BORN SEMICONDUCTOR

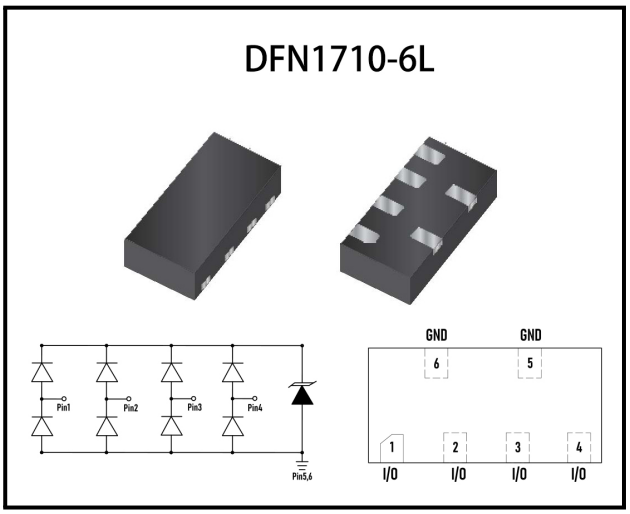
# BDFN1710A054U

**ESD Protection Diode Array**

## Features

- 52Watts peak pulse power (tp = 8/20μs)
- Protect up to 4-lines
- Solid-state silicon-avalanche technology
- Low clamping Voltage
- Low leakage current
- Ultra low capacitance: 0.35pF typical(I/O to I/O)
- IEC 61000-4-2 ±30kV contact ; ±30kV air
- IEC 61000-4-4 (EFT) 40A (5/50ns)
- IEC 61000-4-5 (Lightning) 3.5A (8/20μs)

## Package



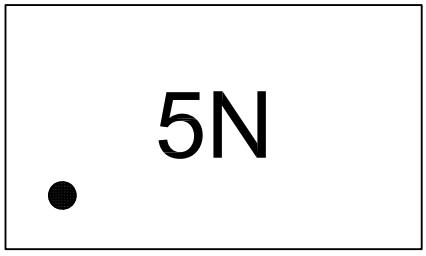

## Applications

- USB 2.0
- USB OTG
- Micro USB

## Mechanical Data

- DFN1710 package
- Molding compound flammability rating: UL 94V-0
- Packaging: Tape and Reel
- RoHS/WEEE Compliant

## Marking




## Ordering information

| Order code | Package | Base qty | Delivery mode |
|---|---|---|---|
| BDFN1710A054U | DFN1710-6L | 3k | Tape and reel |

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

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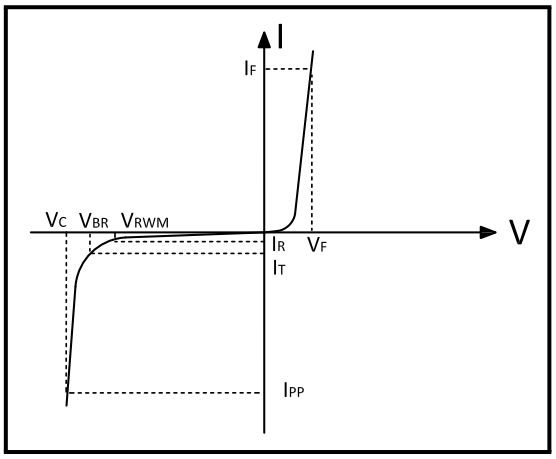
## Electrical Parameters ($T_A$ = 25°C unless otherwise noted)

| 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 ) | $P_{PP}$ | 52 | Watts |
| Peak Pulse Current (tp =8/20μs ) | $I_{PP}$ | 3.5 | A |
| ESD per IEC 61000-4-2 (Air)<br>ESD per IEC 61000-4-2 (Contact) | $V_{ESD}$ | 30<br>30 | 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 | $V_{RWM}$ | – | – | – | 5.0 | V |
| Reverse Breakdown Voltage | $V_{BR}$ | $I_T$=1mA | 6.0 | 8.0 | 9.5 | V |
| Reverse Leakage Current | $I_R$ | $V_{RWM}$=5V,T=25°C | – | – | 0.5 | uA |
| Peak Pulse Current | $I_{PP}$ | tp =8/20us | – | – | 3.5 | A |
| Clamping Voltage | $V_C$ | $I_{PP}$=3.5A, tp =8/20us | – | 12 | 15 | V |
| Junction Capacitance | $C_j$ | $V_R$=0V,f=1MHZ,I/O to I/O | – | 0.35 | – | pF |
| | | $V_R$=0V,f=1MHZ,I/O to GND | – | 0.70 | – | |

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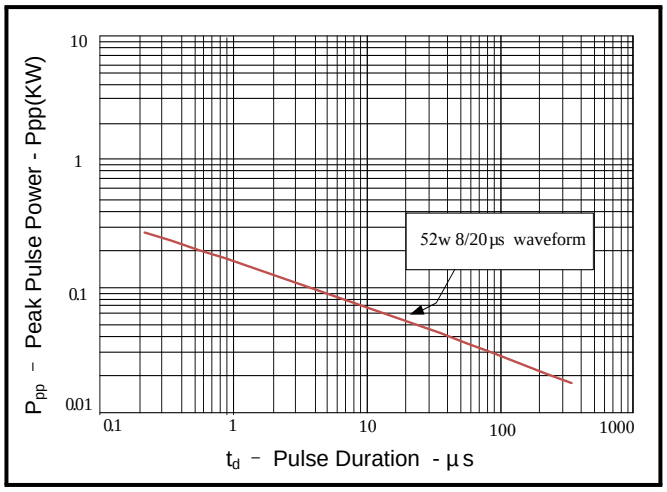
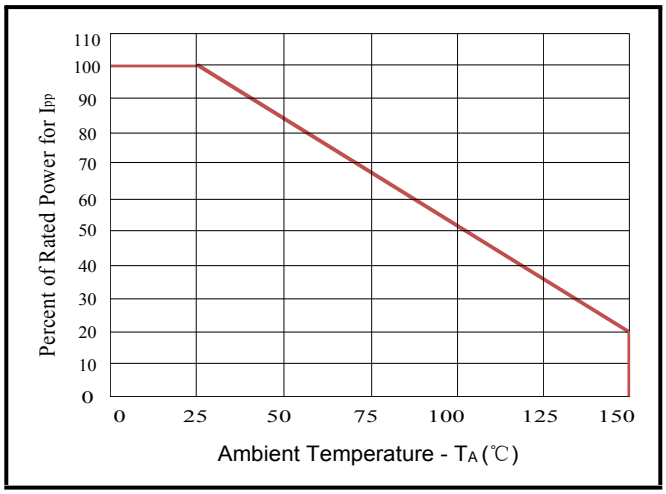
## Typical Characteristics

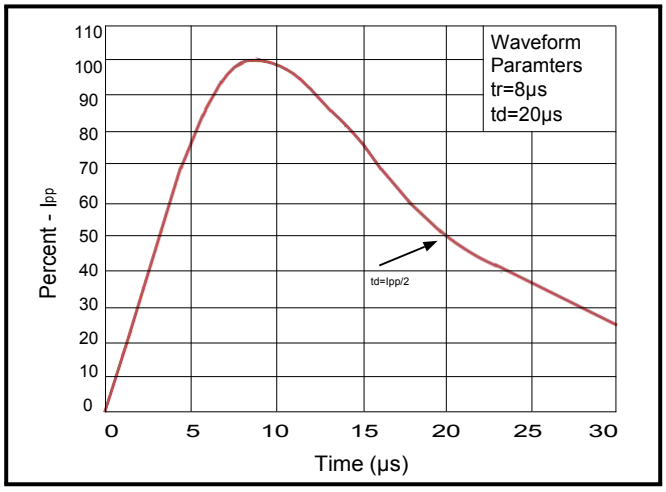
### Figure 1: Peak Pulse Power vs. Pulse Time



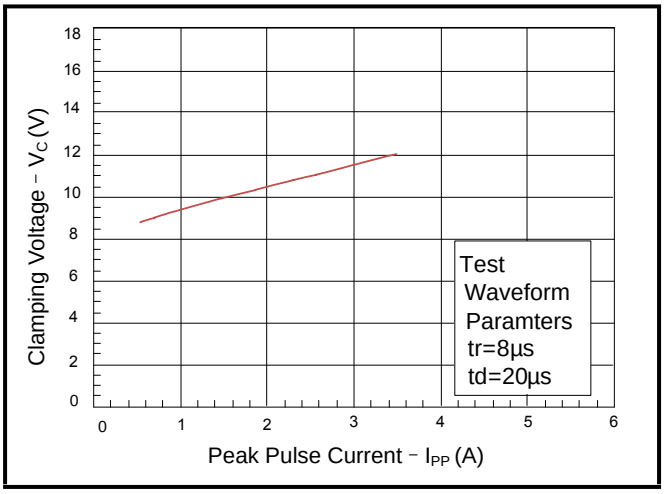

### Figure 2: Power Derating Curve




### Figure 3: Pulse Waveform




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

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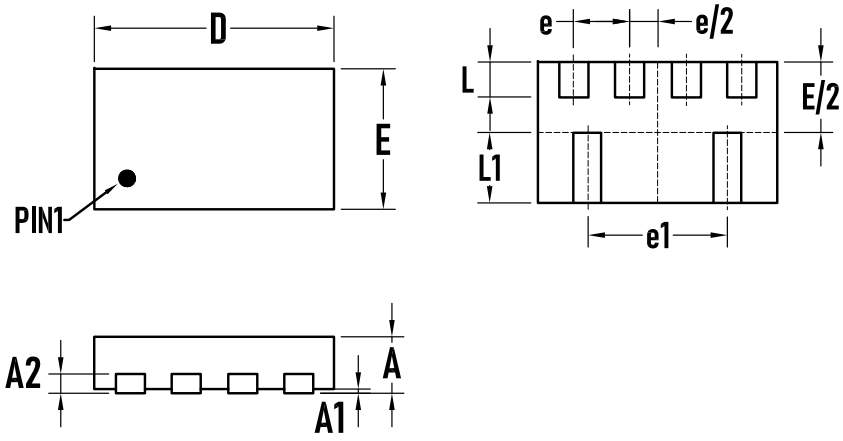
## Outline Drawing - DFN1710-6L




| SYMBOL | MILLIMETER | | |
|---|---|---|---|
| | MIN. | Typ. | MAX. |
| A | 0.37 | 0.40 | 0.43 |
| A1 | 0.00 | 0.02 | 0.05 |
| A2 | | 0.13 | |
| b | 0.15 | 0.20 | 0.25 |
| D | 1.65 | 1.70 | 1.78 |
| E | 0.95 | 1.00 | 1.08 |
| e | | 0.40BSC | |
| e1 | | 1.00BSC | |
| L | 0.20 | 0.25 | 0.30 |
| L1 | 0.45 | 0.50 | 0.55 |

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