

Product Summary (@T_A = +25°C)

Part Number	PPK	I _{FSM}	V _{RWM}	PM _(AV)
SMAT70AQ-13-F	400W	40A	70V	5W
SMBT70AQ-13-F	600W	100A	70V	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 following standards

- ISO10605, C = 150pF, R = 330Ω:
30kV (Air Discharge)
30kV (Contact Discharge)
- ISO7637-2 (Note 5)
Pulse 1: V_s = -100V
Pulse 2a: V_s = +50V
Pulse 3a: V_s = -150V
Pulse 3b: V_s = +100V

Features and Benefits

- 400W, 600W Peak Pulse Power Dissipation
- 70V Standoff Voltage
- 100V maximum Clamping Voltage
- 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 SMAT70AQ, SMBT70AQ 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: SMA / SMB
- 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: Cathode Band
- Weight: SMA 0.064 grams (Approximate)
SMB 0.093 grams (Approximate)

SMA / SMB



Top View

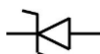
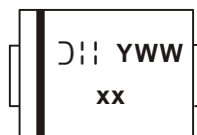


Bottom View

Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
SMAT70AQ-13-F	SMA	5000	Tape & Reel
SMBT70AQ-13-F	SMB	3000	Tape & Reel

- Notes:
- EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
 - 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.
 - Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 - For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.
 - Not applicable to parts with stand-off voltage lower than the average battery voltage (13.5V).

Marking Information


- xx = Product Type Marking Code
(See Electrical Characteristics Table)
DII = Manufacturer's Marking
YWW = Date Code Marking
Y = Last Digit of Year (ex: 4 for 2024)
WW = Week Code (01 to 53)

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

Characteristic	Symbol	SMAT70AQ	SMBT70AQ	Unit
Peak Pulse Power Dissipation (Non-Repetitive Current Pulse Derated above T _A = +25°C)	P _{PK}	400	600	W
Peak Forward Surge Current, 8.3ms Single Half-Sine Wave Superimposed on Rated Load (Note 6)	I _{FSM}	40	100	A
Instantaneous Forward Voltage @ I _F = 35A	V _F	3.5		V

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C
Steady-State Power Dissipation @ T _L = +75°C	PM _(AV)	5.0	W

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

Part Number	Reverse Standoff Voltage	Breakdown Voltage V _{BR} @ I _T (Note 6)		Test Current	Max. Reverse Leakage @ V _{RWM}	Max. Clamping Voltage @ I _{PP}	Max. Peak Pulse Current I _{PP}	Typical Total Capacitance (Note 7)	Typical Voltage Temp. Variation of V _{BR}	Marking Code
	V _{RWM} (V)	Min (V)	Max (V)	I _T (mA)	I _R (μA)	V _C (V)	(A)	(pF)	mV/°C	
SMAT70AQ-13-F	70	77.8	89.5	1.0	5.0	100	3.5	140	80	KEX
SMBT70AQ-13-F	70	77.8	89.5	1.0	5.0	100	5.3	290	80	NPX

Notes: 6. V_{BR} measured with I_T current pulse = 10ms to 15ms.
7. f = 1MHz, V_R = 0V_{DC}.

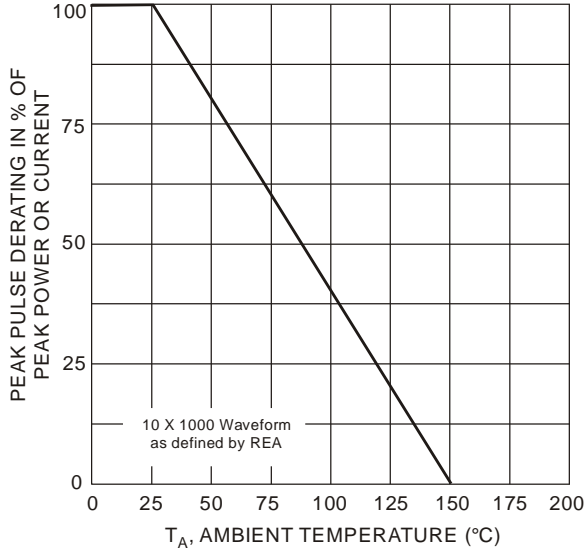


Fig. 1 Pulse Derating Curve

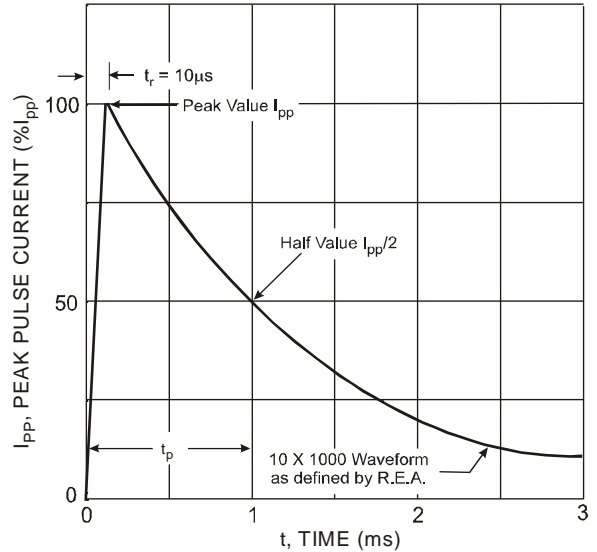


Fig. 2 Pulse Waveform

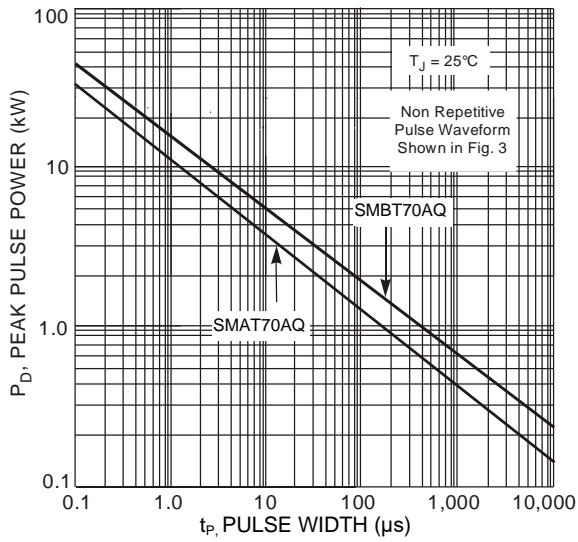


Fig. 3 Pulse Rating Curve

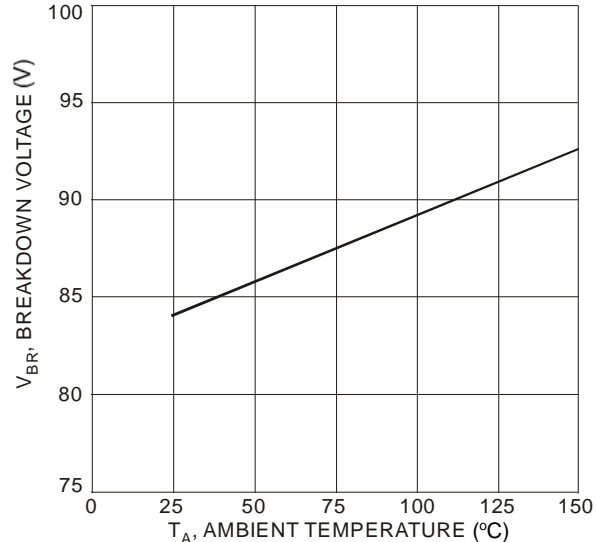
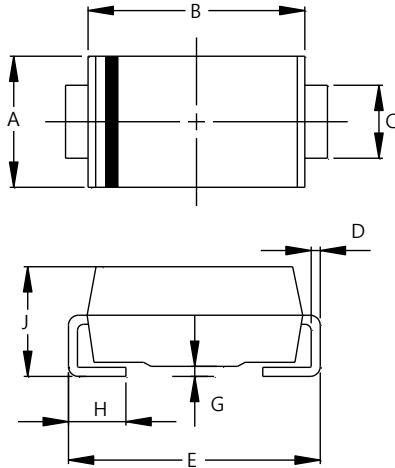


Fig. 4 Average Breakdown Voltage vs. Ambient Temperature

Package Outline Dimensions

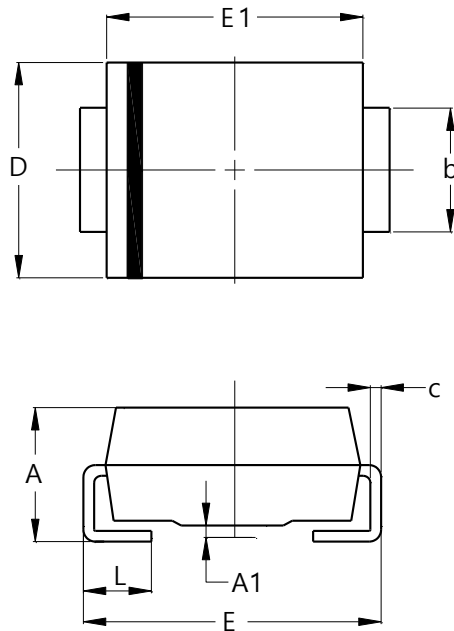
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SMA



SMA		
Dim	Min	Max
A	2.29	2.92
B	4.00	4.60
C	1.27	1.63
D	0.15	0.31
E	4.80	5.59
G	0.05	0.20
H	0.76	1.52
J	1.96	2.40
All Dimensions in mm		

SMB

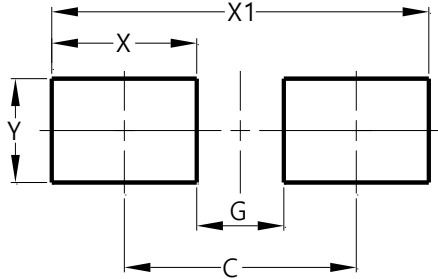


SMB		
Dim	Min	Max
A	2.00	2.50
A1	0.05	0.20
b	1.96	2.21
c	0.15	0.31
D	3.30	3.94
E	5.00	5.59
E1	4.06	4.57
L	0.76	1.52
All Dimensions in mm		

Suggested Pad Layout

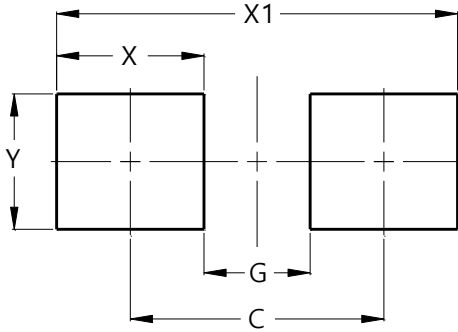
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SMA



Dimensions	Value (in mm)
C	4.00
G	1.50
X	2.50
X1	6.50
Y	1.70

SMB



Dimensions	Value (in mm)
C	4.30
G	1.80
X	2.50
X1	6.80
Y	2.30

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