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.

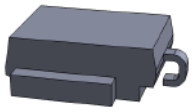
Compliance with the following standards:

- ISO 16750-2, Pulse A and Pulse B
- ISO 7637-2 (Note 5)
  Pulse 1, Pulse 2a, Pulse 3a, Pulse 3b

Mechanical Data

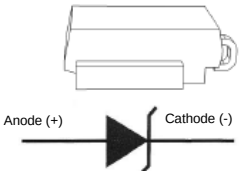
- Package: DO-218
- Package Material: Molded Plastic.
  UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Lead-Free Plating (Matte Tin Finish).
  Solderable per MIL-STD-202, Method 208 (e3)
- Polarity Indicator: Heatsink is Anode
- Weight: 2.74 grams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

DO-218 (Type E)



Top View

Polarity: Heatsink is anode



Pin Information

Ordering Information (Note 4)

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

*x = 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).

Marking Information

M6WxxA = Product Type Marking Code (i.e. M6W10A for DM6W10AQ-13)
Ↄ¦¦ = 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	…	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Code	I	…	M	N	O	P	Q	R	S	T	U	V

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.

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.

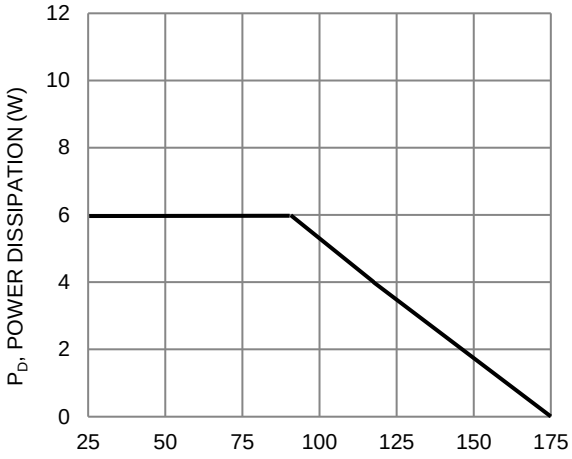


Fig. 1 Power Derating Curve

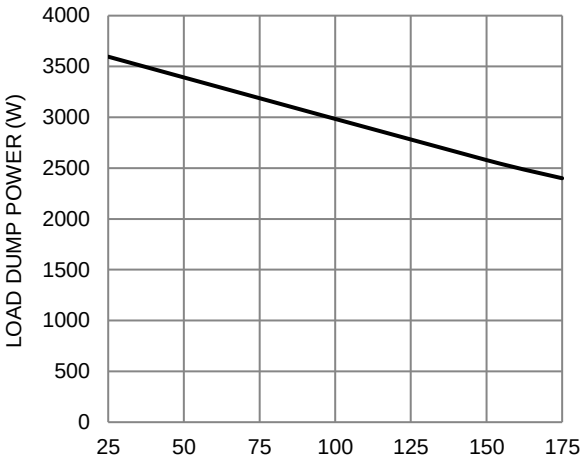


Fig. 2 Load Dump Power Characteristics
(10ms Exponential Waveform)

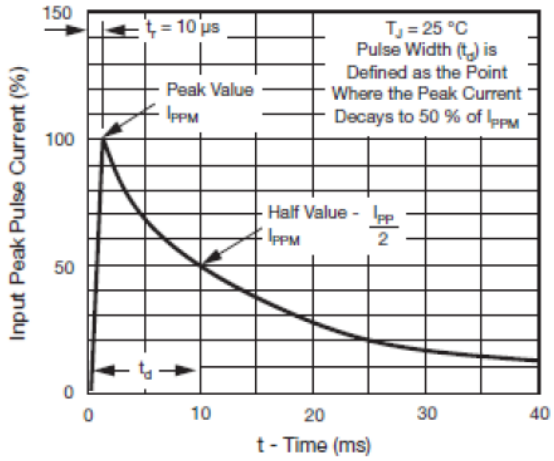


Fig. 3 - Pulse Waveform

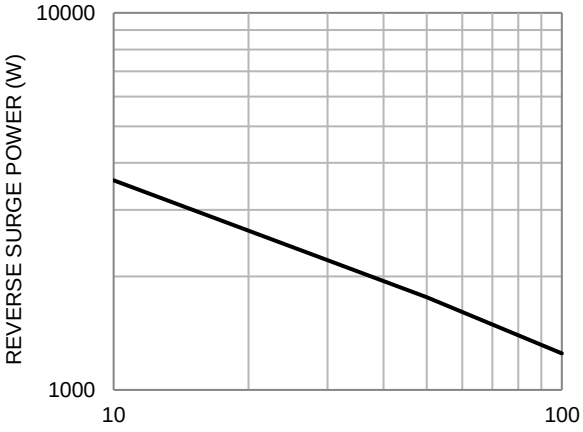


Fig. 4 Reverse Power Capability

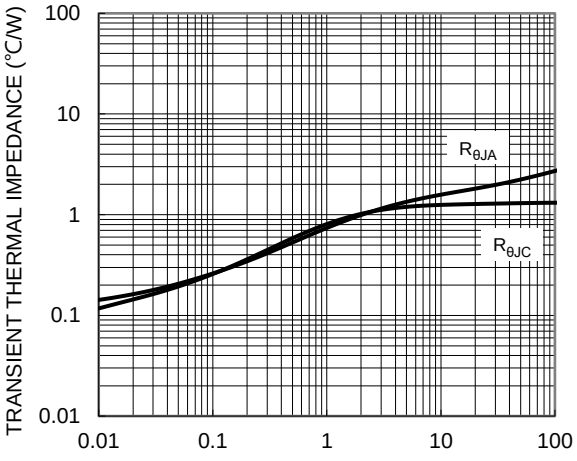


Fig. 5 Typical Transient Thermal Impedance

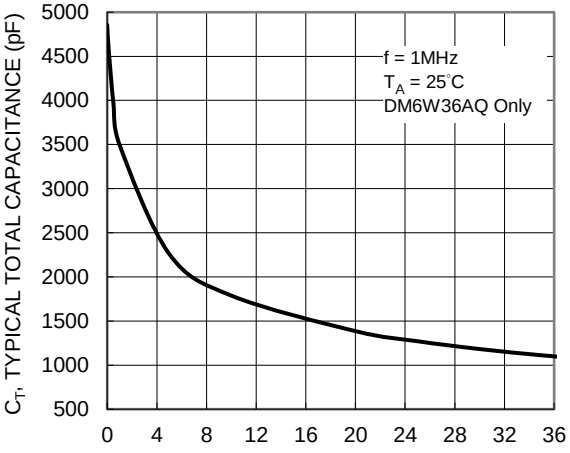
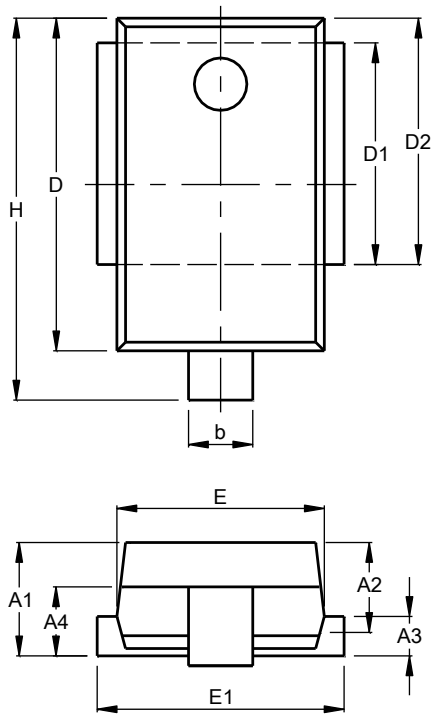


Fig. 6 Typical Total Capacitance

Package Outline Dimensions

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

DO-218 (Type E)

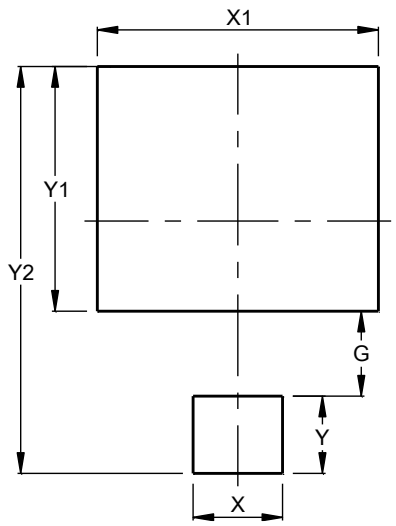


DO-218 (Type E)			
Dim	**Min**	**Max**	**Typ**
A	4.70	5.70	--
A1	4.70	5.25	5.00
A2	3.45	4.26	3.95
A3	1.70	2.50	2.00
A4	2.58	3.55	3.10
b	2.30	3.00	--
c	0.45	0.90	--
D	13.20	13.80	13.50
D1	8.70	9.30	9.00
D2	9.70	10.30	10.00
E	8.20	8.80	8.50
E1	9.50	10.50	--
H	15.00	16.00	15.50
L	1.50	2.50	2.00
All Dimensions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