



## PE4205CS ~ PE4236CS Series

### Hi-Surge ESD Protection

**Voltage** 5~36 V

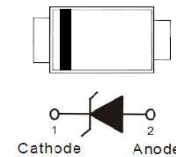
### Features

- 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	$^\circ\text{C}$



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

### PE4205CS

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Reverse Stand-Off Voltage	$V_{RWM}^{(1)}$	-	-	-	5	V
Reverse Breakdown Voltage	$V_{BR}$	$I_{BT} = 1\text{ mA}$	6	-	7.5	V
Reverse leakage current	$I_R$	$V_R = 5\text{ V}$	-	-	1	$\mu\text{A}$
Clamping Voltage	$V_{CL}$	$I_{PP} = 1\text{ A}, t_P = 8/20\ \mu\text{s}$	-	-	8	V
		$I_{PP} = 25\text{ A}, t_P = 8/20\ \mu\text{s}$	-	-	13.5	V
Off State Junction Capacitance	$C_J$	0Vdc Bias $f = 1\text{ MHz}$	-	-	250	pF

### PE4207CS

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Reverse Stand-Off Voltage	$V_{RWM}^{(1)}$	-	-	-	7	V
Reverse Breakdown Voltage	$V_{BR}$	$I_{BT} = 1\text{ mA}$	7.5	-	9.5	V
Reverse leakage current	$I_R$	$V_R = 7\text{ V}$	-	-	1	$\mu\text{A}$
Clamping Voltage	$V_{CL}$	$I_{PP} = 1\text{ A}, t_P = 8/20\ \mu\text{s}$	-	-	10	V
		$I_{PP} = 20\text{ A}, t_P = 8/20\ \mu\text{s}$	-	-	15	V
Off State Junction Capacitance	$C_J$	0Vdc Bias $f = 1\text{ MHz}$	-	-	200	pF

### PE4209CS

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Reverse Stand-Off Voltage	$V_{RWM}^{(1)}$	-	-	-	9	V
Reverse Breakdown Voltage	$V_{BR}$	$I_{BT} = 1\text{ mA}$	9.5	-	12	V
Reverse leakage current	$I_R$	$V_R = 9\text{ V}$	-	-	1	$\mu\text{A}$
Clamping Voltage	$V_{CL}$	$I_{PP} = 1\text{ A}, t_P = 8/20\ \mu\text{s}$	-	-	13	V
		$I_{PP} = 15\text{ A}, t_P = 8/20\ \mu\text{s}$	-	-	20	V
Off State Junction Capacitance	$C_J$	0Vdc Bias $f = 1\text{ MHz}$	-	-	180	pF



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### 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



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### 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.



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## TYPICAL CHARACTERISTIC CURVES

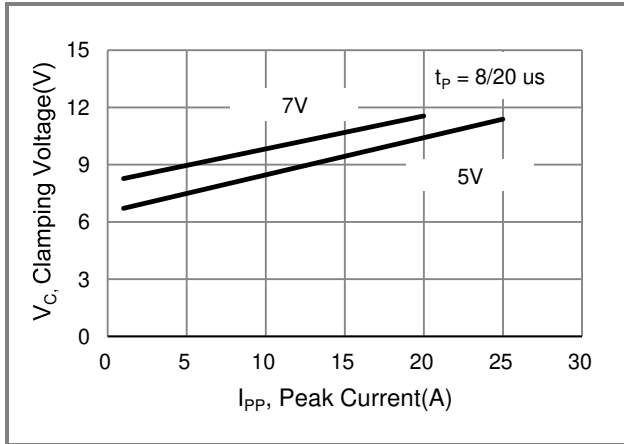


Fig.1 Typical Peak Clamping Voltage

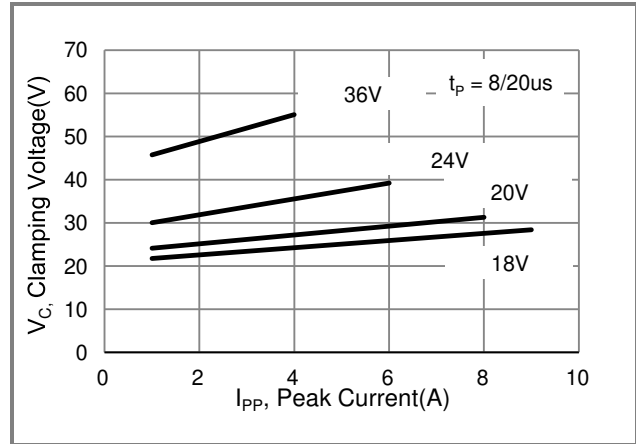


Fig.2 Pulse Waveform

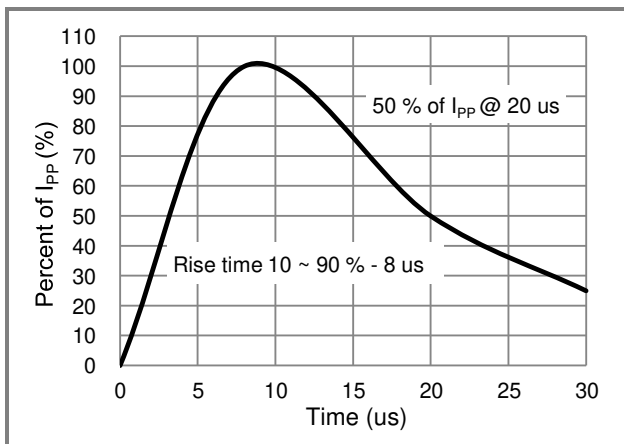


Fig.3 Typical Junction Capacitance

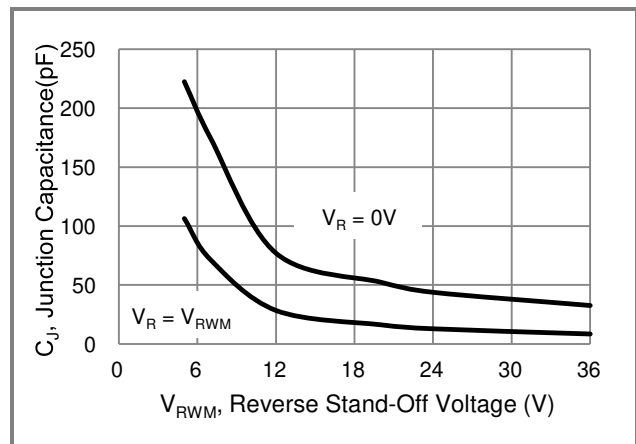


Fig.4 TLP Measurement



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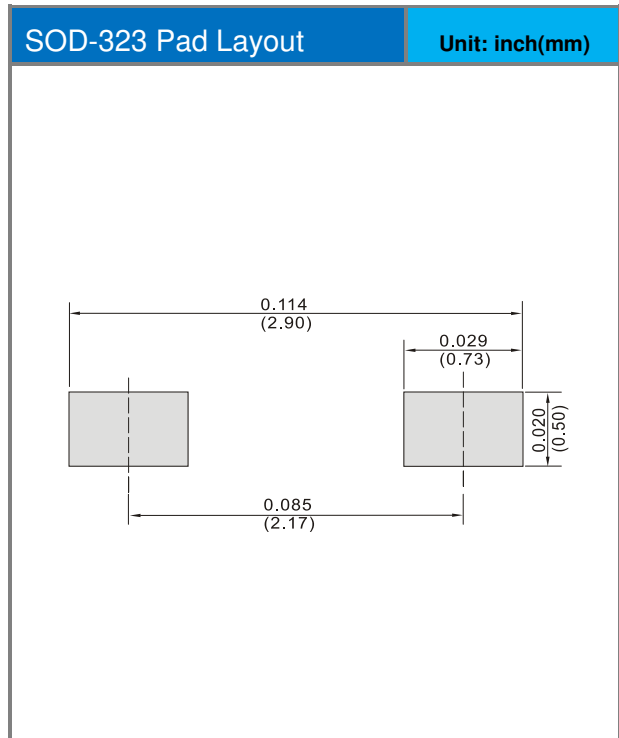
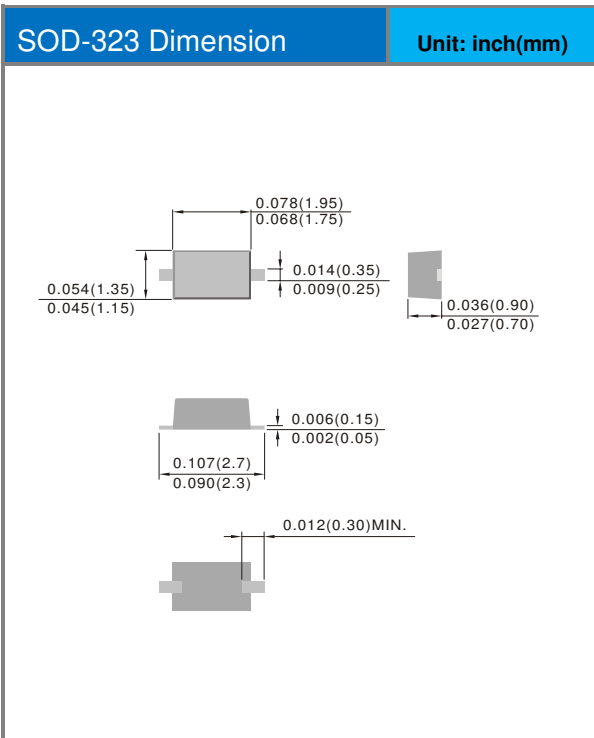
### Part No Packing Code Version

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



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## Packaging Information & Mounting Pad Layout





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