BORN SEMICONDUCTOR

# BDFN1C241R

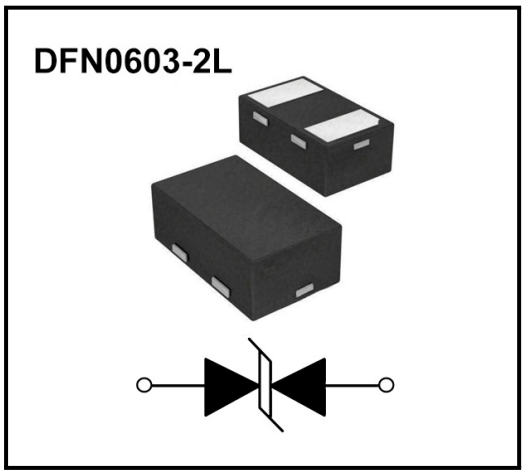
**ESD Protection Diode**

## Features

- 92Watts peak pulse power (tp = 8/20μs)
- Bidirectional configurations
- Solid-state silicon-avalanche technology
- Low clamping Voltage
- Low leakage current
- Low capacitance (Cj=0.25pF typ.)
- Protection one data/power line
- IEC 61000-4-2 ±15kV contact ; ±15kV air
- IEC 61000-4-4 (EFT) 40A (5/50ns)
- IEC 61000-4-5 (Lightning) 2.0A (8/20μs)

## Package

DFN0603-2L



## Applications

- USB3.0,HDMI2.0,Thunderbolt
- Notebooks, Desktops, and Servers
- Portable Instrumentation

## Mechanical Characteristics

- DFN0603-2L package
- Molding compound flammability rating: UL 94V-0
- Packaging: Tape and Reel
- RoHS/WEEE Compliant

## Marking

U24

## Ordering information

| Order code | Package | Base qty | Delivery mode |
|---|---|---|---|
| BDFN1C241R | DFN0603-2L | 10k | Tape and reel |

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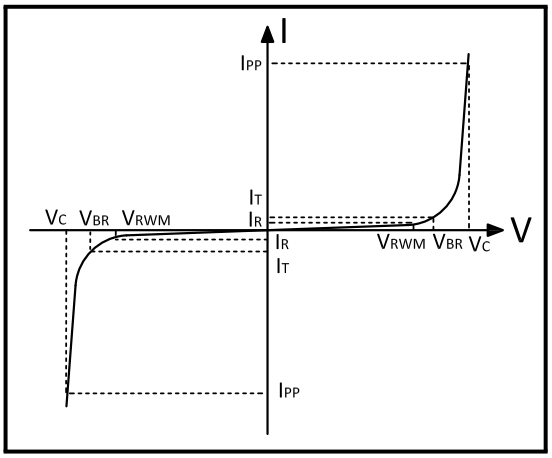
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**ESD Protection Diode**

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

| Symbol | Parameter |
|---|---|
| $I_{PP}$ | Maximum Reverse Peak Pulse Current |
| $V_C$ | Clamping Voltage @ $I_{PP}$ |
| $V_{RWM}$ | Peak Reverse Working Voltage |
| $I_R$ | Reverse Leakage Current @ $V_{RWM}$ |
| $V_{BR}$ | Breakdown Voltage @ $I_T$ |
| $I_T$ | Test Current |
| | |
| | |
| | |




Note:8/20us pulse Waveform.

## Absolute Maximum Rating

| Rating | Symber | Value | Units |
|---|---|---|---|
| Peak Pulse Power ( tp =8/20μs ) | $P_{PP}$ | 92 | Watts |
| Peak Pulse Current (tp =8/20μs ) | $I_{PP}$ | 2.0 | A |
| ESD per IEC 61000-4-2 (Air)<br>ESD per IEC 61000-4-2 (Contact) | $V_{ESD}$ | 15<br>15 | KV |
| Lead Soldering Temperature | $T_L$ | 260(10seconds) | °C |
| Junction Temperature | $T_J$ | -55 to + 150 | °C |
| Storage Temperature | $T_{stg}$ | -55 to + 150 | °C |

## Electrical Characteristics

| Parameter | Symber | Conditions | Min | Typical | Max | Units |
|---|---|---|---|---|---|---|
| Reverse Stand-Off Voltage | $V_{RWM}$ | – | – | – | 24 | V |
| Reverse Breakdown Voltage | $V_{BR}$ | $I_T$=1mA | 26.7 | 29.0 | 32.0 | V |
| Reverse Leakage Current | $I_R$ | $V_{RWM}$=24V,T=25°C | – | – | 0.2 | uA |
| Peak Pulse Current | $I_{PP}$ | tp =8/20us | – | – | 2.0 | A |
| Clamping Voltage | $V_C$ | $I_{PP}$=2.0A, tp =8/20us | – | 42 | 46 | V |
| Junction Capacitance | $C_j$ | $V_R$=0V,T=25°C,f=1MHZ | – | 0.25 | 0.4 | pF |

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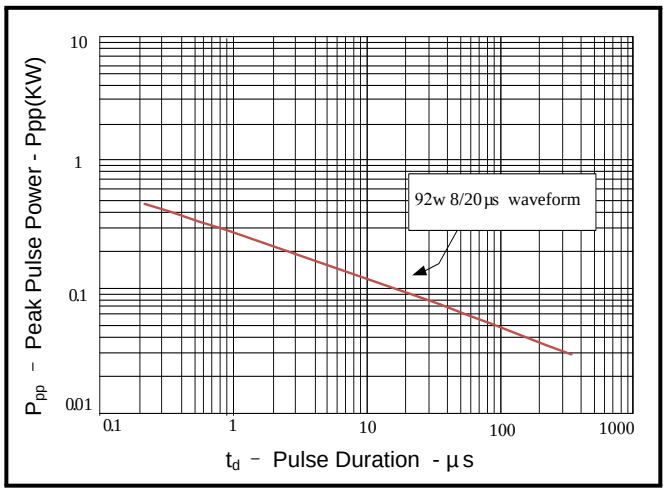
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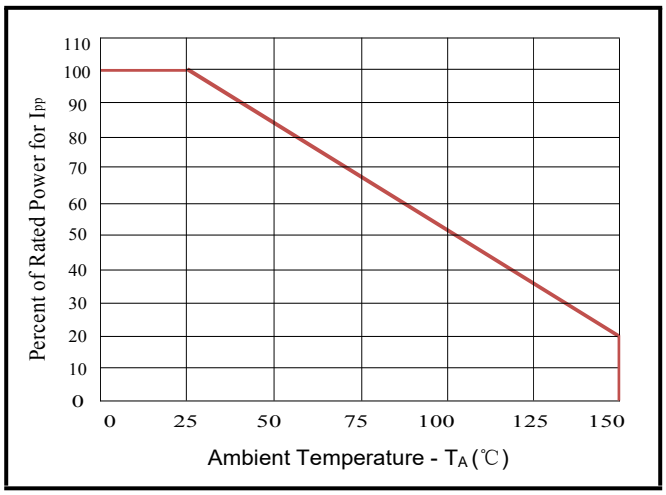
**ESD Protection Diode**

## Typical Characteristics

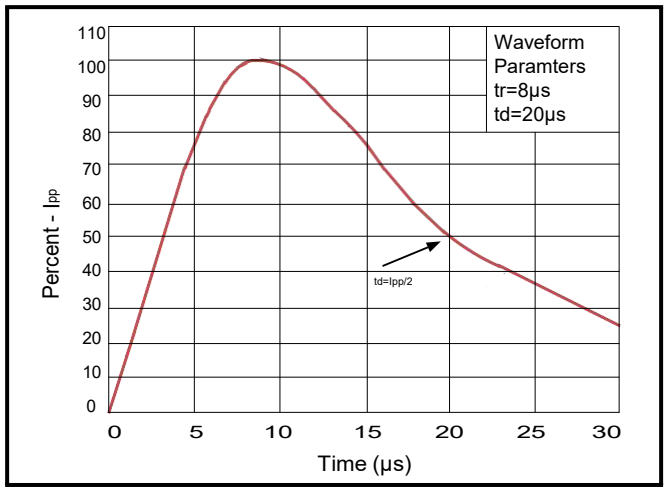
### Figure 1: Peak Pulse Power vs. Pulse Time



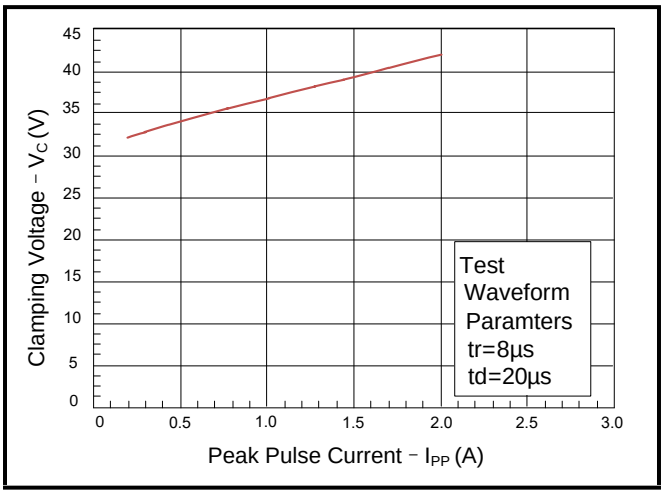

### Figure 2: Power Derating Curve




### Figure 3: Pulse Waveform




### Figure 4: Clamping Voltage vs. $I_{PP}$



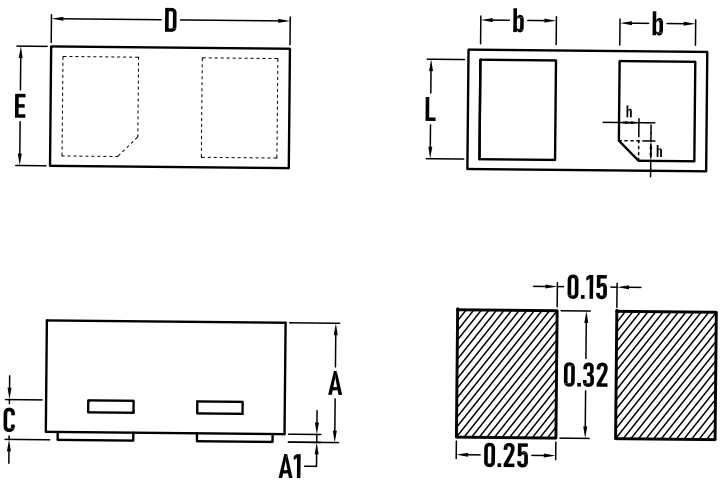

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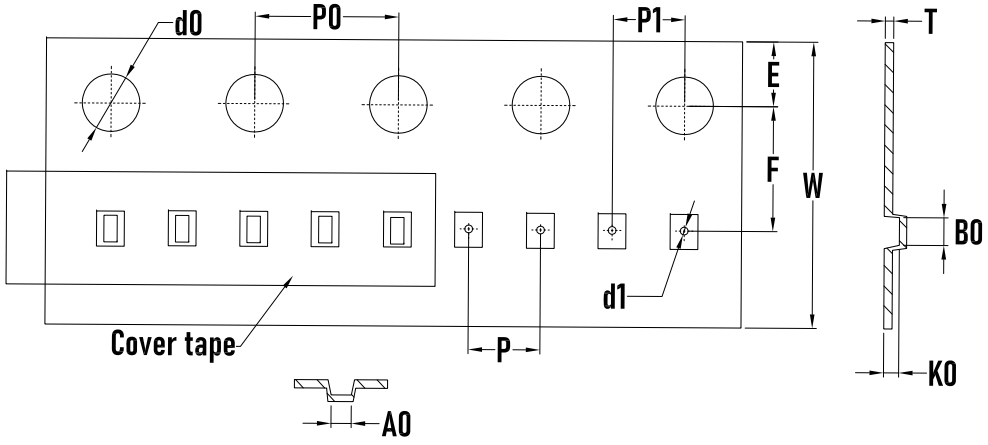
**ESD Protection Diode**

## Outline Drawing – DFN0603-2L



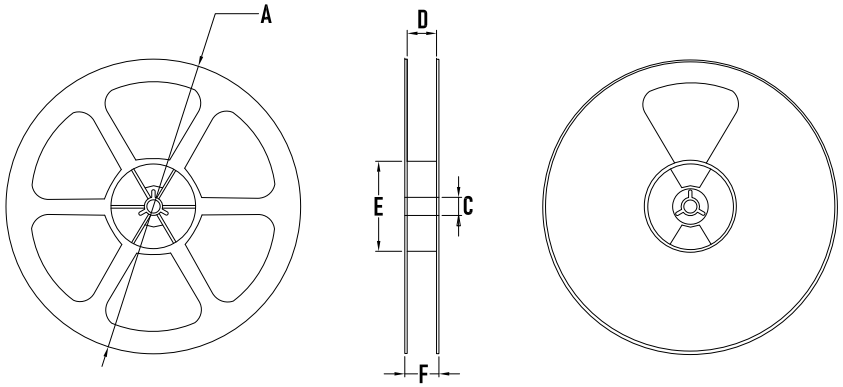

| SYMBOL | MILLIMETER | | |
|---|---|---|---|
| | MIN. | Typ. | MAX. |
| A | 0.28 | 0.30 | 0.32 |
| A1 | 0.00 | 0.02 | 0.05 |
| C | 0.05 | 0.10 | 0.15 |
| D | 0.55 | 0.60 | 0.65 |
| E | 0.25 | 0.30 | 0.35 |
| b | 0.14 | 0.19 | 0.24 |
| L | 0.20 | 0.25 | 0.30 |
| h | – | 0.05 | 0.10 |

## Packaging Tape - DFN0603-2L




| SYMBOL | MILLIMETER |
|---|---|
| A0 | 0.39±0.03 |
| B0 | 0.70±0.03 |
| d0 | 1.55±0.05 |
| d1 | 0.20±0.05 |
| E | 1.75±0.10 |
| F | 3.50±0.04 |
| K0 | $0.37^{+0.03}_{-0.02}$ |
| P | 2.00±0.10 |
| P0 | 4.00±0.10 |
| P1 | 2.00±0.05 |
| W | 8.00±0.10 |
| T | 0.18±0.03 |

## Packaging Reel




| SYMBOL | MILLIMETER |
|---|---|
| A | 178±2 |
| C | $13.0^{+0.5}_{-0.2}$ |
| D | 9.5 |
| E | 55±5 |
| F | 14.4 max. |
| Quantity | 10000PCS |

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**Revision: 2022-Jan-1-A**