SEMTECH

**RECTIFIER, up to 150V, 5A, 30ns** **1N6079 5FF05**
**1N6080 5FF10**
**1N6081 5FF15**

January 7, 1998

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## AXIAL LEADED HERMETICALLY SEALED SUPERFAST RECTIFIER DIODE

- Very low reverse recovery time
- Hermetically sealed in Metoxilite fused metal oxide
- Low switching losses
- Low forward voltage drop
- Soft, non-snap off, recovery characteristics

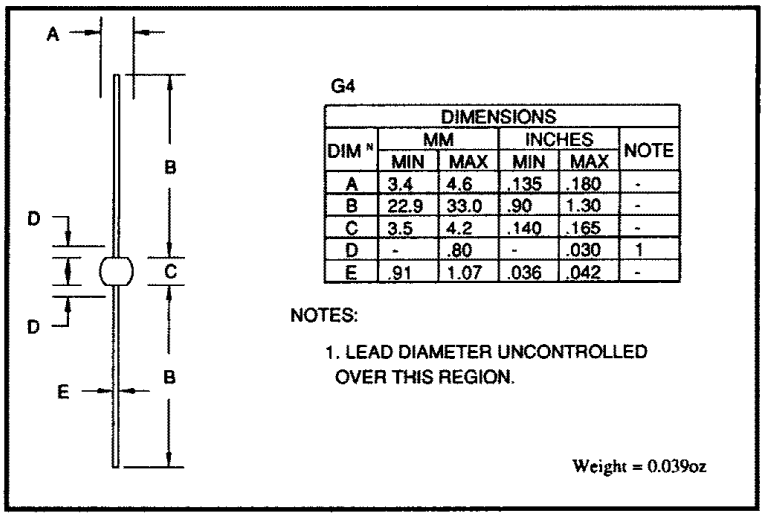
## QUICK REFERENCE DATA

- $V_R$ = 50 - 150V
- $I_F$ = 5.0A
- $t_{rr}$ = 30nS
- $V_F$ = 0.97V

## ABSOLUTE MAXIMUM RATINGS (@ 25°C unless otherwise specified)

| | Symbol | 1N6079 5FF05 | 1N6080 5FF10 | 1N6081 5FF15 | Unit |
|---|---|---|---|---|---|
| Working reverse voltage | $V_{RWM}$ | 50 | 100 | 150 | V |
| Repetitive reverse voltage | $V_{RRM}$ | 50 | 100 | 150 | V |
| Average forward current (@ 55°C, lead length 0.375") | $I_{F(av)}$ | ← | 5.0 | → | A |
| Repetitive surge current (@ 55°C in free air, lead length 0.375") | $I_{FRM}$ | ← | 24 | → | A |
| Non-repetitive surge current ($t_p$ = 8.3mS, @ $V_R$ & $T_{jmax}$) | $I_{FSM}$ | ← | 175 | → | A |
| Storage temperature range | $T_{STG}$ | ← | -65 to +150 | → | °C |
| Operating temperature range | $T_{OP}$ | ← | -65 to +150 | → | °C |

## MECHANICAL

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| DIM | DIMENSIONS MM MIN | MM MAX | INCHES MIN | INCHES MAX | NOTE |
|---|---|---|---|---|---|
| A | 3.4 | 4.6 | .135 | .180 | - |
| B | 22.9 | 33.0 | .90 | 1.30 | - |
| C | 3.5 | 4.2 | .140 | .165 | - |
| D | - | .80 | - | .030 | 1 |
| E | .91 | 1.07 | .036 | .042 | - |

NOTES:

1. LEAD DIAMETER UNCONTROLLED OVER THIS REGION.

Weight = 0.039oz

These products are qualified to MIL-S-19500/503.
They can be supplied fully released as JAN, JANTX, and JANTXV versions.

These products are qualified in Europe to DEF STAN 59-61 (PART 80)/030 available to F and FX levels.

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## ELECTRICAL CHARACTERISTICS (@ 25°C unless otherwise specified)

| | Symbol | 1N6079 5FF05 | 1N6080 5FF10 | 1N6081 5FF15 | Unit |
|---|---|---|---|---|---|
| Average forward current max. $T_A = 55°C$ for sine wave | $I_{F(AV)}$ | ← | 2.0 | → | A |
| Average forward current max. $T_L = 70°C$; L = 0" | $I_{F(AV)}$ | ← | 12.0 | → | A |
| $T_L = 55°C$; L = 3/8" for sine wave | $I_{F(AV)}$ | ← | 4.8 | → | A |
| for square wave | $I_{F(AV)}$ | ← | 5.0 | → | A |
| $I^2t$ for fusing (t = 8.3mS) max. | $I^2t$ | ← | 127 | → | $A^2S$ |
| Forward voltage drop max. @ $I_F$ = 5.0A, $T_j = 25°C$ | $V_F$ | ← | 0.97 | → | V |
| Reverse current max. @ $V_{RWM}$, $T_j = 25°C$ | $I_R$ | ← | 10 | → | µA |
| @ $V_{RWM}$, $T_j = 100°C$ | $I_R$ | ← | 500 | → | µA |
| Reverse recovery time max. 0.5A $I_F$ to 1.0A $I_R$. Recovers to 0.25A $I_{RR}$. | $t_{rr}$ | ← | 30 | → | nS |
| Junction capacitance typ. @ $V_R$ = 5V , f = 1MHz | $C_j$ | ← | 230 | → | pF |

## THERMAL CHARACTERISTICS

| | Symbol | 1N6079 5FF05 | 1N6080 5FF10 | 1N6081 5FF15 | Unit |
|---|---|---|---|---|---|
| Thermal resistance - junction to lead Lead length = 0.375" | $R_{\theta JL}$ | ← | 23.5 | → | °C/W |
| Lead length = 0.0" | $R_{\theta JL}$ | ← | 5 | → | °C/W |
| Thermal resistance - junction to amb. on 0.06" thick pcb. 1 oz. copper. | $R_{\theta JA}$ | ← | 75 | → | °C/W |

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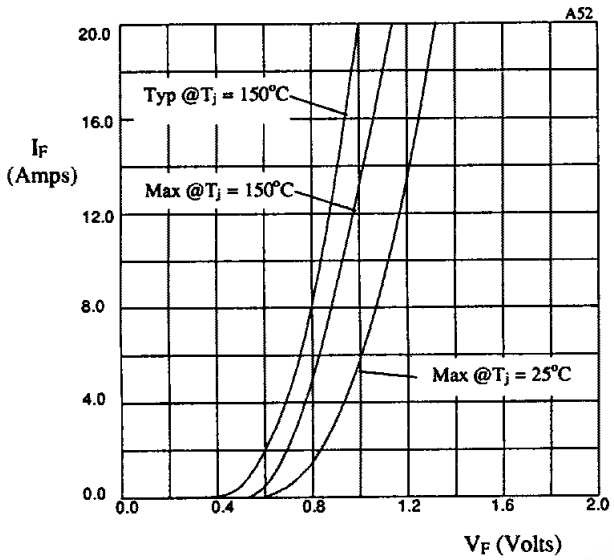


Fig 1. Forward voltage drop as a function of forward current

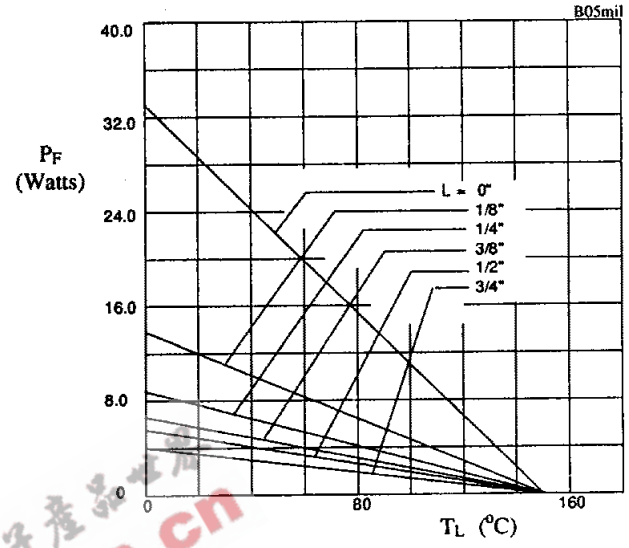


Fig 2. Maximum power versus lead temperature

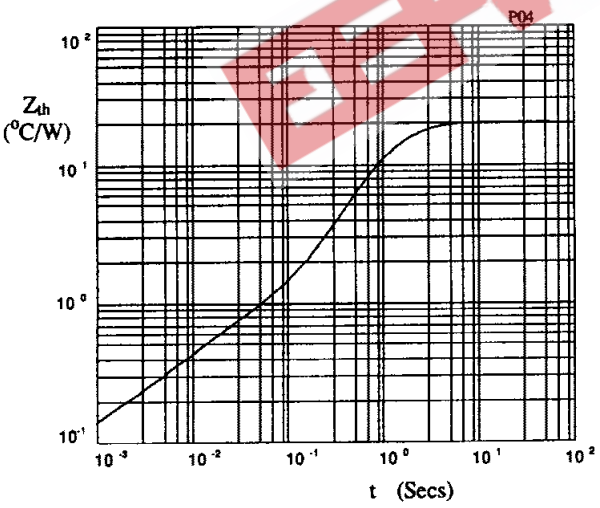


Fig 3. Transient thermal impedance characteristic.

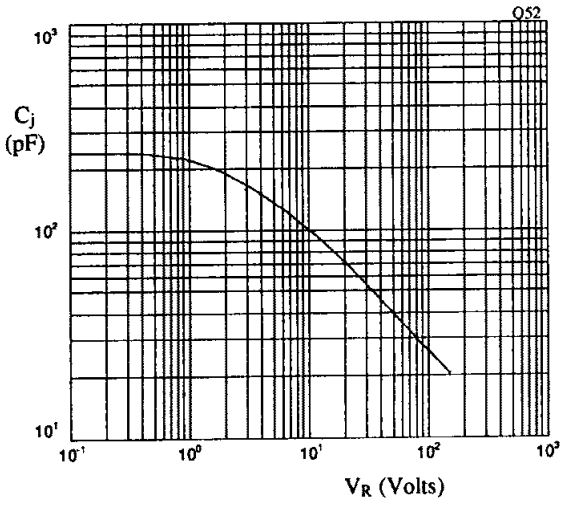


Fig 4. Typical junction capacitance as a function of reverse voltage.

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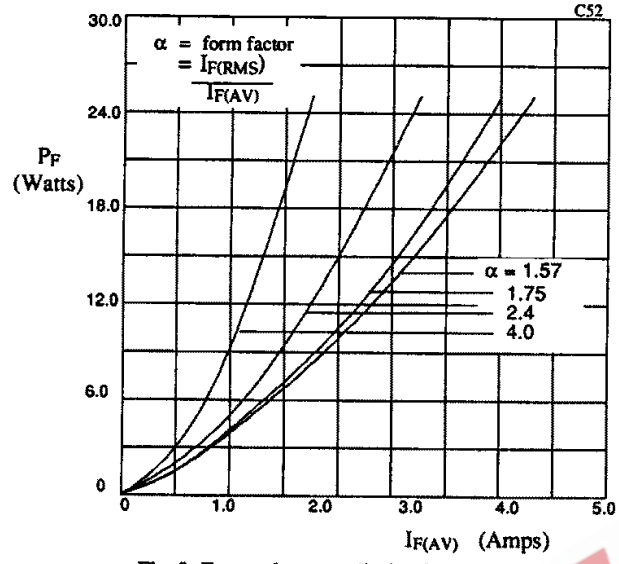


Fig 5. Forward power dissipation as a function of forward current, for sinusoidal operation.

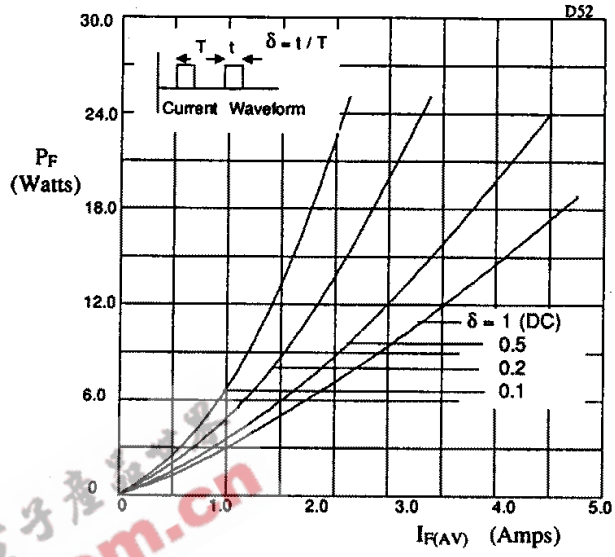


Fig 6. Forward power dissipation as a function of forward current, for square wave operation.

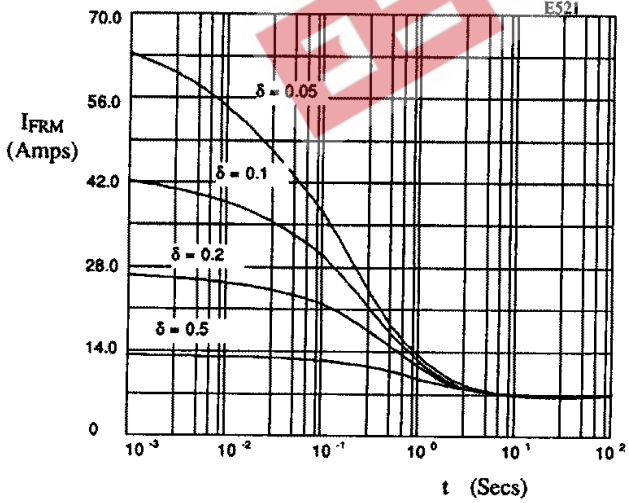


Fig 7. Maximum repetitive forward current as a function of pulse width at 55°C; $R_{\theta JL}$ = 20 °C/W; $V_{RWM}$ during 1 - δ.

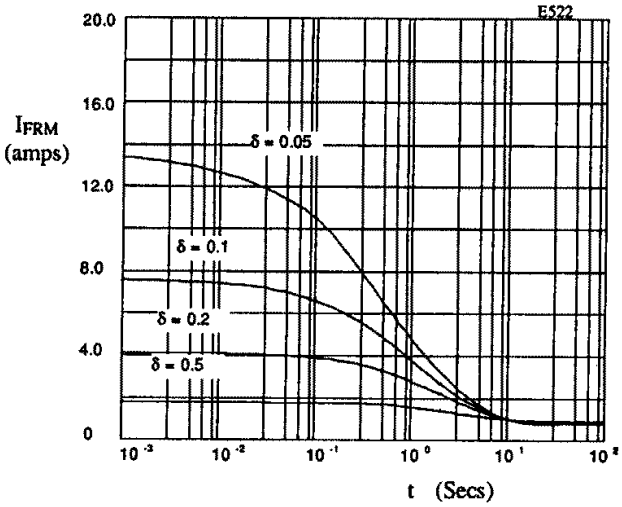


Fig 8. Maximum repetitive forward current as a function of pulse width at 100°C; $R_{\theta JL}$ = 80 °C/W; $V_{RWM}$ during 1 - δ.