3600W SURFACE-MOUNT TRANSIENT VOLTAGE SUPPRESSOR

Product Summary (@T_A = +25°C)

P_{PK}	I_{FSM} (A)	V_{RWM} (V)	$PM_{(AV)}$
3600W	500	22	5W

Features and Benefits

- 3600W Peak Pulse Power Dissipation
- High Current Capability
- Glass Passivated Die Construction
- Low Reverse Current
- Low Thermal Resistance
- Low Power Loss And High Efficiency
- Excellent High Temperature Stability
- Meets ISO7637-2 Surge Capability
- Meets ISO16750-2 Surge Specification
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The DM5W27Q is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**
  https://www.diodes.com/quality/product-definitions/

Description and Applications

Suitable to protect sensitive automotive circuits against surges defined in ISO7637-2 and against load dump surge according to ISO16750-2.

Compliance with following standards:

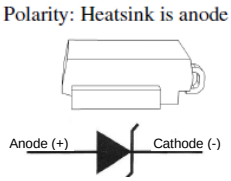
- ISO 16750-2, Pulse A and Pulse B
- ISO 7637-2
  Pulse 1, Pulse 2a, Pulse 3a, Pulse 3b

Mechanical Data

- Package: DO-218
- Package Material: Molded Plastic.
  UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Lead-Free Plating (Matte Tin Finish).
  Solderable per MIL-STD-202, Method 208 e3
- Polarity Indicator: Heatsink Is Anode
- Weight: 2.74 grams (Approximate)

DO-218 (Type E)

Top View



Pin Information

Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
DM5W27Q-13	DO-218 (Type E)	750	Tape & Reel

Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
2. See https://www.diodes.com/quality/lead-free/ 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. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.

Marking Information

Pin 1

M5W27 = Product Type Marking Code
Ↄ⁞⁞ = Manufacturers' Code Marking
aa: Wafer source code
y: Year (P = 2024)
m: Month (1 – C)
d: Date (1 – V)
cc: Lot serial number
Bar Denotes Cathode Pin, Circle Denotes Anode

Date Code Key

Year	2018	-	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Code	I	-	P	R	S	T	U	V	W	X	Y	Z

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	A	B	C

Date	1	2	3	-	9	10	11	12	-	29	30	31
Code	1	2	3	-	9	A	B	C	-	T	U	V

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Peak Pulse Power Dissipation (Non-Repetitive Current Pulse Derated Above T_A = +25°C) (Note 5)	10/1000µs Waveform	P_{PK}	3600	W
	10/10000µs Waveform		2800	
Peak Forward Surge Current, 8.3ms Single Half Sine Wave Superimposed on Rated Load (Notes 5 and 6)		I_{FSM}	500	A
Non-Repetitive Peak Reverse Surge Current for 10µs/10ms Exponentially Decaying Waveform		I_{RSM}	70	A
Instantaneous Forward Voltage, I_F = 6.0A		V_F	1.0	V
Zener Voltage Temperature Coefficient, I_Z = 10mA		V_{ZTC}	36	mV/°C
Steady-State Power Dissipation @ T_C = +25°C		$PM_{(AV)}$	5.0	W

Notes: 5. Valid provided that terminals are kept at ambient temperature.
6. Measured on 8.3ms single half sine wave or equivalent square wave. Duty cycle = 4 pulses per minute maximum.

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance, Junction to Case	$R_{\Theta JC}$	1.1	°C/W
Operating Temperature Range	T_J	-55 to +175	°C
Storage Temperature Range	T_{STG}	-55 to +175	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Type Number	Reverse Standoff Voltage	Breakdown Voltage V_{BR} @ I_T (Note 7)		Test Current	Maximum Reverse Leakage @ V_{RWM}	Maximum Clamping Voltage @ I_{PP}	Maximum Peak Pulse Current I_{PP} at 10/1000µs	Maximum Leakage at V_{WM} T_J = +175°C
	V_{RWM} (V)	Min (V)	Max (V)	I_T (mA)	I_R (µA)	V_C (V)	(A)	I_D (µA)
DM5W27Q	22	24	30	10.0	0.2	40	55	10

Note: 7. V_{BR} measured with I_T current pulse = 10ms to 15ms.

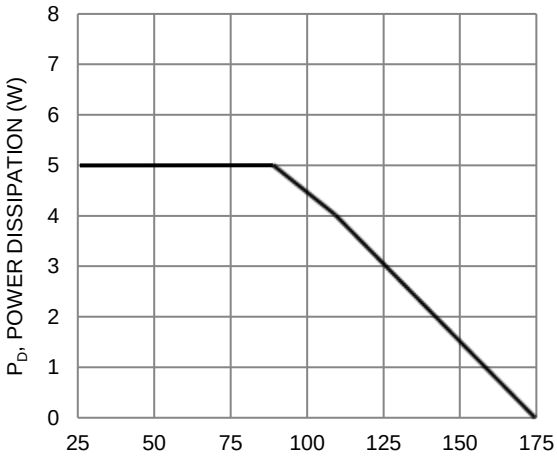


Figure 1. Power Derating Curve

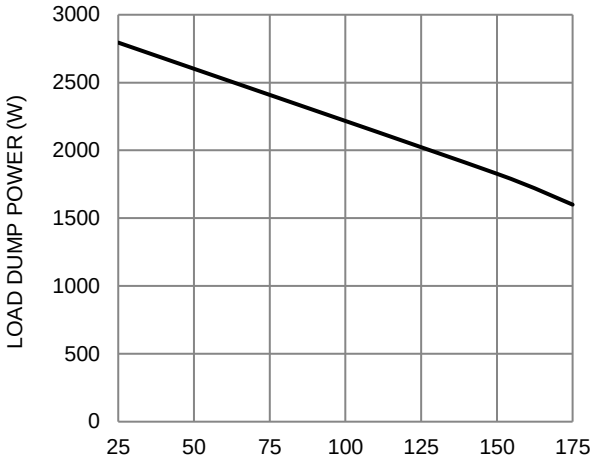


Figure 2. Load Dump Power Characteristics (10ms Exponential Waveform)

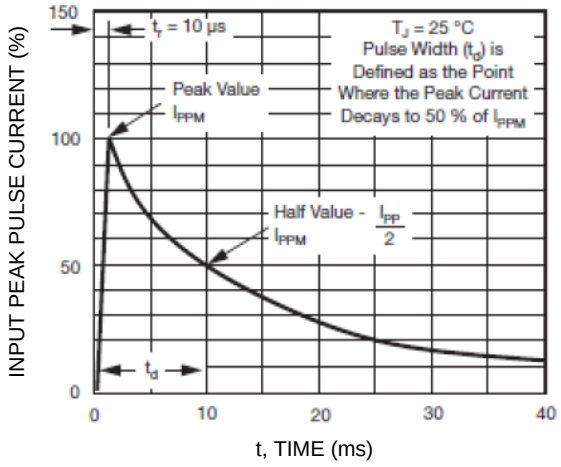


Figure 3. Pulse Waveform

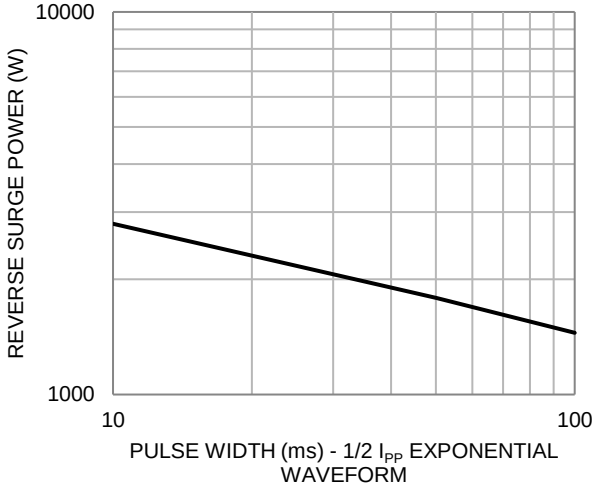


Figure 4. Reverse Power Capability

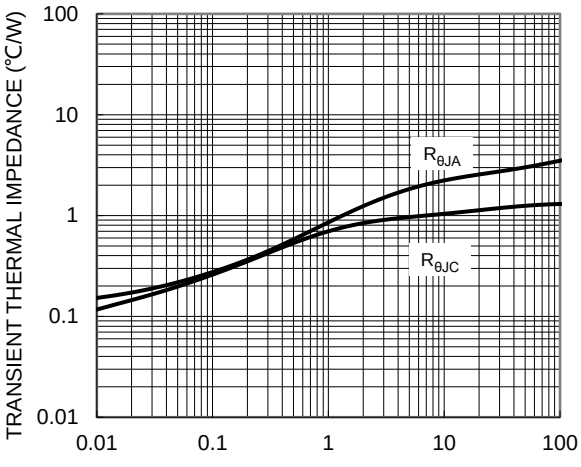


Figure 5. Typical Transient Thermal Impedance

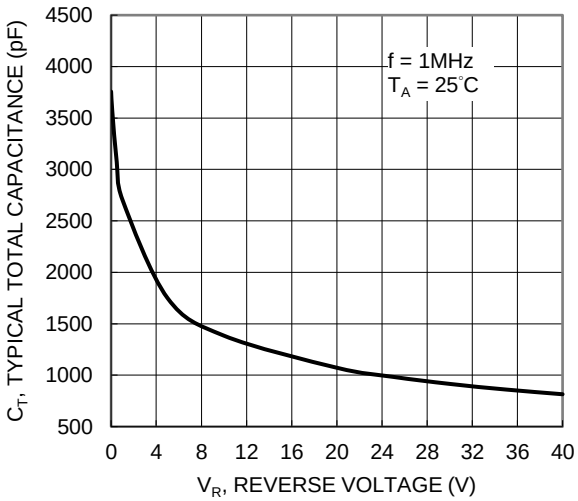


Figure 6. Typical Total Capacitance

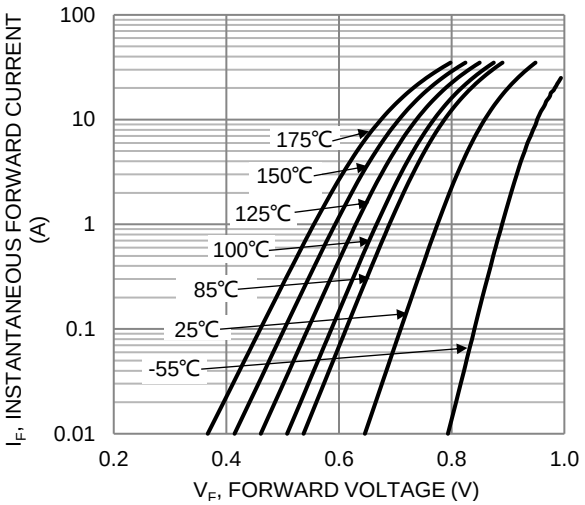


Figure 7. Typical Forward Characterisitic

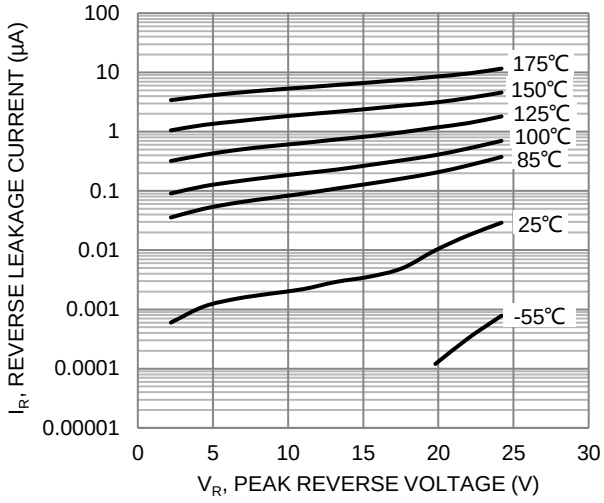
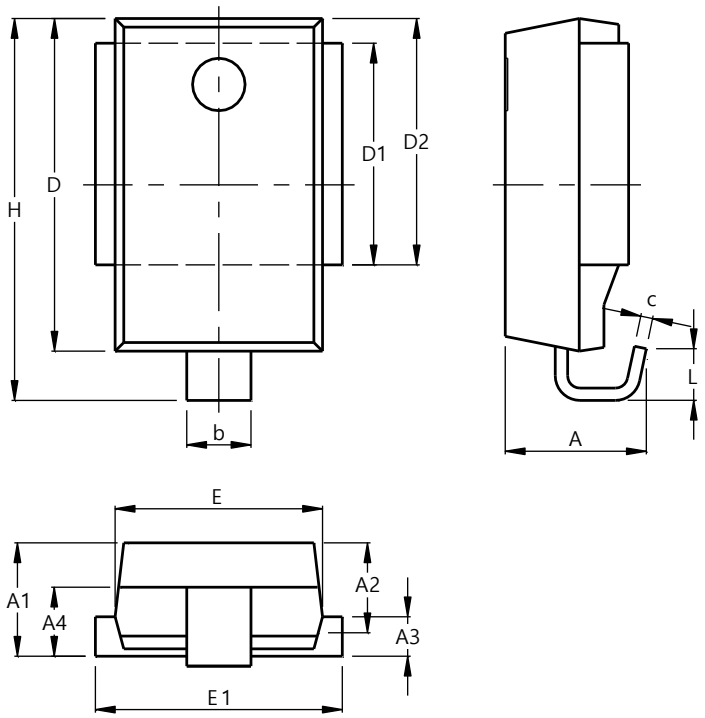


Figure 8. Typical Reverse Characteristic

Package Outline Dimensions

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

DO-218 (Type E)

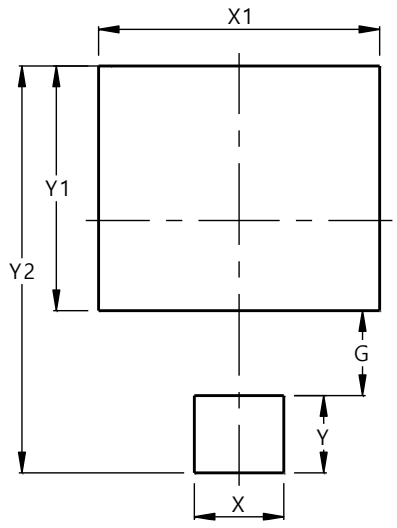


DO-218 (Type E)			
Dim	**Min**	**Max**	**Typ**
A	4.70	5.70	--
A1	4.70	5.25	5.00
A2	3.45	4.26	3.95
A3	1.70	2.50	2.00
A4	2.58	3.55	3.10
b	2.30	3.00	--
c	0.45	0.90	--
D	13.20	13.80	13.50
D1	8.70	9.30	9.00
D2	9.70	10.30	10.00
E	8.20	8.80	8.50
E1	9.50	10.50	--
H	15.00	16.00	15.50
L	1.50	2.50	2.00
All Dimensions in mm			

Suggested Pad Layout

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

DO-218 (Type E)



Dimensions	Value (in mm)
G	3.30
X	3.50
X1	11.00
Y	3.00
Y1	9.50
Y2	15.80

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