600W SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

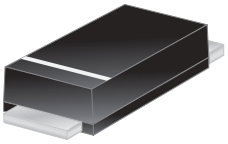
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Features

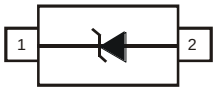
- Packaged in the Low Profile D-FLAT Package to Optimize Board Space
- Glass Passivated Die Construction
- Excellent Clamping Capability
- Fast Response Time
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Mechanical Data

- Case: D-FLAT
- Case Material: Molded Plastic.
  UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 e3
- Polarity Indicator: Cathode Band
- Weight: 0.035 grams (Approximate)



Top View



1 = Cathode
2 = Anode

Device Schematic

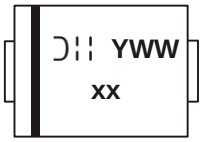
Ordering Information (Note 4)

Part Number	Compliance	Case	Packaging
P6SMAJXXADF-13	Commercial	D-FLAT	10,000/Tape & Reel

*XX = Device Voltage, for example: P6SMAJ17ADF-13.

Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
2. See http://www.diodes.com/quality/lead_free.html 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



xx = Product Type Marking Code
(See Electrical Characteristics Table)
= Manufacturers' Code Marking
YWW = Date Code Marking
Y = Last Digit of Year (ex: 7 for 2017)
WW = Week Code (01 to 53)

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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)	P_{PK}	600	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave Superimposed on Rated Load (Notes 5 & 6)	I_{FSM}	60	A
Steady State Power Dissipation @ T_L = +75°C	$PM_{(AV)}$	1.5	W
Instantaneous Forward Voltage @ I_{PP} = 35A (Notes 5 & 6)	V_F	3.5	V

Notes: 5. Valid provided that terminals are kept at ambient temperature.
6. Measured with 8.3ms single half sine-wave. Duty cycle = 4 pulses per minute maximum.

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance, Junction to Terminal (Note 7)	$R_{\theta JT}$	64	°C/W
Typical Thermal Resistance, Junction to Terminal (Note 8)	$R_{\theta JT}$	57	°C/W
Typical Thermal Resistance, Junction to Ambient (Note 7)	$R_{\theta JA}$	115	°C/W
Typical Thermal Resistance, Junction to Ambient (Note 8)	$R_{\theta JA}$	92	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes: 7. Device mounted on FR-4 substrate, 1" x 1", 2oz, single-sided, PC boards with 0.06" x 0.09" copper pad.
8. Device mounted on FR-4 substrate, 0.4" x 0.5", 2oz, single-sided, PC boards with 0.2" x 0.25" copper pad.

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

Part Number	Reverse Standoff Voltage	Breakdown Voltage V_{BR} @ I_T (Note 9)		Test Current	Max. Reverse Leakage @ V_{RWM}	Max. Clamping Voltage @ I_{PP} (Note 10)	Max. Peak Pulse Current I_{PP} (Note 10)	Marking Code
	V_{RWM} (V)	Min (V)	Max (V)	I_T (mA)	I_R (µA)	V_C (V)	(A)	
P6SMAJ5.0ADF	5.0	6.40	7.23	10	800	9.2	65.2	KE
P6SMAJ6.0ADF	6.0	6.67	7.67	10	800	10.3	58.3	KG
P6SMAJ6.5ADF	6.5	7.22	8.30	10	500	11.2	53.6	KK
P6SMAJ7.0ADF	7.0	7.78	8.95	10	200	12.0	50.0	KM
P6SMAJ7.5ADF	7.5	8.33	9.58	1.0	100	12.9	46.5	KP
P6SMAJ8.0ADF	8.0	8.89	10.23	1.0	50	13.6	44.1	KR
P6SMAJ8.5ADF	8.5	9.44	10.82	1.0	10	14.4	41.7	KT
P6SMAJ9.0ADF	9.0	10.00	11.50	1.0	5.0	15.4	39.0	KV
P6SMAJ10ADF	10	11.10	12.80	1.0	5.0	17.0	35.3	KX
P6SMAJ11ADF	11	12.20	14.40	1.0	1.0	18.2	33.0	KZ
P6SMAJ12ADF	12	13.30	15.30	1.0	1.0	19.9	30.2	LE
P6SMAJ13ADF	13	14.40	16.50	1.0	1.0	21.5	27.9	LG
P6SMAJ14ADF	14	15.60	17.90	1.0	1.0	23.2	25.8	LK
P6SMAJ15ADF	15	16.70	19.20	1.0	1.0	24.4	24.0	LM
P6SMAJ16ADF	16	17.80	20.50	1.0	1.0	26.0	23.1	LP
P6SMAJ17ADF	17	18.90	21.70	1.0	1.0	27.6	21.7	LR
P6SMAJ18ADF	18	20.00	23.30	1.0	1.0	29.2	20.5	LT
P6SMAJ20ADF	20	22.20	25.50	1.0	1.0	32.4	18.5	LV
P6SMAJ22ADF	22	24.40	28.00	1.0	1.0	35.5	16.9	LX
P6SMAJ24ADF	24	26.70	30.70	1.0	1.0	38.9	15.4	LZ
P6SMAJ26ADF	26	28.90	33.20	1.0	1.0	42.1	14.2	ME
P6SMAJ28ADF	28	31.10	35.80	1.0	1.0	45.4	13.2	MG
P6SMAJ30ADF	30	33.30	38.30	1.0	1.0	48.4	12.4	MK
P6SMAJ33ADF	33	36.70	42.20	1.0	1.0	53.3	11.3	MM
P6SMAJ36ADF	36	40.00	46.00	1.0	1.0	58.1	10.3	MP

Notes: 9. V_{BR} measured with I_T current pulse = 10 ~ 15ms.
10. Per 10 x 1000µs waveform. See Figure 4.

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

Part Number	Reverse Standoff Voltage	Breakdown Voltage V_{BR} @ I_T (Note 9)		Test Current	Max. Reverse Leakage @ V_{RWM}	Max. Clamping Voltage @ I_{PP} (Note 10)	Max. Peak Pulse Current I_{PP} (Note 10)	Marking Code
	V_{RWM} (V)	Min (V)	Max (V)	I_T (mA)	I_R (µA)	V_C (V)	(A)	
P6SMAJ40ADF	40.0	44.40	51.10	1.0	1.0	64.5	9.3	MR
P6SMAJ43ADF	43.0	47.80	54.90	1.0	1.0	69.4	8.6	MT
P6SMAJ45ADF	45.0	50.00	57.50	1.0	1.0	72.7	8.3	MV
P6SMAJ48ADF	48.0	53.30	61.30	1.0	1.0	77.4	7.7	MX
P6SMAJ51ADF	51.0	56.70	65.20	1.0	1.0	82.4	7.3	MZ
P6SMAJ54ADF	54.0	60.00	69.00	1.0	1.0	87.1	6.9	NE
P6SMAJ58ADF	58.0	64.40	74.60	1.0	1.0	93.6	6.4	NG
P6SMAJ60ADF	60.0	66.70	76.70	1.0	1.0	96.8	6.2	NK
P6SMAJ64ADF	64.0	71.10	81.80	1.0	1.0	103.0	5.8	NM
P6SMAJ70ADF	70.0	77.80	89.50	1.0	1.0	113.0	5.3	NP
P6SMAJ75ADF	75.0	83.30	95.80	1.0	1.0	121.0	4.9	NR
P6SMAJ78ADF	78.0	86.70	99.70	1.0	1.0	126.0	4.7	NT
P6SMAJ85ADF	85.0	94.40	108.20	1.0	1.0	137.0	4.4	NV

Notes: 9. V_{BR} measured with I_T current pulse = 10 ~ 15ms.
10. Per 10 x 1000µs waveform. See Figure 4.

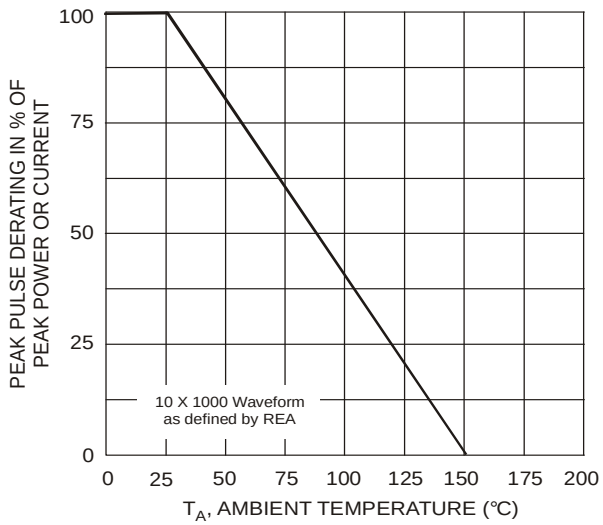


Fig. 1 Pulse Derating Curve

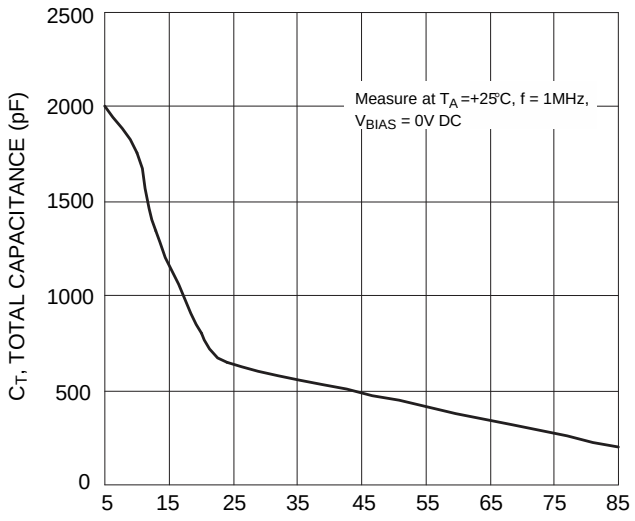


Fig. 2 Typical Total Capacitance vs. Reverse Standoff Voltage

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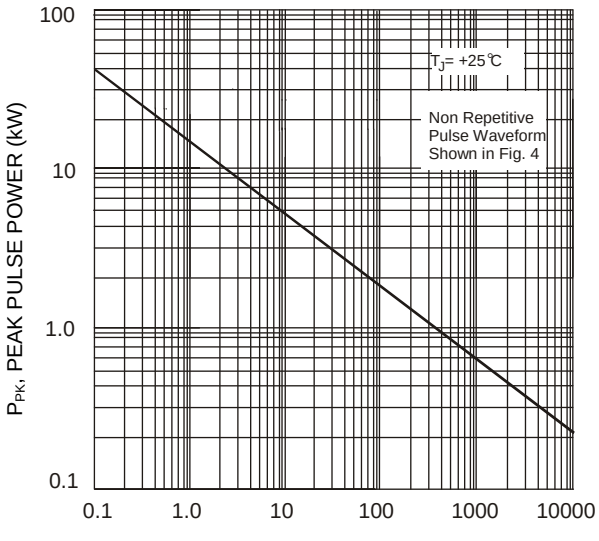


Fig. 3 Pulse Rating Curve

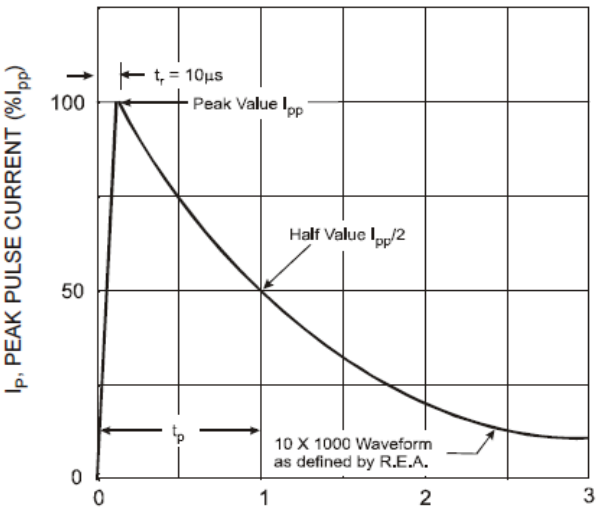


Fig. 4 Pulse Waveform

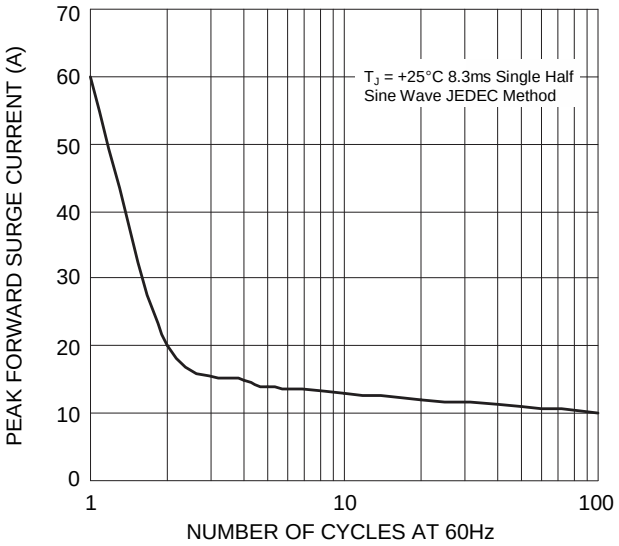


Fig. 5 Maximum Non-Repetitive Forward Surge Current

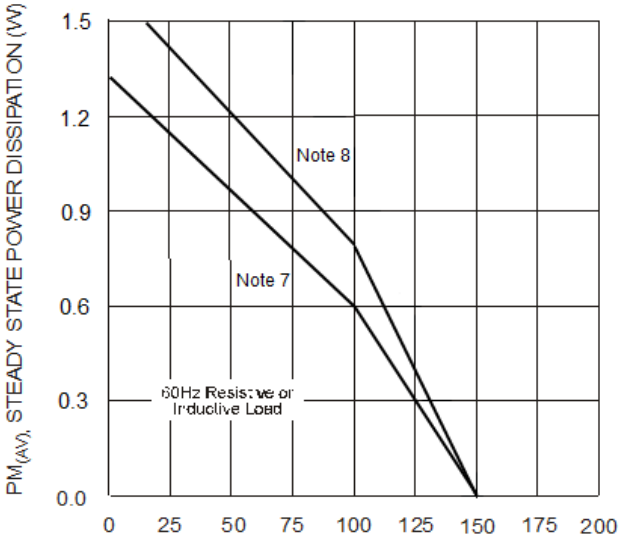


Fig. 6 Steady State Power Derating Curve

Notes: 7. Device mounted on FR-4 substrate, 1" x 1", 2oz, single-sided, PC boards with 0.06" x 0.09" copper pad.
8. Device mounted on FR-4 substrate, 0.4" x 0.5", 2oz, single-sided, PC boards with 0.2" x 0.25" copper pad.

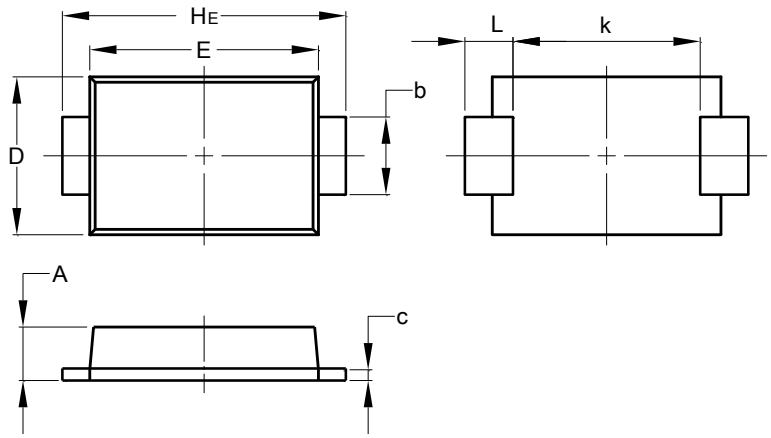
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Package Outline Dimensions

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D-FLAT

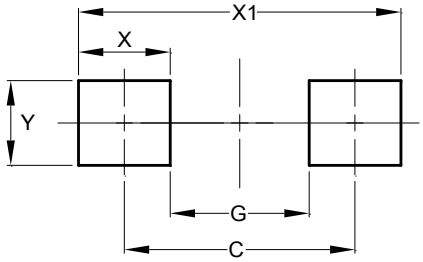


D-FLAT		
Dim	**Min**	**Max**
A	0.90	1.10
b	1.25	1.65
c	0.10	0.40
D	2.25	2.95
E	3.95	4.60
k	2.80	-
H_E	5.00	5.60
L	0.50	1.30
All Dimensions in mm		

Suggested Pad Layout

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

D-FLAT



Dimensions	Value (in mm)
C	4.65
G	2.80
X	1.85
X1	6.50
Y	1.70

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