Microsemi
SCOTTSDALE DIVISION

UPDS3200

3 Amp 200 V High Voltage Schottky Barrier Rectifier

DESCRIPTION

The UPDS3200 offers a small and powerful surface mount package for a high voltage 200 Volt, 3 Amp rated Schottky with low forward voltage and low leakage current. For critical applications requiring very fast switching, these higher voltage Schottkys with their "hot carrier" features provide extremely fast switching to replace conventional ultrafast rectifiers. The very low thermal resistance of the PowerDI™5 package design also permits cooler operating junction temperatures for minimal reverse leakage currents and lower power loss.

APPEARANCE

PowerDI™5

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

FEATURES

- Guard Ring Die Construction for Transient Protection
- High Current Low Forward Voltage Drop
- Low Leakage Current
- High Junction Temperature Capability
- High Forward Surge Current Capability
- Environmentally Friendly "Green" Molding Compound (No Br, Sb)
- Low inductive parasitics for minimal Ldi/dt effects
- Lead-Free Finish & RoHS Compliant per EU Directive Rev 13.2.2003 (Glass and High Temperature Solder Exemptions Applied per Annex Notes 5 and 7 therein)

APPLICATIONS / BENEFITS

- Silicon Schottky (hot carrier) rectifier for minimal t_{rr} and elimination of reverse-recovery oscillations to reduce need for EMI filtering
- For use in high-frequency switching power supplies, inverters, free wheeling, and polarity protection applications
- Low power loss and high efficiency
- Robust package configuration for pick-and-place handling
- Full-metallic bottom eliminates flux entrapment

MAXIMUM RATINGS

- Junction and Storage Temperature (T_J, T_{STG}): -65 to +150°C
- Average Rectified Output Current (I_O): 3 Amps for Single phase, half wave, 60Hz, resistive or inductive load (also see Figure 5). For capacitive load, derate current by 20%.
- Peak Repetitive Reverse Voltage (V_{RRM}): 200 V
  Working Peak Reverse Voltage (V_{RWM}): 200 V
  DC Blocking Voltage (V_R): 200 V
- RMS Reverse Voltage ($V_{R(RMS)}$): 141 V
- Non-Repetitive Peak Forward Surge Current @ 8.3 ms Single half sine-wave Superimposed on Rated Load (I_{FSM}): 180A
- Thermal Resistance Junction to bottom of case ($R_{\theta JC}$) or Junction to Soldering Point ($R_{\theta JS}$): 2.0°C/W
- Thermal Resistance ($R_{\theta JA}$): 90°C/W junction to ambient when mounted on FR-4 PCB, 2 oz. Copper and minimum recommended pad layout (see last page)

MECHANICAL AND PACKAGING

- Case Material: Molded Plastic, Environmentally Friendly "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture sensitivity: Level 1 per J-STD-020C.
- Terminals: Finish – Matte Tin annealed over Copper lead frame **(e3 per JESD97)** Solderable per MIL-STD-202, Method 208
- Marking: See marking information on page 3
- Polarity: See Diagram
- Weight: 0.096 grams (approx.)
- Tape & Reel Option: 5000/reel (13")

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UPDS3200

3 Amp 200 V High Voltage Schottky Barrier Rectifier

ELECTRICAL CHARACTERISTICS @ 25°C unless specified otherwise

Part Number	Working Peak Reverse Voltage	Maximum RMS Voltage	Minimum Reverse Breakdown Voltage	Maximum Forward Voltage (Note 2)		Maximum Reverse Current I_R @ V_{RWM} (Note 1)	Maximum Reverse Current I_R @ V_{RWM} ,125°C (Note 1)
	V_{RWM}	V_{RMS}	V_{BR} @ 10 µA	V_F @ 3 A	V_F @ 6 A	I_R	I_R
	Volts	Volts	Volts	Volts	Volts	µA	mA
UPDS3200	200	141	200	0.78	0.88	10	4.5

NOTE 1: Short duration test pulse used to minimize self-heating effect.
NOTE 2: See Figure 1 for typical values at various temperatures

GRAPHS

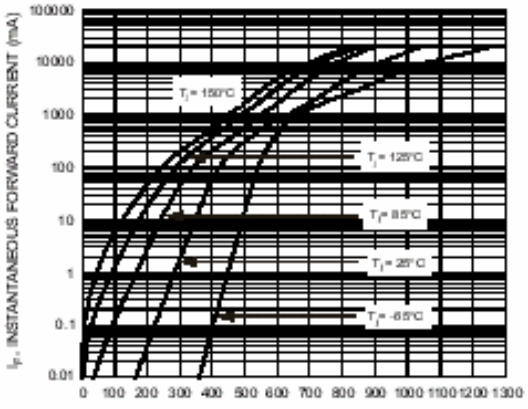


Fig. 1 Typical Forward Characteristics

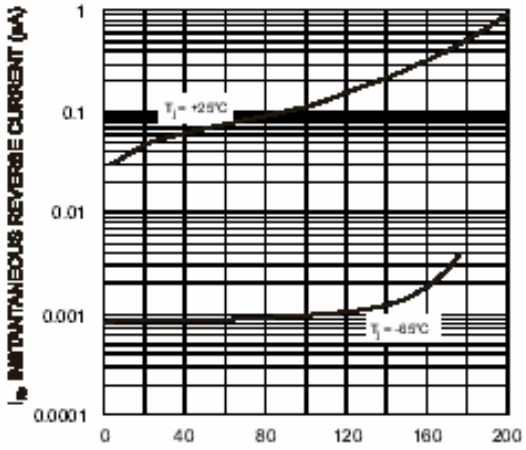


Fig. 2 Typical Reverse Characteristics

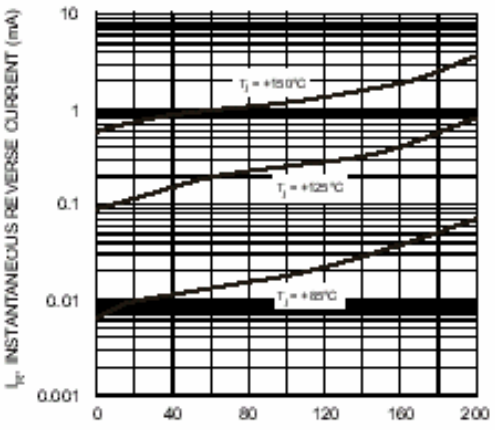


Fig. 3 Typical Reverse Characteristics

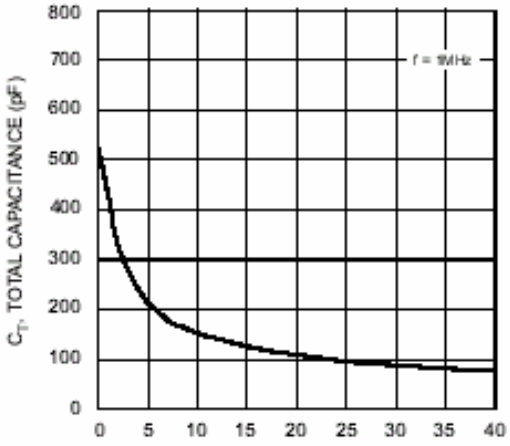


Fig. 4 Typical Total Capacitance

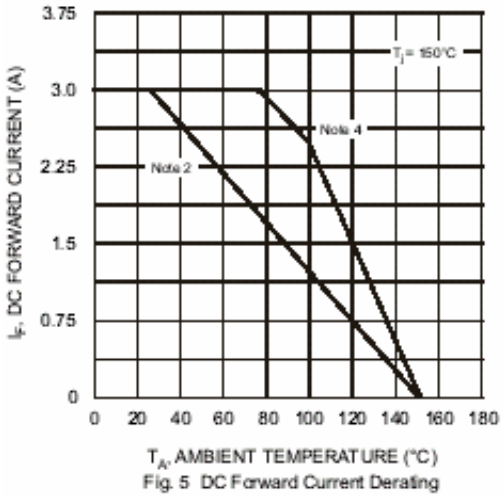


Fig. 5 DC Forward Current Derating

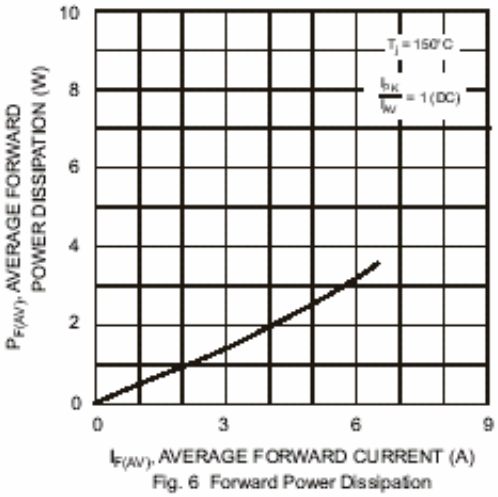


Fig. 6 Forward Power Dissipation

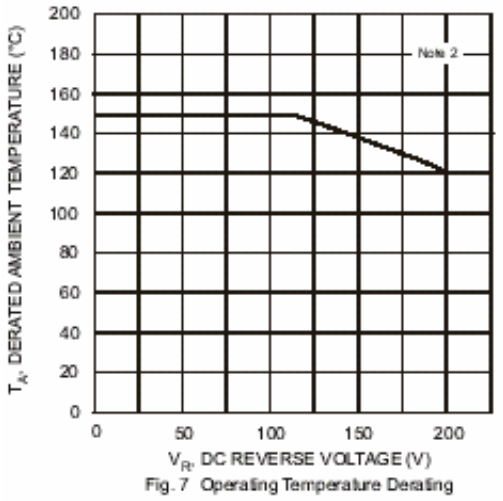


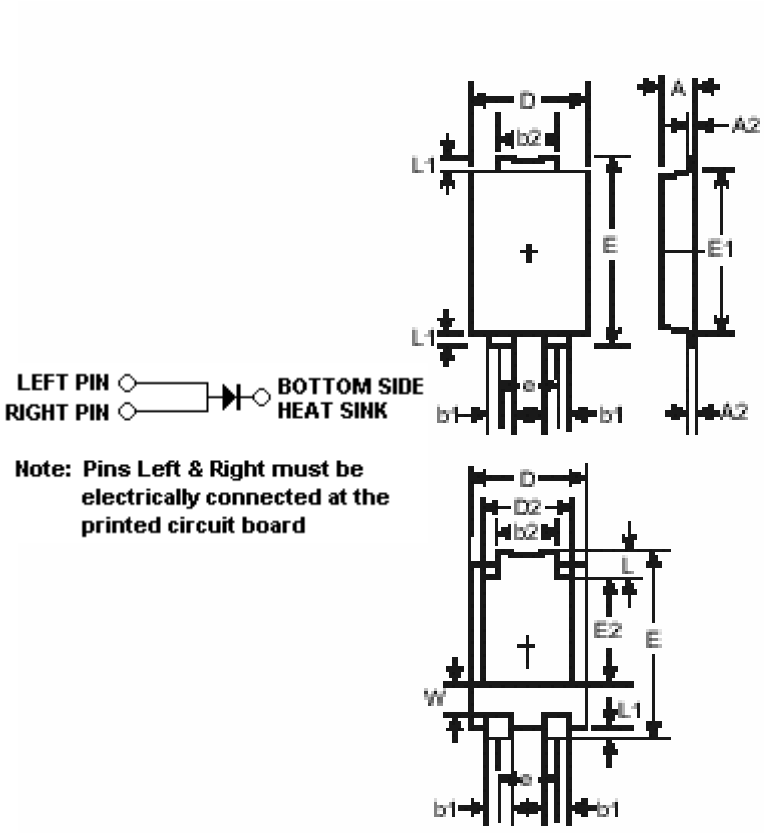
Fig. 7 Operating Temperature Derating

Notes:
2. FR-4 PCB, 2 oz. Copper, minimum recommended pad layout.
3. Short duration test pulse used to minimiz self-heating effect.
4. Polyimide PCB, 2 oz. Copper, minimum recommended pad layout.

MARKING INFORMATION

S3200 = Product type marking code.
MSC = Manufacturers' code marking
YYWW = Date code marking
YY = Last digit of year ex: 04 for 2004
WW = Week code 01 to 52

DIMENSIONS AND SCHEMATIC



Note: Pins Left & Right must be electrically connected at the printed circuit board

Dim	Min	Max
A	1.05	1.15
A2	0.33	0.43
b1	0.80	0.99
b2	1.70	1.88
D	3.90	4.05
D2	3.05 NOM	
E	6.40	6.60
e	1.84 NOM	
E1	5.30	5.45
E2	3.55 NOM	
L	0.75	0.95
L1	0.50	0.65
W	1.20	1.50
All Dimensions in mm		

PowerDI™5

MOUNTING PAD DIMENSIONS

PAD dimensions (mm)	
Z	6.6
X1	1.4
X2	3.6
Y1	0.8
Y2	4.7
C	3.87
E1	0.9