UPS560e3

5 A Schottky Barrier Rectifier

DESCRIPTION

This UPS560e3 in the Powermite3® package is a high efficiency Schottky rectifier that is also RoHS compliant offering high current/power capabilities previously found only in much larger packages. They are ideal for SMD applications that operate at high frequencies. In addition to its size advantages, the Powermite3® package includes a full metallic bottom that eliminates the possibility of solder flux entrapment during assembly and a unique locking tab act as an efficient heat path to the heat-sink mounting. Its innovative design makes this device ideal for use with automatic insertion equipment.

IMPORTANT: For the most current data, consult *MICROSEMI*'s website: **http://www.microsemi.com**

KEY FEATURES

- Very low thermal resistance package
- RoHS Compliant with e3 suffix part number
- Guard-ring-die construction for transient protection
- Efficient heat path with Integral locking bottom metal tab
- Low forward voltage
- Full metallic bottom eliminates flux entrapment
- Compatible with automatic insertion
- Low profile-maximum height of 1mm

ABSOLUTE MAXIMUM RATINGS AT 25º C (UNLESS OTHERWISE SPECIFIED)

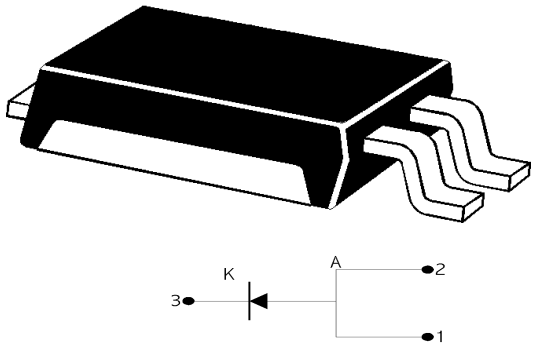
Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	60	V
RMS Reverse Voltage	$V_{R\ (RMS)}$	42	V
Average Rectified Output Current	I_o	5	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single half sine wave Superimposed on Rated Load@ T_c =90 ºC	I_{FSM}	100	A
Storage Temperature	T_{STG}	-55 to +150	ºC
Junction Temperature	T_J	-55 to +125	ºC

THERMAL CHARACTERISTICS

Thermal Resistance			
Junction-to-case (bottom)	$R_{\theta JC}$	3.2	ºC/ Watt
Junction to ambient (1)	$R_{\theta JA}$	65	ºC/ Watt

(1) When mounted on FR-4 PC board using 2 oz copper with recommended minimum foot print

Powermite 3™



Note: 1 Short duration test pulse used to minimize self – heating effect.

APPLICATIONS/BENEFITS

- Switching and Regulating Power Supplies.
- Silicon Schottky (hot carrier) rectifier for minimal reverse voltage recovery
- Elimination of reverse-recovery oscillations to reduce need for EMI filtering
- Charge Pump Circuits
- Reduces reverse recovery loss with low I_{RM}
- Small foot print
  190 X 270 mils (1:1 Actual size)
  See mounting pad details on pg 3

MECHANICAL & PACKAGING

- CASE: Void-free transfer molded thermosetting epoxy compound meeting UL94V-0
- FINISH: Annealed matte-Tin plating over copper and readily solderable per MIL-STD-750 method 2026 (consult factory for Tin-Lead plating)
- POLARITY: See figure (left)
- MARKING: S560•
- WEIGHT: 0.072 gram (approx.)
- Package dimension on last page
- Tape & Reel option: 16 mm tape per Standard EIA-481-B, 5000 on 13" reel

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ELECTRICAL PARAMETERS @ 25°C (unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ.	Max	Units
Forward Voltage (Note 1)	V_{Fm}	I_F = 5 A , T_j = 25 °C I_F = 5 A , T_j = 125 °C I_F = 8 A , T_j = 25 °C I_F = 8 A , T_j = 125 °C		0.65 0.56 0.74 0.64	0.69 0.60 0.78 0.68	V
Reverse Break Down Voltage (Note 1)	V_{BR}	I_R = 0.2 mA	60			V
Reverse Current (Note1)	I_{rm}	V_R = 60 V, T_j = 25°C V_R = 60 V, T_j =125 °C		2 0.6	200 20	µA mA
Capacitance	C_T	V_R = 4 V; F = 1 MH_Z		150		pF

GRAPHS

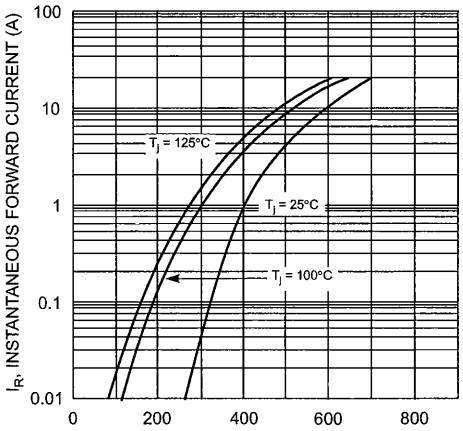


Fig. 1 Typical Forward Characteristics

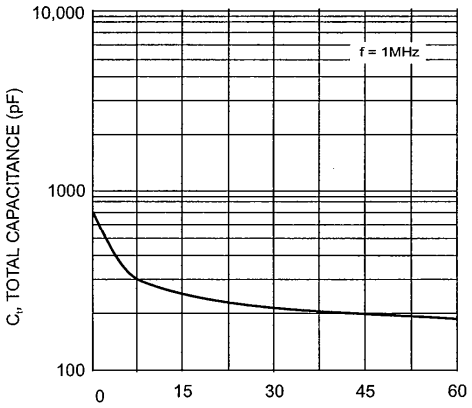


Fig. 3 Typical Capacitance vs. Reverse Voltage

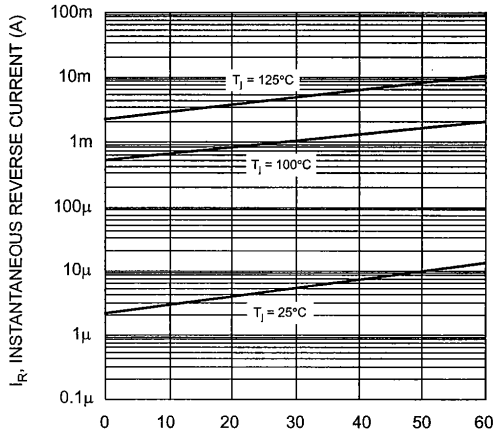


Fig. 2 Typical Reverse Characteristics

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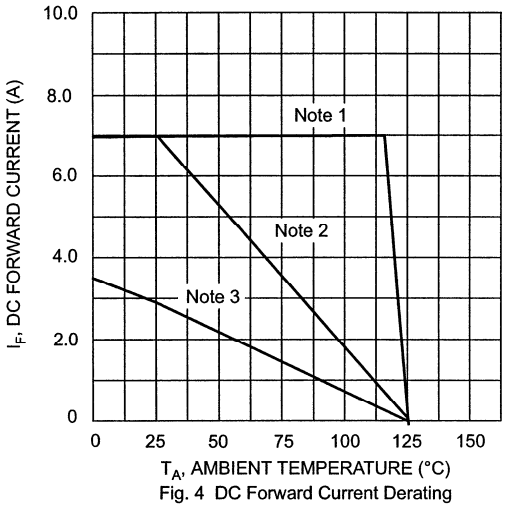


Fig. 4 DC Forward Current Derating

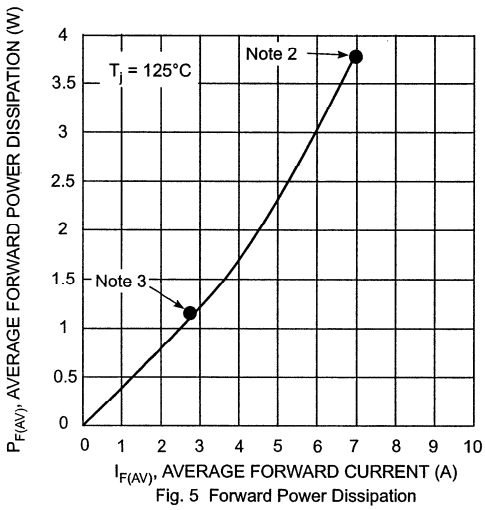


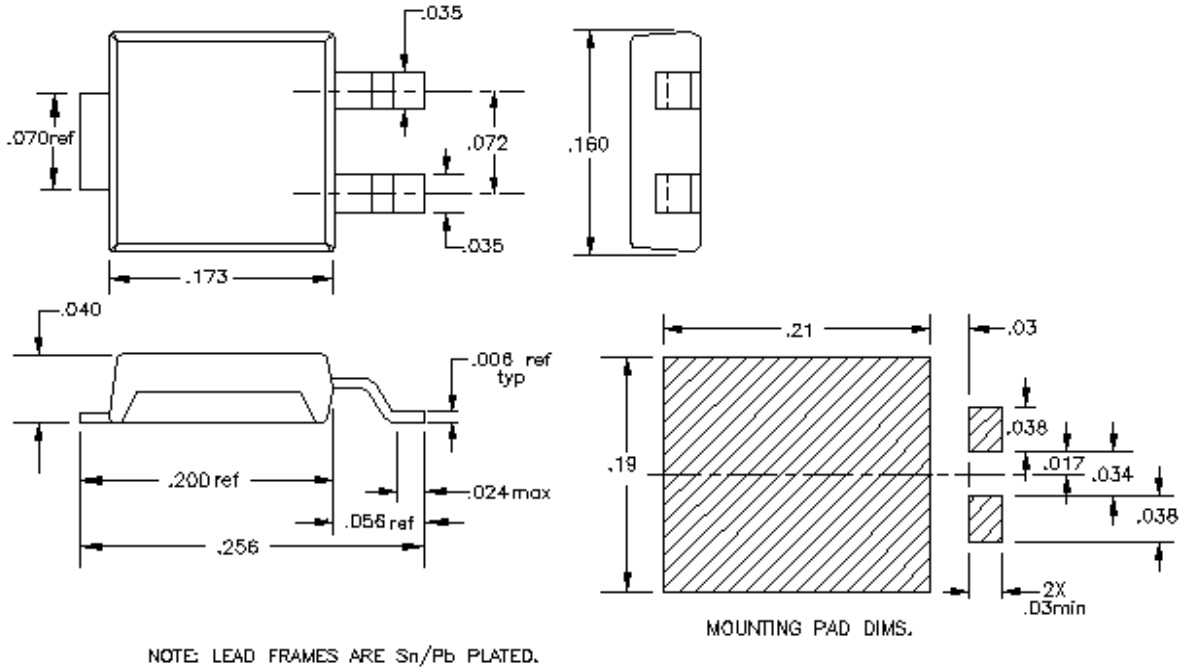
Fig. 5 Forward Power Dissipation

NOTE 1: $T_A = T_C$ at case bottom where $R_{\theta JC}$ =2.5º C/W and $R_{\theta CA}$ = 0º C/W (infinite heat sink).

NOTE 2: Device mounted on GETEK substrate, 2" x 2", 2 oz. copper , double-sided , cathode pad dimensions 0.75" x 1.0", anode pad dimensions 0.25" x 1.0". $R_{\theta JA}$ in range of 20-35° C/W.

NOTE 3: Device mounted on FRA-4 substrate, 2" x 2", 2 oz. copper, single-sided, pad layout $R_{\theta JA}$ in range of 65°C/W. See

PACKAGE & MOUNTING PAD DIMENSIONS (inches)



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