

Product Summary

V_{RWM}	V_{BR} Min	I_{PPM} Max
28V	31V	41A

Features and Benefits

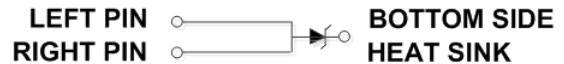
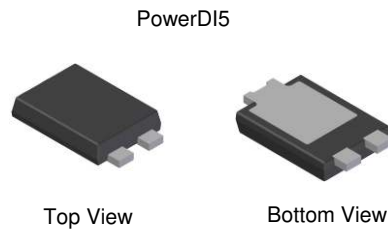
- Uni-directional polarity
- Low profile thermally efficient package
- Compliant with IEC 61000-4-2, IEC61000-4-4, IEC61000-4-5
- **ISO7637-2 (pulses 1, 2a, 2b, 3) Compliant**
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for Automotive**
- **PPAP Capable (Note 4)**

Description and Applications

Packaged in the thermally efficient PowerDI[®]5 this 1800W TVS is designed to protect sensitive electronic circuits in automotive applications from transients induced by inductive load switching.

Mechanical Data

- Case: PowerDI5
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 ⁽³⁾
- Terminal Connections: See Diagram Below
- Weight: 0.093 grams (Approximate)



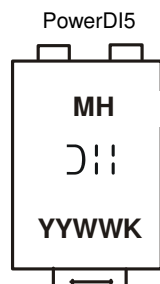
Note: Pins Left & Right must be electrically connected at the printed circuit board.

Ordering Information (Note 5)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
D28V0H1U2P5Q-13	Automotive	MH	13	16	5,000/Tape & Reel

- Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
 2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. Automotive products are AEC-Q101 qualified and are PPAP capable. Please refer to http://www.diodes.com/quality/product_compliance_definitions/.
 5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



- MH = Product Type Marking Code
- YYWW = Date Code Marking
- YY = Last Two Digits of Year (ex: 17 = 2017)
- WW = Week Code (01 - 53)
- K = Factory Designator

Maximum Ratings (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Power Dissipation	P_{PP}	1,800	W	10/1000 μs , See Figure 4
Maximum Instantaneous Forward Voltage	V_F	3.5	V	$I_F = 50\text{A}$
Peak Pulse Surge Current	I_{PPM}	41	A	10/1000 μs , See Figure 4
Non-Repetitive Peak Forward Surge Current 8.3ms	I_{FSM}	150	A	8.3ms single half sine-wave. Duty cycle = 4 pulses per minute max
ESD Protection – Human Body Model	V_{ESD_HBM}	8	kV	IEC 61000-4-2 Standard
ESD Protection – Machine Body Model	V_{ESD_MM}	400	V	IEC 61000-4-2 Standard
ESD Protection – Contact Discharge	$V_{ESD_CONTACT}$	30	kV	IEC 61000-4-2 Standard
ESD Protection – Air Discharge	V_{ESD_AIR}	30	kV	IEC 61000-4-2 Standard

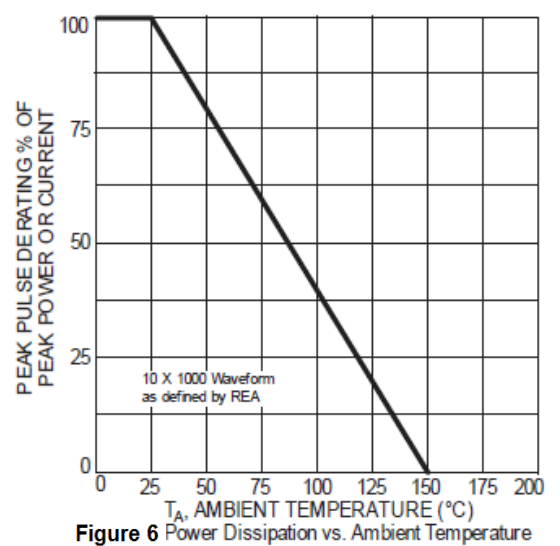
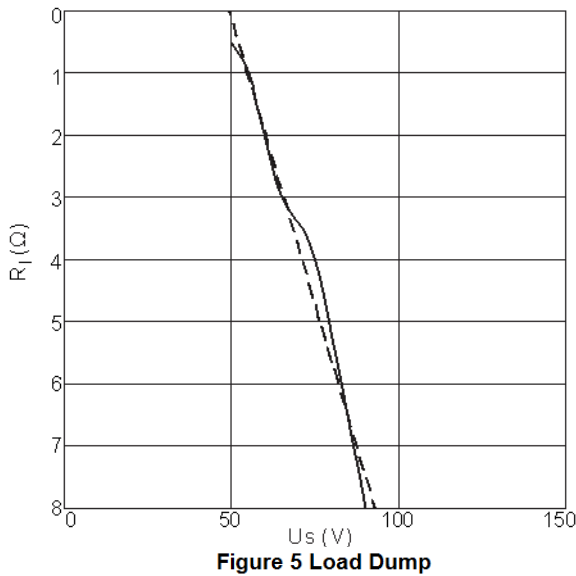
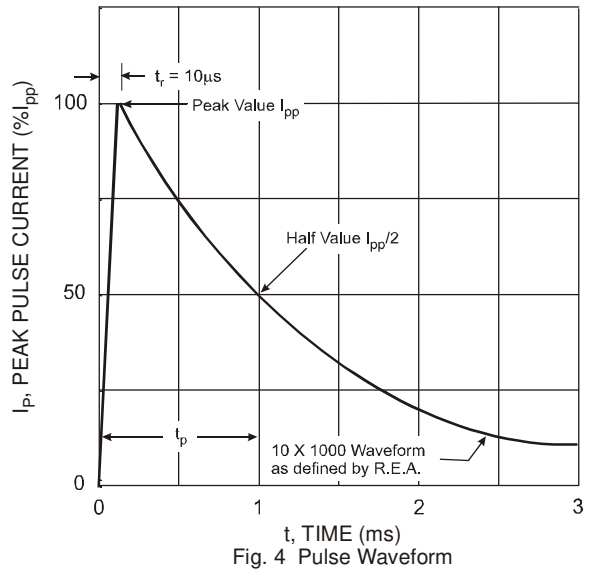
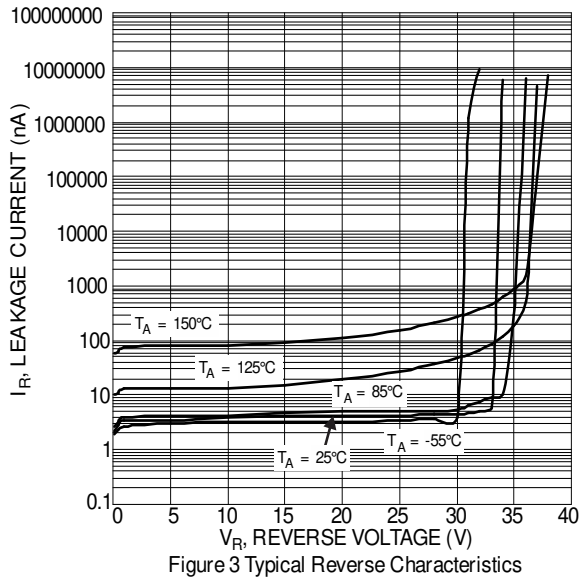
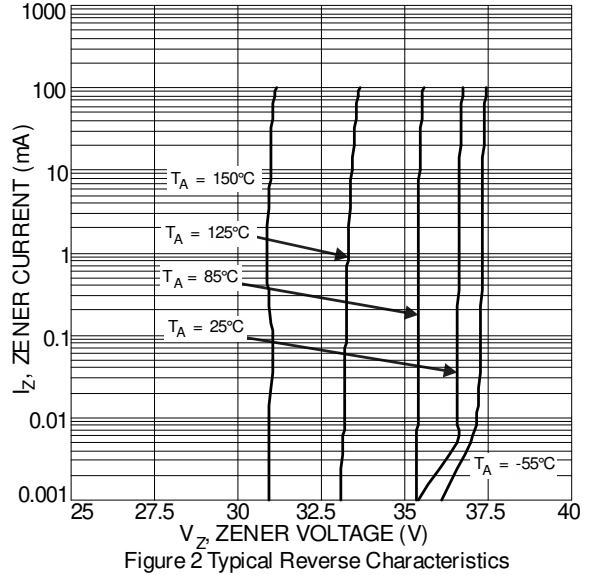
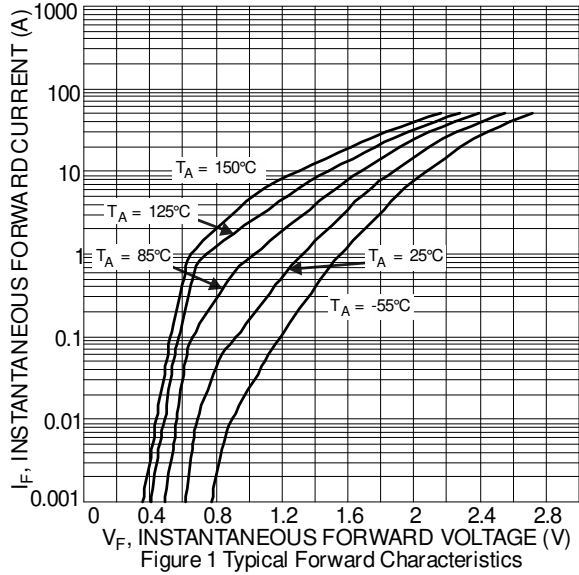
Thermal Characteristics

Characteristic	Symbol	Value	Unit
Package Power Dissipation (Note 6)	P_D	1,300	mW
Thermal Resistance, Junction to Ambient (Note 6)	$R_{\theta JA}$	90	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case (Note 6)	$R_{\theta JC}$	21	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Standoff Voltage	V_{RWM}	—	—	28	V	—
Channel Leakage Current (Note 7)	I_{RM}	—	—	100	nA	$V_{RWM} = 28\text{V}$
Clamping Voltage, Positive Transients	V_{CL}	—	—	44	V	$I_{PP} = I_{PPM}, t_P = 10/1000\mu\text{s}$
Breakdown Voltage	V_{BR}	31	—	35	V	$I_R = 1\text{mA}$
Differential Resistance	R_{DIF}	—	—	0.45	Ω	$I_R = 1\text{A}, t_P = 10/1000\mu\text{s}$

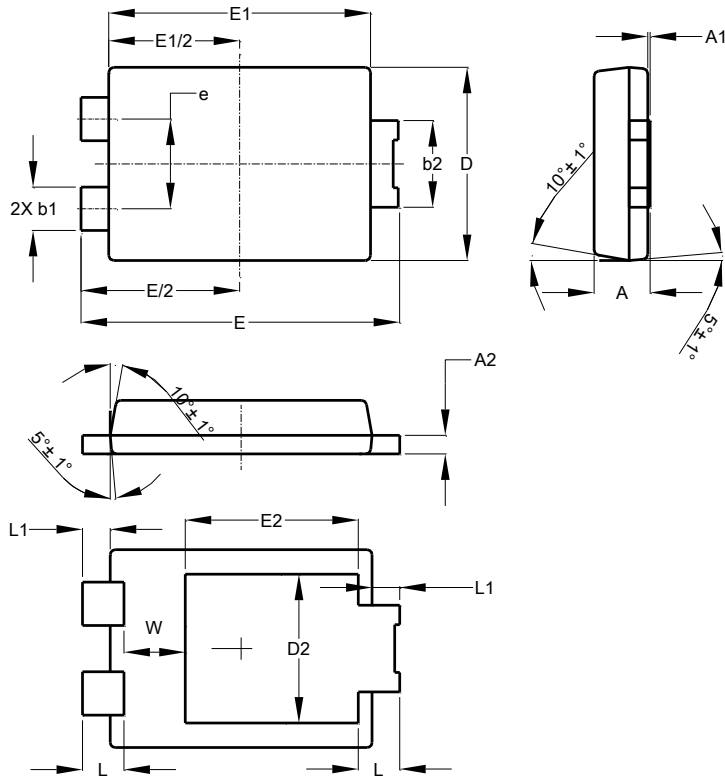
Notes: 6. Device mounted on FR-4 substrate PC board, with minimum recommended pad layout. Refer to <http://www.diodes.com/package-outlines.html>.
7. Short duration pulse test used to minimize self-heating effect.



Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

PowerDI5

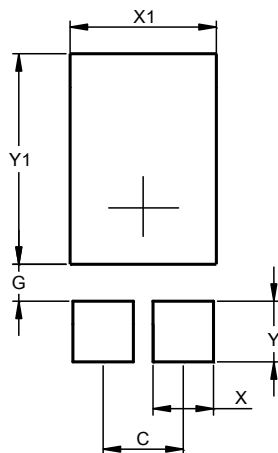


PowerDI5			
Dim	Min	Max	Typ
A	1.05	1.15	1.10
A1	0.00	0.05	—
A2	0.33	0.43	0.381
b1	0.80	0.99	0.89
b2	1.70	1.88	1.78
D	3.90	4.05	3.966
D2	—	—	3.054
E	6.40	6.60	6.504
e	—	—	1.84
E1	5.30	5.45	5.37
E2	—	—	3.549
L	0.75	0.95	0.85
L1	0.50	0.65	0.57
W	1.10	1.41	1.255
All Dimensions in mm			

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

PowerDI5



Dimensions	Value (in mm)
C	1.840
G	0.852
X	1.390
X1	3.360
Y	1.400
Y1	4.860

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