UPS760e3

7 A Schottky Barrier Rectifier

DESCRIPTION

This UPS760e3 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. This acts 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**

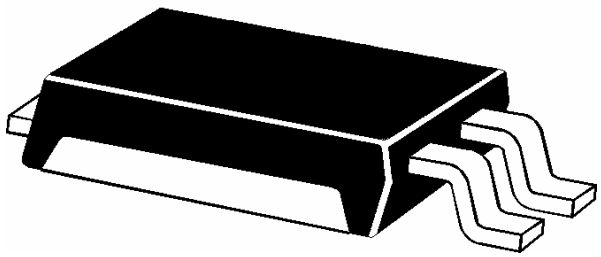
ABSOLUTE MAXIMUM RATINGS AT 25º C (UNLESS OTHERWISE SPECIFIED)

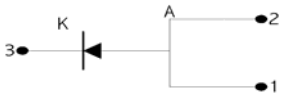
Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	60	V
RMS Reverse Voltage	$V_{R(RMS)}$	42	V
Average Rectified Output Current	I_o	7	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single half sine wave Superimposed on Rated 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 (UNLESS OTHERWISE SPECIFIED)

Thermal Resistance			
Junction to Case (Bottom)	$R_{\theta JC}$	2.5	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.





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
- Options for screening in accordance with MIL-PRF-19500 for JAN, JANTX, and JANTXV are available by adding MQ, MX, or MV prefixes respectively to part numbers. For example, designate MXUPS760e3 for a JANTX (consult factory for Tin-Lead plating).
- Optional 100% avionics screening available by adding MA prefix for 100% temperature cycle, thermal impedance and 24 hours HTRB (consult factory for Tin-Lead plating)

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: S760•
- 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

ELECTRICAL PARAMETERS @ 25°C (unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ.	Max	Units
Forward Voltage (Note 1)	V_{Fm}	I_F = 3.5 A , T_j = 25 ºC I_F = 3.5 A , T_j = 125 ºC I_F = 7 A , T_j = 25 ºC I_F = 7 A , T_j = 125 ºC		0.48 0.36 0.55 0.44	0.52 0.40 0.60 0.48	V
Reverse Break Down Voltage (Note 1)	V_{BR}	I_R = 0.5 mA	60			V
Reverse Current (Note1)	I_R	V_R = 60 V, T_j = 25ºC V_R = 60 V, T_j =125 ºC		15 10	100 20	µA mA
Capacitance	C_T	V_R = 4.0V; f = 1 MH_Z		375		pF

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

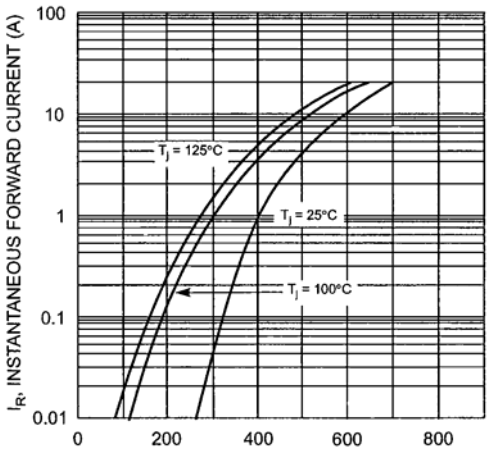


Fig. 1 Typical Forward Characteristics

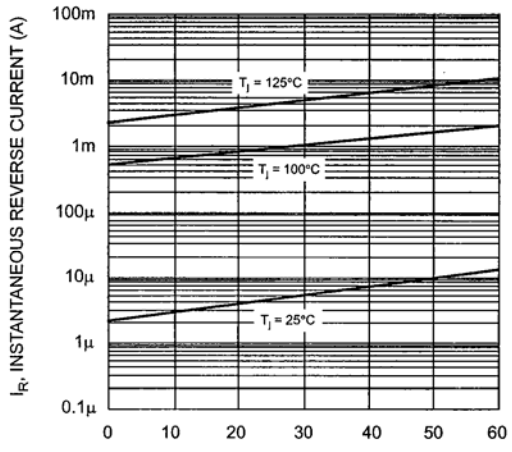


Fig. 2 Typical Reverse Characteristics

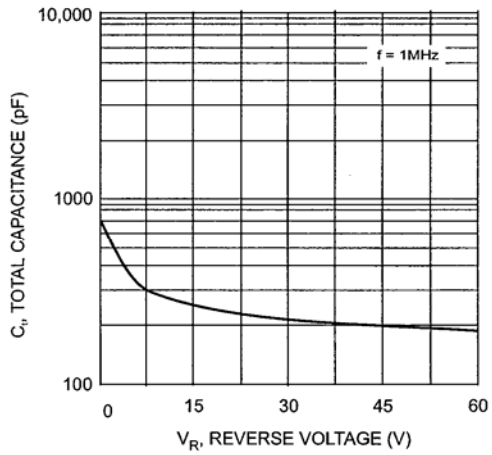


Fig. 3 Typical Capacitance vs. Reverse Voltage

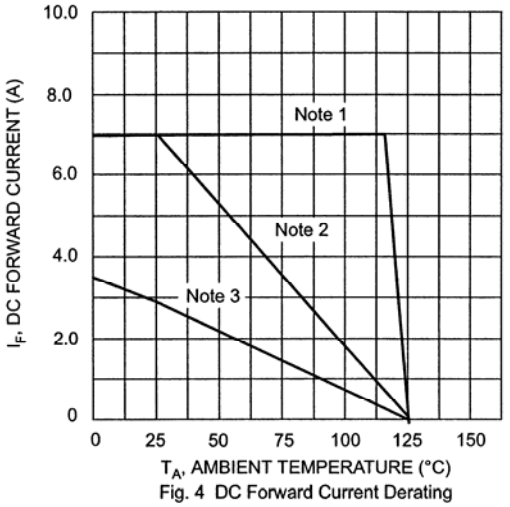


Fig. 4 DC Forward Current Derating

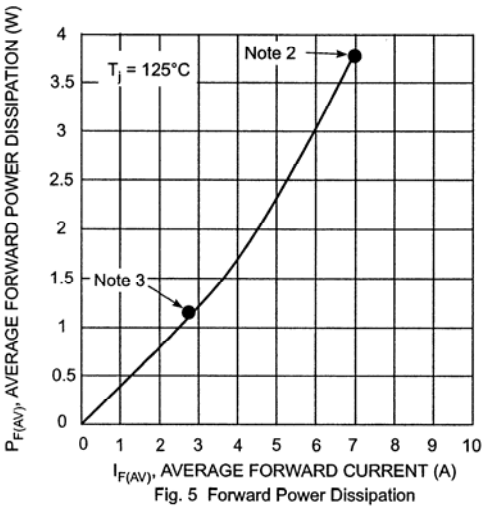
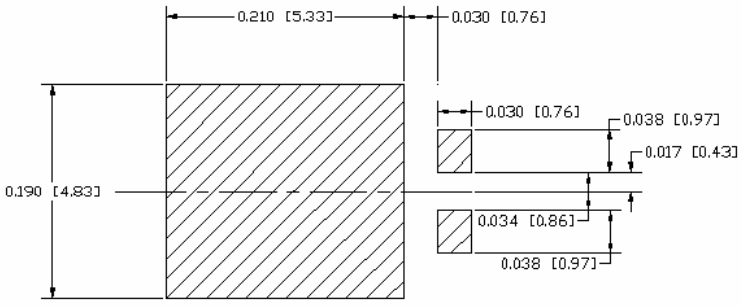


Fig. 5 Forward Power Dissipation

Notes: 1. $T_A = T_{SOLDERING\ POINT}$, $R_{\Theta JS}$ = 2.5C/W, $R_{\Theta SA}$ = 0º C/W.
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.
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 mounting pad below.

MOUNTING PAD

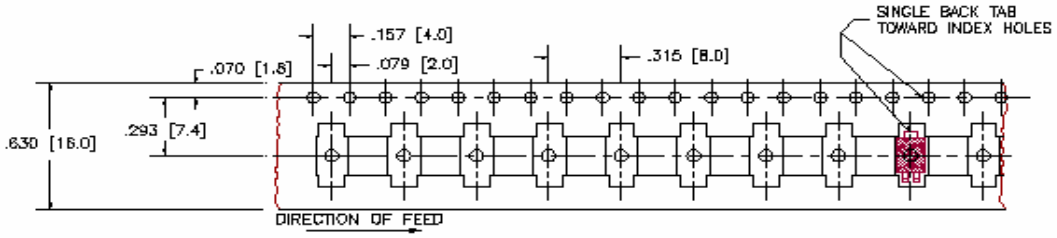


Mounting Pad Dimensions: inches [mm]

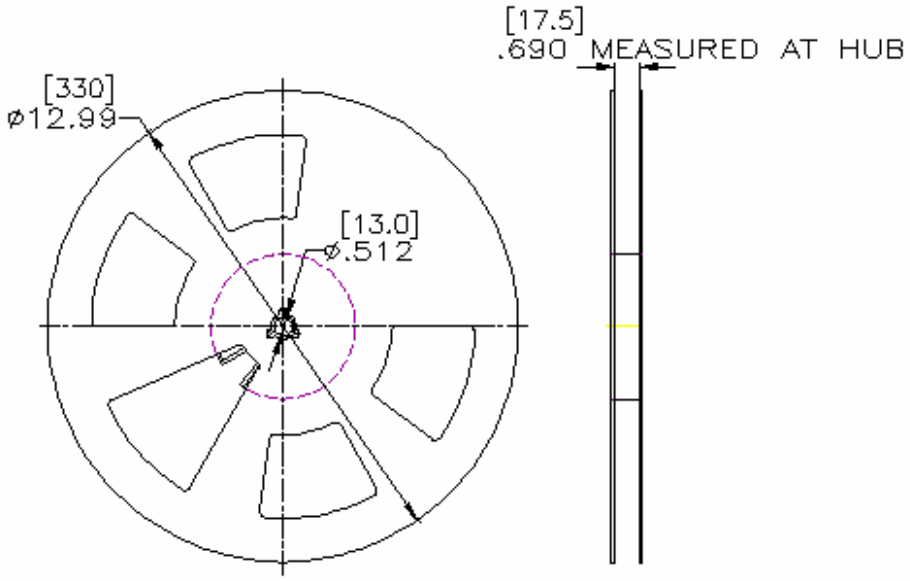
UPS760e3

TAPE & REEL

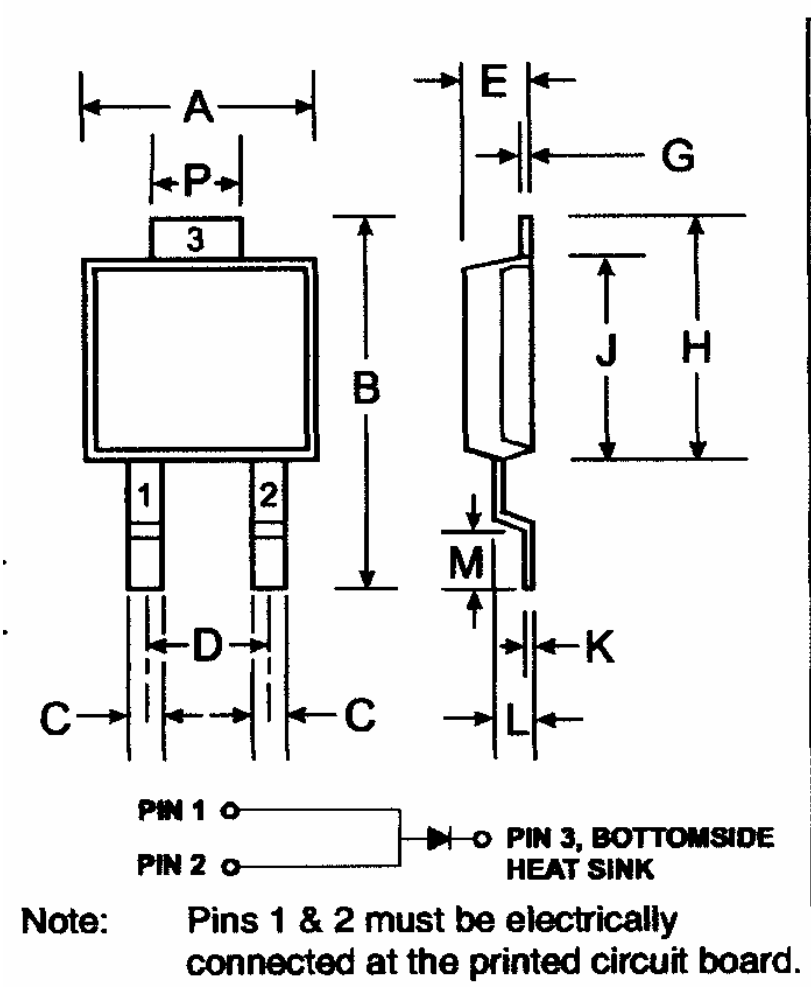
16 MM TAPE



13 INCH REEL



PACKAGE DIMENSIONS



Note: Pins 1 & 2 must be electrically connected at the printed circuit board.

POWERMITE®3		
Dim	Min	Max
A	4.03	4.09
B	6.40	6.61
C	.889 NOM	
D	1.83 NOM	
E	1.10	1.14
G	.178 NOM	
H	5.01	5.17
J	4.37	4.43
K	.178 NOM	
L	.71	.77
M	.36	.46
P	1.73	1.83
All Dimensions in mm		