

Surge & ESD Protection Device SPE06R Series

Features

- Low voltage overshoot
- Low on-state voltage
- Does not degrade surge capability after multiple surge events within limit
- Fails short circuit when surged in excess of ratings
- Bi-directional protection device
- RoHS compliance



IEC Compatibility

- IEC 61000-4-2 (ESD) $\pm 15\text{kV}$ (air), $\pm 8\text{kV}$ (contact)
- IEC 61000-4-5 (SURGE) $10/700\mu\text{s} \pm 2\text{KV}$ (SPE06RA, SPE06RAL)
- IEC 61000-4-5 (SURGE) $10/700\mu\text{s} \pm 4\text{KV}$ (SPE06RB, SPE06RBL)

Applications

- Audio/Video line
- Network and telecom
- Data lines and security systems
- Serial ports

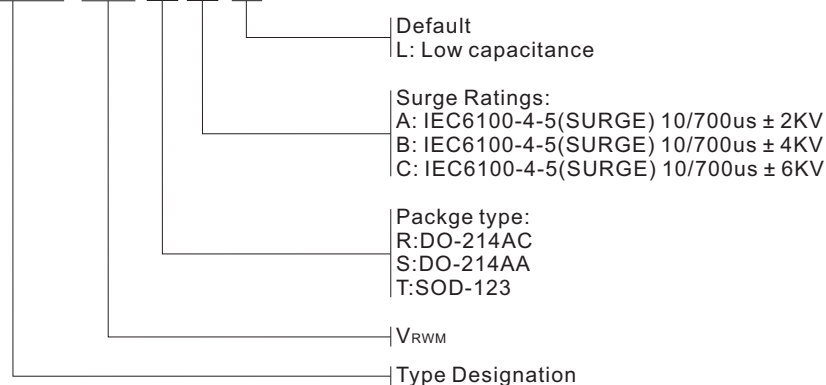
Applicable Global Standards

- TIA-968-A
- TIA-968-B
- ITU K.20/21 Enhanced Level*
- GR 1089 Intra-building
- YD/T 1082
- YD/T 993
- YD/T 950
- ITU K.20/21 Basic Level
- GR 1089 Inter-building*

* A/B-rated parts require series resistance

Product Name

SPE06RAL

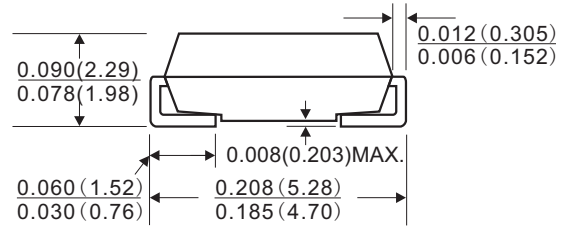
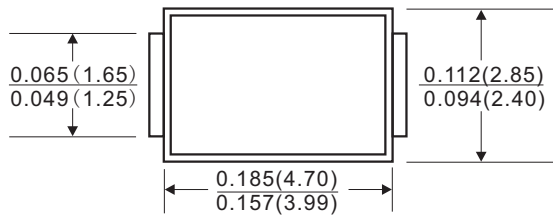


Maximum Ratings($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Rating	Symbol	Value	Units
Thermal Resistance: Junction to Ambient	$R_{\theta JA}$	90	$^{\circ}\text{C}/\text{W}$
Operating junction	T_J	-40 to +150	$^{\circ}\text{C}$
Storage Temperature Range	T_S	-65 to +150	$^{\circ}\text{C}$

Dimensions (DO-214AC)

DO-214AC(SMA J-Bend)

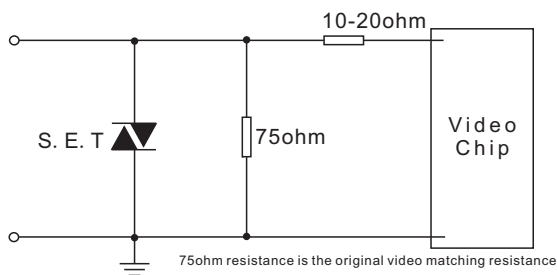


Dimensions in inches and (millimeters)

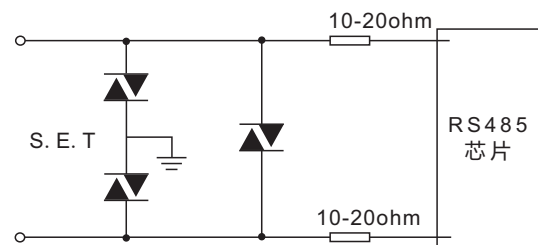
Electrical Characteristics($T_A=25^{\circ}\text{C}$ unless otherwise specified)

SPE06R Part Number	Device Marking Code	V_{RWM}	V_S @100V/ μs	V_{BR}		V_T @ I_T	I_R @ V_{RWM}	I_H	Capacitance @1MHz, 2V bias
		V(typ.)	V(max.)	V(min.)	V(max.)	V(max.)	$\mu\text{A}(\text{max.})$	mA(min.)	pF(max.)
SPE06RA	E06A	6.5	25	8.0	15.0	4	3	20	40
SPE06RB	E06B	6.5	25	8.0	15.0	4	3	20	60
SPE06RAL	EBA	6.5	25	8.0	15.0	4	2	20	15
SPE06RBL	ECA	6.5	25	8.0	15.0	4	2	20	40

Typical Application Circuit



BNC视频方案



RS485方案

Typical Characteristics Curves

Fig.1 $t_r \times t_d$ Pulse Wave-form

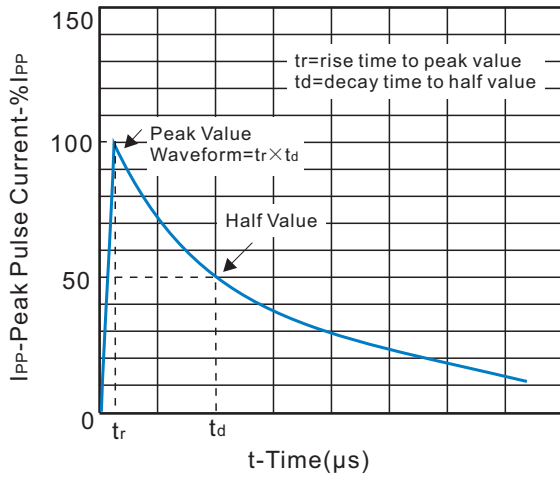


Fig.2 ESD Discharge IEC61000-4-2 Current Waveform

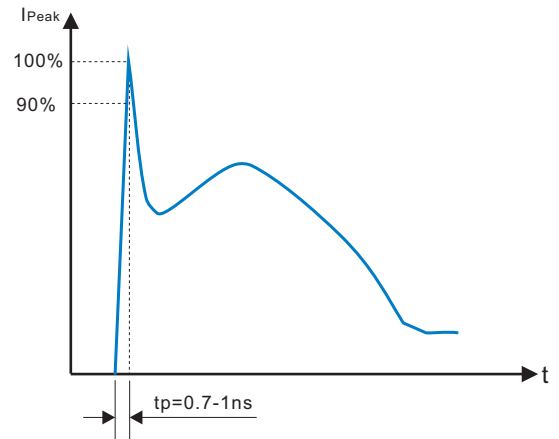


Fig.3 Power Derating Curve

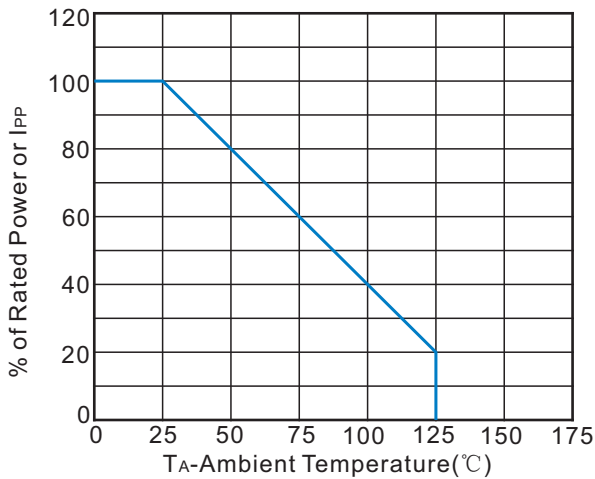


Fig.4 Junction Capacitance vs. Reverse Voltage

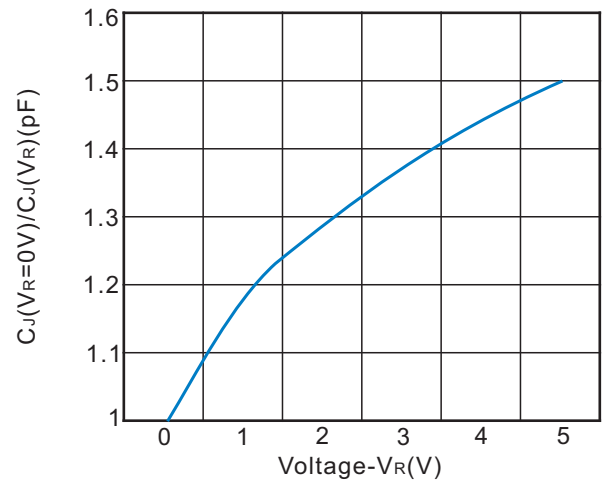


Fig.5 Normalized vs Change Versus Junction Temperature

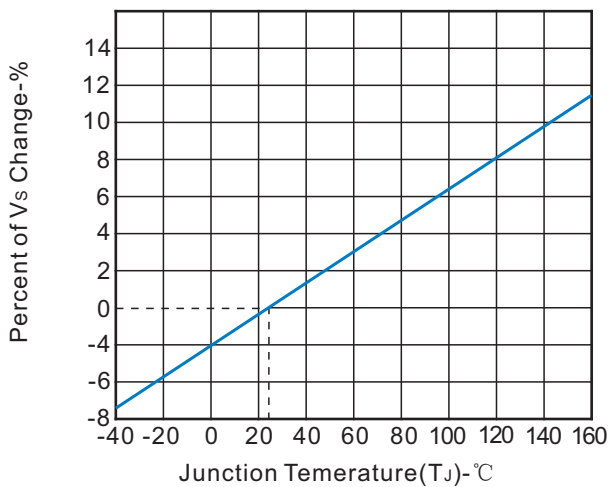
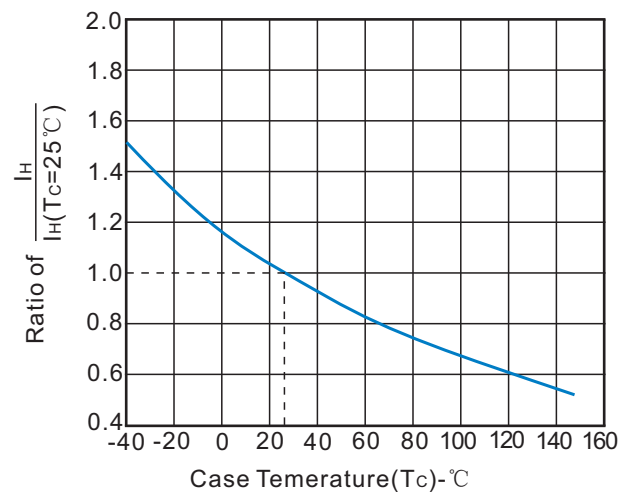
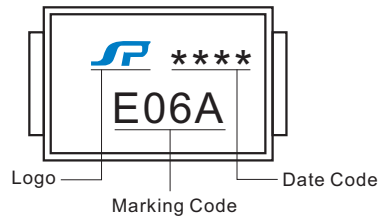


Fig.6 Normalized DC Holding Current



Marking Code

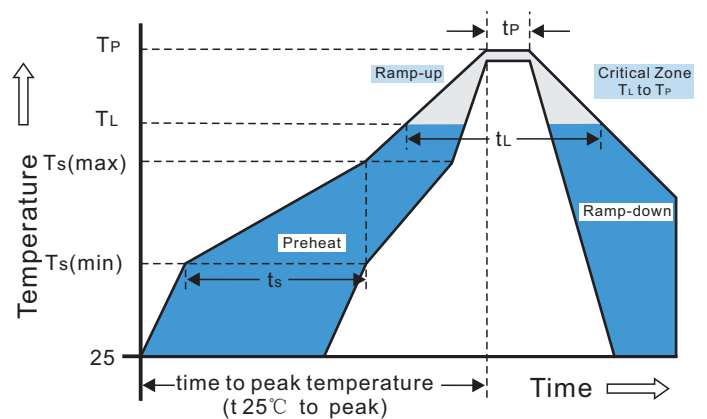


Recommended Soldering Conditions

Recommended Conditions

Reflow Condition		Pb-Free assembly
Pre Heat	-Temperature Min($T_{s(min)}$)	+150°C
	-Temperature Max($T_{s(max)}$)	+200°C
	-Time(Min to Max)(t_s)	60-180secs
Average ramp up rate (Liquidus Temp(T_L) to peak)		3°C/sec.Max.
$T_{s(max)}$ to T_L -Ramp-up Rate		3°C/sec.Max.
Reflow	-Temperature(T_L)(Liquidus)	+217°C
	-Temperature(t_L)	60-150secs
Peak Temp(T_P)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp(t_P)		30 secs.Max.
Ramp-down Rate		6°C/sec.Max.
Time 25°C to Peak Temp(T_P)		8 min.Max.
Do not exceed		+260°C

Reflow Soldering



Tape And Reel Specification

Symbol	Ea Per Reel	Reel Dia(mm)	Industry Standard
SPE06R**	5000	330	EIA RS-481

