晶訊國際有限公司

承　　認　　書

SPECIFICATION FOR APPROVAL

CUSTOMER'S APPROVAL CHOP
客 戶 確 認 蓋 章

條 件 附 確 認:
Approval's condition: _____

確 認 日 期
Approved date: _____

KINDLY RETURN A SET WITH YOUR COMPANY'S OFFICIAL STAMP ON APPROVAL OF THIS ITEM

客 戶 名 稱 ：
CUSTOMER'S NAME ： _____

客 戶 機 型 ：
CUSTOMER'S MODEL NO. : _____

客戶型號：
CUSTOMER'S PART NO. : _____

類 別：
DESCRIPTION : **Over Voltage Protector**

晶 訊 編 號：
Semitel NO. : **SVG170Q**

版本：
VERSION : _____

日期：
DATE : **2016/4/12**

承認書附件:
Attachments:

- □ 制品規格書 Product specification
- □ 樣品/Sample Qty.:
- □ 測試參數 Test data

Prepared By	Checked By	Approved By
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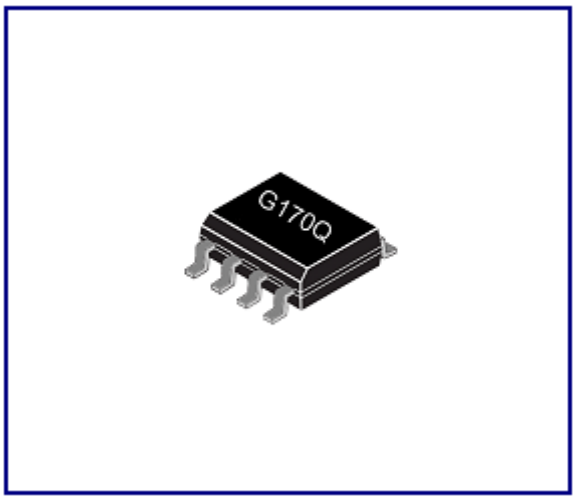
Programmable Overvoltage Protector *SVG170Q*

ROHS

Description

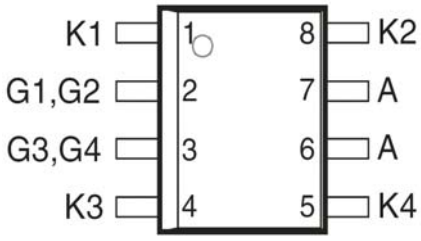


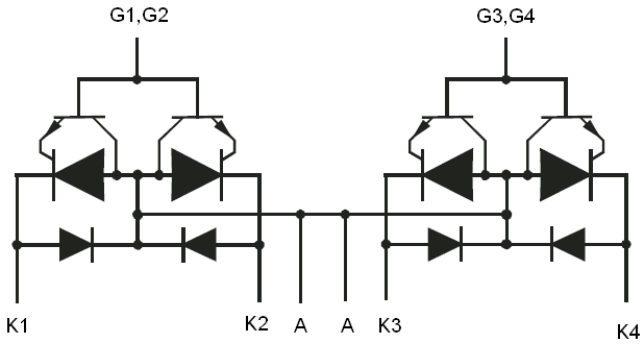
The systems described often have the need to source two POTS (Plain Old Telephone Service) lines, one for a telephone and the other for a facsimile machine. In a single surface mount package, the SVG170Q protects the two POTS line SLICs (Subscriber Line Interface Circuits) against overvoltages caused by lightning, a.c. power contact and induction.

The SVG170Q has an array of four buffered P-gate forward conducting thyristors with twin commoned gates and a common anode connection. Each thyristor cathode has a separate terminal connection. An antiparallel anode-cathode diode is connected across each thyristor. The buffer transistors reduce the gate supply current.

Positive overvoltages are clipped to common by forward conduction of the SVG170Q antiparallel diode. Negative overvoltages are initially clipped close to the SLIC negative supply by emitter follower action of the SVG170Q buffer transistor. If sufficient clipping current flows, the SVG170Q thyristor will regenerate and switch into a low voltage on-state condition. As the overvoltage subsides, the high holding current of the SVG170Q prevents d.c. latchup.

Package Top View and Device Symbol





Features and application

- Wide 0 to -170 V Programming Range
- Low 5 mA max. Gate Triggering Current
- High 150 mA min. (85℃) Holding Current
- Independent Overvoltage Protection for Two SLICs in Short
- WILL (Wireless In the Local Loop)
- SOHO (Small Office Home Office)
- FITL (Fibre In The Loop)
- ISDN-TA (Integrated Services Digital Network - Terminal Adaptors)
- DAML (Digital Added Main Line, Pair Gain)
- MSL: Level 1 - unlimited

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Telecom Standards

- ITU-T K.20/21/45

Rated for Common Impulse Waveforms

SVG170Q		
Voltage Impulse Wave Shape	Current Impulse Wave Shape	I_{PPSM} A
10/1000	10/1000	30
10/700	5/310	40
2/10	2/10	120

Absolute Maximum Ratings, 0°C ≤ TJ ≤ 70°C (Unless Otherwise Noted)

Rating	Symbol	Value	Unit
Repetitive peak off-state voltage, VGK =0	V_{DRM}	-170	V
Repetitive peak gate-cathode voltage, VKA =0	V_{GKRM}	-167	V
Non-repetitive peak on-state pulse current (see Notes 1 and 2)			
10/1000 (Telcordia (Bellcore) GR-1089-CORE, Issue 2, February 1999, Section 4)	I_{PPSM}	30	A
5/320 (ITU-T K.20, K.21& K.45, K.44 open-circuit voltage wave shape 10/700)		40	
2/10 (Telcordia (Bellcore) GR-1089-CORE, Issue 2, February 1999, Section 4)		120	
Non-repetitive peak on-state current, 50 Hz/60 Hz (see Notes 1 and 2)			
0.1 s	I_{TSM}	7	
1s		2.7	A
5s		1.5	A
300 s		0.45	
900 s		0.43	
Non-repetitive peak gate current, 1/2 µs pulse, cathodes commoned (see Note 1)	I_{GSM}	40	A
Operating free-air temperature range	T_A	-40 to +85	°C
Junction temperature	T_J	-40 to +150	°C
Storage temperature range	T_{stg}	-40 to +150	°C

NOTES: 1. Initially, the protector must be in thermal equilibrium. The surge may be repeated after the device returns to its initial conditions. Gate voltage range is -20 V to -155 V.

2. These non-repetitive rated currents are peak values for either polarity. The rated current values may be applied to any cathode anode terminal pair. Additionally, all cathode-anode terminal pairs may have their rated current values applied simultaneously (in this case the anode terminal current will be four times the rated current value of an individual terminal pair).

Recommended Operating Conditions

	SVG170Q	Min.	Typ.	Max.	Unit
C_G	Gate decoupling capacitor	100	220		nF
R_S	Series resistor for GR-1089-CORE intra-building surge survival, section 4.5.9, tests 1 and 2	5	50		Ω
	Series resistor for K.20, K.21 and K.45 coordination with a 400 V primary protector	10	50		Ω

Electrical Characteristics, 0°C ≤ TJ ≤ 70°C (Unless Otherwise Noted)

	Parameter	Test Conditions		Min	Typ	Max	Unit
I_D	Off-state current	$V_D = V_{DRM}$, V_{GK} =0	T_J =25 °C			-5	μA
						-50	μA
$V_{(BO)}$	Ramp breakover voltage	dV/dt ≤±100 V/μs, di/dt = ±10 A/μs, V_{GG} = -100 V, Maximum ramp value = ±10 A	T_J =25 °C			-112	V
$V_{(BO)}$	Impulse breakover voltage	2/10 μs, I_{TM} = -27 A, di/dt = -27 A/μs, R_S =50 Ω, V_{GG} = -100 V, (see Note 1)				-115	V
$V_{GK(BO)}$	Gate-cathode impulse breakover voltage	2/10 μs, I_{TM} = -27 A, di/dt = -27 A/μs, R_S =50 Ω, V_{GG} = -100 V, (see Note 1)				15	V
V_F	Forward voltage	I_F =5A, tw = 200 μs				3	V
V_{FRM}	Ramp peak forward recovery voltage	UL 497B, dv/dt ≤±100 V/μs, di/dt = ±10 A/μs, Maximum ramp value = ±10 A	T_J =25 °C			5	V
V_{FRM}	Impulse peak forward recovery voltage	2/10 μs, I_{TM} = -27 A, di/dt = -27 A/μs, R_S =50 Ω, (see Note 1)				12	V
I_H	Holding current	I_T = -1 A, di/dt = 1A/ms, V_{GG} = -100 V		-150			mA
I_{GKS}	Gate reverse current	$V_{GG} = V_{GK} = V_{GKRM}$, V_{KA} =0	T_J = 25 °C			-5	μA
						-50	μA
I_{GT}	Gate trigger current	I_T =-3A, $t_{p(g)}$ ≥ 20 μs, V_{GG} = -100 V	T_J =25 °C			5	mA
						6	mA
V_{GT}	Gate-cathode trigger voltage	I_T =-3A, $t_{p(g)}$ ≥ 20 μs, V_{GG} = -100 V				2.5	V
C_{KA}	Cathode-anode off-state capacitance	f=1MHz, V_d =1V, I_G = 0, (see Note 2)	V_D = -3 V			100	pF
			V_D = -48 V			50	pF

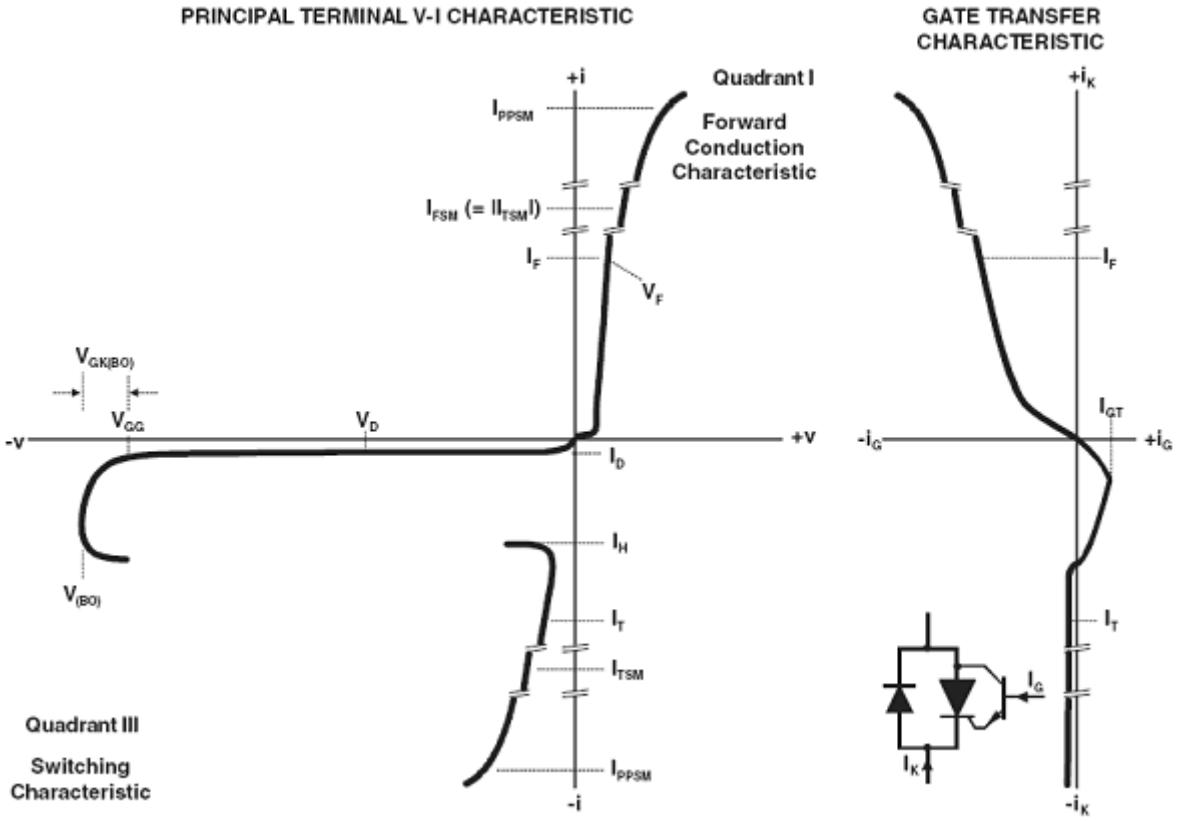
NOTES: 1. GR-1089-CORE intra-building 2/10, 1.5 kV conditions with 20 MHz bandwidth. The diode forward recovery and the thyristor gate impulse breakover (overshoot) are not strongly dependent of the SLIC supply voltage value (V_{GG}).

2. These capacitance measurements employ a three terminal capacitance bridge incorporating a guard circuit. The unmeasured device terminals are a.c. connected to the guard terminal of the bridge.

Thermal Characteristics

	Parameter	Test Conditions	Min	Typ	Max	Unit
$R_{\theta JA}$	Junction to free air thermal resistance	TA = 70 °C, EIA/JESD51-3 PCB, EIA/JESD51-2 environment, Ptot =0.52W			160	°C/W

Parameter Measurement Information

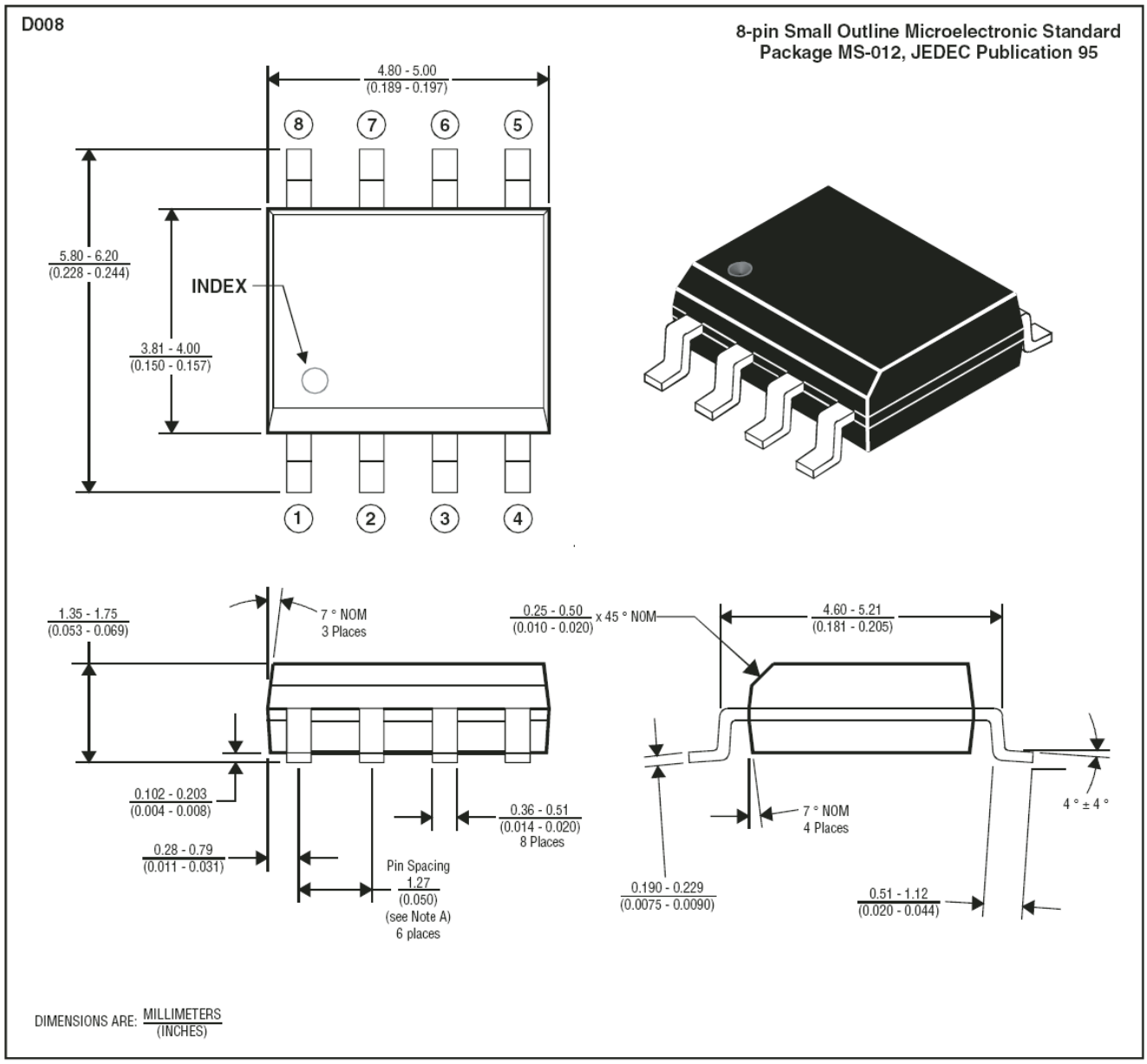


SVG170Q Principal Terminal and Gate Transfer Characteristics

Programmable Overvoltage Protector SVG170Q

ROHS

Product Dimensions



NOTES: A. Leads are within 0.25 (0.010) radius of true position at maximum material condition.

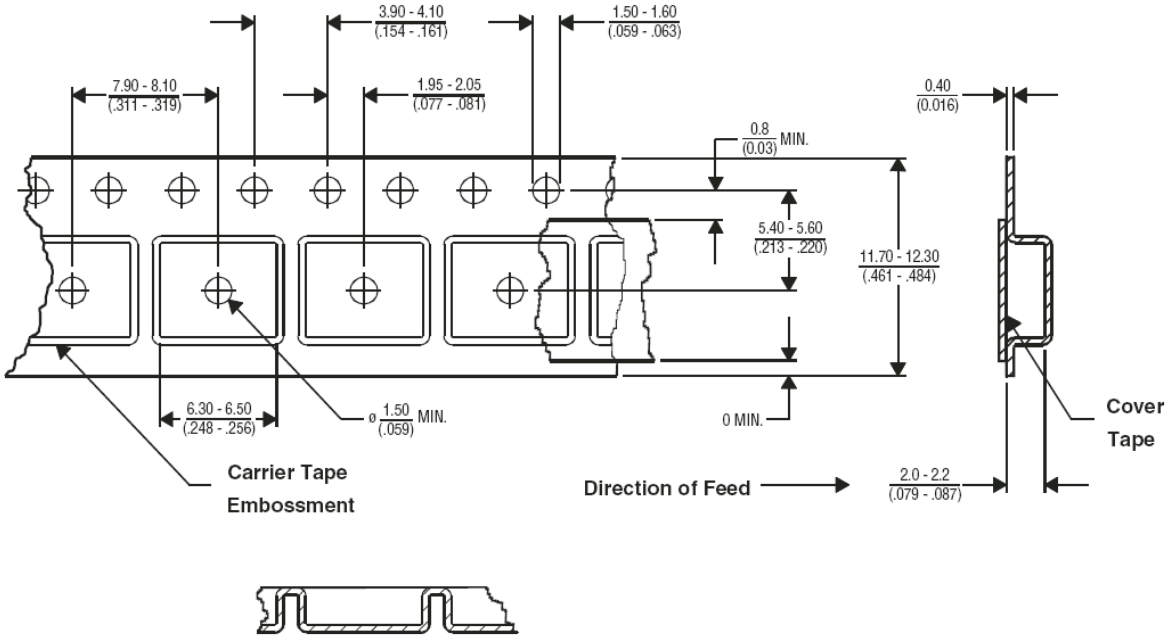
B. Body dimensions do not include mold flash or protrusion.

C. Mold flash or protrusion shall not exceed 0.15 (0.006).

D. Lead tips to be planar within ±0.051 (0.002).

Package Information

D008 Package (8-pin Small Outline) Single-Sprocket Tape



DIMENSIONS ARE: MILLIMETERS (INCHES)

NOTES: A. Taped devices are supplied on a reel of the following dimensions:-

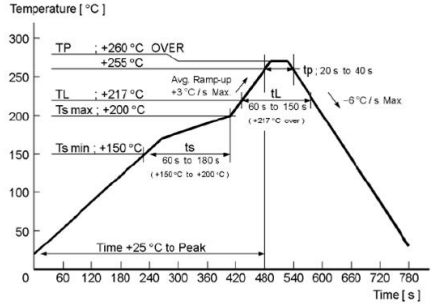
Reel diameter:	330 +0.0/-4.0 (12.992 +0.0/-.157)
Reel hub diameter :	100 ± 2.0 (3.937 ± .079)
Reel axial hole:	13.0 ± 0.2 (.512 ± .008)

B. 2500 devices are on a reel.

Reflow Soldering and Rework Recommendations

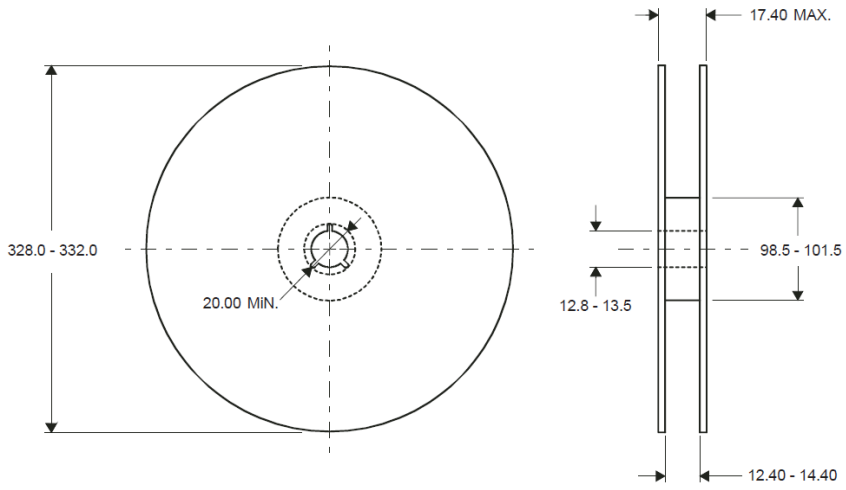
- Recommended reflow methods, Recommended reflow methods: IR, Vapor phase oven, hot air oven, wave solder.
- Devices can be cleaned using standard industry methods and solvents.
- If a device is removed from the board, it should be discarded and replaced with a new device.
- Leaded devices are not designed to be compatible with wave soldering manufacturing operations.
- Lead free reflow curve.

JEDEC 020D suggested reflow profile



Reel Dimension

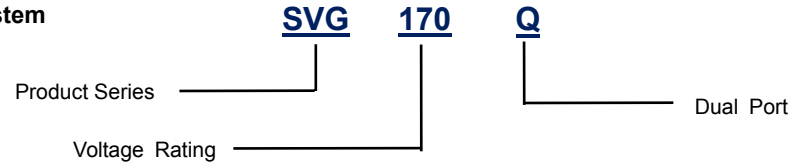
SOP-8 Package Reel



DIMENSIONS ARE: MILLIMETERS

Marking and Order Information

Part Number System



Order Information

Device	Package	Net Weight	Carrier	Quantity	HSF Status
SVG170Q	SOP-8	0.0791g	Tape & Reel	2,500pcs/reel	RoHS compliant

Operating temperature range

可以承受工作温度: -65℃～150℃

Storage temperature range

可以承受存储温度: -65℃～150℃

MSL：moisture sensitivity level

MSL：1-unlimited

ESD耐靜電壓

lESD Immunity(HBM): JESD22 Class 3B, ≥8KV

How To Order

Device	Package	Carrier	Marking Code	Standard Quantity
SVG170Q	SOP Package	Embossed Tape Reeled	G170Q	2500pcs

NOTE:

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For additional information, please contact your local Sales Representative.

CAUTION:

Operation beyond the maximum ratings or improper use may result in device damage and possible electrical arcing and flame. The devices are intended for protection against occasional over-current or over temperature fault conditions and should not be used when repeated fault conditions or prolonged trip events are anticipated. Device performance can be impacted negatively if devices are handled in a manner inconsistent with recommended electronic, thermal, and mechanical procedures for electronic components.

Contact information

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Rev. letter	B	Date	Jan. 15.2011
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