



SMBJ7.0(C)AQ - SMBJ100(C)AQ

600W SURFACE MOUNT AUTOMOTIVE TRANSIENT VOLTAGE SUPPRESSOR

Product Summary (@T_A = +25°C)

Ррк	IFSM	VRWM	PM(AV)
600W	100A	7.0V to 100V	5W

Description and Applications

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 (Note 5)
 - Pulse 1: Vs = -150V
 - Pulse 2a: VS = +112V
 - Pulse 3a: Vs = -220V
 - Pulse 3b: Vs = +150V

Features and Benefits

- 600W Peak Pulse Power Dissipation
- 7.0V to 100V Standoff Voltages
- Glass Passivated Die Construction
- Unidirectional and Bidirectional Versions Available
- Excellent Clamping Capability
- Lead-Free Finish; RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- The SMBJ7.0(C)AQ SMBJ100(C)AQ are suitable for automotive applications requiring specific change control; these parts are AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities. <u>https://www.diodes.com/quality/product-definitions/</u>

Mechanical Data

- Case: SMB
- Case 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 ⁽³⁾
- Weight: 0.1 grams (Approximate)

SMB



Top View



Bottom View

Ordering Information (Note 4)

Part Number	Qualification	Case	Packaging
SMBJX.X(C)AQ-13-F	Automotive	SMB	3000/Tape & Reel
SMBJXX(C)AQ-13-F	Automotive	SMB	3000/Tape & Reel
SMBJXXX(C)AQ-13-F	Automotive	SMB	3000/Tape & Reel

*X = Device Voltage, e.g., SMBJ14AQ-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.

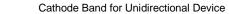
4. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.

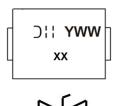
5. Not applicable to parts with stand-off voltage lower than the average battery voltage (13.5V).

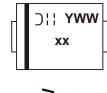


Marking Information

Bidirectional Device







xx = Product Type Marking Code (See Page 3)
) | = Manufacturers' Marking
YWW = Date Code Marking
Y = Last Digit of Year (ex: 1 for 2021)
WW = Week Code (01 to 53)

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

Characteristic	Symbol	Value	Unit
Peak Pulse Power Dissipation			
(Non Repetitive Current Pulse Derated above $T_A = +25^{\circ}C$)	Ррк	600	W
(Note 6)			
Peak Power Derating Above +25°C	P _{DER}	4.8	W/°C
Peak Forward Surge Current, 8.3ms Single Half Sine Wave Superimposed on Rated Load (Notes 6, 7 & 8)	IFSM	100	А
Steady State Power Dissipation @ $T_L = +75^{\circ}C$	PM(AV)	5.0	W
Instantaneous Forward Voltage @ IPP = 35A (Notes 6, 7 & 8)	VF	3.5	V

Thermal Characteristics

Notes:

Characteristic	Symbol	Value	Unit	
Operating Temperature Range	TJ	-55 to +150	°C	
Storage Temperature Range	Tstg	-55 to +175	°C	

6. Valid provided that terminals are kept at ambient temperature.

7. Measured with 8.3ms single half sine-wave. Duty cycle = 4 pulses per minute maximum.

8. Unidirectional units only.



Part Number Add C for Bi- Directional	Reverse Standoff Voltage	Vo	kdown Itage [·] (Note 10)	Test Current	Max. Reverse Leakage @ V _{RWM} (Note 12)	Max. Clamping Voltage @ I _{pp} (Note 11)	Max. Peak Pulse Current	Marking	g Code
(Note 9)	VRWM (V)	Min (V)	Max (V)	l⊤ (mA)	I _R (μΑ)	Vc (V)	Ipp (A)	BI-	UNI-
SMBJ7.0(C)AQ	7.0	7.78	8.95	10	200	12.0	50.0	AM	KM
SMBJ12(C)AQ	12.0	13.30	15.30	1.0	5.0	19.9	30.2	BE	LE
SMBJ14(C)AQ	14.0	15.60	17.90	1.0	5.0	23.2	25.8	BK	LK
SMBJ15(C)AQ	15.0	16.70	19.20	1.0	5.0	24.4	24.0	BM	LM
SMBJ16(C)AQ	16.0	17.80	20.50	1.0	5.0	26.0	23.1	BP	LP
SMBJ17(C)AQ	17.0	18.90	21.70	1.0	5.0	27.6	21.7	BR	LR
SMBJ18(C)AQ	18.0	20.00	23.30	1.0	5.0	29.2	20.5	BT	LT
SMBJ20(C)AQ	20.0	22.20	25.50	1.0	5.0	32.4	18.5	BV	LV
SMBJ22(C)AQ	22.0	24.40	28.00	1.0	5.0	35.5	16.9	BX	LX
SMBJ24(C)AQ	24.0	26.70	30.70	1.0	5.0	38.9	15.4	ΒZ	LZ
SMBJ26(C)AQ	26.0	28.90	33.20	1.0	5.0	42.1	14.2	CE	ME
SMBJ28(C)AQ	28.0	31.10	35.80	1.0	5.0	45.4	13.2	CG	MG
SMBJ30(C)AQ	30.0	33.30	38.30	1.0	5.0	48.4	12.4	CK	MK
SMBJ33(C)AQ	33.0	36.70	42.20	1.0	5.0	53.3	11.3	CM	MM
SMBJ36(C)AQ	36.0	40.00	46.00	1.0	5.0	58.1	10.3	CP	MP
SMBJ40(C)AQ	40.0	44.40	51.10	1.0	5.0	64.5	9.3	CR	MR
SMBJ51(C)AQ	51.0	56.70	65.20	1.0	5.0	82.4	7.3	CZ	MZ
SMBJ58(C)AQ	58.0	64.40	74.60	1.0	5.0	93.6	6.4	DG	NG
SMBJ70(C)AQ	70.0	77.80	89.50	1.0	5.0	113.0	5.3	DP	NP
SMBJ100(C)AQ	100.0	111.0	128.00	1.0	5.0	162.0	3.7	DZ	NZ

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

Notes: 9. Suffix C denotes bidirectional device.

 $10. V_{BR} \mbox{ measured with } I_T \mbox{ current pulse} = 10\mbox{ms to 15ms.} \\ 11. Per 10 \times 1000\mbox{ µs waveform. See Figure 4.} \\ 12. For Bi-Directional devices having VRWM of 10V and under, the IR is doubled.$



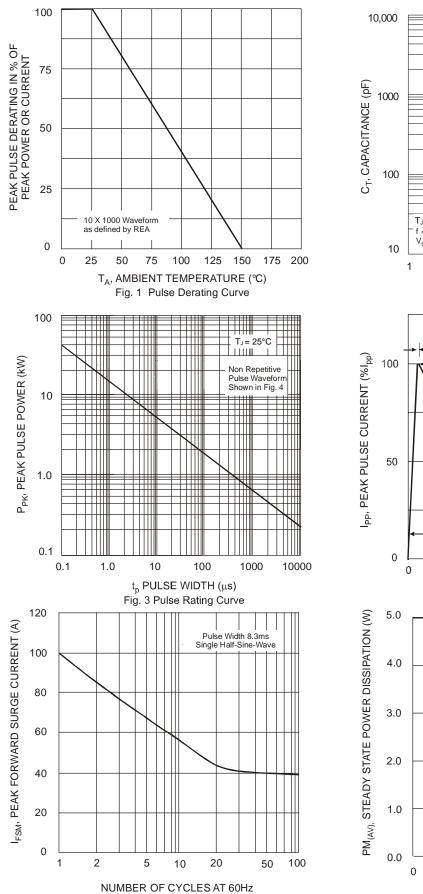
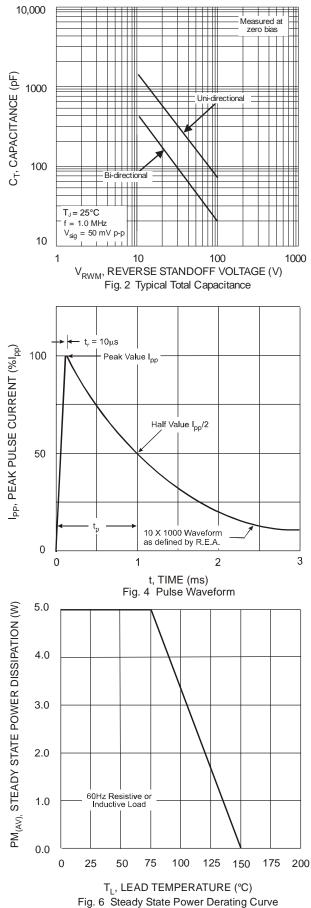


Fig. 5 Maximum Non-Repetitive Surge Current

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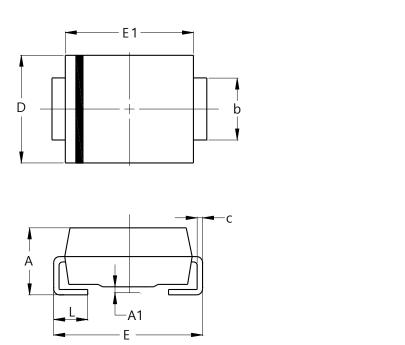


SMBJ7.0(C)AQ - SMBJ100(C)AQ Document number: DS40740 Rev. 6 - 2



Package Outline Dimensions (Note 13)

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



SMB				
Dim	Min	Max		
Α	2.00	2.50		
A1	0.05	0.20		
b	1.96	2.21		
c	0.15	0.31		
D	3.30	3.94		
Е	5.00	5.59		
E1	4.06	4.57		
L	0.76	1.52		
All Dimensions in mm				

Note: 13. The bar in the upper drawing is polarity indicator for Cathode Band. It is for unidirectional devices only. Bidirectional devices have no polarity Indicator.

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Suggested Pad Layout

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

Dimensions	Value (in mm)	
С	4.30	
G	1.80	
Х	2.50	
X1	6.80	
Y	2.30	

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