NEW PRODUCT

P6SMAJ5.0ADFQ – P6SMAJ85ADFQ

600W SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

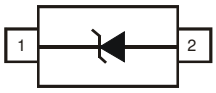
Features

- 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)**
- **The P6SMAJxxADFQ-13 is suitable for automotive applications requiring specific change control and is AEC-Q101 qualified, is PPAP capable, and is manufactured in IATF16949:2016 certified facilities.**

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 Lead-Frame. 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

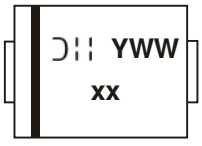
Ordering Information (Note 4)

Part Number	Compliance	Case	Packaging
P6SMAJXXADFQ-13	Automotive	D-FLAT	10,000/Tape & Reel

*XX = Device Voltage, for example: P6SMAJ17ADFQ-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/.

Marking Information



xx = Product Type Marking Code
(See Electrical Characteristics Table)
= Manufacturers' Code Marking
YWW = Date Code Marking
Y = Last Digit of Year (ex: 9 for 2019)
WW = Week Code (01 to 53)

NEW PRODUCT

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 = +25°C	$PM_{(AV)}$	1.0	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.

NEW PRODUCT

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)	
P6SMAJ5.0ADFQ	5.0	6.40	7.23	10	800	9.2	65.2	KE
P6SMAJ6.0ADFQ	6.0	6.67	7.67	10	800	10.3	58.3	KG
P6SMAJ6.5ADFQ	6.5	7.22	8.30	10	500	11.2	53.6	KK
P6SMAJ7.0ADFQ	7.0	7.78	8.95	10	200	12.0	50.0	KM
P6SMAJ7.5ADFQ	7.5	8.33	9.58	1.0	100	12.9	46.5	KP
P6SMAJ8.0ADFQ	8.0	8.89	10.23	1.0	50	13.6	44.1	KR
P6SMAJ8.5ADFQ	8.5	9.44	10.82	1.0	10	14.4	41.7	KT
P6SMAJ9.0ADFQ	9.0	10.00	11.50	1.0	5.0	15.4	39.0	KV
P6SMAJ10ADFQ	10	11.10	12.80	1.0	5.0	17.0	35.3	KX
P6SMAJ11ADFQ	11	12.20	14.40	1.0	1.0	18.2	33.0	KZ
P6SMAJ12ADFQ	12	13.30	15.30	1.0	1.0	19.9	30.2	LE
P6SMAJ13ADFQ	13	14.40	16.50	1.0	1.0	21.5	27.9	LG
P6SMAJ14ADFQ	14	15.60	17.90	1.0	1.0	23.2	25.8	LK
P6SMAJ15ADFQ	15	16.70	19.20	1.0	1.0	24.4	24.0	LM
P6SMAJ16ADFQ	16	17.80	20.50	1.0	1.0	26.0	23.1	LP
P6SMAJ17ADFQ	17	18.90	21.70	1.0	1.0	27.6	21.7	LR
P6SMAJ18ADFQ	18	20.00	23.30	1.0	1.0	29.2	20.5	LT
P6SMAJ20ADFQ	20	22.20	25.50	1.0	1.0	32.4	18.5	LV
P6SMAJ22ADFQ	22	24.40	28.00	1.0	1.0	35.5	16.9	LX
P6SMAJ24ADFQ	24	26.70	30.70	1.0	1.0	38.9	15.4	LZ
P6SMAJ26ADFQ	26	28.90	33.20	1.0	1.0	42.1	14.2	ME
P6SMAJ28ADFQ	28	31.10	35.80	1.0	1.0	45.4	13.2	MG
P6SMAJ30ADFQ	30	33.30	38.30	1.0	1.0	48.4	12.4	MK
P6SMAJ33ADFQ	33	36.70	42.20	1.0	1.0	53.3	11.3	MM
P6SMAJ36ADFQ	36	40.00	46.00	1.0	1.0	58.1	10.3	MP
P6SMAJ40ADFQ	40.0	44.40	51.10	1.0	1.0	64.5	9.3	MR
P6SMAJ43ADFQ	43.0	47.80	54.90	1.0	1.0	69.4	8.6	MT
P6SMAJ45ADFQ	45.0	50.00	57.50	1.0	1.0	72.7	8.3	MV
P6SMAJ48ADFQ	48.0	53.30	61.30	1.0	1.0	77.4	7.7	MX
P6SMAJ51ADFQ	51.0	56.70	65.20	1.0	1.0	82.4	7.3	MZ
P6SMAJ54ADFQ	54.0	60.00	69.00	1.0	1.0	87.1	6.9	NE
P6SMAJ58ADFQ	58.0	64.40	74.60	1.0	1.0	93.6	6.4	NG
P6SMAJ60ADFQ	60.0	66.70	76.70	1.0	1.0	96.8	6.2	NK
P6SMAJ64ADFQ	64.0	71.10	81.80	1.0	1.0	103.0	5.8	NM
P6SMAJ70ADFQ	70.0	77.80	89.50	1.0	1.0	113.0	5.3	NP
P6SMAJ75ADFQ	75.0	83.30	95.80	1.0	1.0	121.0	4.9	NR
P6SMAJ78ADFQ	78.0	86.70	99.70	1.0	1.0	126.0	4.7	NT
P6SMAJ85ADFQ	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.

NEW PRODUCT

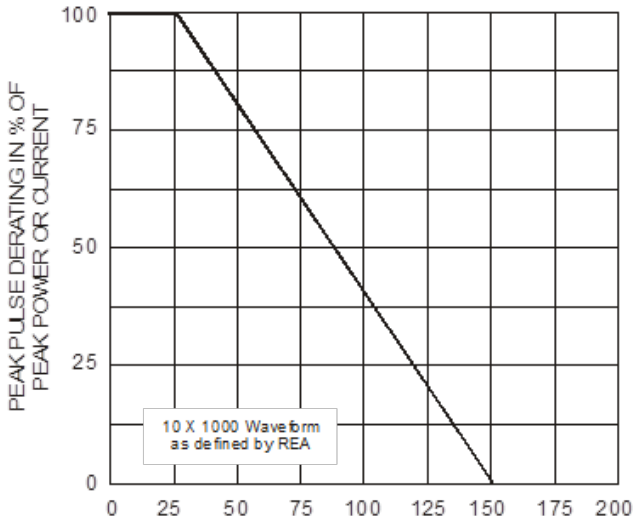


Fig. 1 Pulse Derating Curve

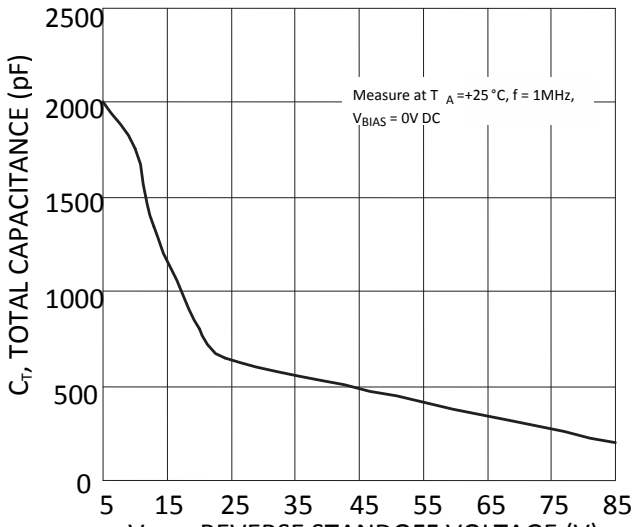


Fig. 2 Typical Total Capacitance vs. Reverse Standoff Voltage

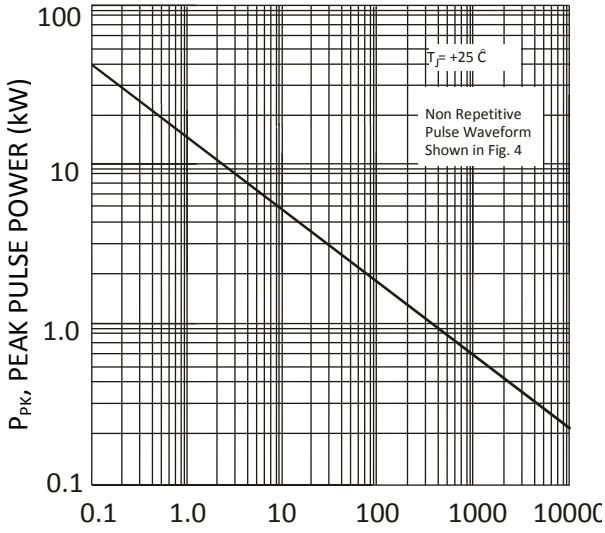


Fig. 3 Pulse Rating Curve

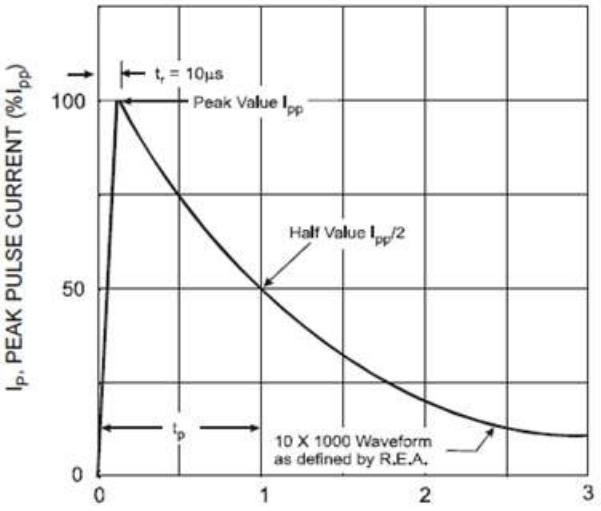


Fig. 4 Pulse Waveform

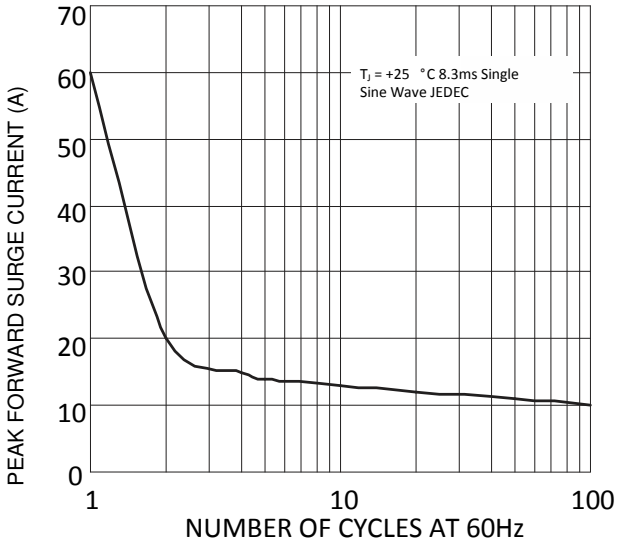


Fig. 5 Maximum Non-Repetitive Forward Surge

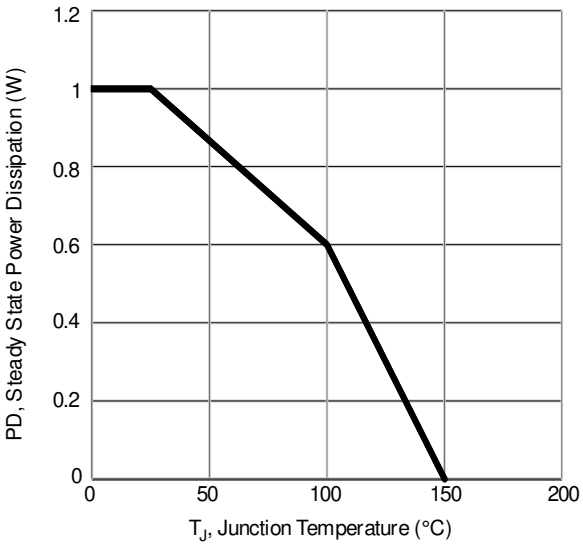
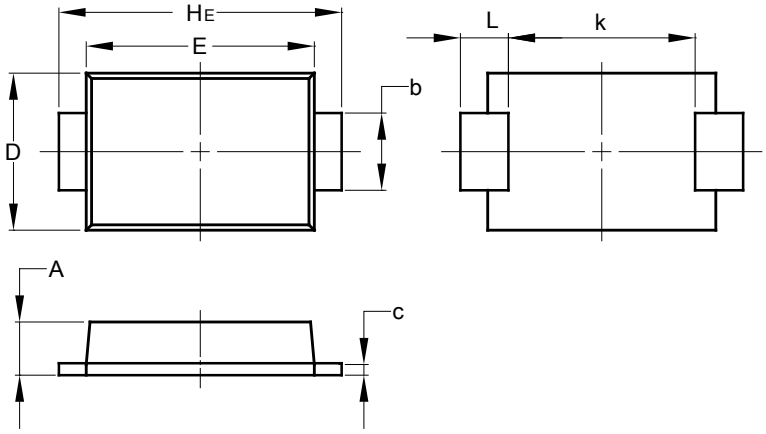


Fig 6 PD, Steady State Power Dissipation (W)

NEW PRODUCT

Package Outline Dimensions

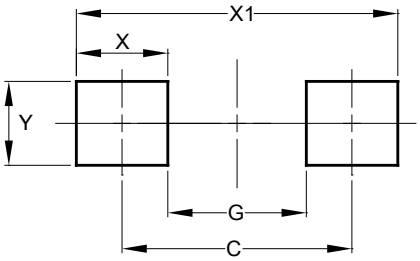
Please see http://www.diodes.com/package-outlines.html for the latest version.



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.



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

NEW PRODUCT

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