



# PE4205CS ~ PE4236CS Series

## Hi-Surge ESD Protection

**Voltage** 5~36 V

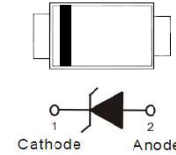
### Features

- IEC61000-4-2(ESD):  $\pm 15$  kV Air,  $\pm 8$  kV Contact  
Compliance with the capability up to  $\pm 30$  kV
- IEC61000-4-4(EFT): 80 A (5/50 ns)
- IEC61000-4-5(Lightning): 25 A~4 A (8/20  $\mu$ S)
- Low clamping voltage
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

### Mechanical Data

- Case: Molded plastic, SOD-323
- Terminals: Solder plated, solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.00014 ounces, 0.0041 grams

SOD-323



## Maximum Ratings and Thermal Characteristics ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	LIMIT	UNITS
ESD IEC61000-4-2(Air)	$V_{ESD}$	$\pm 30$	kV
ESD IEC61000-4-2(Contact)		$\pm 30$	
Operating Junction Temperature Range	$T_J$	-55~150	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55~150	$^\circ\text{C}$



## PE4205CS ~ PE4236CS Series

### Electrical Characteristics (T<sub>A</sub> = 25 °C unless otherwise noted)

#### PE4205CS

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Reverse Stand-Off Voltage	V <sub>RWM</sub> <sup>(1)</sup>	-	-	-	5	V
Reverse Breakdown Voltage	V <sub>BR</sub>	I <sub>BT</sub> = 1 mA	6	-	7.5	V
Reverse leakage current	I <sub>R</sub>	V <sub>R</sub> = 5 V	-	-	1	μA
Clamping Voltage	V <sub>CL</sub>	I <sub>PP</sub> = 1 A, t <sub>P</sub> = 8/20 μs	-	-	8	V
		I <sub>PP</sub> = 25 A, t <sub>P</sub> = 8/20 μs	-	-	13.5	V
Off State Junction Capacitance	C <sub>J</sub>	0Vdc Bias f = 1 MHz	-	-	250	pF

#### PE4207CS

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Reverse Stand-Off Voltage	V <sub>RWM</sub> <sup>(1)</sup>	-	-	-	7	V
Reverse Breakdown Voltage	V <sub>BR</sub>	I <sub>BT</sub> = 1 mA	7.5	-	9.5	V
Reverse leakage current	I <sub>R</sub>	V <sub>R</sub> = 7 V	-	-	1	μA
Clamping Voltage	V <sub>CL</sub>	I <sub>PP</sub> = 1 A, t <sub>P</sub> = 8/20 μs	-	-	10	V
		I <sub>PP</sub> = 20 A, t <sub>P</sub> = 8/20 μs	-	-	15	V
Off State Junction Capacitance	C <sub>J</sub>	0Vdc Bias f = 1 MHz	-	-	200	pF

#### PE4209CS

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Reverse Stand-Off Voltage	V <sub>RWM</sub> <sup>(1)</sup>	-	-	-	9	V
Reverse Breakdown Voltage	V <sub>BR</sub>	I <sub>BT</sub> = 1 mA	9.5	-	12	V
Reverse leakage current	I <sub>R</sub>	V <sub>R</sub> = 9 V	-	-	1	μA
Clamping Voltage	V <sub>CL</sub>	I <sub>PP</sub> = 1 A, t <sub>P</sub> = 8/20 μs	-	-	13	V
		I <sub>PP</sub> = 15 A, t <sub>P</sub> = 8/20 μs	-	-	20	V
Off State Junction Capacitance	C <sub>J</sub>	0Vdc Bias f = 1 MHz	-	-	180	pF



## PE4205CS ~ PE4236CS Series

### PE4212CS

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Reverse Stand-Off Voltage	$V_{RWM}^{(1)}$	-	-	-	12	V
Reverse Breakdown Voltage	$V_{BR}$	$I_{BT} = 1 \text{ mA}$	12.5	-	15.5	V
Reverse leakage current	$I_R$	$V_R = 12 \text{ V}$	-	-	0.5	$\mu\text{A}$
Clamping Voltage	$V_{CL}$	$I_{PP} = 1 \text{ A}, t_P = 8/20 \text{ }\mu\text{s}$	-	-	17	V
		$I_{PP} = 12 \text{ A}, t_P = 8/20 \text{ }\mu\text{s}$	-	-	24	V
Off State Junction Capacitance	$C_J$	0Vdc Bias $f = 1 \text{ MHz}$	-	-	120	pF

### PE4215CS

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Reverse Stand-Off Voltage	$V_{RWM}^{(1)}$	-	-	-	15	V
Reverse Breakdown Voltage	$V_{BR}$	$I_{BT} = 1 \text{ mA}$	15.5	-	20	V
Reverse leakage current	$I_R$	$V_R = 15 \text{ V}$	-	-	0.5	$\mu\text{A}$
Clamping Voltage	$V_{CL}$	$I_{PP} = 1 \text{ A}, t_P = 8/20 \text{ }\mu\text{s}$	-	-	22	V
		$I_{PP} = 9 \text{ A}, t_P = 8/20 \text{ }\mu\text{s}$	-	-	32	V
Off State Junction Capacitance	$C_J$	0Vdc Bias $f = 1 \text{ MHz}$	-	-	100	pF

### PE4218CS

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Reverse Stand-Off Voltage	$V_{RWM}^{(1)}$	-	-	-	18	V
Reverse Breakdown Voltage	$V_{BR}$	$I_{BT} = 1 \text{ mA}$	20	-	24	V
Reverse leakage current	$I_R$	$V_R = 18 \text{ V}$	-	-	0.1	$\mu\text{A}$
Clamping Voltage	$V_{CL}$	$I_{PP} = 1 \text{ A}, t_P = 8/20 \text{ }\mu\text{s}$	-	-	27	V
		$I_{PP} = 9 \text{ A}, t_P = 8/20 \text{ }\mu\text{s}$	-	-	34	V
Off State Junction Capacitance	$C_J$	0Vdc Bias $f = 1 \text{ MHz}$	-	-	90	pF



## PE4205CS ~ PE4236CS Series

### PE4220CS

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Reverse Stand-Off Voltage	$V_{RWM}^{(1)}$	-	-	-	20	V
Reverse Breakdown Voltage	$V_{BR}$	$I_{BT} = 1 \text{ mA}$	20.5	-	26	V
Reverse leakage current	$I_R$	$V_R = 20 \text{ V}$	-	-	0.1	$\mu\text{A}$
Clamping Voltage	$V_{CL}$	$I_{PP} = 1 \text{ A}, t_P = 8/20 \text{ }\mu\text{s}$	-	-	28.5	V
		$I_{PP} = 8 \text{ A}, t_P = 8/20 \text{ }\mu\text{s}$	-	-	35	V
Off State Junction Capacitance	$C_J$	0Vdc Bias $f = 1 \text{ MHz}$	-	-	60	pF

### PE4224CS

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Reverse Stand-Off Voltage	$V_{RWM}^{(1)}$	-	-	-	24	V
Reverse Breakdown Voltage	$V_{BR}$	$I_{BT} = 1 \text{ mA}$	24.5	-	31	V
Reverse leakage current	$I_R$	$V_R = 24 \text{ V}$	-	-	0.1	$\mu\text{A}$
Clamping Voltage	$V_{CL}$	$I_{PP} = 1 \text{ A}, t_P = 8/20 \text{ }\mu\text{s}$	-	-	35	V
		$I_{PP} = 6 \text{ A}, t_P = 8/20 \text{ }\mu\text{s}$	-	-	46	V
Off State Junction Capacitance	$C_J$	0Vdc Bias $f = 1 \text{ MHz}$	-	-	55	pF

### PE4236CS

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Reverse Stand-Off Voltage	$V_{RWM}^{(1)}$	-	-	-	36	V
Reverse Breakdown Voltage	$V_{BR}$	$I_{BT} = 1 \text{ mA}$	36.5	-	46.5	V
Reverse leakage current	$I_R$	$V_R = 36 \text{ V}$	-	-	0.1	$\mu\text{A}$
Clamping Voltage	$V_{CL}$	$I_{PP} = 1 \text{ A}, t_P = 8/20 \text{ }\mu\text{s}$	-	-	53	V
		$I_{PP} = 4 \text{ A}, t_P = 8/20 \text{ }\mu\text{s}$	-	-	67	V
Off State Junction Capacitance	$C_J$	0Vdc Bias $f = 1 \text{ MHz}$	-	-	40	pF

**NOTES:**

1. A transient suppressor is selected according to the working peak reverse voltage ( $V_{RWM}$ ), which should be equal to or greater than the DC or continuous peak operation voltage level.



# PE4205CS ~ PE4236CS Series

## TYPICAL CHARACTERISTIC CURVES

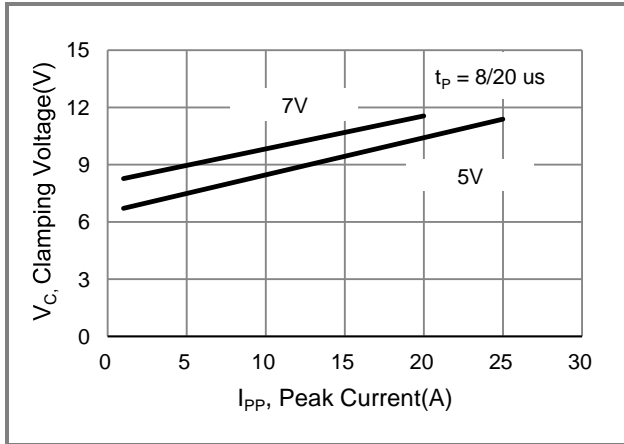


Fig.1 Typical Peak Clamping Voltage

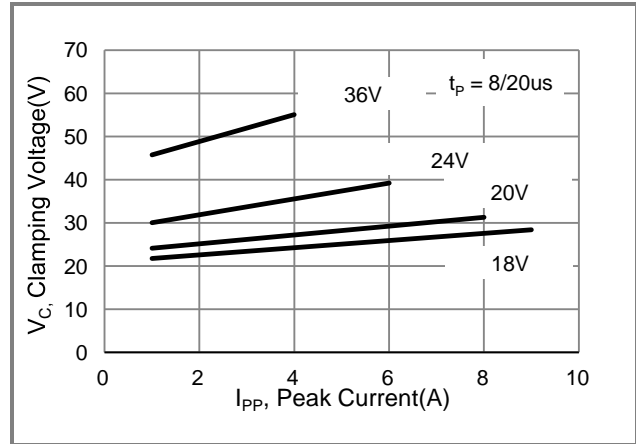


Fig.2 Pulse Waveform

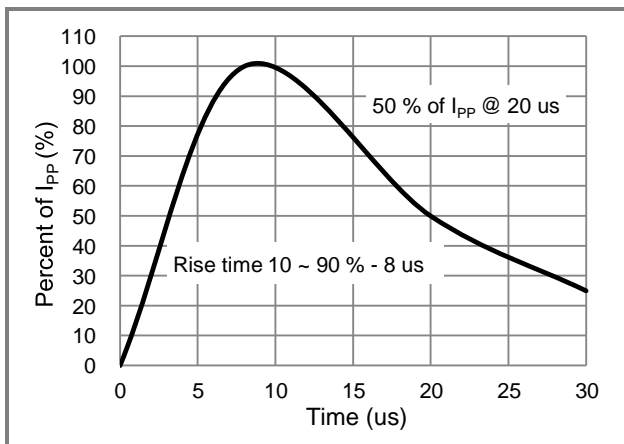


Fig.3 Typical Junction Capacitance

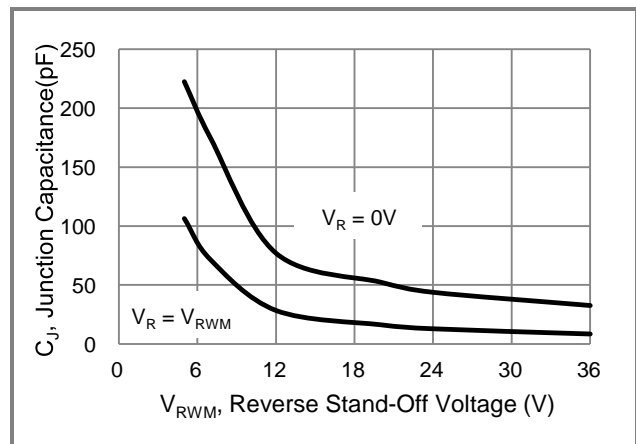


Fig.4 TLP Measurement



## PE4205CS ~ PE4236CS Series

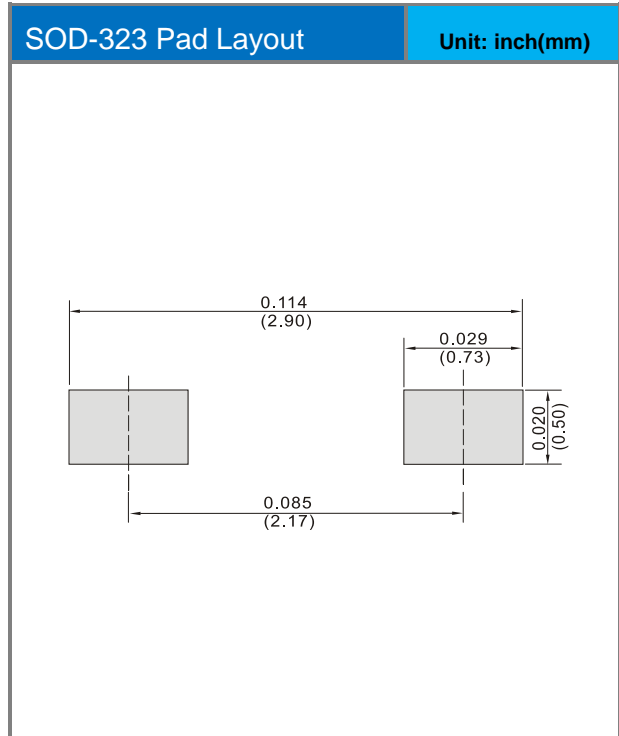
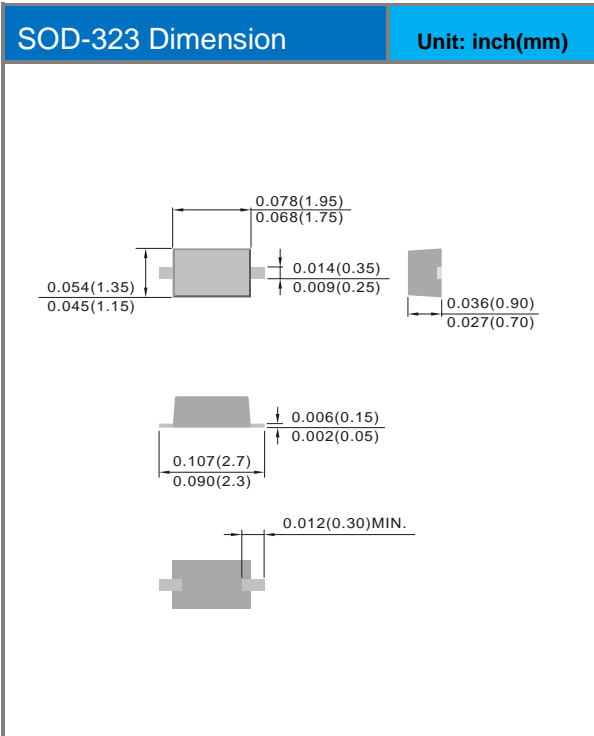
### Part No Packing Code Version

Part No Packing Code	Package Type	Packing Type	Marking	Version
PE4205CS_R1_00001	SOD-323	5K pcs / 7" reel	ABA	Halogen free
PE4207CS_R1_00001	SOD-323	5K pcs / 7" reel	ABB	Halogen free
PE4209CS_R1_00001	SOD-323	5K pcs / 7" reel	ABC	Halogen free
PE4212CS_R1_00001	SOD-323	5K pcs / 7" reel	ABD	Halogen free
PE4215CS_R1_00001	SOD-323	5K pcs / 7" reel	ABE	Halogen free
PE4218CS_R1_00001	SOD-323	5K pcs / 7" reel	ABF	Halogen free
PE4220CS_R1_00001	SOD-323	5K pcs / 7" reel	ABH	Halogen free
PE4224CS_R1_00001	SOD-323	5K pcs / 7" reel	ABI	Halogen free
PE4236CS_R1_00001	SOD-323	5K pcs / 7" reel	ABJ	Halogen free



# PE4205CS ~ PE4236CS Series

## Packaging Information & Mounting Pad Layout





## PE4205CS ~ PE4236CS Series

### Disclaimer

- Reproducing and modifying information of the document is prohibited without permission from Panjit International Inc..
- Panjit International Inc. reserves the rights to make changes of the content herein the document anytime without notification. Please refer to our website for the latest document.
- Panjit International Inc. disclaims any and all liability arising out of the application or use of any product including damages incidentally and consequentially occurred.
- Panjit International Inc. does not assume any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.
- Applications shown on the herein document are examples of standard use and operation. Customers are responsible in comprehending the suitable use in particular applications. Panjit International Inc. makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.
- The products shown herein are not designed and authorized for equipments requiring high level of reliability or relating to human life and for any applications concerning life-saving or life-sustaining, such as medical instruments, transportation equipment, aerospace machinery et cetera. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Panjit International Inc. for any damages resulting from such improper use or sale.
- Since Panjit uses lot number as the tracking base, please provide the lot number for tracking when complaining.