

3600W SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

Product Summary (@T_A = +25°C)

PPK	IFSM (A)	VRWM (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.

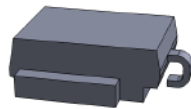
Compliance with following standards

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

Mechanical Data

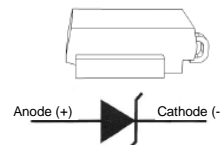
- Package: DO-218
- Package Material: Molded Plastic.
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Lead-Free Plating (Matte Tin Finish).
Solderable per MIL-STD-202, Method 208 Ⓔ
- Polarity Indicator: Heatsink is Anode
- Weight: 2.74 grams (Approximate)

DO-218 (Type E)



Top View

Polarity: Heatsink is anode



Pin Information

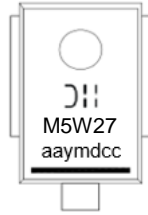
Ordering Information (Note 4)

Part Number	Qualification	Package	Packing	
			Qty.	Carrier
DM5W27Q-13	Automotive	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

Pin1



M5W27 = Product Type Marking Code
 ⓁⓂ = Manufacturers' Code Marking
 aa: Wafer source code
 y: Year (M=2022)
 m: Month (1 – C)
 d: Date (1 – V)
 cc: Lot serial number
 Bar Denotes Cathode Pin, Circle Denotes Anode

Date Code Key

Year	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Code	I	J	K	L	M	N	O	P	Q	R	S	T

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)	P _{PK}	10/1000μs Waveform	3600
		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

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance, Junction to Case	R _{θJC}	1.1	°C/W
Operating Temperature Range	T _J	-55 to +175	°C
Storage Temperature Range	T _{STG}	-55 to +175	°C

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.

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

Part 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.

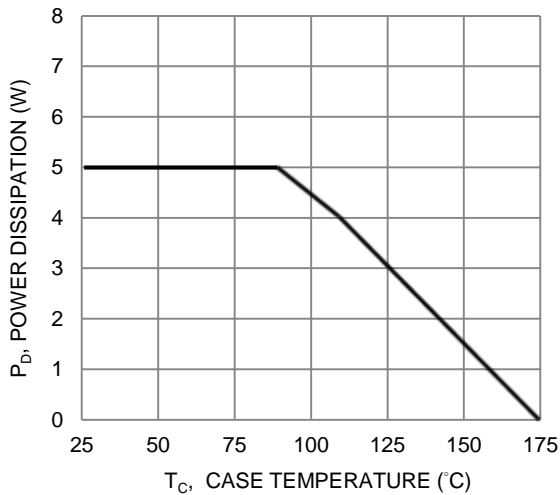


Fig. 1 Power Derating Curve

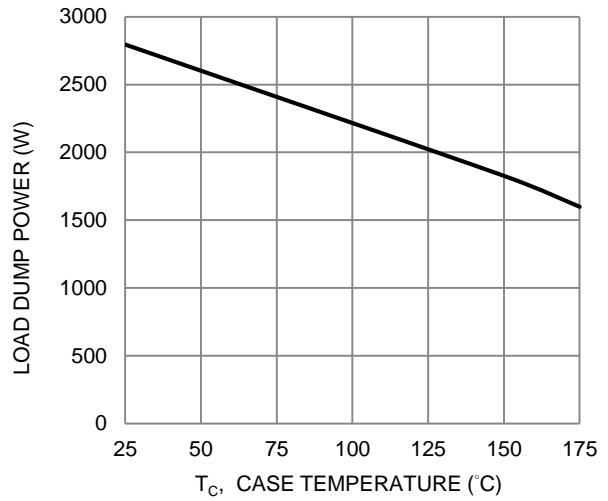


Fig. 2 Load Dump Power Characteristics (10ms Exponential Waveform)

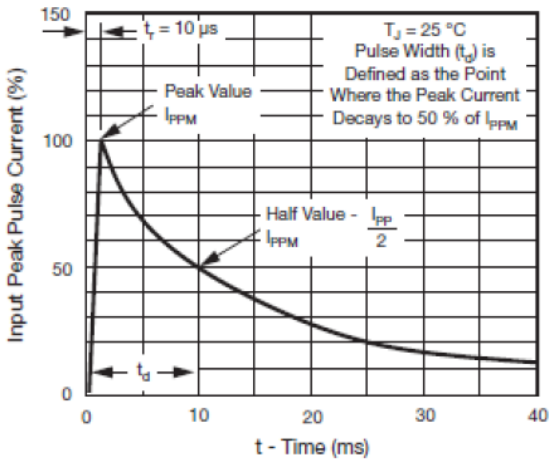


Fig. 3 - Pulse Waveform

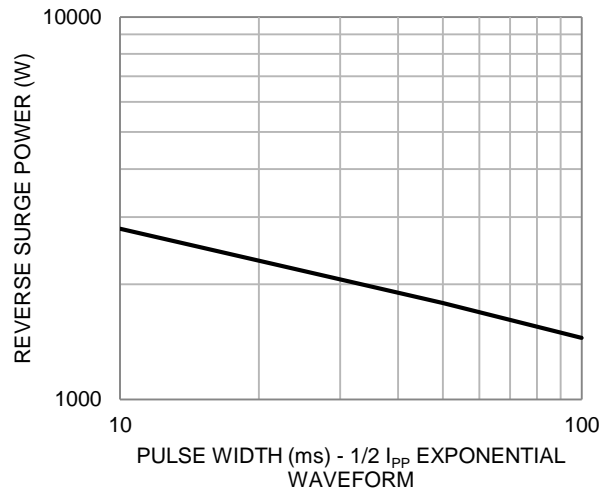


Fig. 4 Reverse Power Capability

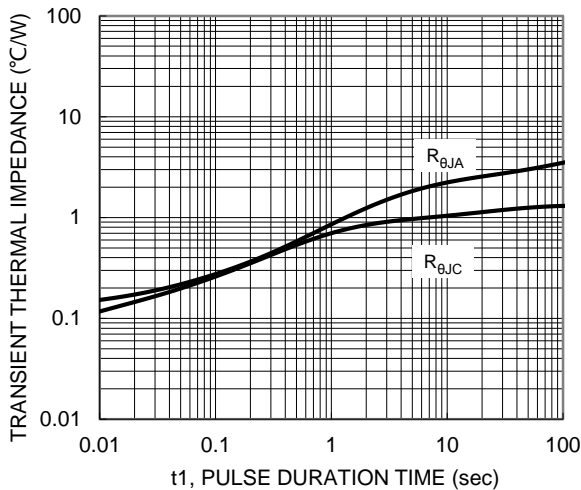


Fig. 5 Typical Transient Thermal Impedance

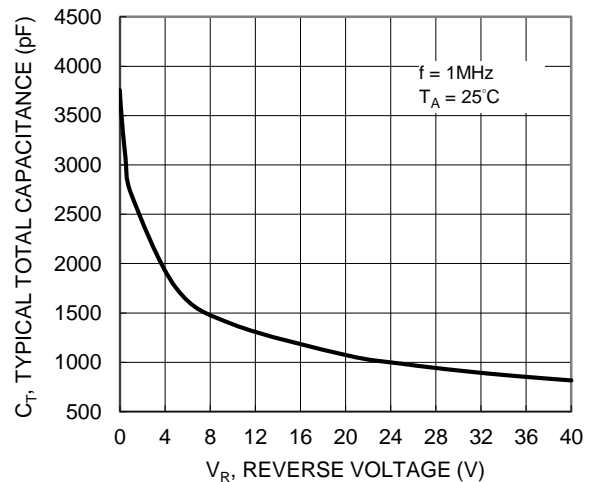


Fig. 6 Typical Total Capacitance

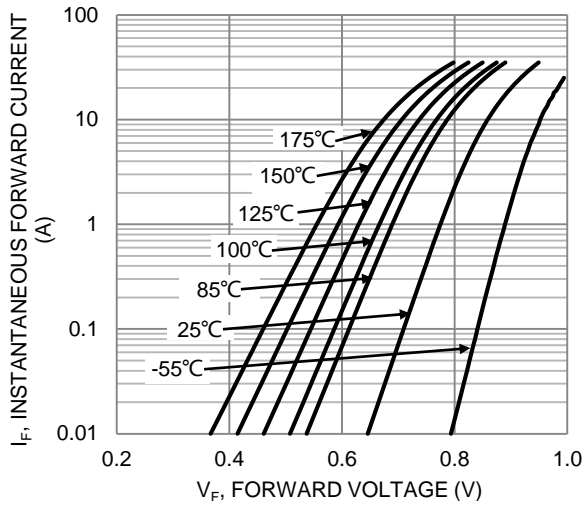


Figure 7. Typical Forward Characteristic

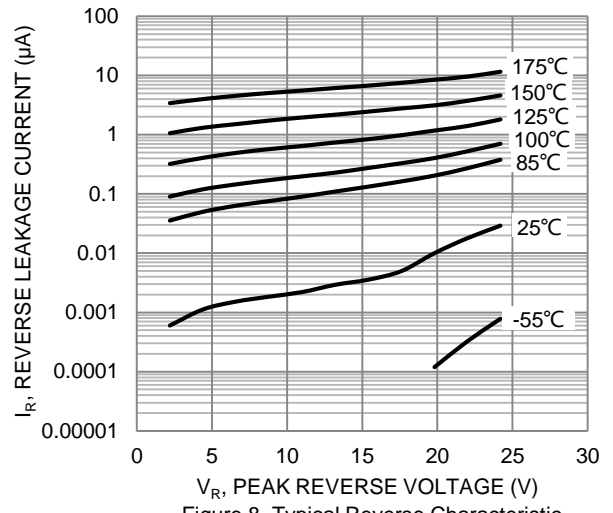
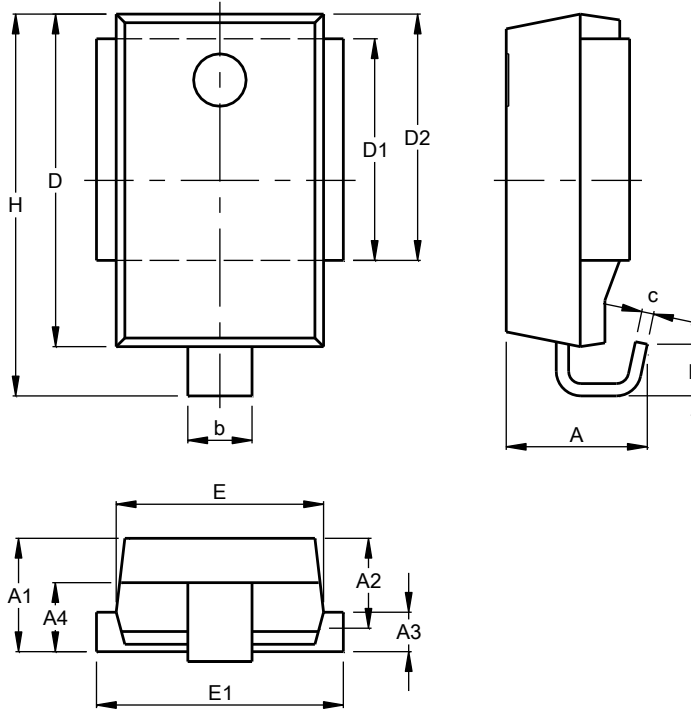


Figure 8. Typical Reverse Characteristic

Package Outline Dimensions

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

DO-218 (Type E)

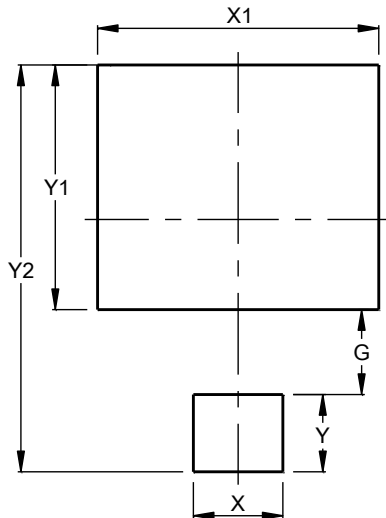


DO-218 (Type E)			
Dim	Min	Max	Typ
A	4.70	5.70	--
A1	4.70	5.25	5.00
A2	3.45	4.26	3.95
A3	1.70	2.50	2.00
A4	2.58	3.55	3.10
b	2.30	3.00	--
c	0.45	0.90	--
D	13.20	13.80	13.50
D1	8.70	9.30	9.00
D2	9.70	10.30	10.00
E	8.20	8.80	8.50
E1	9.50	10.50	--
H	15.00	16.00	15.50
L	1.50	2.50	2.00
All Dimensions in mm			

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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