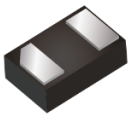
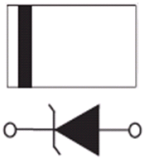
# PE4705L1Q ~ PE4736L1Q Series

## Hi-Surge ESD Protection

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

**DFN1610-2L**





### Features

- IEC61000-4-2(ESD) : ±30kV Air, ±30kV Contact
- IEC61000-4-4(EFT) : 40A(5/50ns)
- IEC61000-4-5(Lightning) : 19A ~ 100A(8/20uS)
- Low clamping voltage
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

### Mechanical Data

- Case : DFN1610-2L Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.0024 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 |
| Typical Thermal Resistance(Note 1) | $R_{\theta JA}$ | 300 | °C/W |
| Operating Junction Temperature Range | $T_J$ | -55~150 | °C |
| Storage Temperature Range | $T_{STG}$ | -55~150 | °C |

# PE4705L1Q ~ PE4736L1Q Series

## Electrical Characteristics ($T_A$ = 25°C unless otherwise noted)

| PE4705L1Q | | | | | | |
|---|---|---|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **TEST CONDITION** | **MIN.** | **TYP.** | **MAX.** | **UNITS** |
| Reverse Stand-Off Voltage(Note 2) | $V_{RWM}$ | - | - | - | 5 | V |
| Maximum Peak Pulse Current | $I_{PP}$ | $t_P$ = 8/20us | - | - | 100 | A |
| Reverse Breakdown Voltage | $V_{BR}$ | $I_{BT}$ = 1mA | 5.5 | - | 9 | V |
| Reverse Leakage Current | $I_R$ | $V_R$ = 5V | - | - | 3 | uA |
| Clamping Voltage | $V_{CL}$ | $I_{PP}$ = 1A, $t_P$ = 8/20us | - | - | 9 | V |
| | | $I_{PP}$ = 100A, $t_P$ = 8/20us | - | - | 14.5 | V |
| Off State Junction Capacitance | $C_J$ | 0Vdc Bias f = 1MHz | - | - | 1300 | pF |

| PE4707L1Q | | | | | | |
|---|---|---|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **TEST CONDITION** | **MIN.** | **TYP.** | **MAX.** | **UNITS** |
| Reverse Stand-Off Voltage(Note 2) | $V_{RWM}$ | - | - | - | 7 | V |
| Maximum Peak Pulse Current | $I_{PP}$ | $t_P$ = 8/20us | - | - | 88 | A |
| Reverse Breakdown Voltage | $V_{BR}$ | $I_{BT}$ = 1mA | 7.7 | - | 9.5 | V |
| Reverse Leakage Current | $I_R$ | $V_R$ = 7V | - | - | 1 | uA |
| Clamping Voltage | $V_{CL}$ | $I_{PP}$ = 1A, $t_P$ = 8/20us | - | - | 10.5 | V |
| | | $I_{PP}$ = 88A, $t_P$ = 8/20us | - | - | 16.5 | V |
| Off State Junction Capacitance | $C_J$ | 0Vdc Bias f = 1MHz | - | - | 960 | pF |

| PE4709L1Q | | | | | | |
|---|---|---|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **TEST CONDITION** | **MIN.** | **TYP.** | **MAX.** | **UNITS** |
| Reverse Stand-Off Voltage(Note 2) | $V_{RWM}$ | - | - | - | 9 | V |
| Maximum Peak Pulse Current | $I_{PP}$ | $t_P$ = 8/20us | - | - | 73 | A |
| Reverse Breakdown Voltage | $V_{BR}$ | $I_{BT}$ = 1mA | 9.9 | - | 12 | V |
| Reverse Leakage Current | $I_R$ | $V_R$ = 9V | - | - | 1 | uA |
| Clamping Voltage | $V_{CL}$ | $I_{PP}$ = 1A, $t_P$ = 8/20us | - | - | 13.5 | V |
| | | $I_{PP}$ = 73A, $t_P$ = 8/20us | - | - | 20 | V |
| Off State Junction Capacitance | $C_J$ | 0Vdc Bias f = 1MHz | - | - | 700 | pF |

# PE4705L1Q ~ PE4736L1Q Series

| PE4712L1Q | | | | | | |
|---|---|---|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **TEST CONDITION** | **MIN.** | **TYP.** | **MAX.** | **UNITS** |
| Reverse Stand-Off Voltage(Note 2) | $V_{RWM}$ | - | - | - | 12 | V |
| Maximum Peak Pulse Current | $I_{PP}$ | $t_P$ = 8/20us | - | - | 58 | A |
| Reverse Breakdown Voltage | $V_{BR}$ | $I_{BT}$ = 1mA | 13.2 | - | 15.5 | V |
| Reverse Leakage Current | $I_R$ | $V_R$ = 12V | - | - | 1 | uA |
| Clamping Voltage | $V_{CL}$ | $I_{PP}$ = 1A, $t_P$ = 8/20us | - | - | 18 | V |
| | | $I_{PP}$ = 58A, $t_P$ = 8/20us | - | - | 27 | V |
| Off State Junction Capacitance | $C_J$ | 0Vdc Bias f = 1MHz | - | - | 600 | pF |

| PE4715L1Q | | | | | | |
|---|---|---|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **TEST CONDITION** | **MIN.** | **TYP.** | **MAX.** | **UNITS** |
| Reverse Stand-Off Voltage(Note 2) | $V_{RWM}$ | - | - | - | 15 | V |
| Maximum Peak Pulse Current | $I_{PP}$ | $t_P$ = 8/20us | - | - | 45 | A |
| Reverse Breakdown Voltage | $V_{BR}$ | $I_{BT}$ = 1mA | 16.5 | - | 20 | V |
| Reverse Leakage Current | $I_R$ | $V_R$ = 15V | - | - | 1 | uA |
| Clamping Voltage | $V_{CL}$ | $I_{PP}$ = 1A, $t_P$ = 8/20us | - | - | 22.5 | V |
| | | $I_{PP}$ = 45A, $t_P$ = 8/20us | - | - | 32 | V |
| Off State Junction Capacitance | $C_J$ | 0Vdc Bias f = 1MHz | - | - | 480 | pF |

| PE4720L1Q | | | | | | |
|---|---|---|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **TEST CONDITION** | **MIN.** | **TYP.** | **MAX.** | **UNITS** |
| Reverse Stand-Off Voltage(Note 2) | $V_{RWM}$ | - | - | - | 20 | V |
| Maximum Peak Pulse Current | $I_{PP}$ | $t_P$ = 8/20us | - | - | 34 | A |
| Reverse Breakdown Voltage | $V_{BR}$ | $I_{BT}$ = 1mA | 22 | - | 26 | V |
| Reverse Leakage Current | $I_R$ | $V_R$ = 20V | - | - | 1 | uA |
| Clamping Voltage | $V_{CL}$ | $I_{PP}$ = 1A, $t_P$ = 8/20us | - | - | 30 | V |
| | | $I_{PP}$ = 34A, $t_P$ = 8/20us | - | - | 43 | V |
| Off State Junction Capacitance | $C_J$ | 0Vdc Bias f = 1MHz | - | - | 310 | pF |

# PE4705L1Q ~ PE4736L1Q Series

| PE4724L1Q | | | | | | |
|---|---|---|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **TEST CONDITION** | **MIN.** | **TYP.** | **MAX.** | **UNITS** |
| Reverse Stand-Off Voltage(Note 2) | $V_{RWM}$ | - | - | - | 24 | V |
| Maximum Peak Pulse Current | $I_{PP}$ | $t_P$ = 8/20us | - | - | 32 | A |
| Reverse Breakdown Voltage | $V_{BR}$ | $I_{BT}$ = 1mA | 26.4 | - | 31 | V |
| Reverse Leakage Current | $I_R$ | $V_R$ = 24V | - | - | 1 | uA |
| Clamping Voltage | $V_{CL}$ | $I_{PP}$ = 1A, $t_P$ = 8/20us | - | - | 35 | V |
| | | $I_{PP}$ = 32A, $t_P$ = 8/20us | - | - | 45 | V |
| Off State Junction Capacitance | $C_J$ | 0Vdc Bias f = 1MHz | - | - | 280 | pF |

| PE4736L1Q | | | | | | |
|---|---|---|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **TEST CONDITION** | **MIN.** | **TYP.** | **MAX.** | **UNITS** |
| Reverse Stand-Off Voltage(Note 2) | $V_{RWM}$ | - | - | - | 36 | V |
| Maximum Peak Pulse Current | $I_{PP}$ | $t_P$ = 8/20us | - | - | 19 | A |
| Reverse Breakdown Voltage | $V_{BR}$ | $I_{BT}$ = 1mA | 39.6 | - | 46.5 | V |
| Reverse Leakage Current | $I_R$ | $V_R$ = 36V | - | - | 1 | uA |
| Clamping Voltage | $V_{CL}$ | $I_{PP}$ = 1A, $t_P$ = 8/20us | - | - | 52.5 | V |
| | | $I_{PP}$ = 19A, $t_P$ = 8/20us | - | - | 75 | V |
| Off State Junction Capacitance | $C_J$ | 0Vdc Bias f = 1MHz | - | - | 190 | pF |

NOTES :

1. Mounted on a FR4 PCB, single-sided copper, standard footprint.
2. A transient suppressor is selected according to the working peak reverse voltage(VRWM), which should be equal to or greater than the DC or continuous peak operation voltage level.

# PE4705L1Q ~ PE4736L1Q Series

## TYPICAL CHARACTERISTIC CURVES

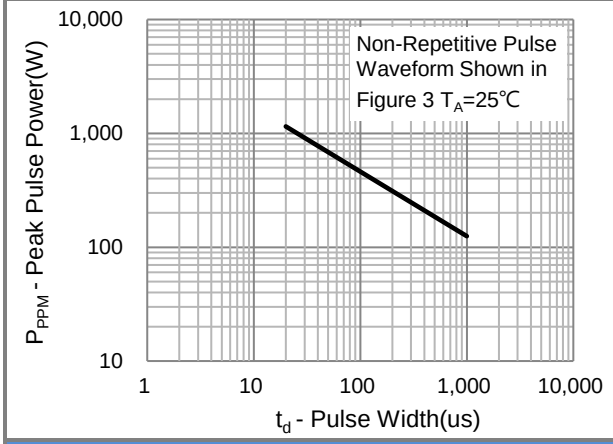



Fig.1 Peak Pulse Power Rating Curve

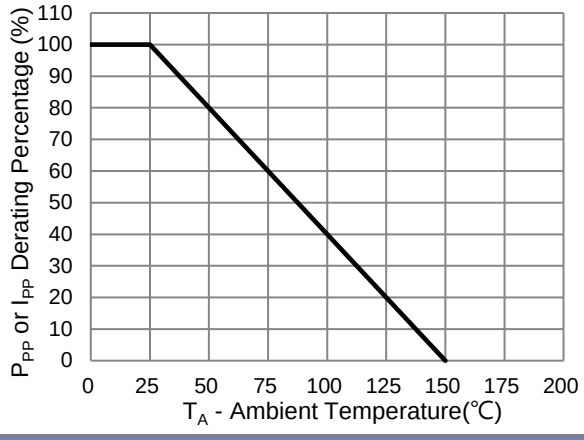



Fig.2 Derating Curve

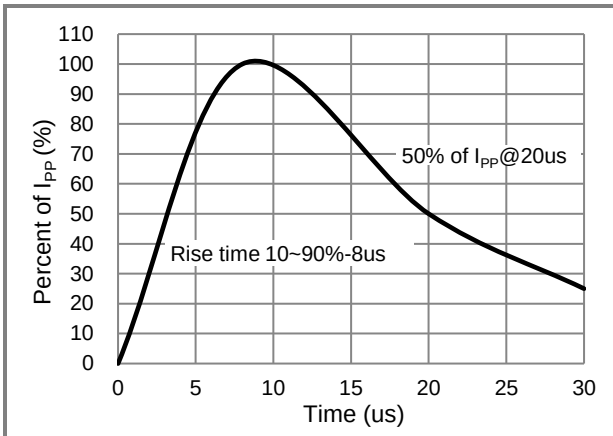



Fig.3 Pulse Waveform

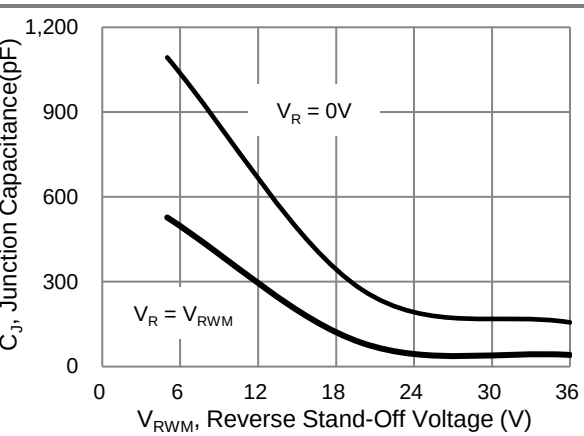



Fig.4 Typical Junction Capacitance

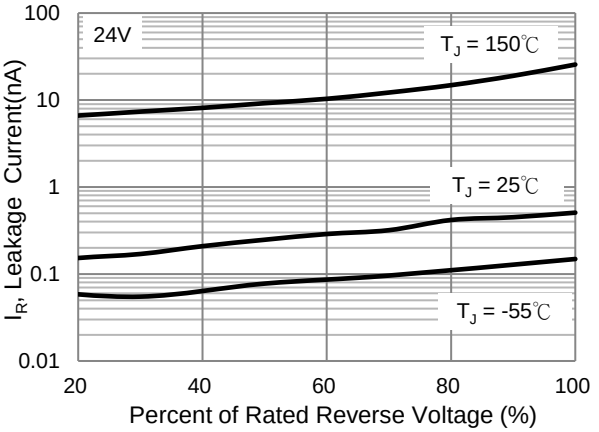



Fig.5 Typical Reverse Characteristics

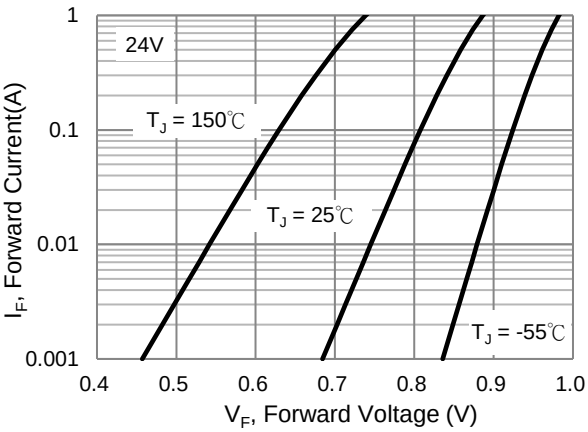



Fig.6 Typical Forward Characteristics

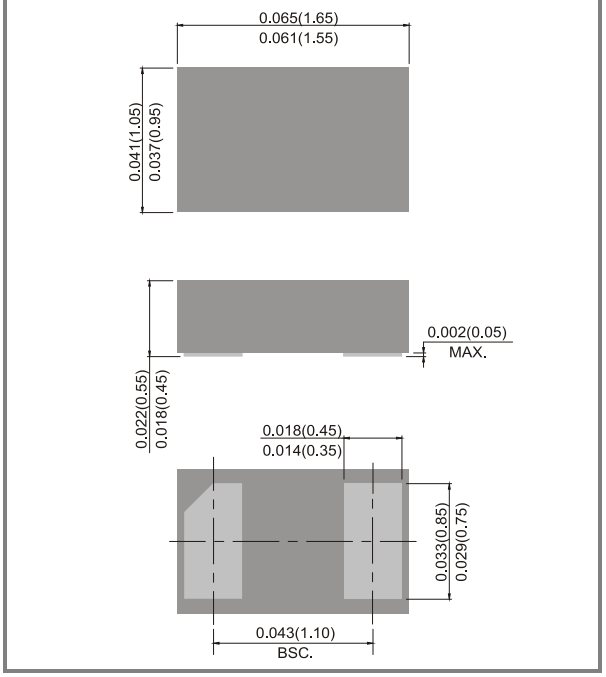
# PE4705L1Q ~ PE4736L1Q Series

## Product and Packing Information

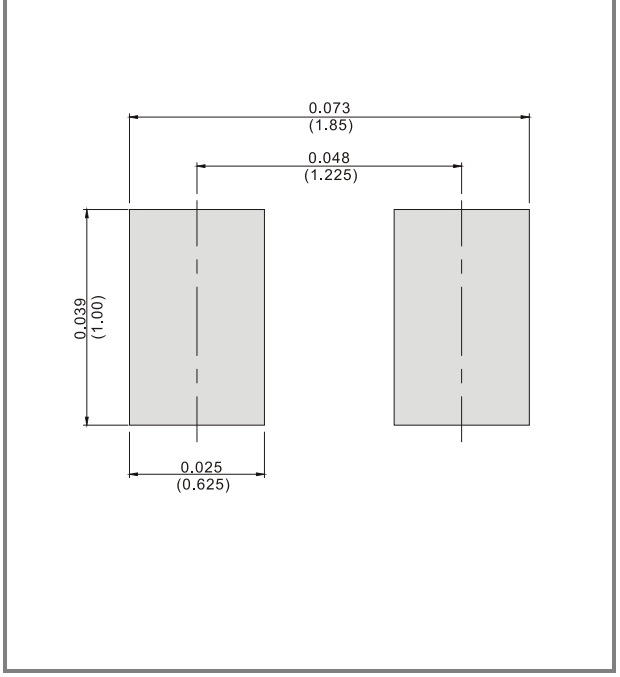
| Part No. | Package Type | Packing Type | Marking |
|---|---|---|---|
| PE4705L1Q | DFN1610-2L | 3K pcs / 7” reel | JA |
| PE4707L1Q | DFN1610-2L | 3K pcs / 7” reel | JB |
| PE4709L1Q | DFN1610-2L | 3K pcs / 7” reel | JD |
| PE4712L1Q | DFN1610-2L | 3K pcs / 7” reel | JF |
| PE4715L1Q | DFN1610-2L | 3K pcs / 7” reel | JG |
| PE4720L1Q | DFN1610-2L | 3K pcs / 7” reel | JH |
| PE4724L1Q | DFN1610-2L | 3K pcs / 7” reel | JI |
| PE4736L1Q | DFN1610-2L | 3K pcs / 7” reel | JL |

## Packaging Information & Mounting Pad Layout

DFN1610-2L Dimension — Unit: inch(mm)




DFN1610-2L Pad Layout — Unit: inch(mm)



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