

Product Summary (@T_A = +25°C)

| P _{PK} | I _{FSM} (A) | V _{RWM} (V) | PM _(AV) |
|-----------------|----------------------|----------------------|--------------------|
| 3600W | 500 | 10 to 36 | 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)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **An Automotive-Compliant Part is Available Under Separate Datasheet ([DM5W10AQ-DM5W36AQ](#))**

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 (Note 5)
Pulse 1, Pulse 2a, Pulse 3a, Pulse 3b

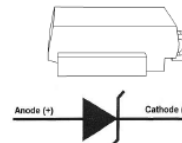
Mechanical Data

- Case: DO-218 (Type E)
- Case 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 Ⓔ3
- 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 | Case | Packaging |
|-------------|---------------|-----------------|-----------------|
| DM5WxxA-13 | AEC-Q101 | DO-218 (Type E) | 750/Tape & Reel |

*x = Device Voltage, e.g., DM5W10A-13

- 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/>.
 5. Not applicable to parts with stand-off voltage lower than the average battery voltage (13.5V).

Marking Information


M5WxxA = Product Type Marking Code (i.e. M5W10A for DM5W10A-13)
 J;I = Manufacturers' Code Marking
 YWW = Date Code Marking
 Y = Last Digit of Year (ex: 8 for 2018)
 WW = Week Code (01 to 53)
 Bar Denotes Cathode Pin, Circle Denotes Anode

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 6) | 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 6 & 7) | I _{FSM} | 500 | A |
| Steady State Power Dissipation @ T _C = +25°C | PM _(AV) | 5.0 | W |

Thermal Characteristics

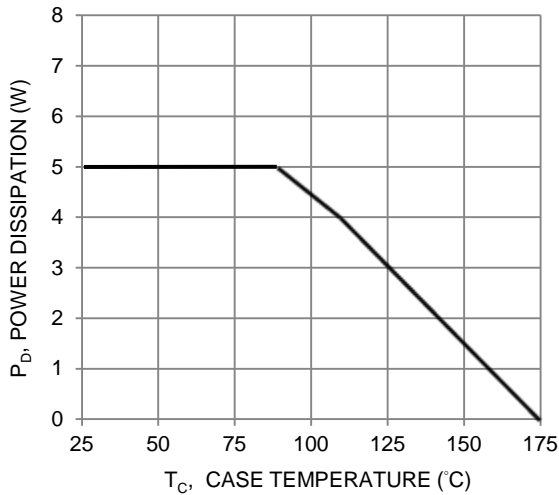
| Characteristic | Symbol | Value | Unit |
|--|------------------|-------------|------|
| Typical Thermal Resistance, Junction to Case | R _{θJC} | 1.1 | °C/W |
| Operating Temperature Range | T _J | -55 to +175 | °C |
| Storage Temperature Range | T _{STG} | -55 to +175 | °C |

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

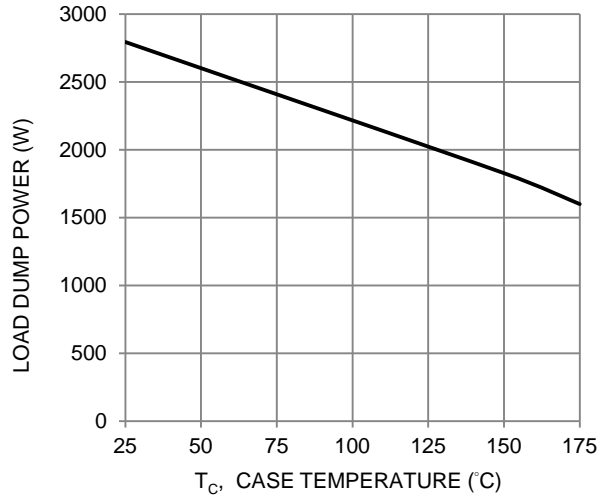
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

| Part Number | Reverse Standoff Voltage | Breakdown Voltage V _{BR} @ I _T (Note 8) | | Test Current | Max. Reverse Leakage @ V _{RWM} | Max. Clamping Voltage @ I _{pp} | Max. Peak Pulse Current I _{pp} at 10/1000µs (Note 9) | 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) |
| DM5W10A | 10 | 11.1 | 12.3 | 5 | 15 | 17.0 | 211 | 250 |
| DM5W11A | 11 | 12.2 | 13.5 | 5 | 10 | 18.2 | 198 | 150 |
| DM5W12A | 12 | 13.3 | 14.7 | 5 | 10 | 19.9 | 181 | 150 |
| DM5W13A | 13 | 14.4 | 15.9 | 5 | 10 | 21.5 | 167 | 150 |
| DM5W14A | 14 | 15.6 | 17.2 | 5 | 10 | 23.2 | 155 | 150 |
| DM5W15A | 15 | 16.7 | 18.5 | 5 | 10 | 24.4 | 148 | 150 |
| DM5W16A | 16 | 17.8 | 19.7 | 5 | 10 | 26.0 | 138 | 150 |
| DM5W17A | 17 | 18.9 | 20.9 | 5 | 10 | 27.6 | 130 | 150 |
| DM5W18A | 18 | 20.0 | 22.1 | 5 | 10 | 29.2 | 123 | 150 |
| DM5W20A | 20 | 22.2 | 24.5 | 5 | 10 | 32.4 | 111 | 150 |
| DM5W22A | 22 | 24.4 | 26.9 | 5 | 10 | 35.5 | 101 | 150 |
| DM5W24A | 24 | 26.7 | 29.5 | 5 | 10 | 38.9 | 93 | 150 |
| DM5W26A | 26 | 28.9 | 31.9 | 5 | 10 | 42.1 | 86 | 150 |
| DM5W28A | 28 | 31.1 | 34.4 | 5 | 10 | 45.4 | 79 | 150 |
| DM5W30A | 30 | 33.3 | 36.8 | 5 | 10 | 48.4 | 74 | 150 |
| DM5W33A | 33 | 36.7 | 40.6 | 5 | 10 | 53.3 | 68 | 150 |
| DM5W36A | 36 | 40.0 | 44.2 | 5 | 10 | 58.1 | 61 | 150 |

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



T_C, CASE TEMPERATURE (°C)
Fig. 1 Power Derating Curve



T_C, CASE TEMPERATURE (°C)
Fig. 2 Load Dump Power Characteristics
(10ms Exponential Waveform)

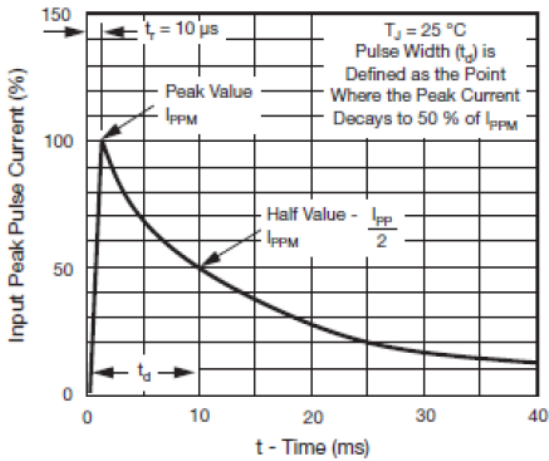


Fig. 3 - Pulse Waveform

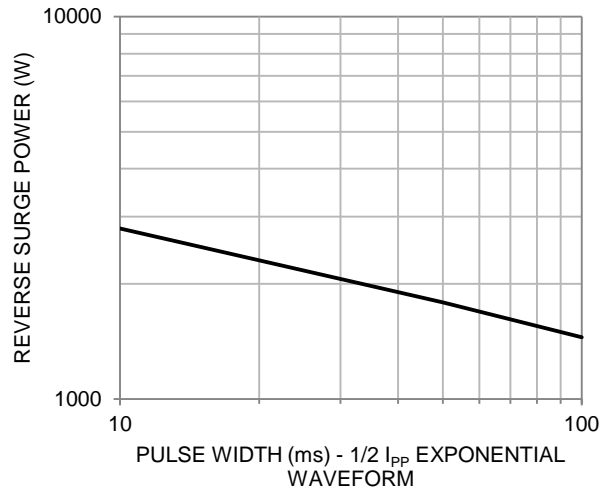


Fig. 4 Reverse Power Capability

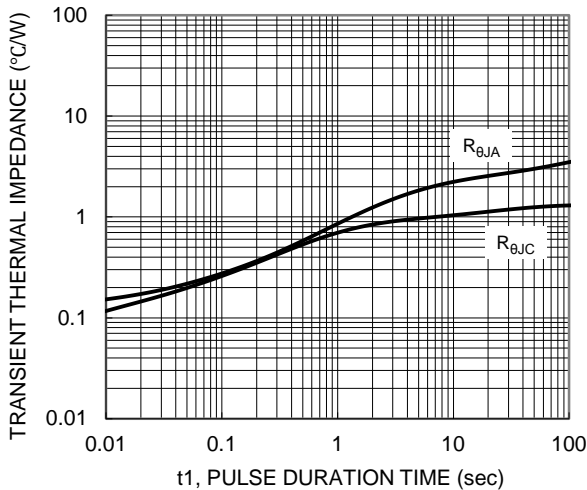


Fig. 5 Typical Transient Thermal Impedance

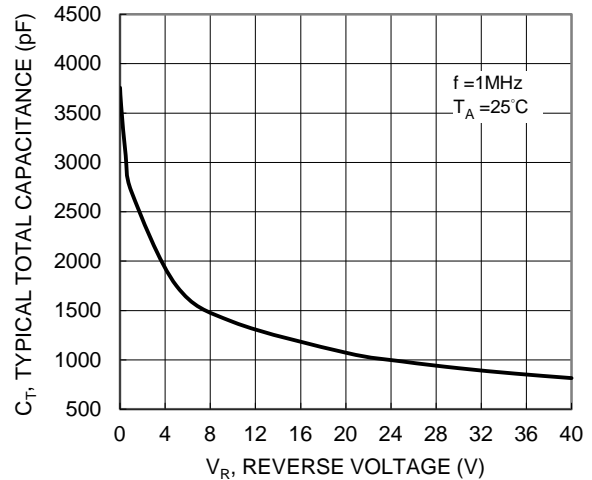
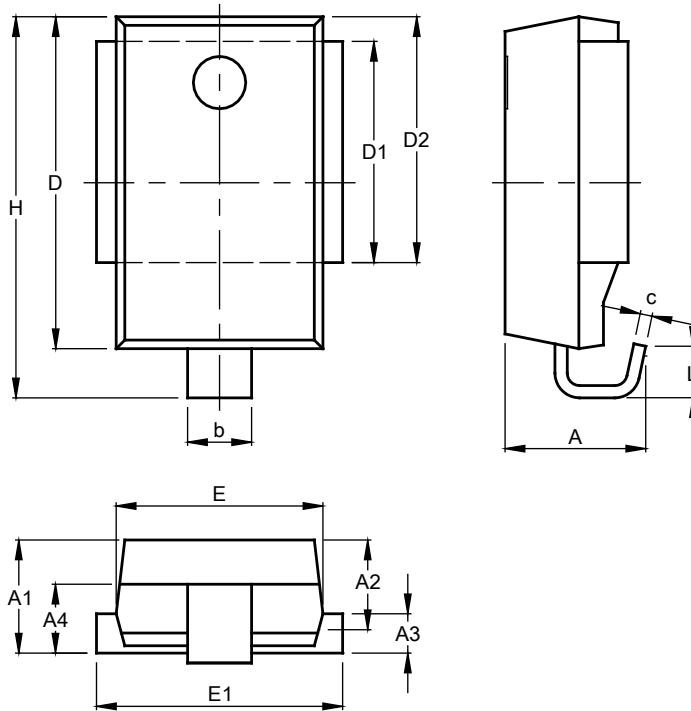


Fig. 6 Typical Total Capacitance

Package Outline Dimensions

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

DO-218 (Type E)

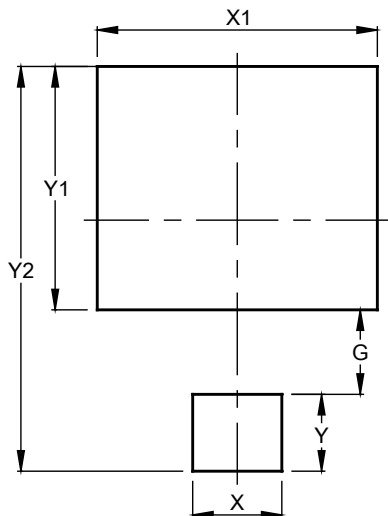


| DO-218 (Type E) | | | |
|----------------------|-------|-------|-------|
| Dim | Min | Max | Typ |
| A | 4.70 | 5.70 | -- |
| A1 | 4.70 | 5.25 | 5.00 |
| A2 | 3.45 | 4.25 | 3.95 |
| A3 | 1.70 | 2.50 | 2.00 |
| A4 | 2.65 | 3.55 | 3.10 |
| b | 2.30 | 3.00 | -- |
| c | 0.45 | 0.90 | -- |
| D | 13.20 | 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 | 10.00 | -- |
| 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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