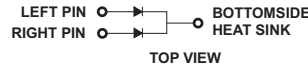
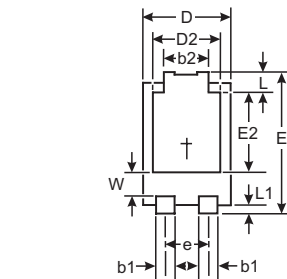
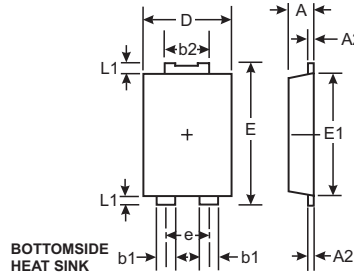


### Features

- Guard Ring Die Construction for Transient Protection
- Low Power Loss, High Efficiency
- Low Forward Voltage Drop
- Very Low Reverse Leakage Current
- For Use in Low Voltage, High Frequency Inverters, OR'ing, and Polarity Protection Applications
- High Forward Surge Current Capability
- **Lead Free Finish, RoHS Compliant (Note 1)**
- **"Green" Molding Compound (No Br, Sb)**
- **Qualified to AEC-Q101 Standards for High Reliability**



PowerDI™5		
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
<b>All Dimensions in mm</b>		

### Mechanical Data

- Case: PowerDI™5
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Finish – Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 (E3)
- Polarity: See Diagram
- Marking: See Page 3
- Weight: 0.096 grams (approx.)

### Maximum Ratings @ T<sub>A</sub> = 25°C unless otherwise specified

Single phase, half wave, 60Hz, resistive or inductive load.  
For capacitive load, derate current by 20%.

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V <sub>RRM</sub> V <sub>RWM</sub> V <sub>R</sub>	40	V
RMS Reverse Voltage	V <sub>R(RMS)</sub>	28	V
Average Rectified Output Current (See also Figure 5) per element total device	I <sub>O</sub>	5 10	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single half sine-wave Superimposed on Rated Load Per element	I <sub>FSM</sub>	110	A
Operating Temperature Range	T <sub>J</sub>	-65 to +150	°C
Storage Temperature Range	T <sub>STG</sub>	-65 to +150	°C

### Thermal Characteristics @ T<sub>A</sub> = 25°C unless otherwise specified

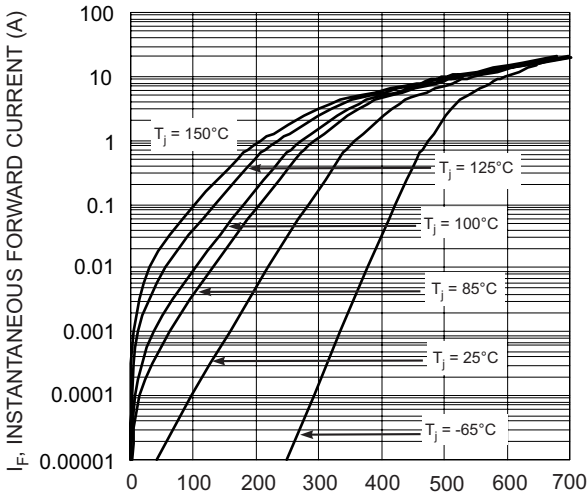
Characteristic	Symbol	Typ	Max	Unit
Thermal Resistance Junction to Soldering Point	R <sub>θJS</sub>	—	2.0	°C/W
Thermal Resistance Junction to Ambient Air (Note 2)	R <sub>θJA</sub>	95	—	°C/W
Thermal Resistance Junction to Ambient Air (Note 3)	R <sub>θJA</sub>	75	—	°C/W
Thermal Resistance Junction to Ambient Air (Note 4)	R <sub>θJA</sub>	50	—	°C/W

- Notes:
1. RoHS revision 13.2.2003. Glass and High Temperature Solder Exemptions Applied, see *EU Directive Annex Notes 5 and 7*.
  2. FR-4 PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com/datasheets/ap02001.pdf>.
  3. Polyimide PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com/datasheets/ap02001.pdf>.
  4. Polyimide PCB, 2 oz. Copper. Cathode pad dimensions 9.4mm x 7.2mm. Anode pad dimensions 2.7mm x 1.6mm.

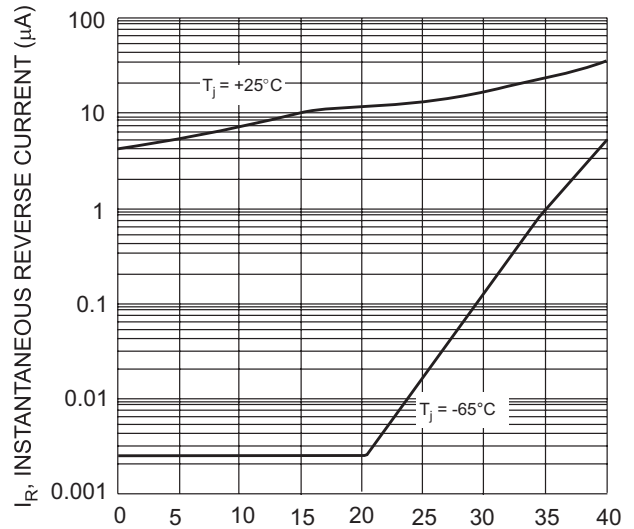
**Electrical Characteristics** @  $T_A = 25^\circ\text{C}$  unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 5)	$V_{(BR)R}$	40	—	—	V	$I_R = 500\mu\text{A}$
Forward Voltage	$V_F$	—	0.465 0.41 0.39 0.55 0.53 0.52	0.50 0.45 0.43 0.60 0.57 0.56	V	$I_F = 5\text{A}, T_s = 25^\circ\text{C}$ $I_F = 5\text{A}, T_s = 100^\circ\text{C}$ $I_F = 5\text{A}, T_s = 125^\circ\text{C}$ $I_F = 10\text{A}, T_s = 25^\circ\text{C}$ $I_F = 10\text{A}, T_s = 100^\circ\text{C}$ $I_F = 10\text{A}, T_s = 125^\circ\text{C}$
Reverse Leakage Current (Note 5)	$I_R$	—	20 3 15 2.5 6 1	200 25 150 10 80 5	$\mu\text{A}$ mA $\mu\text{A}$ mA $\mu\text{A}$ mA	$V_R = 40\text{V}, T_s = 25^\circ\text{C}$ $V_R = 40\text{V}, T_s = 100^\circ\text{C}$ $V_R = 35\text{V}, T_s = 25^\circ\text{C}$ $V_R = 35\text{V}, T_s = 100^\circ\text{C}$ $V_R = 17.5\text{V}, T_s = 25^\circ\text{C}$ $V_R = 17.5\text{V}, T_s = 100^\circ\text{C}$

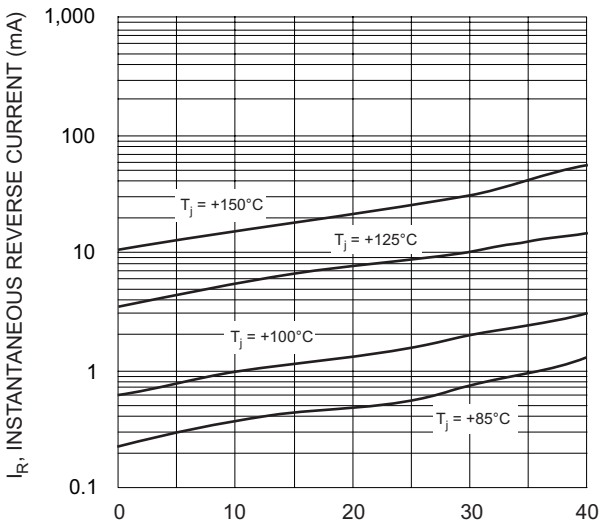
Notes: 5. Short duration test pulse used to minimize self-heating effect.



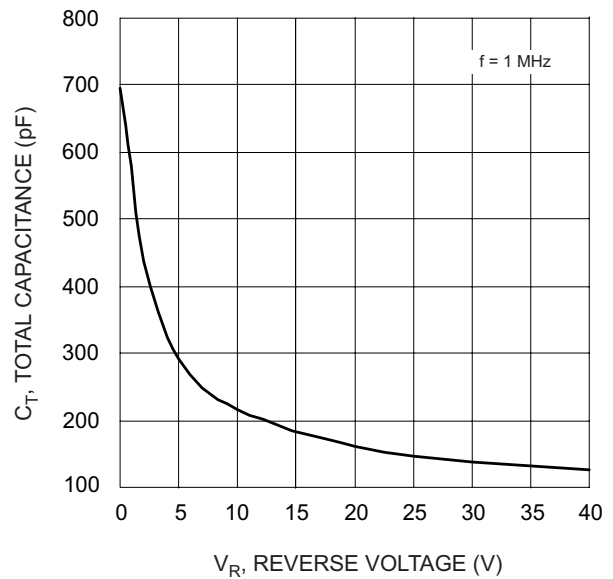
$V_F$ , INSTANTANEOUS FORWARD VOLTAGE (mV)  
Fig. 1 Typical Forward Characteristics, Per Element



$V_R$ , INSTANTANEOUS REVERSE VOLTAGE (V)  
Fig. 2 Typical Reverse Characteristics, Per Element



$V_R$ , INSTANTANEOUS REVERSE VOLTAGE (V)  
Fig. 3 Typical Reverse Characteristics, Per Element



$V_R$ , REVERSE VOLTAGE (V)  
Fig. 4 Typical Total Capacitance vs. Reverse Voltage, Per Element

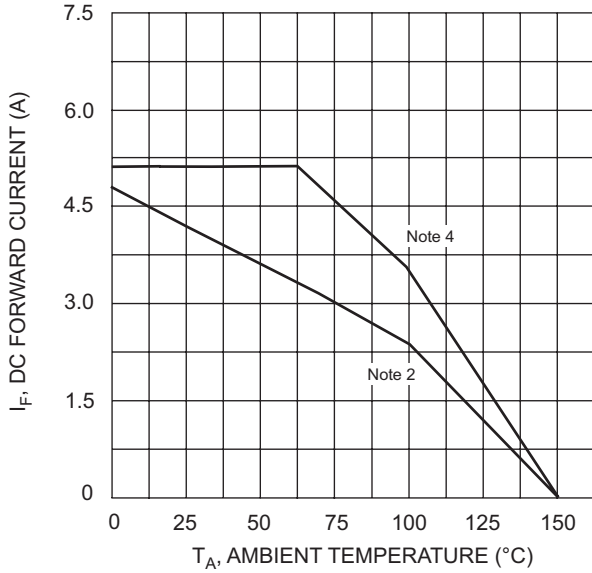


Fig. 5 DC Forward Current Derating, Per Element

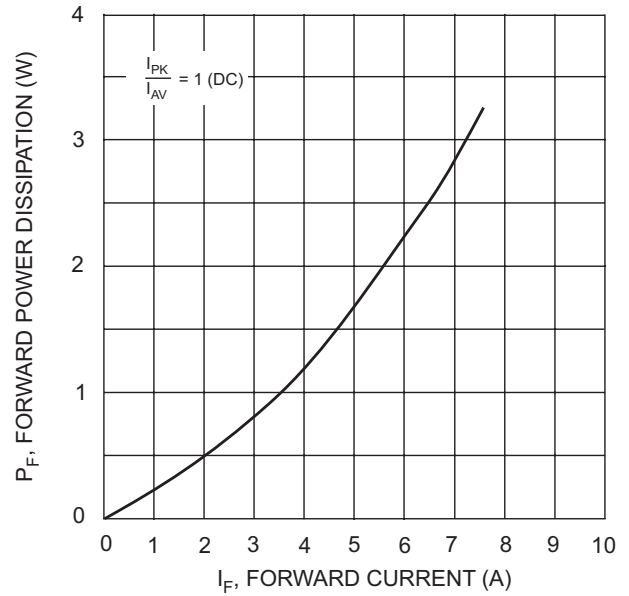


Fig. 6 Forward Power Dissipation, Per Element

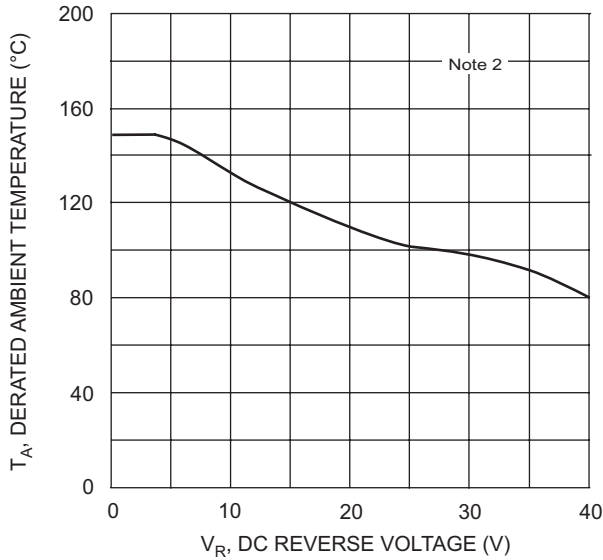


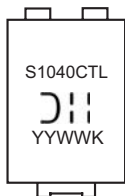
Fig. 7 Operating Temperature Derating, Per Element

**Ordering Information** (Note 6)

Device	Packaging	Shipping
PDS1040CTL-13	PowerDI™5	5000/Tape & Reel

- Notes:
- FR-4 PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com/datasheets/ap02001.pdf>.
  - Polyimide PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com/datasheets/ap02001.pdf>.
  - Polyimide PCB, 2 oz. Copper. Cathode pad dimensions 9.4mm x 7.2mm. Anode pad dimensions 2.7mm x 1.6mm.
  - Short duration test pulse used to minimize self-heating effect.
  - For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

**Marking Information**



S1040CTL = Product type marking code  
 DII = Manufacturer's code marking  
 YYWW = Date code marking  
 YY = Last digit of year ex: 04 for 2004  
 WW = Week code 01 to 52  
 K = Factory Designator Code