ALSO AVAILABLE IN SURFACE MOUNT

Microsemi Corp.
The diode experts

*SCOTTSDALE, AZ*
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# 60S SERIES

## 6 AMP AXIAL-LEAD SILICON RECTIFIER DIODES

## DESCRIPTION/FEATURES

- ECONOMICAL 6 AMP $I_O$ MOLDED DEVICE OFFERS CAPABILITY OF STUD-MOUNTED RECTIFIERS
- 400 AMPS SURGE PROVIDES HIGH IN-RUSH CURRENT CAPABILITY
- WIDE VOLTAGE RANGE AVAILABLE: 50 TO 1000 VOLTS $V_{RRM}$

## Major Ratings and Characteristics

| | 60S | |
|---|---|---|
| $I_{F(AV)}$ | 6 | A |
| @ Max. $T_L$ | 95 | °C |
| $I_{FSM}$ | | |
| @ 50 Hz | 382 | A |
| @ 60 Hz | 400 | |
| $I^2t$ | | |
| @ 50 Hz | 712 | $A^2s$ |
| @ 60 Hz | 650 | |
| $T_J$ | -40 to 175 | °C |
| $V_{RRM}$ Range | 50-1000 | V |

### VOLTAGE RATINGS

| Part Number | Working $V_{RWM}$ (V) $T_J$ = -40°C to 200°C | $V_R$ – Max. Direct Reverse Voltage (V) $T_J$ = -40°C to 200°C |
|---|---|---|
| 60S05 | 50 | 50 |
| 60S1 | 100 | 100 |
| 60S2 | 200 | 200 |
| 60S4 | 400 | 400 |
| 60S5 | 500 | 500 |
| 60S6 | 600 | 600 |
| 60S8 | 800 | 800 |
| 60S10 | 1000 | 1000 |

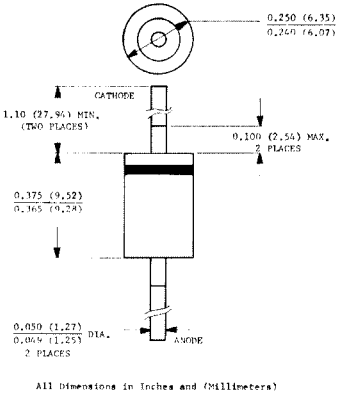
### ELECTRICAL SPECIFICATIONS

| | | 60S | Units | Conditions |
|---|---|---|---|---|
| $I_{F(AV)}$ | Max. average forward current | 6 | A | 1-phase operation, 180° conduction, $T_L$ = 95°C, ℓ = 9.5 mm (0.375 in.) |
| $I_{FSM}$ | Max. peak one-cycle non-repetitive surge current | 382 | A | Half cycle 50 Hz sine wave or 6 ms rectangular pulse; Following any rated load condition and with rated $V_{RRM}$ applied. |
| | | 400 | | Half cycle 60 Hz sine wave or 5 ms rectangular pulse |
| | | 454 | | Half cycle 50 Hz sine wave or 6 ms rectangular pulse; Following any rated load condition and with $V_{RRM}$ applied following surge = 0. |
| | | 475 | | Half cycle 60 Hz sine wave or 5 ms rectangular pulse |
| $I^2t$ | Max. $I^2t$ for fusing | 712 | $A^2s$ | t = 10 ms; With rated $V_{RRM}$ applied following surge, initial $T_J$ = 175°C |
| | | 650 | | t = 8.3 ms |
| | Max. $I^2t$ for individual device fusing | 1006 | | t = 10 ms; With $V_{RRM}$ = 0 following surge, initial $T_J$ = 175°C |
| | | 919 | | t = 8.3 ms |
| $I^2\sqrt{t}$ | Max. $I^2\sqrt{t}$ for individual device fusing (1) | 10,330 | $A^2\sqrt{s}$ | t = 0.1 to 10 ms, $V_{RRM}$ = 0 following surge. |
| $V_{FM}$ | Max. peak forward voltage | 1.00 | V | $I_{F(AV)}$ = 6A (18.8A peak), $T_J$ = 25°C |
| $I_{R(AV)}$ | Max. average reverse current | | | |
| | 50 - 100V | 2.0 | mA | Max. rated $I_{F(AV)}$ and $V_{RRM}$, $T_C$ = 95°C, length of leads to the temperature measurement points (heat sinks) = 9.5 mm (0.375 in.) |
| | 200V | 1 | | |
| | 400-500V | 0.8 | | |
| | 600-1000V | 0.5 | | |

### THERMAL-MECHANICAL SPECIFICATIONS

| | | | | |
|---|---|---|---|---|
| $T_J$ | Max. operating junction temperature range | -40 to 175 | °C | |
| $T_{stg}$ | Max. storage temperature range | -40 to 175 | °C | |
| $R_{thJC}$ | Max. internal thermal resistance, junction-to-leads | – | deg C/W | DC operation, double side cooled, measured 9.5 mm (0.375 in.) from body. |
| ℓ | Length of leads (ℓ) (1/8") 3.2 mm | 11.0 | | ± 10% |
| | Length of leads (ℓ) (3/8") 9.5 mm | 14.7 | | |
| | Length of leads (ℓ) (3/4") 19 mm | 20.0 | | |
| wt | Approximate weight | 1.5 (0.053) | g (oz) | |

Note (1): $I^2t$ for time $t_x = I^2\sqrt{t} \cdot \sqrt{t_x}$




All Dimensions in Inches and (Millimeters)

### MECHANICAL CHARACTERISTICS

CASE: Molded plastic use Flame Retardant Epoxy.

TERMINALS: Axial leads, solderable per MIL-STD-202, Method 208.

POLARITY: Color band denotes cathode.

MOUNTING POSITION: Any.

# 60S Series
## RATING AND CHARACTERISTIC CURVES

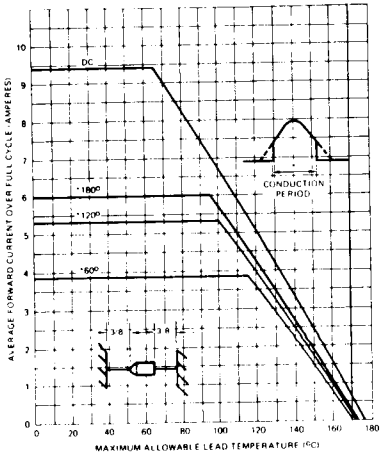



**Fig. 1 – Average Forward Current Vs. Lead Temperature at Heat Sinks (ℓ = 3/8 inch)**

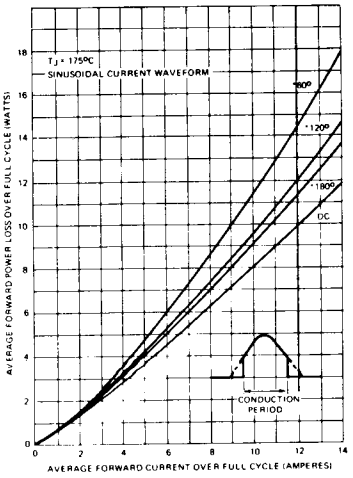



**Fig. 2 – Maximum Average Forward Power Loss Vs. Low-Level Average Forward Current**

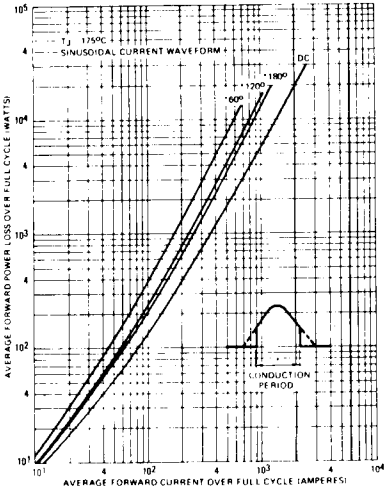



**Fig. 3 – Maximum Average Forward Power Loss Vs. High-Level Forward Current**

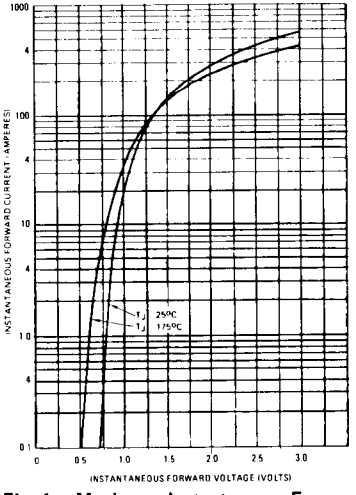



**Fig. 4 – Maximum Instantaneous Forward Voltage Vs. Instantaneous Forward Current**

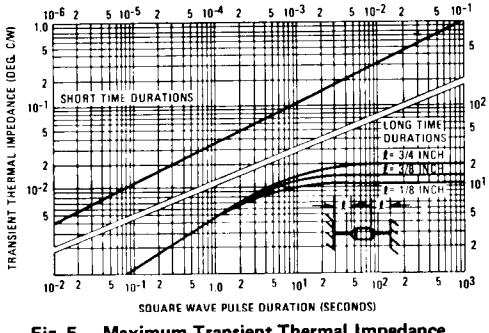



**Fig. 5 – Maximum Transient Thermal Impedance, Vs. Square Wave Pulse Duration**

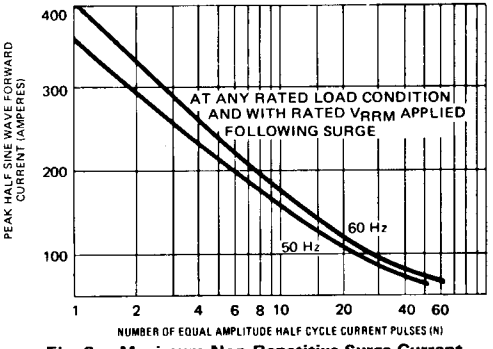



**Fig. 6 – Maximum Non-Repetitive Surge Current Vs. Number of Current Pulses**