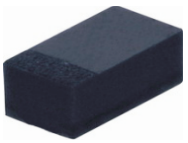
# SMD ESD Protection Diode

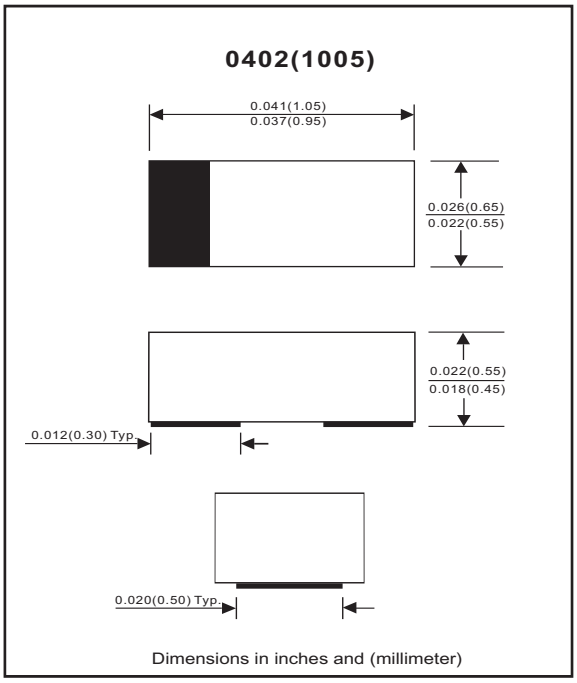
COMCHIP
SMD Diodes Specialist

# CPDQR5V0U (RoHS Device)



## Features

Uni-directional ESD protection.
(16kV) IEC 61000-4-2 rating.
Surface mount package.
Ultra small SMD package:0402.
High component density.




## Mechanical data

Case: 0402(1005) standard package,
molded plastic.
Terminals: Gold plated, solderable per
MIL-STD-750,method 2026.
Marking Code:
CPDQR5V0U: E5
Mounting position: Any.
Weight: 0.001 gram(approx.).



## Maximum Rating AND Electrical Characteristics
(at $T_A$=25 °C unless otherwise noted)

| Parameter | Conditions | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **Forward voltage** | $I_F$ = 10mA | $V_F$ | | 0.8 | | V |
| **Diode breakdown voltage** | $I_R$ = 1mA | $V_{BD}$ | 6 | | | V |
| **Leakage current** | $V_R$ = 5V | $I_L$ | | 0.3 | 2.0 | uA |
| **Junction capacitance** | $V_R$ = 0V,f = 1MHz | $C_T$ | | 90 | 120 | pF |
| **ESD capability** | IEC 61000-4-2(air)<br>IEC 61000-4-2(contact) | ESD | | | 20<br>15 | kV |
| **Clamping voltage** | $I_{PP}$ = 5A,$T_P$=8/20us<br>$I_{PP}$ = 16A,$T_P$=8/20us | $V_C$ | | | 9.8<br>12.5 | V |
| **Peak pulse power** | | $P_{PP}$ | | | 200 | W |
| **Operation temperature** | | $T_J$ | | | 125 | °C |
| **Storage temperature** | | $T_{STG}$ | -55 | | 150 | °C |

## RATING AND CHARACTERISTIC CURVES (CPDQR5V0U)

Fig. 1 - 8/20us Peak pulse current wave form acc. IEC 61000-4-5

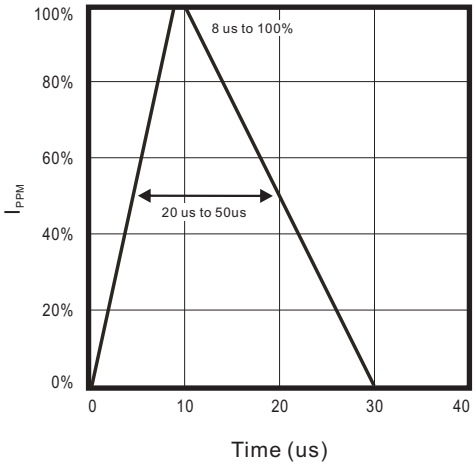



Fig. 2 - Power rating derating curve

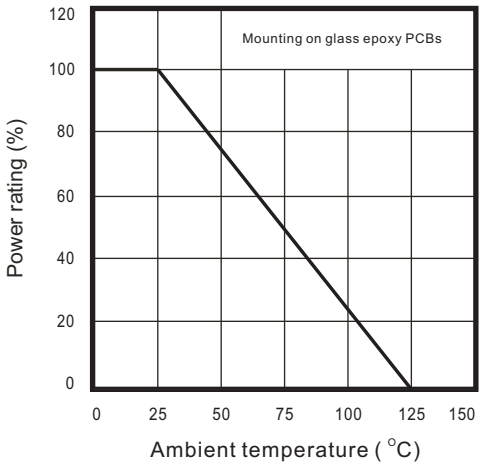



Fig. 3 - Clamping volatage vs. peak pulse current

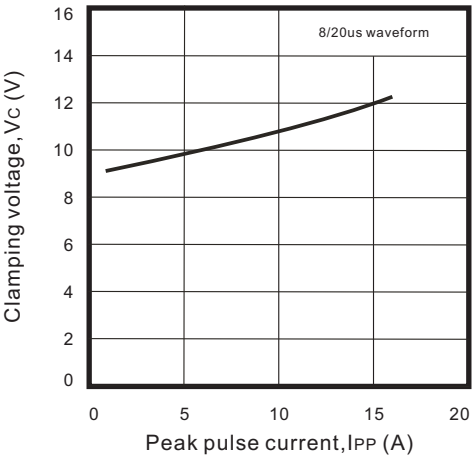



Fig. 4 - Forward volatage vs. forward current

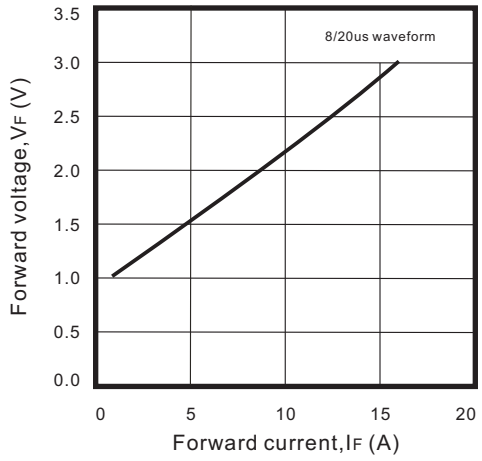
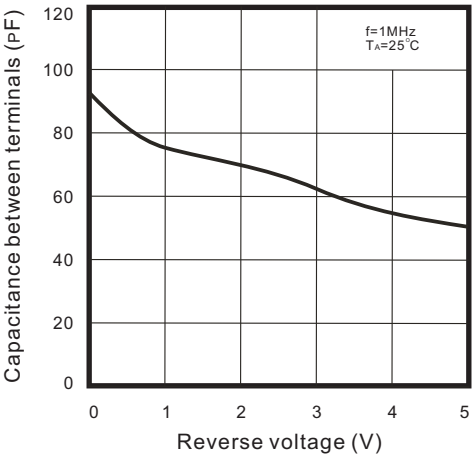
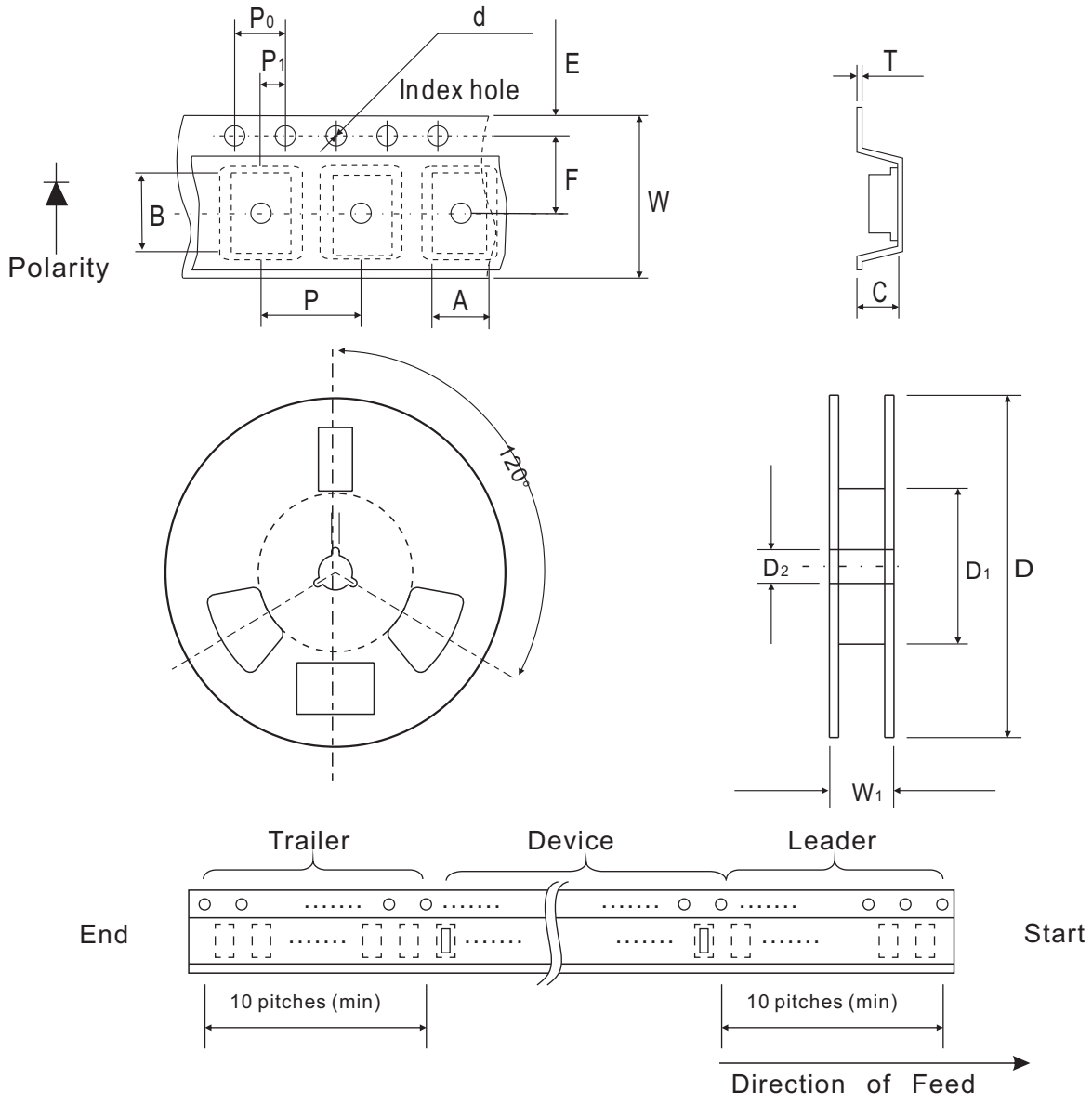



Fig. 5 - Capacitance between terminals characteristics



## Reel Taping Specification




| | SYMBOL | A | B | C | d | D | $D_1$ | $D_2$ |
|---|---|---|---|---|---|---|---|---|
| QR/0402 | (mm) | 0.75 ± 0.10 | 1.15 ± 0.10 | 0.60 ± 0.10 | 1.55 ± 0.10 | 178 ± 1 | 60.0 MIN. | 13.0 ± 0.20 |
| | (inch) | 0.026 ± 0.004 | 0.045 ± 0.004 | 0.024 ± 0.004 | 0.061 ± 0.004 | 7.008 ± 0.04 | 2.362 MIN. | 0.512 ± 0.008 |

| | SYMBOL | E | F | P | $P_0$ | $P_1$ | T | W | $W_1$ |
|---|---|---|---|---|---|---|---|---|---|
| QR/0402 | (mm) | 1.75 ± 0.10 | 3.50 ± 0.05 | 4.00 ± 0.10 | 4.00 ± 0.10 | 2.00 ± 0.10 | 0.22 ± 0.05 | 8.00 ± 0.20 | 13.5 MAX. |
| | (inch) | 0.069 ± 0.004 | 0.138 ± 0.002 | 0.157 ± 0.004 | 0.157 ± 0.004 | 0.079 ± 0.004 | 0.009 ± 0.002 | 0.315 ± 0.008 | 0.531 MAX. |

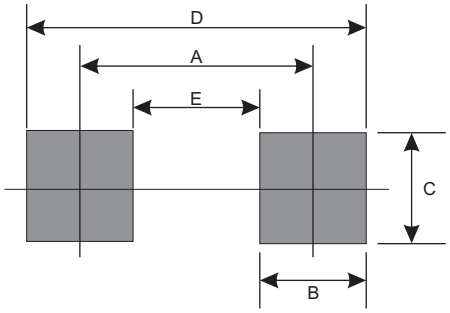
## Marking Code

| Part Number | Marking Code |
|---|---|
| CPDQR5V0U | E5 |




## Suggested PAD Layout

| SIZE | QR/0402 | |
|---|---|---|
| | (mm) | (inch) |
| A | 0.750 | 0.030 |
| B | 0.500 | 0.020 |
| C | 0.700 | 0.028 |
| D | 1.250 | 0.049 |
| E | 0.250 | 0.010 |




## Standard Package

| Case Type | Qty per Reel | Reel Size |
|---|---|---|
| | (Pcs) | (inch) |
| QR/0402 | 5000 | 7 |

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