



ULTRA-FAST RECOVERY RECTIFIER DIODES

MAIN PRODUCT CHARACTERISTICS

| | |
|----------------------|--------|
| $I_{F(AV)}$ | 3 A |
| V_{RRM} | 200 V |
| $T_j(\text{max})$ | 150°C |
| $V_F(\text{max})$ | 0.99 V |
| $t_{rr}(\text{max})$ | 30 ns |

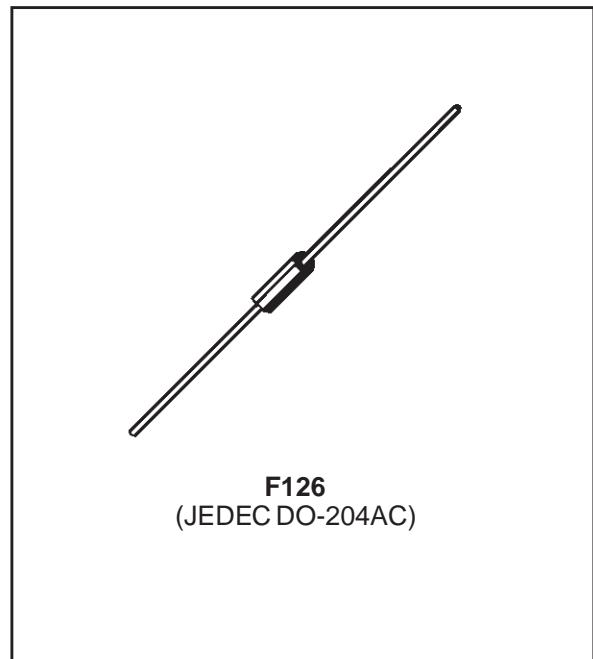
FEATURES

- SUITED FOR SMPS
- LOW LOSSES
- LOW FORWARD AND REVERSE RECOVERY TIME
- HIGH SURGE CURRENT CAPABILITY

DESCRIPTION

Low cost single chip rectifier suited for Switched Mode Power Supplies and high frequency DC to DC converters.

Packaged in F126, this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.



ABSOLUTE MAXIMUM (limiting values)

| Symbol | Parameter | Value | Unit |
|-------------|--|---------------|------|
| V_{RRM} | Repetitive peak reverse voltage | 200 | V |
| $I_{F(AV)}$ | Average forward current | 3 | A |
| I_{FSM} | Surge non repetitive forward current | 30 | A |
| T_{stg} | Storage temperature range | - 65 to + 150 | °C |
| T_j | Maximum operating junction temperature | 150 | °C |

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THERMAL RESISTANCE

| Symbol | Parameter | Value | Unit |
|---------------|-----------------------|-------|------|
| $R_{th(j-l)}$ | Junction lead (L=5mm) | 25 | °C/W |

STATIC ELECTRICAL CHARACTERISTICS

| Symbol | Parameters | Test conditions | | Min. | Typ. | Max. | Unit |
|------------|-------------------------|---------------------------|--------------------|------|------|------|---------------|
| I_R^* | Reverse leakage current | $T_j = 25^\circ\text{C}$ | $V_R = V_{RRM}$ | | | 10 | μA |
| | | $T_j = 100^\circ\text{C}$ | | | 0.2 | 0.5 | mA |
| V_F^{**} | Forward voltage drop | $T_j = 125^\circ\text{C}$ | $I_F = 3\text{ A}$ | | 0.8 | 0.99 | V |
| | | $T_j = 125^\circ\text{C}$ | $I_F = 6\text{ A}$ | | 0.95 | 1.20 | |
| | | $T_j = 25^\circ\text{C}$ | $I_F = 6\text{ A}$ | | | 1.25 | |

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

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

To evaluate the conduction losses use the following equation :

$$P = 0.78 \times I_{F(AV)} + 0.070 \times I_{F(RMS)}^2$$

RECOVERY CHARACTERISTICS

| Symbol | Test conditions | | | Min. | Typ. | Max. | Unit |
|----------|--------------------------|---|-------------------------------------|------|------|------|------|
| t_{rr} | $T_j = 25^\circ\text{C}$ | $I_F = 0.5\text{ A}$ $I_R = 1\text{ A}$ | $I_{rr} = 0.25\text{ A}$ | | | 30 | ns |
| t_{fr} | $T_j = 25^\circ\text{C}$ | $I_F = 3\text{ A}$ $V_{FR} = 1.1 \times V_F \text{ max}$ | $dI_F/dt = 50\text{ A}/\mu\text{s}$ | | 20 | | ns |
| V_{FP} | $T_j = 25^\circ\text{C}$ | $I_F = 3\text{ A}$ | $dI_F/dt = 50\text{ A}/\mu\text{s}$ | | 3 | | V |

Fig. 1 : Average forward power dissipation versus average forward current.

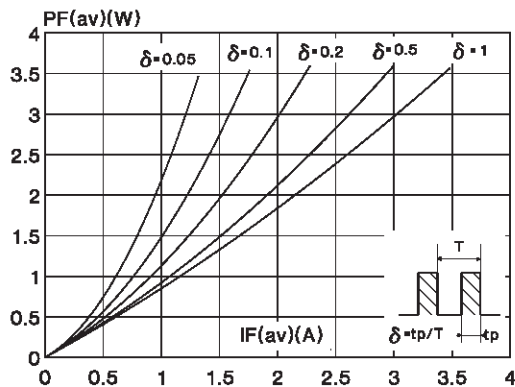


Fig. 2 : Peak current versus form factor.

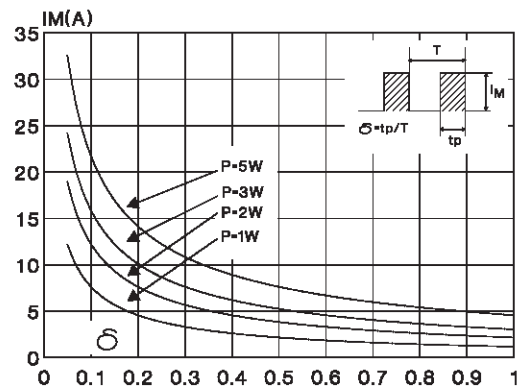


Fig. 3: Average current versus ambient temperature ($\delta : 0.5$)
 * circuit board e (Cu) = 35 μ m, S (cu) = 12mm²
 L(LEADS) = 20mm

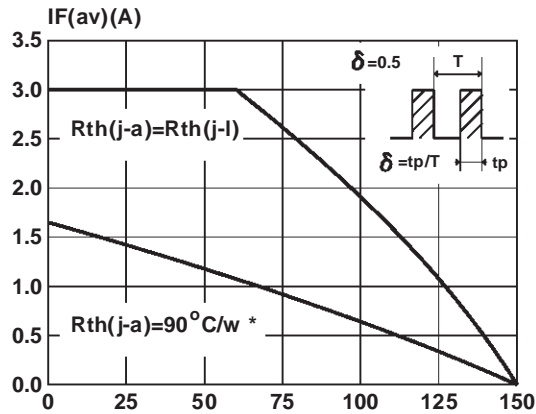


Fig. 4: Non repetitive surge peak forward current versus overload duration (maximum values).

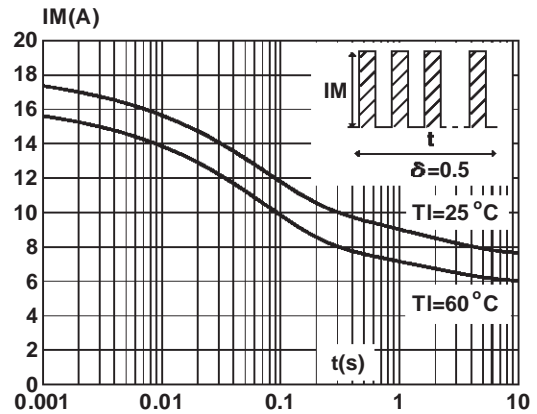


Fig. 5: Relative variation of thermal transient impedance junction to case versus pulse duration.

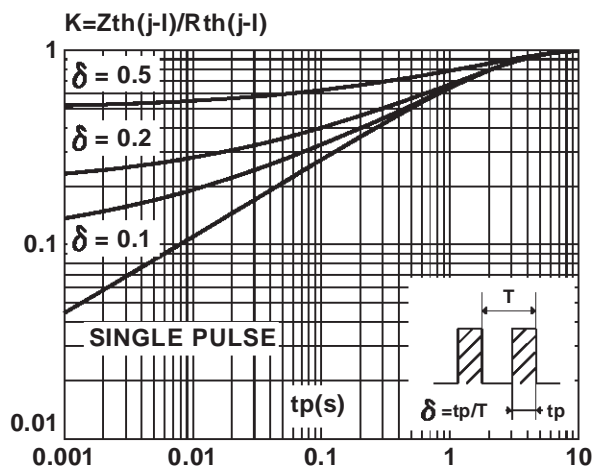


Fig. 6: Forward voltage drop versus forward current (maximum values).

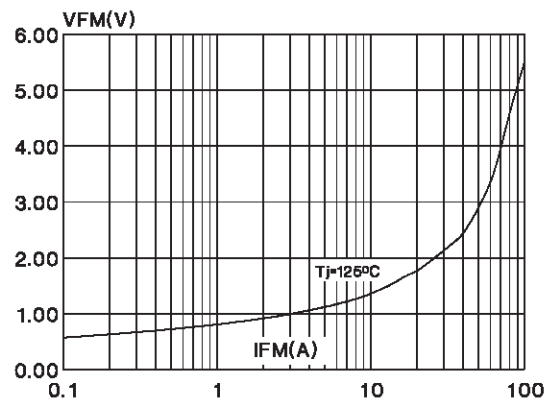


Fig. 7: Junction capacitance versus reverse voltage applied (typical values).

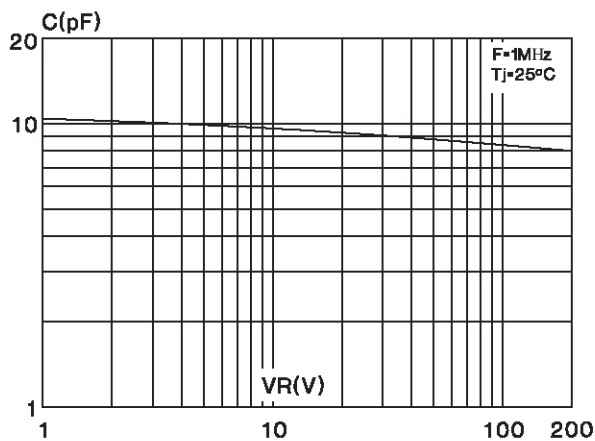
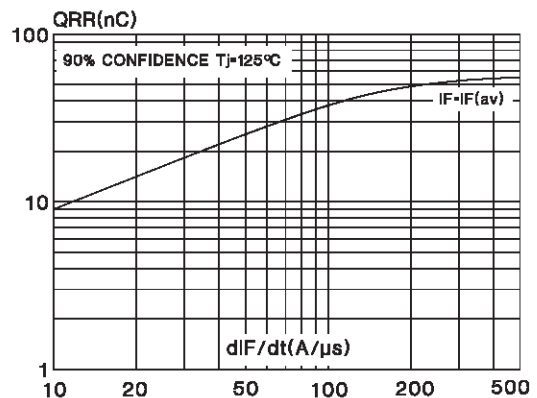


Fig. 8: Recovery charges versus dIF/dt.



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

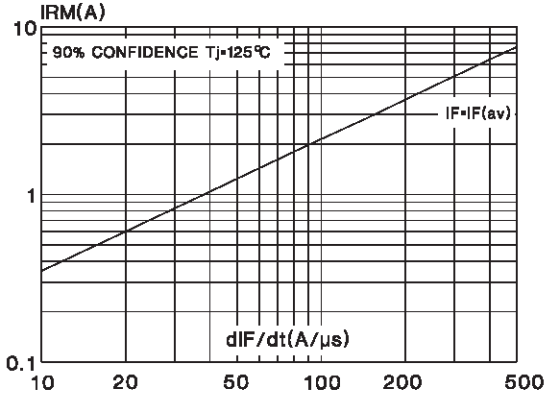
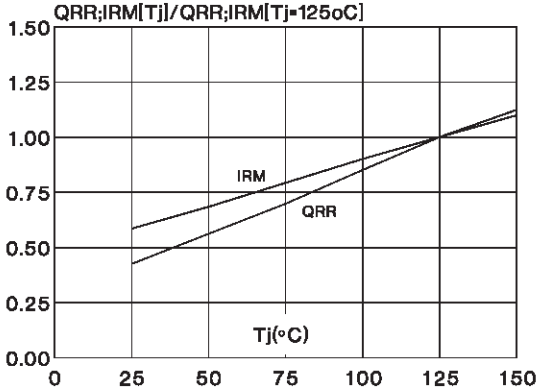
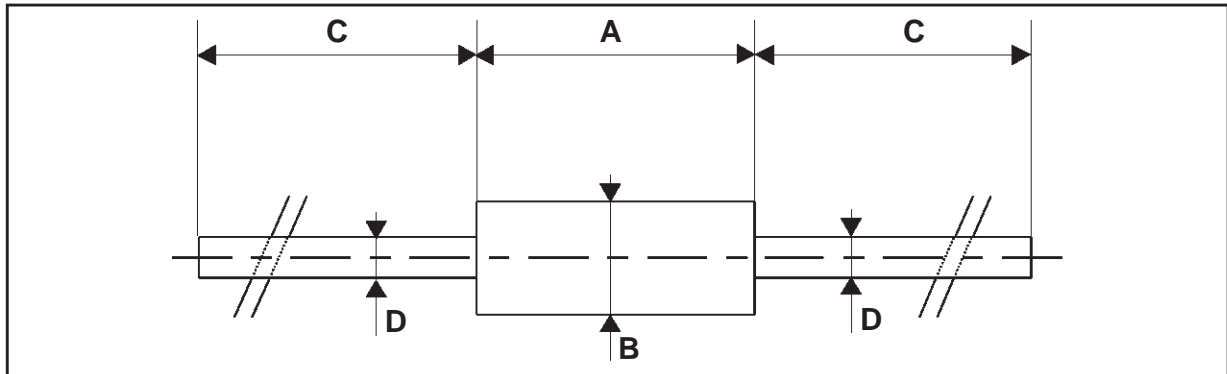


Fig. 10: Dynamic parameters versus junction temperature.



PACKAGE MECHANICAL DATA

F126



| REF. | DIMENSIONS | | | | | |
|------|-------------|------|------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 6.05 | 6.20 | 6.35 | 0.238 | 0.244 | 0.250 |
| B | 2.95 | 3.00 | 3.05 | 0.116 | 0.118 | 0.120 |
| C | 26 | | 31 | 1.024 | | 1.220 |
| D | 0.76 | 0.81 | 0.86 | 0.030 | 0.032 | 0.034 |

| Ordering type | Marking | Package | Weight | Base qty | Delivery mode |
|---------------|---------|---------|--------|----------|---------------|
| STPR320 | STPR320 | F126 | 0.4g | 1000 | Ammopack |

- Cooling method : by conduction (C)
- Epoxy meets UL94,V0

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