# 6600W SURFACE-MOUNT TRANSIENT VOLTAGE SUPPRESSOR

## Product Summary (@$T_A$ = +25°C)

| $P_{PK}$ | $I_{FSM}$ (A) | $V_{RWM}$ (V) | $PM_{(AV)}$ |
|---|---|---|---|
| 6600W | 700 | 22 | 8W |

## Features and Benefits

- 6600W 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 DM8W27Q 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:

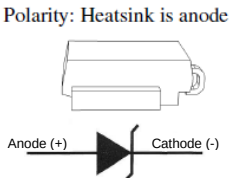
- ISO 16750-2, Pulse A and Pulse B
- ISO 7637-2
  Pulse 1, Pulse 2a, Pulse 3a, Pulse 3b

## 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 |
| DM8W27Q-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


M8W27 = 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 | 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 (@$T_A$ = +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 | $P_{PK}$ | 6600 | W |
| | 10/10000µs Waveform | | 5200 | |
| Peak Forward Surge Current, 8.3ms Single Half Sine Wave Superimposed on Rated Load (Notes 5 and 6) | | $I_{FSM}$ | 700 | A |
| Non-Repetitive Peak Reverse Surge Current for 10µs/10ms Exponentially Decaying Waveform | | $I_{RSM}$ | 130 | A |
| Instantaneous Forward Voltage, $I_F$ = 6.0A | | $V_F$ | 0.98 | V |
| Zener Voltage Temperature Coefficient | | $V_{ZTC}$ | 36 | mV/°C |
| Steady-State Power Dissipation @ $T_C$ = +25°C | | $PM_{(AV)}$ | 8.0 | W |

Notes: 5. Valid provided 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 | $R_{\theta JC}$ | 0.90 | °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 (Note 8) | 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) |
| DM8W27Q | 22 | 24 | 30 | 10.0 | 1.0 | 40 | 75 | 50 |

Notes: 7. $V_{BR}$ measured with $I_T$ current pulse = 10ms to 15ms.
8. Refer to Figure 3 for the waveform.

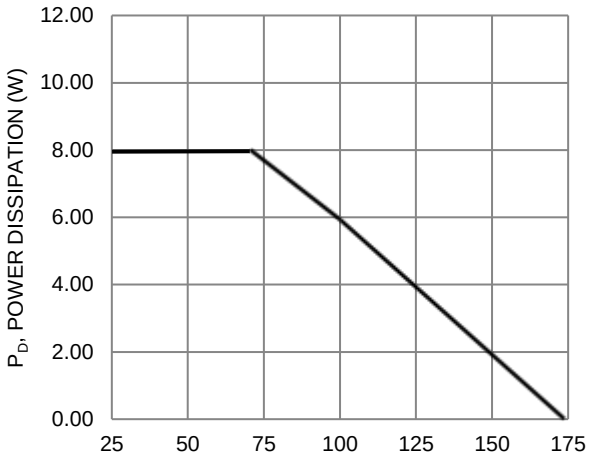



Figure 1. Power Derating Curve

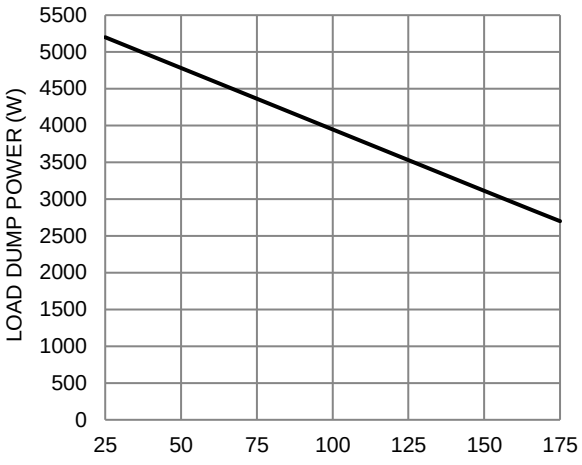



Figure 2. Load Dump Power Characteristics (10ms Exponential Waveform)

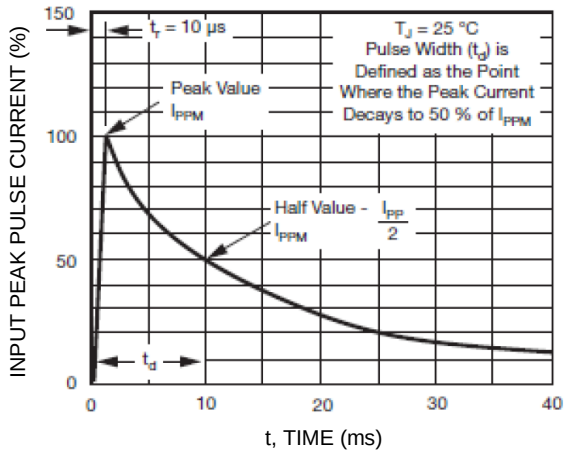



Figure 3. Pulse Waveform

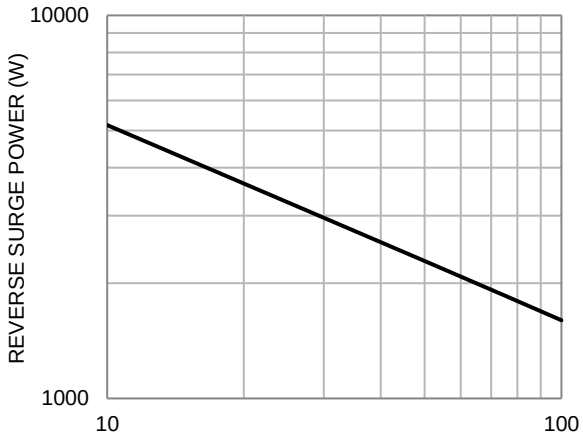



Figure 4. Reverse Power Capability

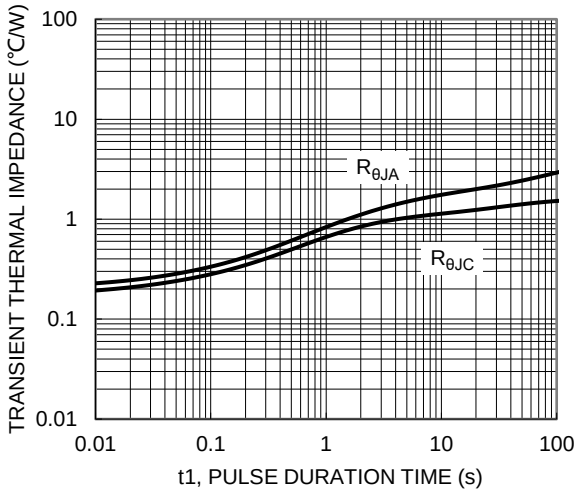



Figure 5. Typical Transient Thermal Impedance

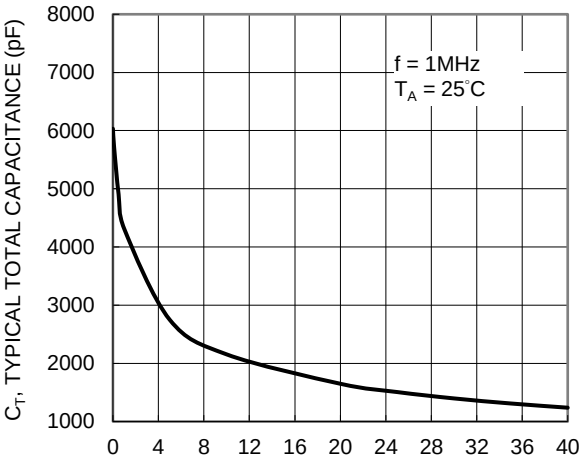



Figure 6. Typical Total Capacitance

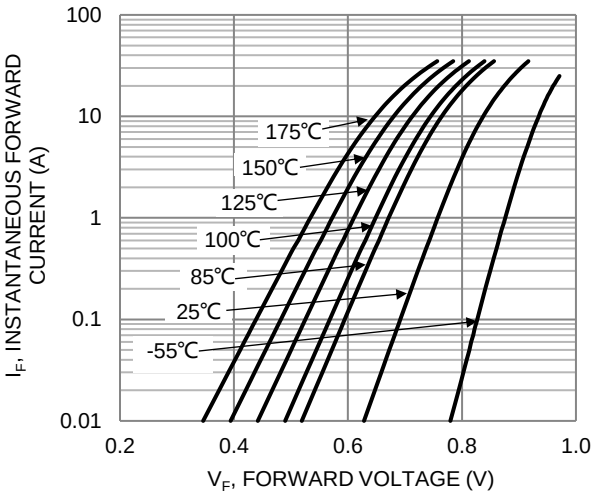



Figure 7. Typical Forward Characteristics

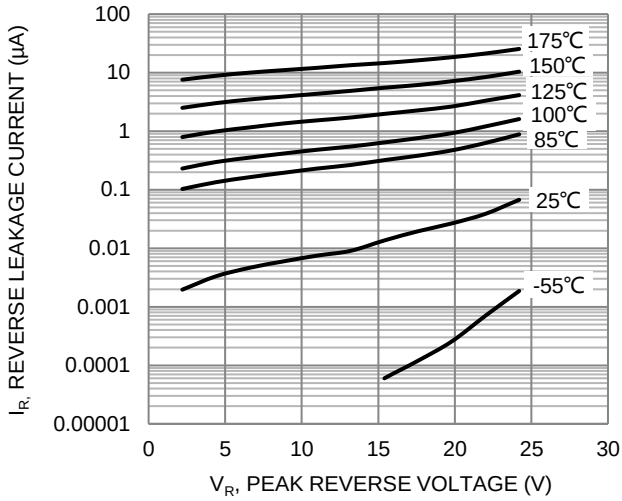
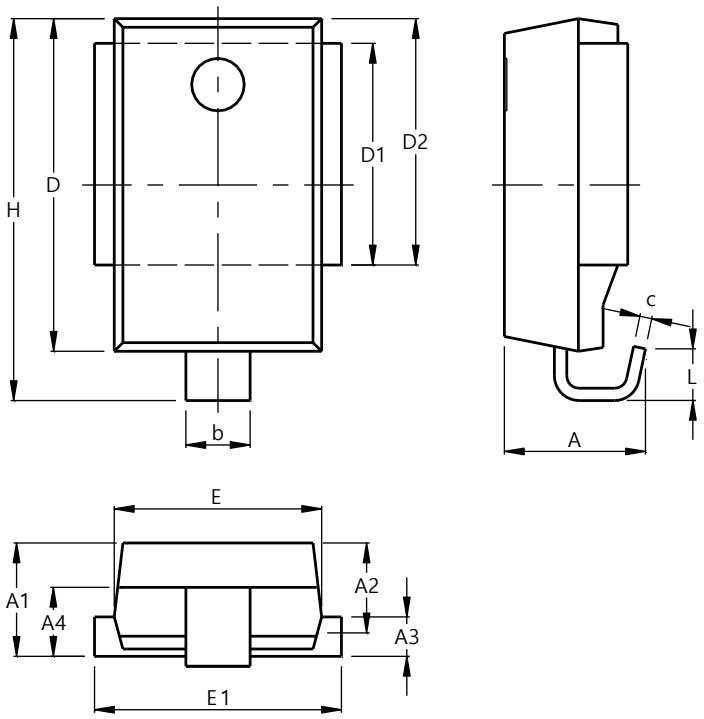



Figure 8. Typical Reverse Characteristics

## Package Outline Dimensions

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

**DO-218 (Type E)**

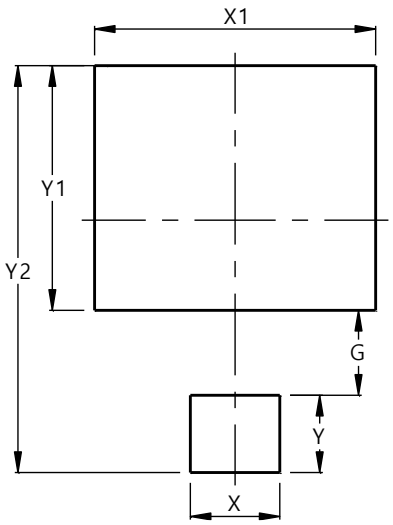



| DO-218 (Type E) | | | |
|---|---|---|---|
| **Dim** | **Min** | **Max** | **Typ** |
| **A** | 4.70 | 5.70 | -- |
| **A1** | 4.70 | 5.25 | 5.00 |
| **A2** | 3.45 | 4.26 | 3.95 |
| **A3** | 1.70 | 2.50 | 2.00 |
| **A4** | 2.58 | 3.55 | 3.10 |
| **b** | 2.30 | 3.00 | -- |
| **c** | 0.45 | 0.90 | -- |
| **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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