

## Surge & ESD Protection Device SPE06S 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)  $10/700\mu\text{s} \pm 4\text{KV}$ (SPE06SB,SPE06SBL)
- IEC 61000-4-5(SURGE)  $10/700\mu\text{s} \pm 6\text{KV}$ (SPE06SC,SPE06SCL)

### Applications

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

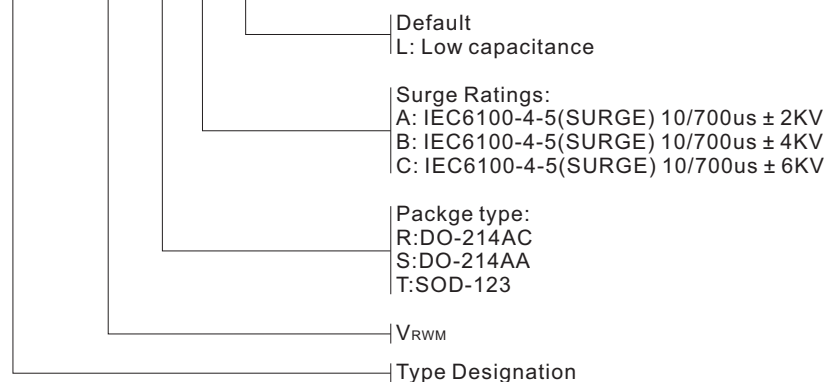
### Applicable Global Standards

- 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

SPE06SAL

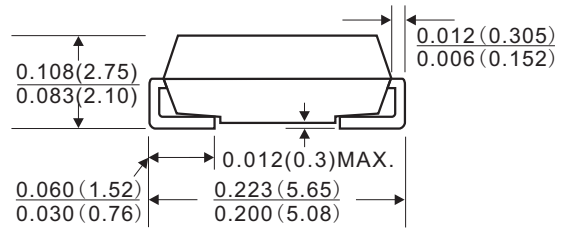
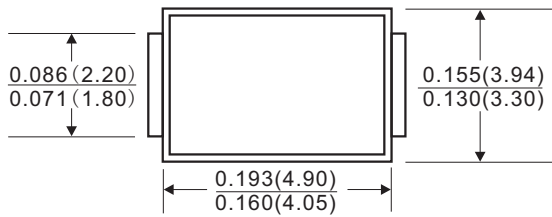


Maximum Ratings( $T_A=25^{\circ}\text{C}$  unless otherwise specified)

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-214AA)

DO-214AA(SMB J-Bend)

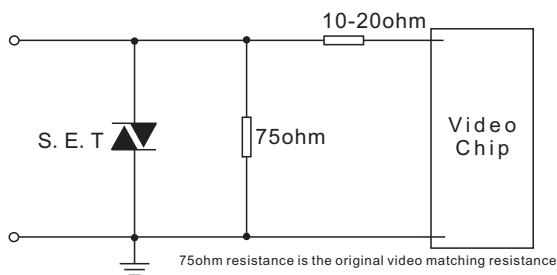


Dimensions in inches and (millimeters)

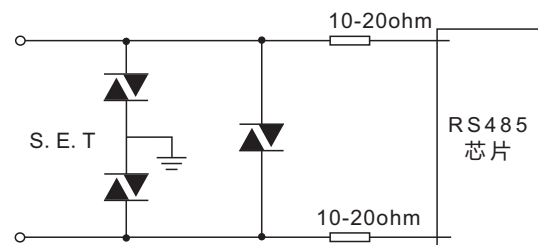
Electrical Characteristics( $T_A=25^{\circ}\text{C}$  unless otherwise specified)

SPE06S Part Number	Device Marking Code	$V_{RWM}$	$V_S$ @100KV/S	$V_{BR}$		$V_T$ @ $I_T$	$I_R$ @ $V_{RWM}$	$I_H$	Capacitance @1MHz, 2V bias
		V(typ.)	V(max.)	V(min.)	V(max.)	V(max.)	$\mu\text{A(max.)}$	mA(min.)	pF(max.)
SPE06SB	E06SB	6.5	25	8.0	15.0	4	3	20	60
SPE06SC	E06SC	6.5	25	8.0	15.0	4	3	20	100
SPE06SBL	EDA	6.5	25	8.0	15.0	4	2	20	40
SPE06SCL	EFA	6.5	25	8.0	15.0	4	2	20	50

Typical Application Circuit



BNC视频方案



RS485方案

Typical Characteristics Curves

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

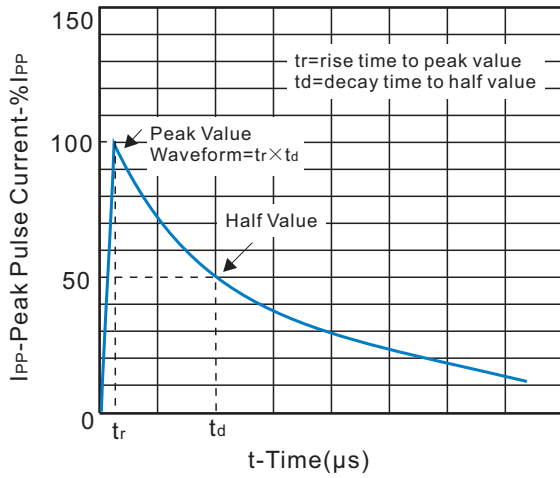


Fig.2 ESD Discharge IEC61000-4-2 Current Waveform

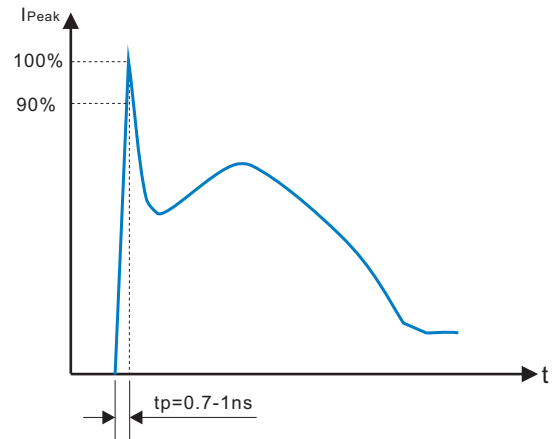


Fig.3 Power Derating Curve

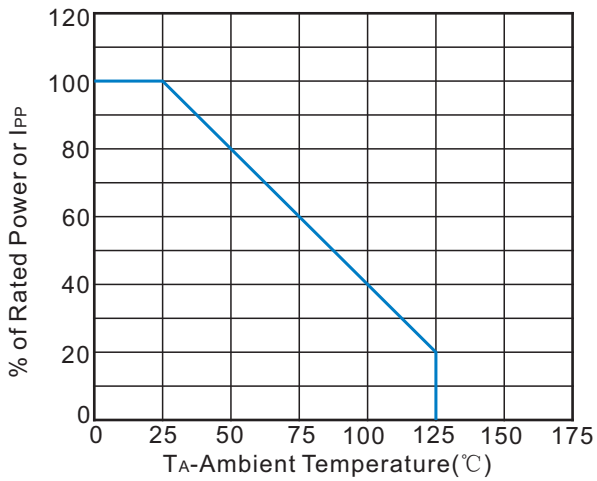


Fig.4 Junction Capacitance vs. Reverse Voltage

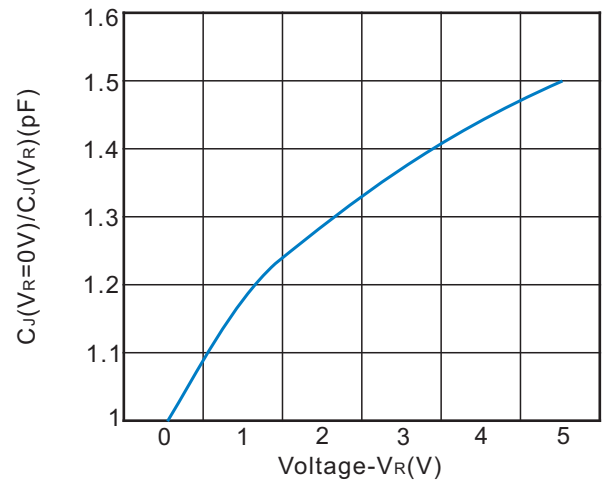


Fig.5 Normalized vs Change Versus Junction Temperature

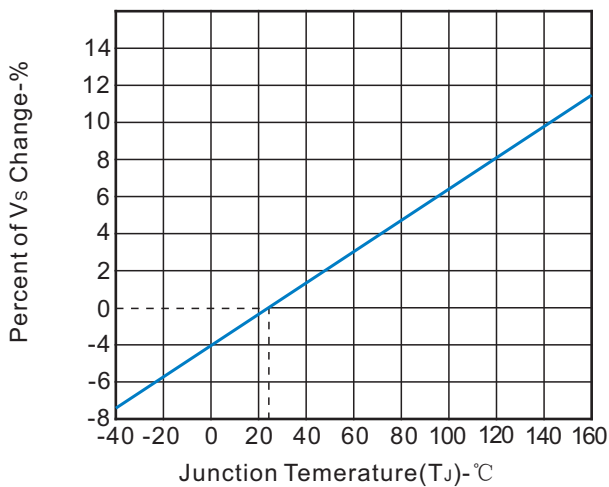
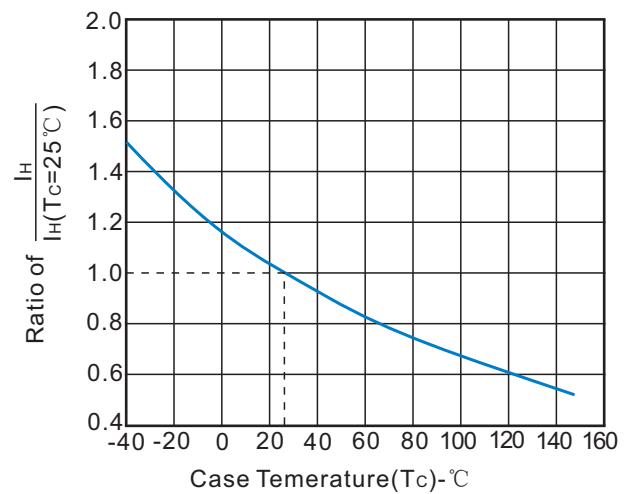
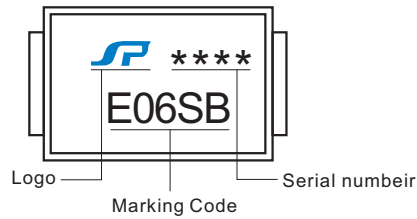


Fig.6 Normalized DC Holding Current



## Marking Code

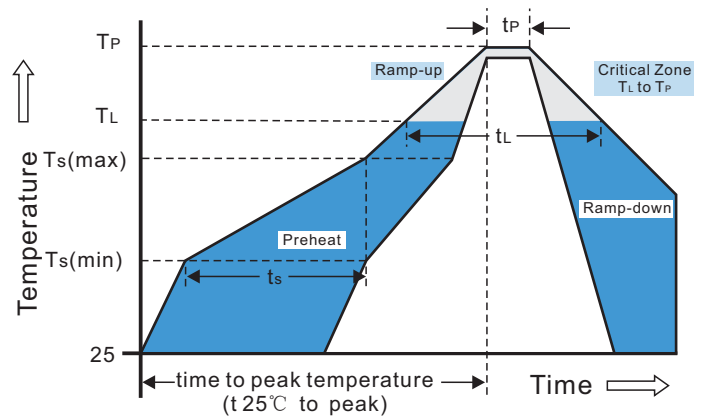


## Recommended Soldering Conditions

### 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
SPE06S**	2500	330	EIA RS-481

