

### DESCRIPTION

This UPS540e3 in the Powermite3<sup>®</sup> 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<sup>®</sup> 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>

### ABSOLUTE MAXIMUM RATINGS AT 25° C (UNLESS OTHERWISE SPECIFIED)

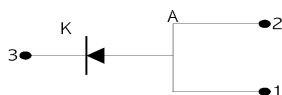
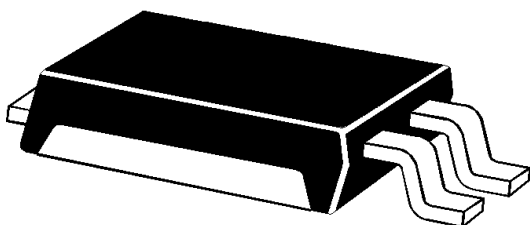
Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	40	V
RMS Reverse Voltage	$V_R (RMS)$	28	V
Average Rectified Output Current	$I_o$	5	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single half sine wave Superimposed on Rated Load @ $T_c = 90^\circ C$	$I_{FSM}$	100	A
Storage Temperature	$T_{STG}$	-55 to +150	°C
Junction Temperature	$T_J$	-55 to +125	°C

### THERMAL CHARACTERISTICS

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

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


### Powermite 3™



### 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

### 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

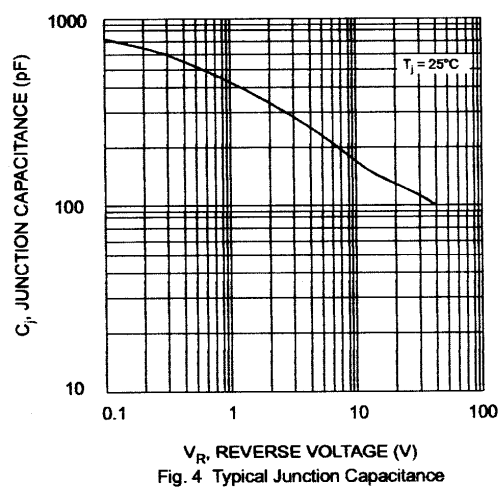
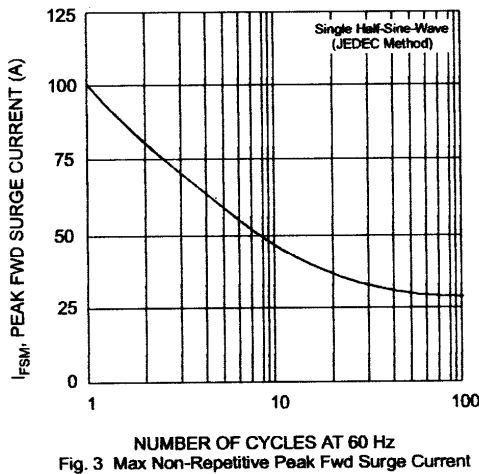
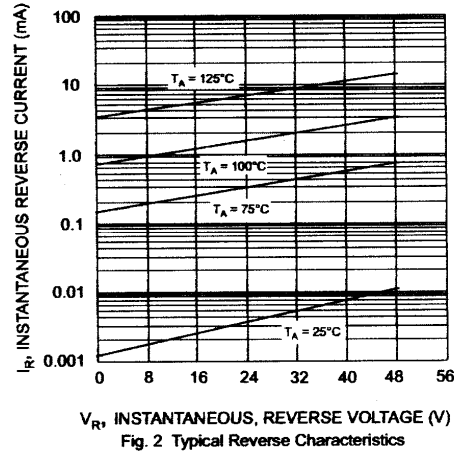
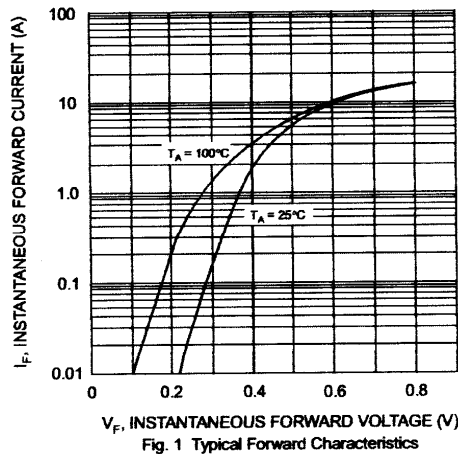
### MECHANICAL & PACKAGING

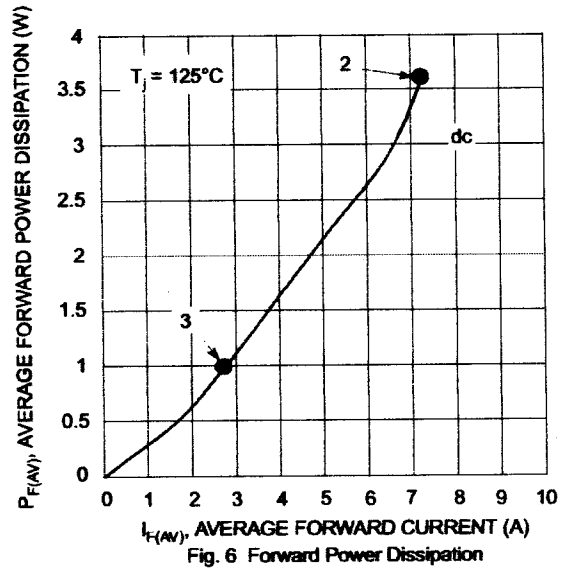
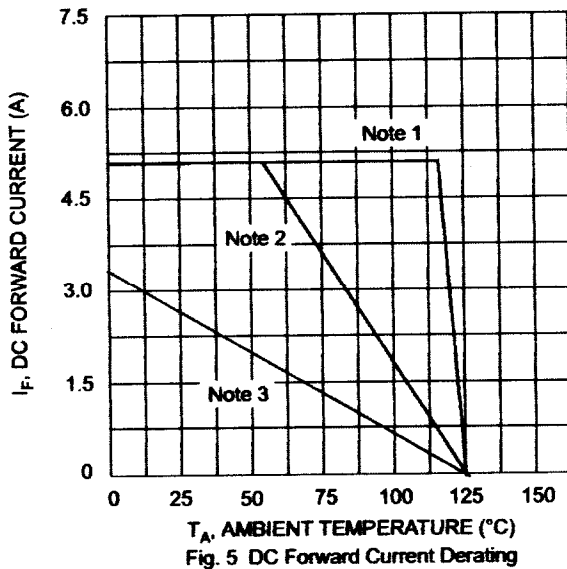
- CASE: Void-free transfer molded thermosetting epoxy compound meeting UL94V-0
- FINISH: Annealed matte-Tin plating over copper and readily solderable per MIL-STD-750 method 2026 (consult factory for Tin-Lead plating)
- POLARITY: See figure (left)
- MARKING: S540•
- WEIGHT: 0.072 gram (approx.)
- Package 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)**

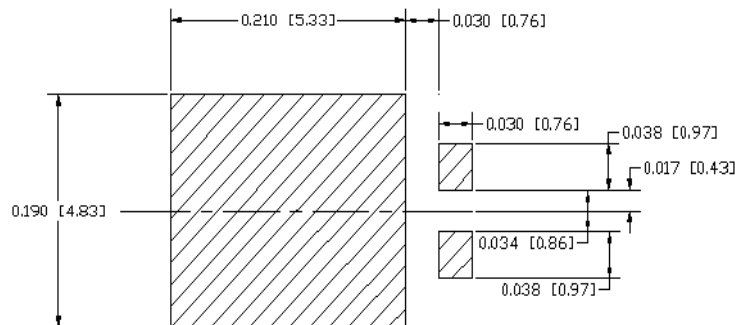
Parameter	Symbol	Conditions	Min	Typ.	Max	Units
Forward Voltage (Note 1)	$V_F$	$I_F = 5 \text{ A}, T_J = 25^\circ\text{C}$ $I_F = 5 \text{ A}, T_J = 125^\circ\text{C}$ $I_F = 10 \text{ A}, T_J = 25^\circ\text{C}$ $I_F = 10 \text{ A}, T_J = 125^\circ\text{C}$		0.47 0.45 0.62 0.59	0.54	V
Reverse Break Down Voltage (Note 1)	$V_{BR}$	$I_R = 0.5 \text{ mA}$	40			V
Reverse Current (Note1)	$I_R$	$V_R = 40 \text{ V}, T_J = 25^\circ\text{C}$ $V_R = 40 \text{ V}, T_J = 125^\circ\text{C}$		0.030 2.5	0.5 20	mA
Capacitance	$C_T$	$V_R = 4 \text{ V}; F = 1 \text{ MHz}$		250		pF

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



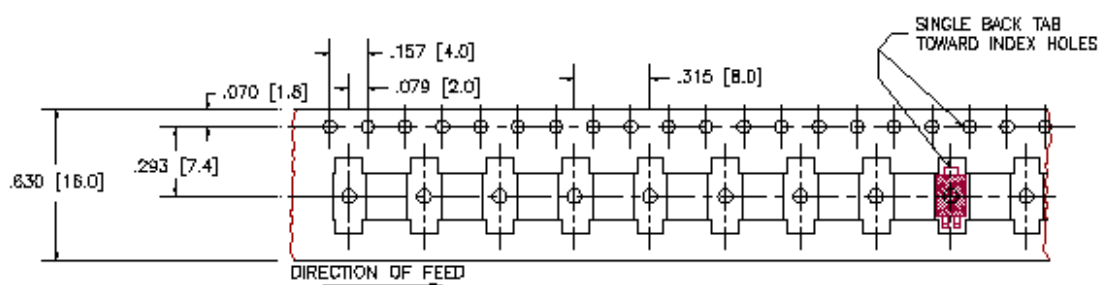


- Notes:
1.  $T_A = T_{\text{SOLDERING POINT}}$ ,  $R_{\theta JS} = 3.2^\circ\text{C/W}$ ,  $R_{\theta SA} = 0^\circ\text{C/W}$ .
  2. Device mounted on GETEK substrate, 2" x 2", 2 oz. copper, double-sided, cathode pad dimensions 0.75" x 1.0", anode pad dimensions 0.25" x 1.0".  $R_{\theta JA}$  in range of 15-30° 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.

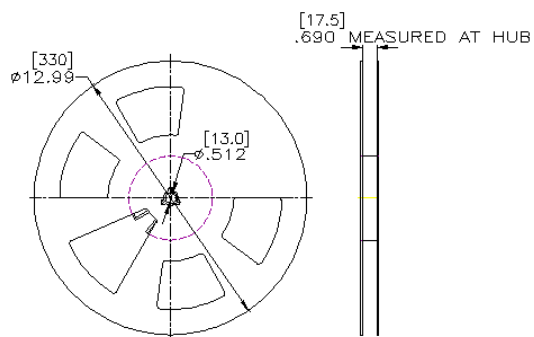


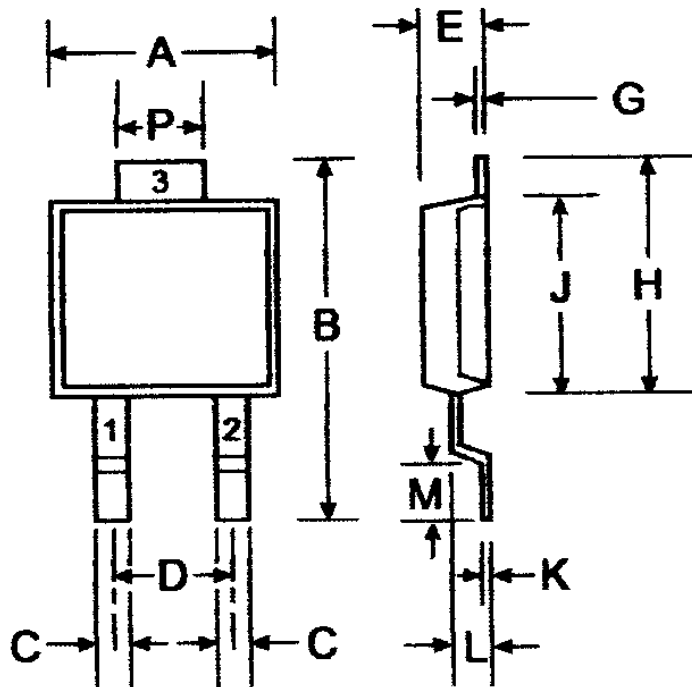
Mounting Pad Dimensions: inches [mm]

### 16 mm TAPE



### 13 INCH REEL



**DIMENSIONS**


PIN 1 ○  
PIN 2 ○  
PIN 3, BOTTOMSIDE  
HEAT SINK

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		



**UPS540e3**

**5 A Schottky Barrier Rectifier**

NOTES:

# Mouser Electronics

Authorized Distributor

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[UPS540e3/TR13](#)