4600W SURFACE-MOUNT TRANSIENT VOLTAGE SUPPRESSOR

Product Summary (@T_A = +25°C)

P_{PK}	I_{FSM} (A)	V_{RWM} (V)	$PM_{(AV)}$
4600W	600	10 to 43	6W

Features and Benefits

- 4600W Peak Pulse Power Dissipation
- High Current Capability
- 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 DM6W10AQ-DM6W43AQ are suitable for automotive applications requiring specific change control; these parts are 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 the 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

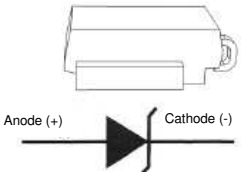
- Package: DO-218
- Package Material: Molded Plastic.
  UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Lead-Free Plating (Matte Tin Finish).
  Solderable per MIL-STD-202, Method 208 e3
- Polarity Indicator: Heatsink is Anode
- Weight: 2.74 grams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

DO-218 (Type E)



Top View

Polarity: Heatsink is anode



Pin Information

Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
DM6WxxAQ-13	DO-218 (Type E)	750	Tape & Reel

*xx = Device Voltage, e.g., DM6W10AQ-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).

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Marking Information



M6Wxxx = Product Type Marking Code (i.e. M6W10A for DM6W10AQ-13)
= Manufacturer's 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 6)	10/1000µs Waveform	P_{PK}	4,600	W
	10/10000µs Waveform		3,600	
Peak Forward Surge Current, 8.3ms Single Half Sine Wave Superimposed on Rated Load (Note 7)		I_{FSM}	600	A
Steady State Power Dissipation @T_C = +25°C		$PM_{(AV)}$	6.0	W

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.0	°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.

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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} (Note 10)	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)
DM6W10AQ	10	11.1	12.3	5	15	17.0	271	250
DM6W11AQ	11	12.2	13.5	5	10	18.2	253	150
DM6W12AQ	12	13.3	14.7	5	10	19.9	231	150
DM6W13AQ	13	14.4	15.9	5	10	21.5	214	150
DM6W14AQ	14	15.6	17.2	5	10	23.2	198	150
DM6W15AQ	15	16.7	18.5	5	10	24.4	189	150
DM6W16AQ	16	17.8	19.7	5	10	26.0	177	150
DM6W17AQ	17	18.9	20.9	5	10	27.6	167	150
DM6W18AQ	18	20.0	22.1	5	10	29.2	158	150
DM6W20AQ	20	22.2	24.5	5	10	32.4	142	150
DM6W22AQ	22	24.4	26.9	5	10	35.5	130	150
DM6W24AQ	24	26.7	29.5	5	10	38.9	118	150
DM6W26AQ	26	28.9	31.9	5	10	42.1	119	150
DM6W28AQ	28	31.1	34.4	5	10	45.4	101	150
DM6W30AQ	30	33.3	36.8	5	10	48.4	95	150
DM6W33AQ	33	36.7	40.6	5	10	53.3	86	150
DM6W36AQ	36	40.0	44.2	5	10	58.1	79	150
DM6W40AQ	40	44.4	49.1	5	10	64.5	71	150
DM6W43AQ	43	47.8	52.8	5	10	69.4	66	150

Notes: 8. V_{BR} measured with I_T current pulse = 10ms to 15ms.
9. Refer to Figure 3 for the waveform.
10. A short duration pulse test is used to minimize the self-heating effect.

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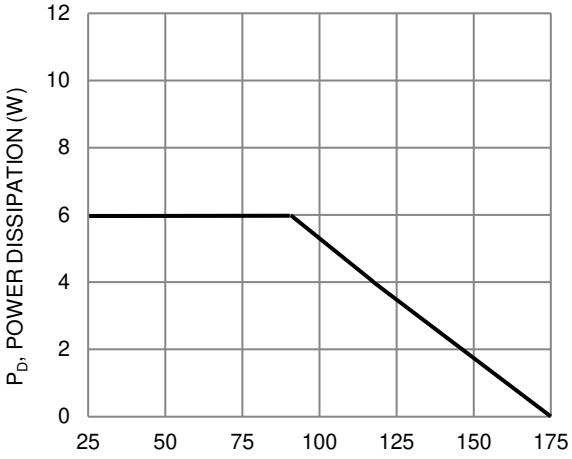


Figure 1. Power Derating Curve

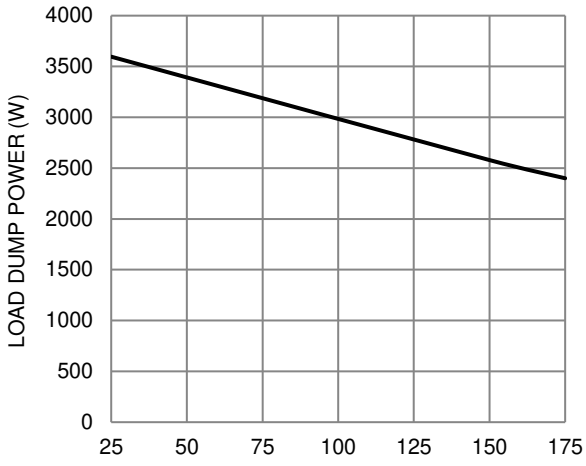


Figure 2. Load Dump Power Characteristics (10ms Exponential Waveform)

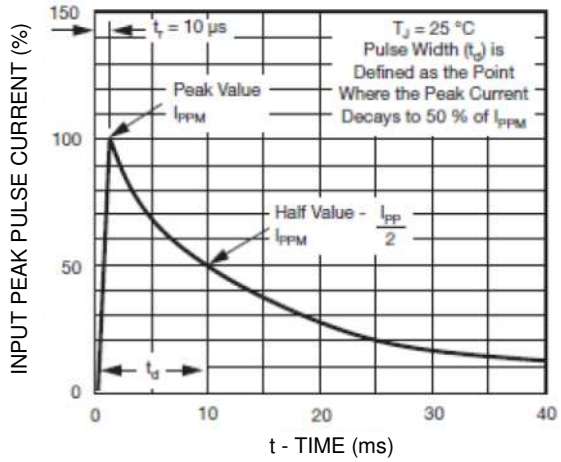


Figure 3. Pulse Waveform

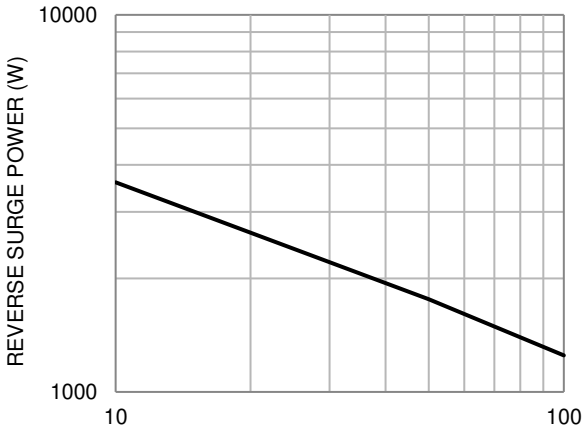


Figure 4. Reverse Power Capability

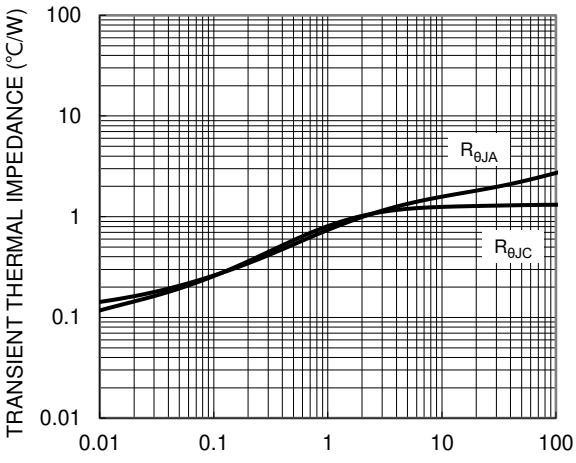


Figure 5. Typical Transient Thermal Impedance

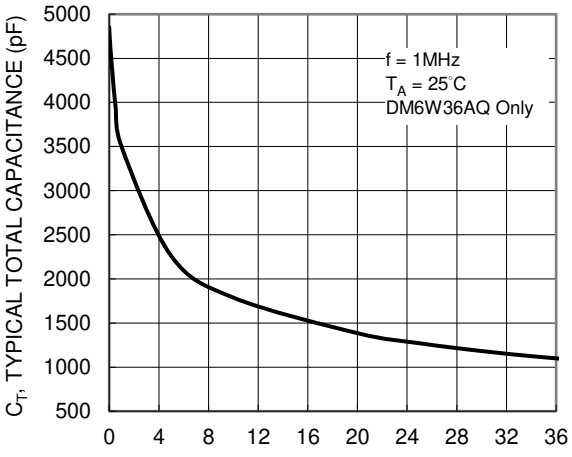


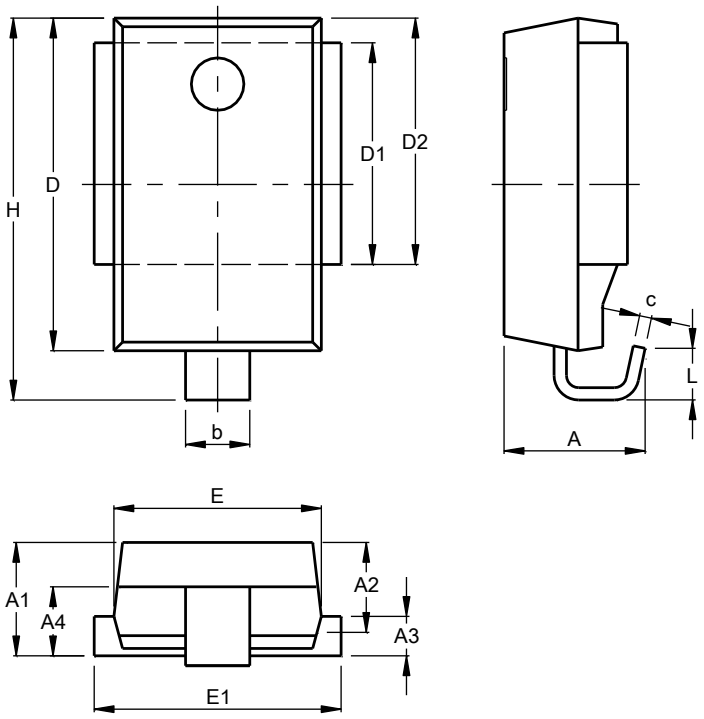
Figure 6. Typical Total Capacitance

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Package Outline Dimensions

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

DO-218 (Type E)

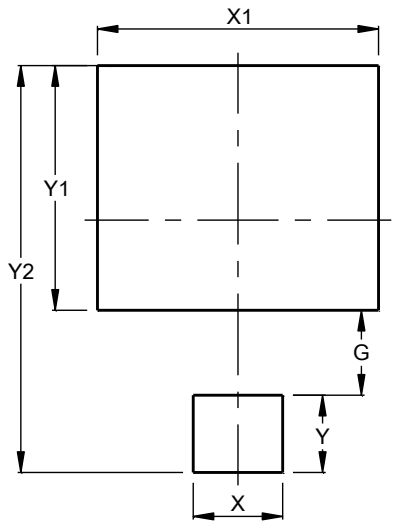


DO-218 (Type E)			
Dim	**Min**	**Max**	**Typ**
A	4.70	5.70	--
A1	4.70	5.25	5.00
A2	3.45	4.26	3.95
A3	1.70	2.50	2.00
A4	2.58	3.55	3.10
b	2.30	3.00	--
c	0.45	0.90	--
D	13.20	13.80	13.50
D1	8.70	9.30	9.00
D2	9.70	10.30	10.00
E	8.20	8.80	8.50
E1	9.50	10.50	--
H	15.00	16.00	15.50
L	1.50	2.50	2.00
All Dimensions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