

**Product Summary** (@T<sub>A</sub> = +25°C)

PPK	I <sub>FSM</sub> (A)	V <sub>RWM</sub> (V)	PM(AV)
4600W	600	22	6W

**Features and Benefits**

- 4600W 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 DM6W27Q 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.

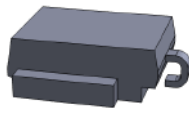
Compliance with following standards:

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

**Mechanical Data**

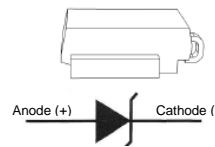
- Package: DO-218
- Package Material: Molded Plastic.  
 UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Lead-Free Plating (Matte Tin Finish).  
 Solderable per MIL-STD-202, Method 208
- Polarity Indicator: Heatsink Is Anode
- Weight: 2.74 grams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

DO-218 (Type E)



Top View

Polarity: Heatsink is anode



Pin Information

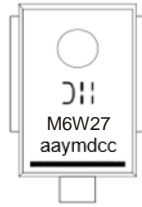
**Ordering Information** (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
DM6W27Q-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



M6W27 = Product Type Marking Code  
 ⓁⓂ = 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	2019	-	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Code	J	-	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<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Peak Pulse Power Dissipation (Non-Repetitive Current Pulse Derated Above T <sub>A</sub> = +25°C) (Note 5)	10/1000μs Waveform	4600	W
	10/10000μs Waveform	3600	
Peak Forward Surge Current, 8.3ms Single Half Sine Wave Superimposed on Rated Load (Notes 5 and 6)	I <sub>FSM</sub>	600	A
Non-Repetitive Peak Reverse Surge Current for 10μs/10ms Exponentially Decaying Waveform	I <sub>RSM</sub>	90	A
Instantaneous Forward Voltage, I <sub>F</sub> = 6.0A	V <sub>F</sub>	0.99	V
Zener Voltage Temperature Coefficient	V <sub>ZTC</sub>	36	mV/°C
Steady-State Power Dissipation @ T <sub>C</sub> = +25°C	PM(AV)	6.0	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 <sub>θJC</sub>	1.1	°C/W
Operating Temperature Range	T <sub>J</sub>	-55 to +175	°C
Storage Temperature Range	T <sub>STG</sub>	-55 to +175	°C

## Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Type Number	Reverse Standoff Voltage	Breakdown Voltage V <sub>BR</sub> @ I <sub>T</sub> (Note 7)		Test Current	Maximum Reverse Leakage @ V <sub>RWM</sub>	Maximum Clamping Voltage @ I <sub>PP</sub>	Maximum Peak Pulse Current I <sub>PP</sub> at 10/1000μs (Note 8)	Maximum Leakage at V <sub>WM</sub> T <sub>J</sub> = +175°C
	V <sub>RWM</sub> (V)	Min (V)	Max (V)	I <sub>T</sub> (mA)	I <sub>R</sub> (μA)	V <sub>C</sub> (V)	(A)	I <sub>D</sub> (μA)
DM6W27Q	22	24	30	10.0	0.5	40	65	20

 Notes: 7. V<sub>BR</sub> measured with I<sub>T</sub> current pulse = 10ms to 15ms.

8. Refer to Figure 3 for the waveform.

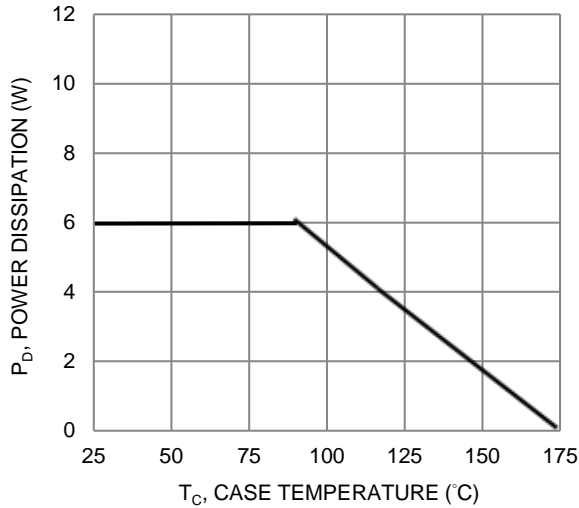


Figure 1. Power Derating Curve

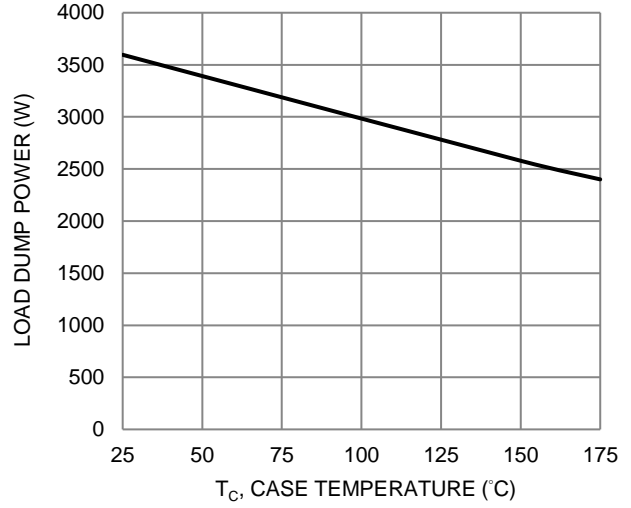


Figure 2. Load Dump Power Characteristics (10ms Exponential Waveform)

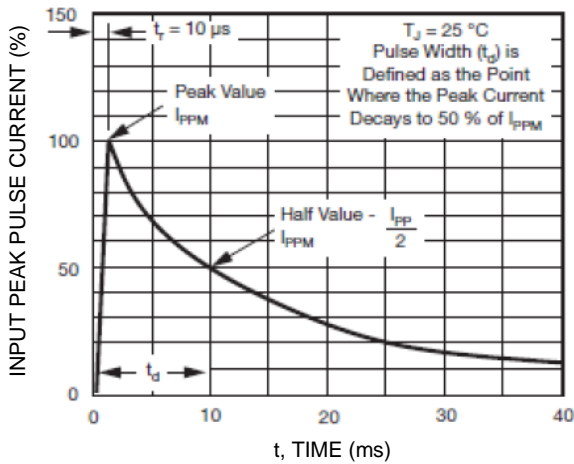


Figure 3. Pulse Waveform

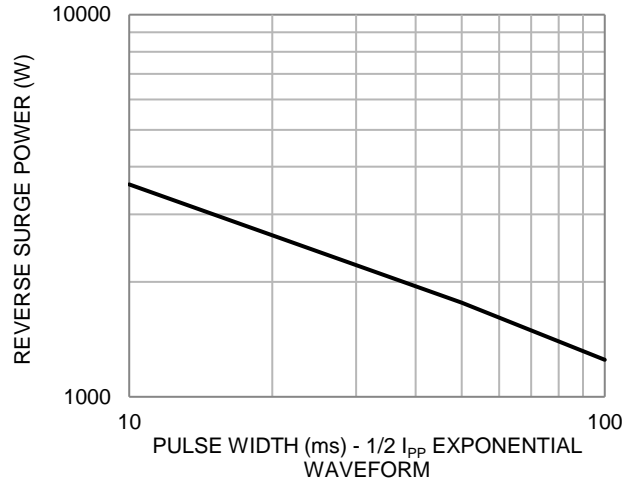


Figure 4. Reverse Power Capability

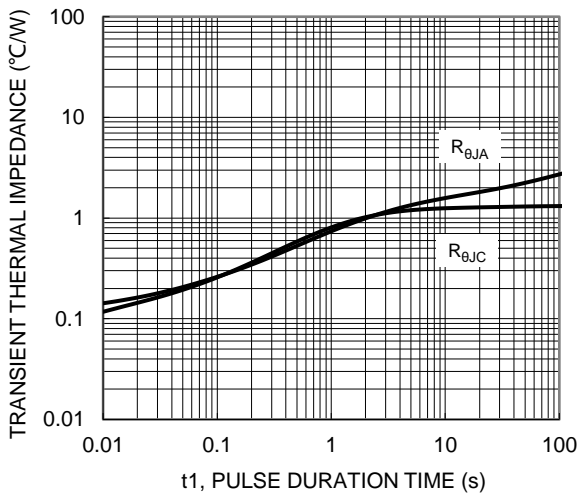


Figure 5. Typical Transient Thermal Impedance

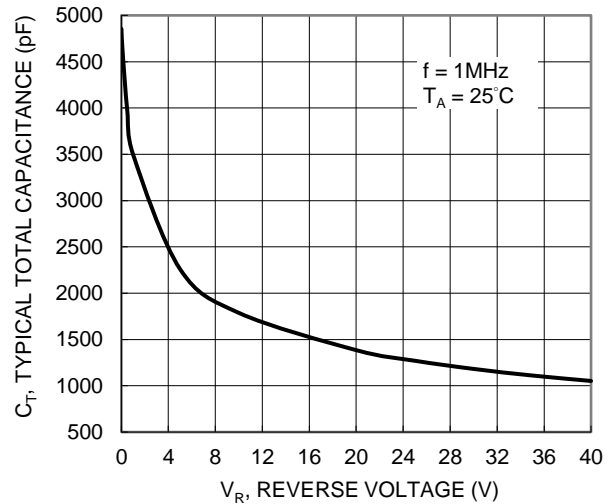


Figure 6. Typical Total Capacitance

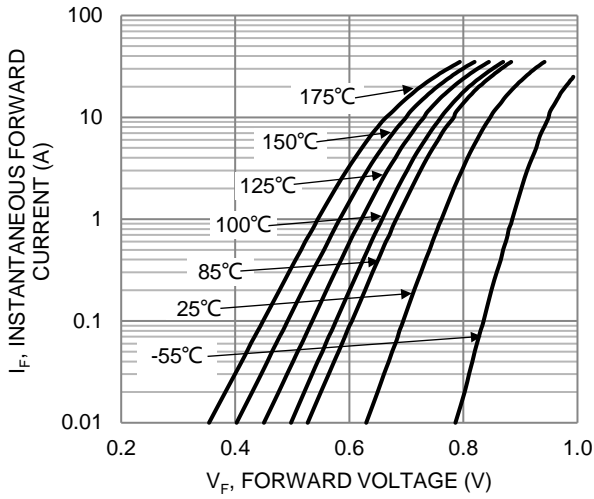


Figure 7. Typical Forward Characteristic

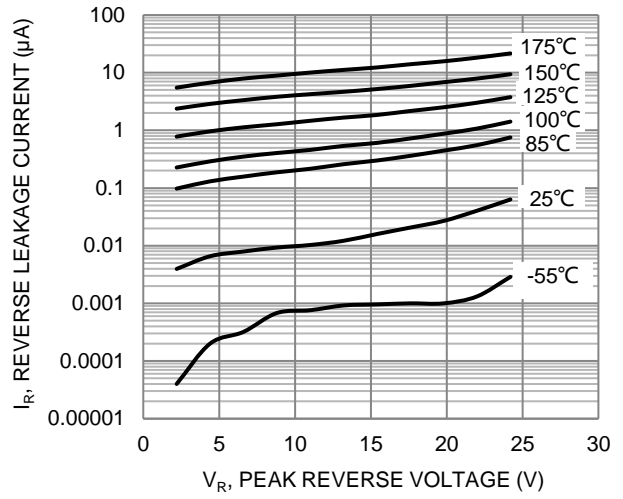
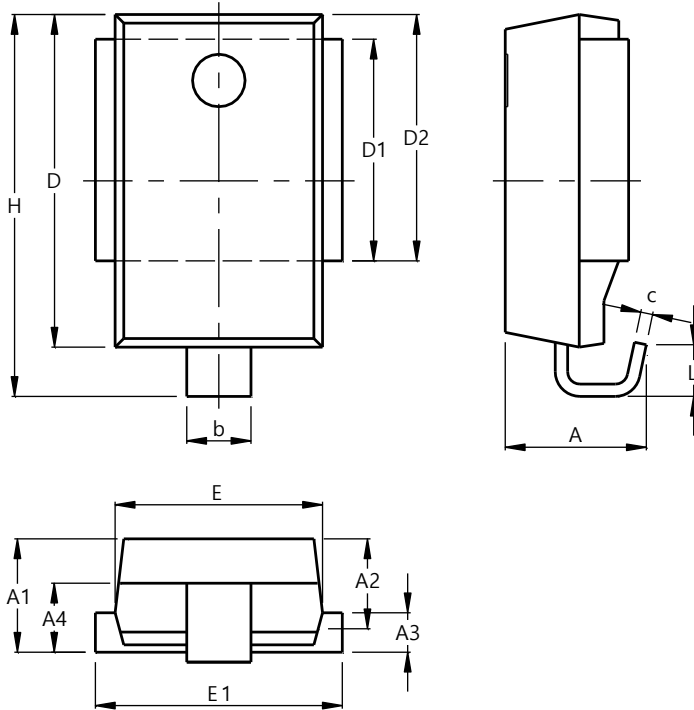


Figure 8. Typical Reverse Characteristic

**Package Outline Dimensions**

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

**DO-218 (Type E)**

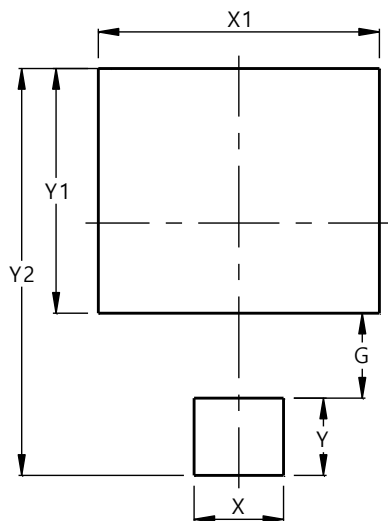


DO-218 (Type E)			
Dim	Min	Max	Typ
A	4.70	5.70	--
A1	4.70	5.25	5.00
A2	3.45	4.26	3.95
A3	1.70	2.50	2.00
A4	2.58	3.55	3.10
b	2.30	3.00	--
c	0.45	0.90	--
D	13.20	13.80	13.50
D1	8.70	9.30	9.00
D2	9.70	10.30	10.00
E	8.20	8.80	8.50
E1	9.50	10.50	--
H	15.00	16.00	15.50
L	1.50	2.50	2.00
All Dimensions in mm			

**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

**IMPORTANT NOTICE**

1. DIODES INCORPORATED (Diodes) AND ITS SUBSIDIARIES MAKE NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO ANY INFORMATION CONTAINED IN THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).
2. The Information contained herein is for informational purpose only and is provided only to illustrate the operation of Diodes' products described herein and application examples. Diodes does not assume any liability arising out of the application or use of this document or any product described herein. This document is intended for skilled and technically trained engineering customers and users who design with Diodes' products. Diodes' products may be used to facilitate safety-related applications; however, in all instances customers and users are responsible for (a) selecting the appropriate Diodes products for their applications, (b) evaluating the suitability of Diodes' products for their intended applications, (c) ensuring their applications, which incorporate Diodes' products, comply the applicable legal and regulatory requirements as well as safety and functional-safety related standards, and (d) ensuring they design with appropriate safeguards (including testing, validation, quality control techniques, redundancy, malfunction prevention, and appropriate treatment for aging degradation) to minimize the risks associated with their applications.
3. Diodes assumes no liability for any application-related information, support, assistance or feedback that may be provided by Diodes from time to time. Any customer or user of this document or products described herein will assume all risks and liabilities associated with such use, and will hold Diodes and all companies whose products are represented herein or on Diodes' websites, harmless against all damages and liabilities.
4. Products described herein may be covered by one or more United States, international or foreign patents and pending patent applications. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks and trademark applications. Diodes does not convey any license under any of its intellectual property rights or the rights of any third parties (including third parties whose products and services may be described in this document or on Diodes' website) under this document.
5. Diodes' products are provided subject to Diodes' Standard Terms and Conditions of Sale (<https://www.diodes.com/about/company/terms-and-conditions/terms-and-conditions-of-sales/>) or other applicable terms. This document does not alter or expand the applicable warranties provided by Diodes. Diodes does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel.
6. Diodes' products and technology may not be used for or incorporated into any products or systems whose manufacture, use or sale is prohibited under any applicable laws and regulations. Should customers or users use Diodes' products in contravention of any applicable laws or regulations, or for any unintended or unauthorized application, customers and users will (a) be solely responsible for any damages, losses or penalties arising in connection therewith or as a result thereof, and (b) indemnify and hold Diodes and its representatives and agents harmless against any and all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim relating to any noncompliance with the applicable laws and regulations, as well as any unintended or unauthorized application.
7. While efforts have been made to ensure the information contained in this document is accurate, complete and current, it may contain technical inaccuracies, omissions and typographical errors. Diodes does not warrant that information contained in this document is error-free and Diodes is under no obligation to update or otherwise correct this information. Notwithstanding the foregoing, Diodes reserves the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. This document is written in English but may be translated into multiple languages for reference. Only the English version of this document is the final and determinative format released by Diodes.
8. Any unauthorized copying, modification, distribution, transmission, display or other use of this document (or any portion hereof) is prohibited. Diodes assumes no responsibility for any losses incurred by the customers or users or any third parties arising from any such unauthorized use.
9. This Notice may be periodically updated with the most recent version available at <https://www.diodes.com/about/company/terms-and-conditions/important-notice>

The Diodes logo is a registered trademark of Diodes Incorporated in the United States and other countries.  
All other trademarks are the property of their respective owners.  
© 2024 Diodes Incorporated. All Rights Reserved.

[www.diodes.com](http://www.diodes.com)