



TVS Diode SMAJ12CA Ideal for the Protection of I/O Interfaces, Bi-directional Transient Voltage Suppressor

Our Product Introduction

Basic Information

- Place of Origin: Shenzhen, Guangdong, China
- Brand Name: SOCAY
- Certification: UL, REACH, RoHS, ISO
- Model Number: SMAJ12CA
- Minimum Order Quantity: 5000PCS
- Price: Negotiable
- Delivery Time: 5-8 work days



Product Specification

- SMAJ12CA Name: TVS Diodes
- Package Type: DO-214AC/SMA
- SMAJ12CA V_{rw}: 12.0V
- V_{br}@I_t (Min.): 13.3V
- SMAJ12CA V_{br}@I_t (Max.): 14.7V
- I_t: 1mA
- V_c@I_{pp}: 19.9V
- SMAJ12CA I_{pp}: 20.10A
- I_r@V_{rw}: 5μA

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Product Description

TVS Diode SMAJ12CA Ideal for the Protection of I/O Interfaces, Bi-directional Transient Voltage Suppressor

TVS Diode SMAJ12CA DATASHEET: [SMAJ_v2207.1.pdf](#)

TVS Diode SMAJ12CA Description:

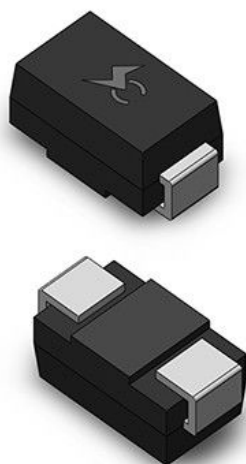
series TVS transient suppression diode products adopt standard surface mount SMA packaging and have a peak rated power of 400W. The product has extremely fast response time (sub-nanosecond) and very high stability. Designed specifically for the protection of various interfaces in electronic circuit applications from transient voltages caused by lightning strikes and other transient voltage events.

SMAJ12CA Part Number		SMAJ12CA Marking		Reverse Stand-Off Voltage VRWM(V)	Breakdown Voltage VBR (V) @IT		Test Current IT (mA)	Maximum Clamping Voltage VC @IPP (V)	Maximum Peak Pulse Current IPP (A)	Maximum Reverse Leakage IR @VRWM (μA)
Uni	Bi	Uni	Bi		MIN	MAX				
SMAJ12A	SMAJ12CA	BE	XE	12.0	13.30	14.70	1	19.9	20.10	5

Product Features

- Low profile package
- Ideal for automated placement
- 400 Watt peak pulse power capability with a 10/1000μs waveform
- For surface mounted applications to optimize board space
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance

- Power supply protection
- Automotive application
- Industrial application
- Power management



Description

The SMAJ series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.

Features

- ◆ For surface mounted applications in order to optimize board space
- ◆ Low leakage
- ◆ Uni and Bidirectional unit
- ◆ Glass passivated junction
- ◆ Low inductance
- ◆ Excellent clamping capability
- ◆ 400W Peak power capability at $10 \times 1000\mu\text{s}$ waveform Repetition rate (duty cycle):0.01%
- ◆ Fast response time: typically less than 1.0ps from 0 Volts to V_{BR} min
- ◆ Typical I_R less than 5 μA above 12V
- ◆ High Temperature soldering: 260°C/40 seconds at terminals
- ◆ Typical maximum temperature coefficient $\Delta V_{BR} = 0.1\% \times V_{BR}@25^\circ\text{C} \times \Delta T$
- ◆ Plastic package has Underwriters Laboratory Flammability 94V-0
- ◆ Matte tin lead-free Plated
- ◆ Halogen free and RoHS compliant
- ◆ Typical failure mode is short from over-specified voltage or current
- ◆ Whisker test is conducted based on JEDEC JESD201A per its table 4a and 4c
- ◆ IEC-61000-4-2 ESD 15kV(Air), 8kV (Contact)
- ◆ ESD protection of data lines in accordance with IEC 61000-4-2 (IEC801-2)
- ◆ EFT protection of data lines in accordance with IEC 61000-4-4 (IEC801-4)

Functional Diagram

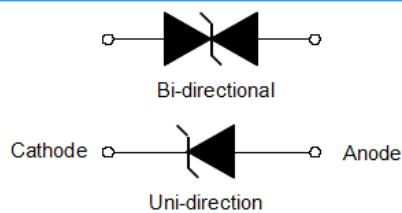


Figure 1 - Peak Pulse Power Rating Curve

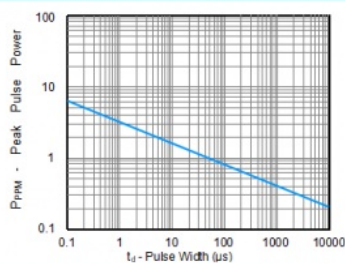


Figure 2 - Pulse Derating Curve

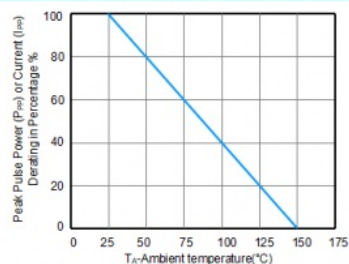


Figure 3 - Pulse Waveform

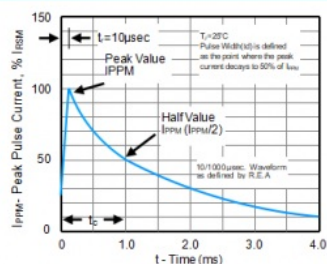


Figure 4 - Typical Junction Capacitance

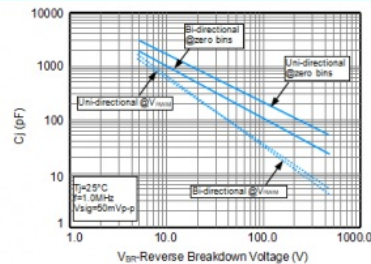


Figure 5 - Steady State Power Derating Curve

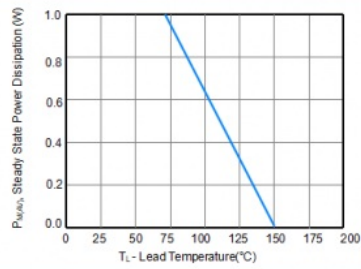
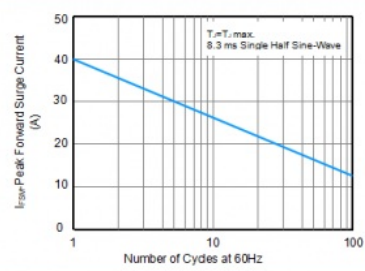
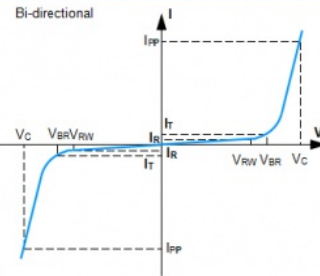
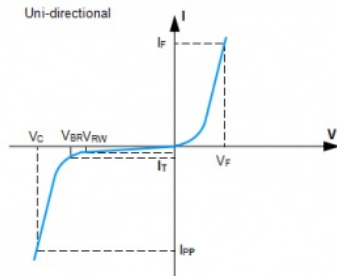


Figure 6 - Maximum Non-Repetitive Surge Current



I-V Curve Characteristics



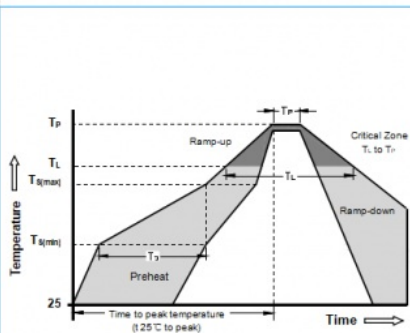
Physical Specifications

Weight	0.002 ounce, 0.061 gram
Case	JEDEC DO-214AC Molded Plastic over glass passivated junction
Polarity	Color band denotes cathode except Bipolar
Terminal	Matte Tin-plated leads, Solderable per JESD22-B102D

Environmental Specifications

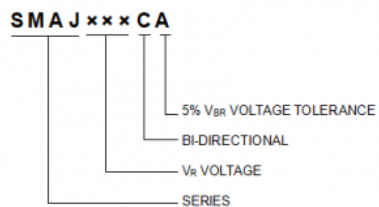
Temperature Cycle	JESD22-A104
Pressure Cooker	JESD22-A102
High Temp. Storage	JESD22-A103
HTRB	JESD22-A108
Thermal Shock	JESD22-A106

Soldering Parameters

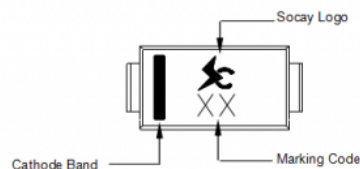


Reflow Condition		Lead-free assembly
Pre Heat	-Temperature Min ($T_{s(min)}$)	150°C
	-Temperature Max ($T_{s(max)}$)	200°C
	-Time (min to max) (T_s)	60 - 180 Seconds
Average ramp up rate (Liquidus Temp T_L) to peak		3°C/second max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Time (min to max) (T_L)	60 - 150 Seconds
Peak Temperature (T_P)		260 +0/-5°C
Time within 5°C of actual peak Temperature (t_p)		20 - 40 Seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_P)		8 minutes Max
Do not exceed		280°C

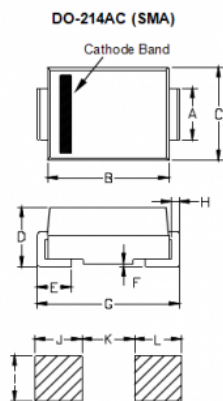
Part Numbering



Part Marking



Dimensions

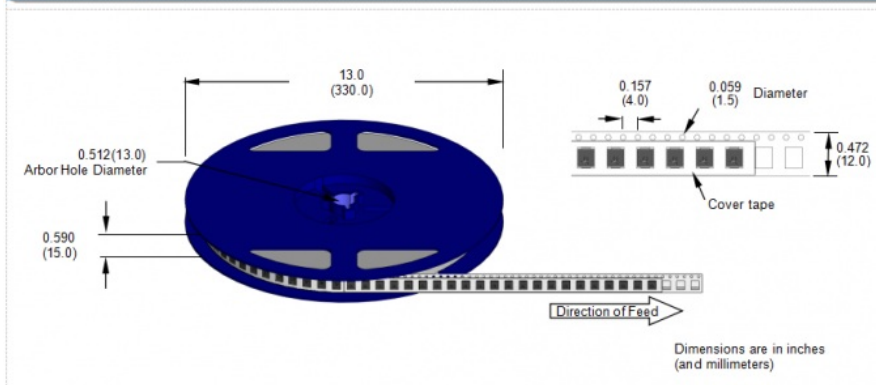


Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.049	0.065	1.25	1.65
B	0.156	0.183	3.95	4.65
C	0.093	0.112	2.35	2.85
D	0.078	0.095	1.98	2.41
E	0.030	0.060	0.76	1.52
F	-	0.008	-	0.203
G	0.185	0.209	4.70	5.30
H	0.006	0.012	0.15	0.31
I	0.067	-	1.70	-
J	0.082	-	2.10	-
K	-	0.090	-	2.30
L	0.082	-	2.10	-

Packaging

Part Number	Component Package	Reel (pcs)	Per Carton (pcs)	Packaging Option	Reel Diameters (mm)
SMA.JXXXXX	DO-214AC (SMA)	5000	80000	Tape & Reel -15mm/13"tape	330.0

Tape and Reel Specifications



SOCAY's main products include a full range of Ceramic Gas Discharge Tubes (GDT) Transient Suppression Diodes (TVS Diodes), ESD Suppressor, Thyristor Surge Suppressors (TSS), Spark Gap Protectors (SPG), Varistors (MOV), Chip Varistors (MLV), PTC Resettable Fuse, Negative Temperature Coefficient thermistors (NTC Thermistors), Chip Bead, Schottky Diodes, Zener Diode, etc. From circuit design to product testing (and provide test reports), we will provide you with one-stop services in the field of circuit protection. With excellent quality and service, SOCAY has won extensive praise from customers and respect from the industry.

 **SOCAY® Shenzhen Socay Electronics Co., Ltd.**



+8618126201429



sylvia@socay.com



socaydiode.com

4/F, Block C, HeHengXing Science & Technology Park, 19 MinQing Road, LongHua District, Shenzhen City, Guangdong Province, China