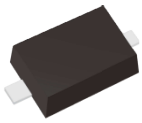
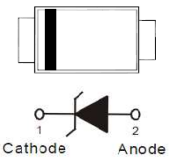
# PE4205CS ~ PE4236CS Series

## Hi-Surge ESD Protection

**Voltage** **5~36 V**

**SOD-323**






## Features

- IEC61000-4-2(ESD): ± 15 kV Air, ± 8 kV Contact Compliance with the capability up to ± 30 kV
- IEC61000-4-4(EFT): 80 A (5/50 ns)
- IEC61000-4-5(Lightning): 25 A~4 A (8/20 uS)
- 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

## Maximum Ratings and Thermal Characteristics ($T_A$ = 25 °C unless otherwise noted)

| PARAMETER | SYMBOL | LIMIT | UNITS |
|---|---|---|---|
| ESD IEC61000-4-2(Air)<br>ESD IEC61000-4-2(Contact) | $V_{ESD}$ | ±30<br>±30 | kV |
| Operating Junction Temperature Range | $T_J$ | -55~150 | °C |
| Storage Temperature Range | $T_{STG}$ | -55~150 | °C |

# PE4205CS ~ PE4236CS Series

## Electrical Characteristics ($T_A$ = 25 °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 mA | 6 | - | 7.5 | V |
| Reverse leakage current | $I_R$ | $V_R$ = 5 V | - | - | 1 | μA |
| Clamping Voltage | $V_{CL}$ | $I_{PP}$ = 1 A, $t_P$ = 8/20 μs | - | - | 8 | V |
| | | $I_{PP}$ = 25 A, $t_P$ = 8/20 μs | - | - | 13.5 | V |
| Off State Junction Capacitance | $C_J$ | 0Vdc Bias f = 1 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 mA | 7.5 | - | 9.5 | V |
| Reverse leakage current | $I_R$ | $V_R$ = 7 V | - | - | 1 | μA |
| Clamping Voltage | $V_{CL}$ | $I_{PP}$ = 1 A, $t_P$ = 8/20 μs | - | - | 10 | V |
| | | $I_{PP}$ = 20 A, $t_P$ = 8/20 μs | - | - | 15 | V |
| Off State Junction Capacitance | $C_J$ | 0Vdc Bias f = 1 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 mA | 9.5 | - | 12 | V |
| Reverse leakage current | $I_R$ | $V_R$ = 9 V | - | - | 1 | μA |
| Clamping Voltage | $V_{CL}$ | $I_{PP}$ = 1 A, $t_P$ = 8/20 μs | - | - | 13 | V |
| | | $I_{PP}$ = 15 A, $t_P$ = 8/20 μs | - | - | 20 | V |
| Off State Junction Capacitance | $C_J$ | 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 mA | 12.5 | - | 15.5 | V |
| Reverse leakage current | $I_R$ | $V_R$ = 12 V | - | - | 0.5 | μA |
| Clamping Voltage | $V_{CL}$ | $I_{PP}$ = 1 A, $t_P$ = 8/20 μs | - | - | 17 | V |
| | | $I_{PP}$ = 12 A, $t_P$ = 8/20 μs | - | - | 24 | V |
| Off State Junction Capacitance | $C_J$ | 0Vdc Bias f = 1 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 mA | 15.5 | - | 20 | V |
| Reverse leakage current | $I_R$ | $V_R$ = 15 V | - | - | 0.5 | μA |
| Clamping Voltage | $V_{CL}$ | $I_{PP}$ = 1 A, $t_P$ = 8/20 μs | - | - | 22 | V |
| | | $I_{PP}$ = 9 A, $t_P$ = 8/20 μs | - | - | 32 | V |
| Off State Junction Capacitance | $C_J$ | 0Vdc Bias f = 1 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 mA | 20 | - | 24 | V |
| Reverse leakage current | $I_R$ | $V_R$ = 18 V | - | - | 0.1 | μA |
| Clamping Voltage | $V_{CL}$ | $I_{PP}$ = 1 A, $t_P$ = 8/20 μs | - | - | 27 | V |
| | | $I_{PP}$ = 9 A, $t_P$ = 8/20 μs | - | - | 34 | V |
| Off State Junction Capacitance | $C_J$ | 0Vdc Bias f = 1 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 mA | 20.5 | - | 26 | V |
| Reverse leakage current | $I_R$ | $V_R$ = 20 V | - | - | 0.1 | μA |
| Clamping Voltage | $V_{CL}$ | $I_{PP}$ = 1 A, $t_P$ = 8/20 μs | - | - | 28.5 | V |
| | | $I_{PP}$ = 8 A, $t_P$ = 8/20 μs | - | - | 35 | V |
| Off State Junction Capacitance | $C_J$ | 0Vdc Bias f = 1 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 mA | 24.5 | - | 31 | V |
| Reverse leakage current | $I_R$ | $V_R$ = 24 V | - | - | 0.1 | μA |
| Clamping Voltage | $V_{CL}$ | $I_{PP}$ = 1 A, $t_P$ = 8/20 μs | - | - | 35 | V |
| | | $I_{PP}$ = 6 A, $t_P$ = 8/20 μs | - | - | 46 | V |
| Off State Junction Capacitance | $C_J$ | 0Vdc Bias f = 1 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 mA | 36.5 | - | 46.5 | V |
| Reverse leakage current | $I_R$ | $V_R$ = 36 V | - | - | 0.1 | μA |
| Clamping Voltage | $V_{CL}$ | $I_{PP}$ = 1 A, $t_P$ = 8/20 μs | - | - | 53 | V |
| | | $I_{PP}$ = 4 A, $t_P$ = 8/20 μs | - | - | 67 | V |
| Off State Junction Capacitance | $C_J$ | 0Vdc Bias f = 1 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

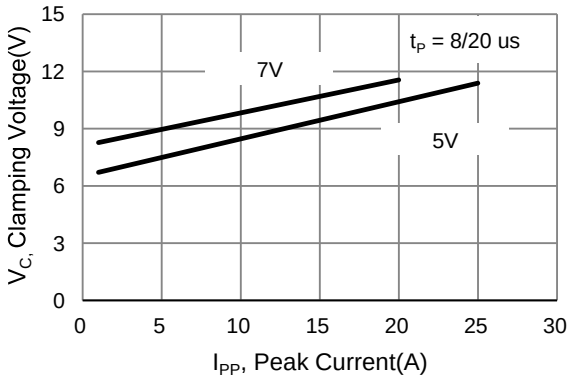



Fig.1 Typical Peak Clamping Voltage

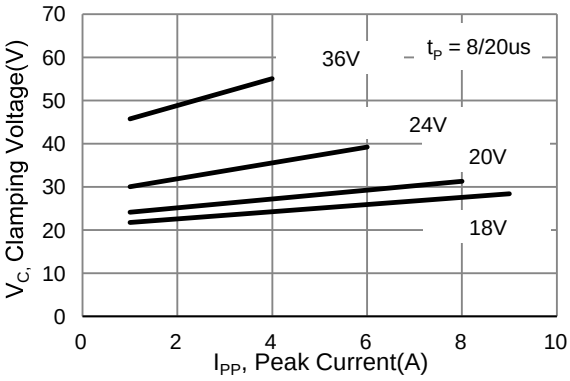



Fig.2 Pulse Waveform

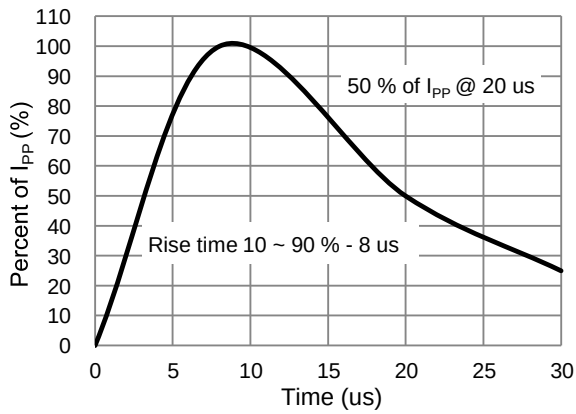



Fig.3 Typical Junction Capacitance

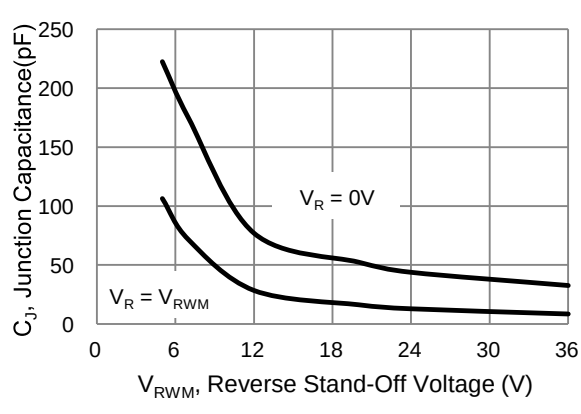



Fig.4 TLP Measurement

# PE4205CS ~ PE4236CS Series

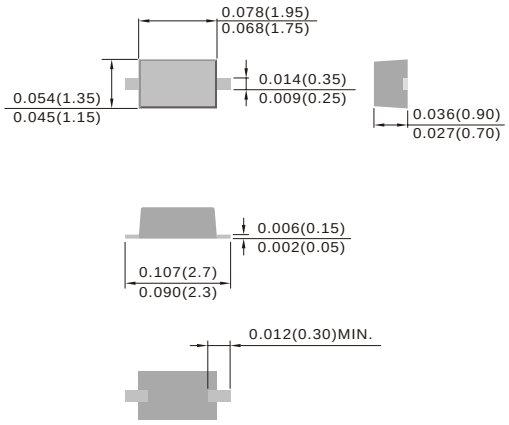
## Part No Packing Code Version

| 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 |

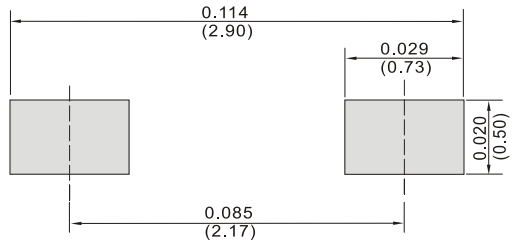
# PE4205CS ~ PE4236CS Series

## Packaging Information & Mounting Pad Layout

SOD-323 Dimension — Unit: inch(mm)




SOD-323 Pad Layout — Unit: inch(mm)



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