5.0SMDJ54AQ–5.0SMDJ100AQ

5000W SURFACE-MOUNT AUTOMOTIVE TRANSIENT VOLTAGE SUPPRESSOR

Product Summary

P_{PK}	I_{FSM} (A)	V_{RWM} (V)	$P_{M(AV)}$
5000W	300	54 to 100	2.0W

Description and Applications

This device is suitable to protect sensitive automotive circuits against surges defined in ISO7637-2 and against electrostatic discharges according to ISO10605.

Compliance with the following standards:

- ISO10605, C = 150pF, R = 330Ω:
  30kV (Air Discharge)
  30kV (Contact Discharge)
- ISO7637-2:
  Pulse 1: VS = -150V
  Pulse 2a: VS = +112V
  Pulse 3a: VS = -220V
  Pulse 3b: VS = +150V

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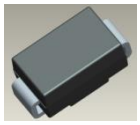
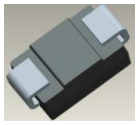


Top View



Bottom View

Features

- 5000W Peak Pulse Power Dissipation
- 54V to 100V Standoff Voltages
- ONO Passivated Die Construction
- Excellent Clamping Capability
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Notes 3)**
- **The 5.0SMDJ54AQ–5.0SMDJ100AQ 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/

Mechanical Data

- Package: SMC
- Package Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Solderable per MIL-STD-202, Method 208
  Lead-Free Plating (Matte Tin Finish) e3
- Weight: 0.21 grams (Approximate)

Uni-Directional

Ordering Information (Note 4)

Orderable Part Number	Package	Packing	
		Qty.	Carrier
5.0SMDJXXAQ-13-F	SMC	3,000	Tape & Reel
5.0SMDJXXXAQ-13-F	SMC	3,000	Tape & Reel

X = Device Voltage, e.g., 5.0SMDJ20AQ-13-F

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

YWXX = Date Code Marking
Y = Year (ex: 5 = 2025)
W = Week Code
XX = Journal Lot Code (ex: 0 to 9 and A to Z, Skip O, I)
ZZZZ = Product Type Marking Code

Date Code Key

Year	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Code	5	6	7	8	9	0	1	2	3	4	5	6

Week	1-26	27-52	53
Code	A-Z	a-z	z

Maximum Ratings (@ T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Power Dissipation (Note 5)	P_{PK}	5000	W	T_J = +25°C, tp = 1ms (See Figure 3)
Peak Forward Surge Current, 8.3ms Single Half Sine Wave Superimposed on Rated Load (Notes 6 & 7)	I_{FSM}	300	A	8.3ms Single Half Sine Wave @T_J = +25°C (Note 5)
Steady-State Power Dissipation with PCB	$P_{M(AV)}$	2.0	W	See Figure 4
ESD Protection – Contact Discharge	$V_{ESD\_CONTACT}$	±30	kV	Standard IEC 61000-4-2
ESD Protection – Air Discharge	V_{ESD_AIR}	±30	kV	Standard IEC 61000-4-2

Notes: 5. Non-repetitive current pulse per Figure 2 and derated above T_A = +25°C per Figure 1.
6. Mounted on 8.00mm^2 (0.013mm thick) land areas.
7. Measured with 8.3ms single half sine wave. Duty cycle = 4 pulses per minute maximum.

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Operating Temperature Range	T_J	-55 to +175	°C
Storage Temperature Range	T_{STG}	-55 to +175	°C

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} (Note 9)	Max Peak Pulse Current	Marking Code
	V_{RWM} (V)	Min (V)	Max (V)	I_T (mA)	I_R (µA)	V_C (V)	I_{PP} (A)	
5.0SMDJ54AQ	54	60.0	66.3	1	2	87.1	57.4	ADDX
5.0SMDJ58AQ	58	64.4	71.2	1	2	93.6	53.4	ADDY
5.0SMDJ60AQ	60	66.7	73.7	1	2	96.8	51.7	ADDZ
5.0SMDJ64AQ	64	71.1	78.6	1	2	103.0	48.5	ADCA
5.0SMDJ70AQ	70	77.8	86.0	1	2	113.0	44.2	ADCB
5.0SMDJ75AQ	75	83.3	92.1	1	2	121.0	41.3	ADCC
5.0SMDJ78AQ	78	86.7	95.8	1	2	126.0	39.7	ADCD
5.0SMDJ80AQ	80	88.8	97.6	1	2	129.6	38.6	ADCE
5.0SMDJ85AQ	85	94.4	104.0	1	2	137.0	36.5	ADCF
5.0SMDJ90AQ	90	100.0	111.0	1	2	146.0	34.2	ADCG
5.0SMDJ100AQ	100	111.0	123.0	1	2	162.0	30.9	ADCH

Notes: 8. V_{BR} measured with I_T current pulse = 10ms to 15ms.
9. Per 10 × 1000µs waveform. See Figure 2.

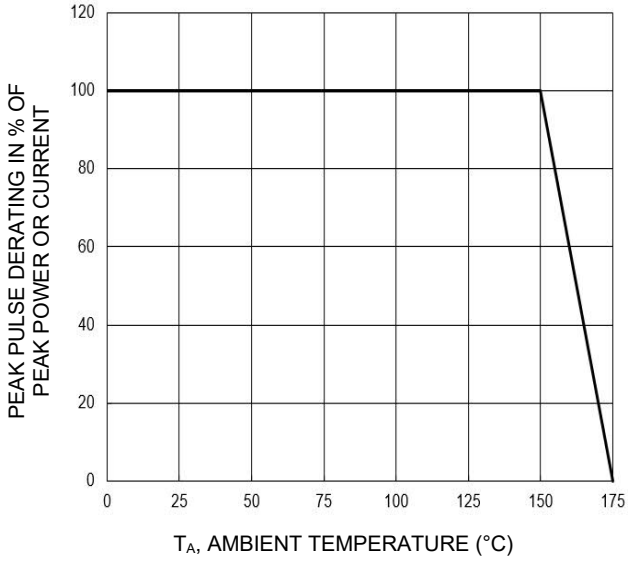


Figure 1. Pulse Deration Curve

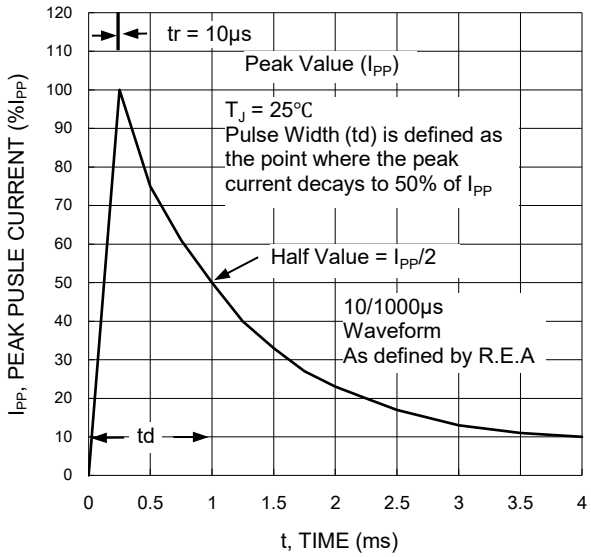


Figure 2. Pulse Waveform

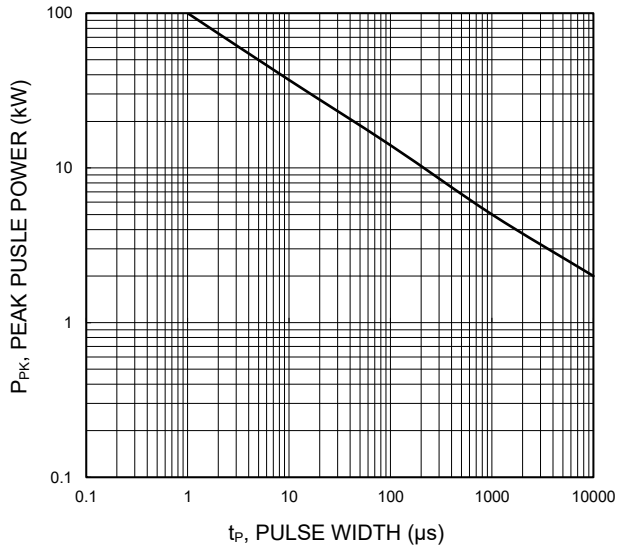


Figure 3. Pulse-Rating Curve

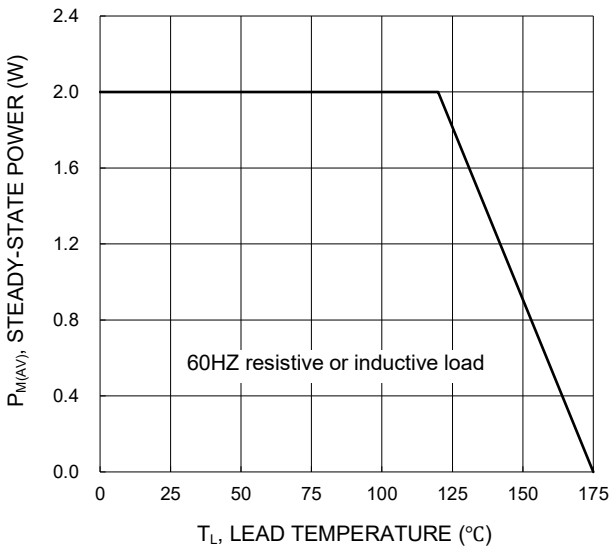


Figure 4. Steady-State Power Deration Curve

Package Outline Dimensions

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

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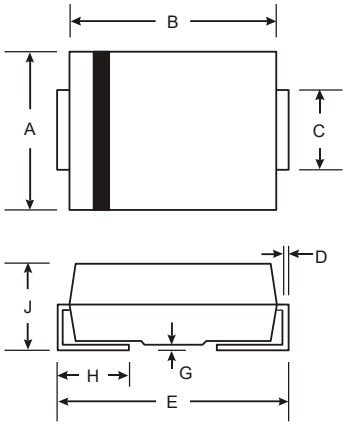

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Dim	**Min**	**Max**
A	5.59	6.22
B	6.60	7.11
C	2.75	3.18
D	0.15	0.31
E	7.75	8.13
G	0.10	0.20
H	0.76	1.52
J	2.00	2.50
All Dimensions in mm		

Suggested Pad Layout

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

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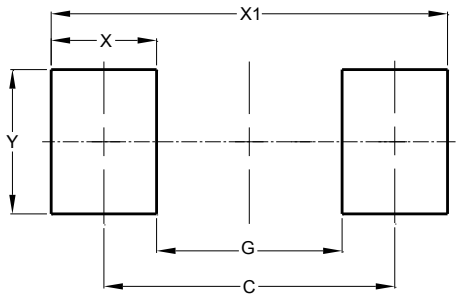

Dimensions	Value (in mm)
C	6.90
G	4.40
X	2.50
X1	9.40
Y	3.30

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