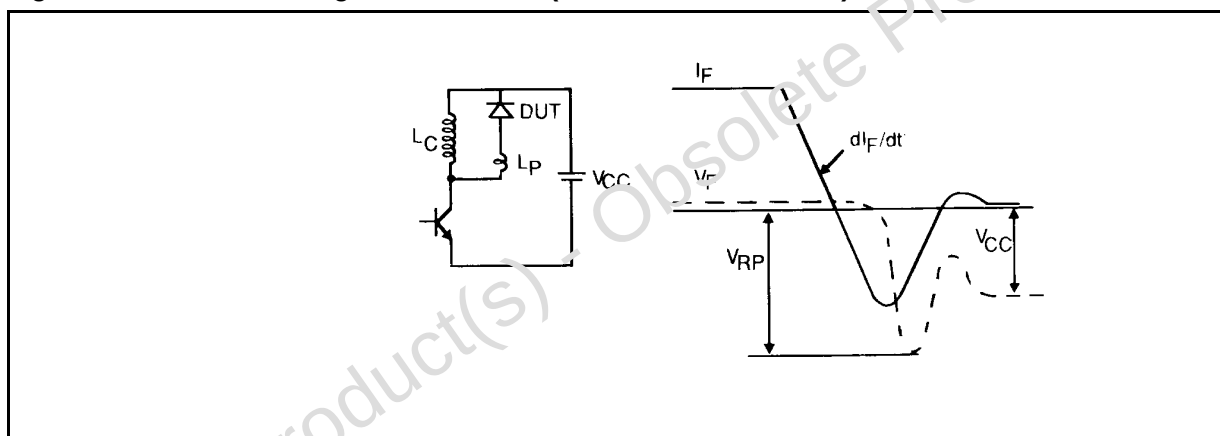
| Symbol    | Test Conditions                     |                                                                                                                  | Min. | Typ. | Max. | Unit        |
|-----------|-------------------------------------|------------------------------------------------------------------------------------------------------------------|------|------|------|-------------|
| $t_{IRM}$ | $di_F/dt = -32\text{A}/\mu\text{s}$ | $V_{CC} = 200\text{V}$ $I_F = 8\text{A}$<br>$L_p \leq 0.05\mu\text{H}$ $T_j = 100^\circ\text{C}$<br>See Figure 1 |      |      | 200  | $\text{ns}$ |
|           | $di_F/dt = -64\text{A}/\mu\text{s}$ |                                                                                                                  |      | 120  |      |             |
| $I_{RM}$  | $di_F/dt = -32\text{A}/\mu\text{s}$ |                                                                                                                  |      |      | 5.5  | $\text{A}$  |
|           | $di_F/dt = -64\text{A}/\mu\text{s}$ |                                                                                                                  |      | 6    |      |             |

**TURN-OFF OVERVOLTAGE COEFFICIENT (With Series Inductance)**

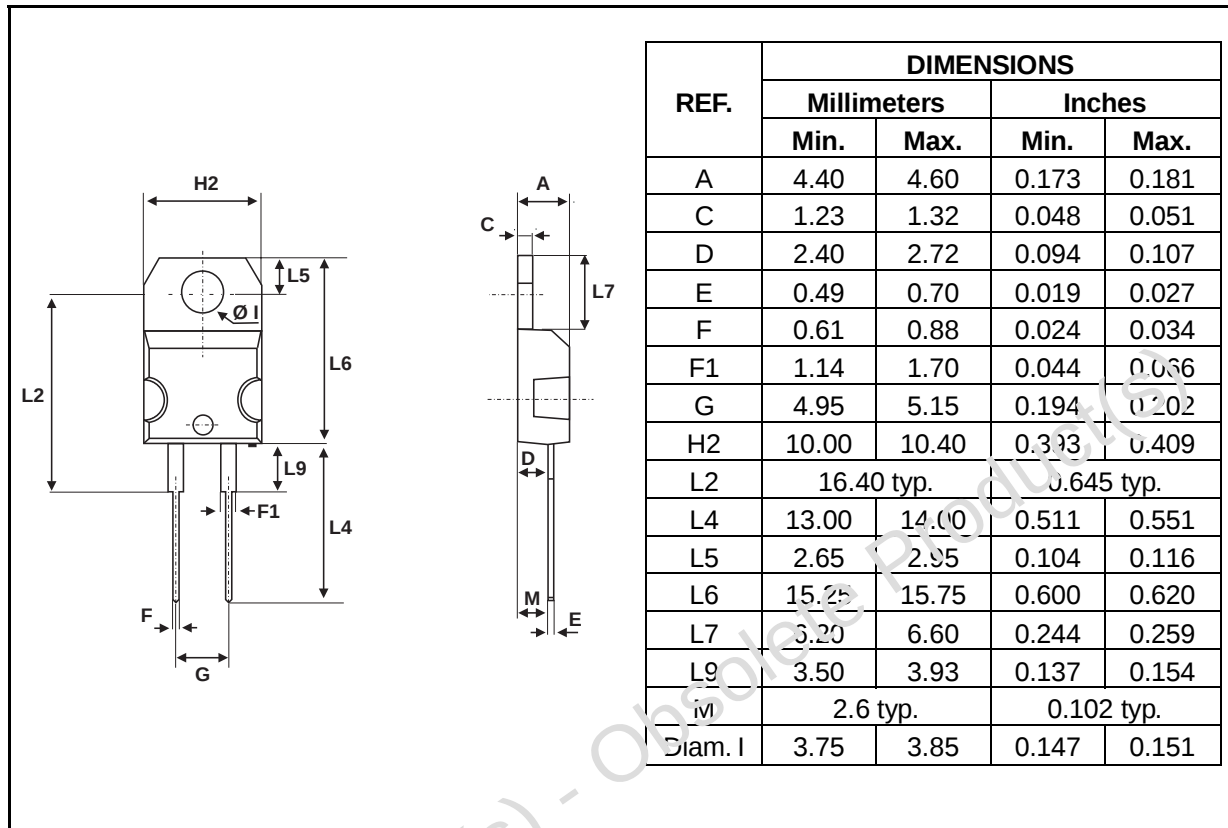
| Symbol                      | Test Conditions                                                 |                                                                                | Min. | Typ. | Max. | Unit |
|-----------------------------|-----------------------------------------------------------------|--------------------------------------------------------------------------------|------|------|------|------|
| $C = \frac{V_{RP}}{V_{CC}}$ | $T_j = 100^\circ\text{C}$<br>$di_F/dt = -8\text{A}/\mu\text{s}$ | $V_{CC} = 200\text{V}$ $I_F = I_{F(AV)}$<br>$L_p = 12\mu\text{H}$ See figure 2 |      |      | 4.5  |      |

To evaluate the conduction losses use the following equations:

$$V_F = 1.47 + 0.041 I_F \quad P = 1.47 \times I_{F(AV)} + 0.041 I_{F(RMS)}^2$$

**Figure 1. Turn-off switching characteristics (without series inductance).****Figure 2. Turn-off switching characteristics (with series inductance).**

## PACKAGE MECHANICAL DATA : TO220AC Plastic



Cooling method: by conduction (method C)

Marking: type number

Weight: 2.42g

Recommended torque value: 80cm. N

Maximum torque value: 100cm. N

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