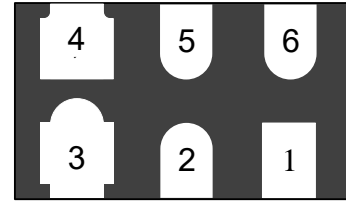


Features

- Ultra small package: 1.6x1.0x0.5mm
- Ultra low leakage: nA level
- Low clamping voltage
- 2-pin leadless package
- RoHS compliant



IEC COMPATIBILITY (EN61000-4)

- IEC 61000-4-2 (ESD) $\pm 25\text{kV}$ (air), $\pm 20\text{kV}$ (contact)
- IEC 61000-4-4 (EFT) 40A(5/50ns)
- IEC 61000-4-5 (Lightning) 5A(8/20us)

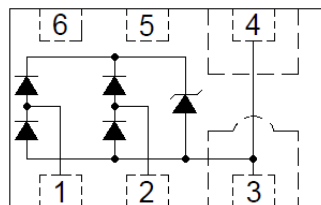
Applications

- USB 3.0, USB 2.0, MHL
- HDMI 2.0, Display Port 1.3, eSATA
- Unified Display Interface (UDI)
- Digital Visual Interface (DVI)
- High speed serial interfaces

Mechanical Characteristics

- Package: DFN1610
- Molding compound flammability rating: UL 94V-0
- Marking: Marking Code
- Packaging: Tape and Reel
- RoHS/WEEE Compliant
- MSD Level: 2

Schematic and PIN Configuration

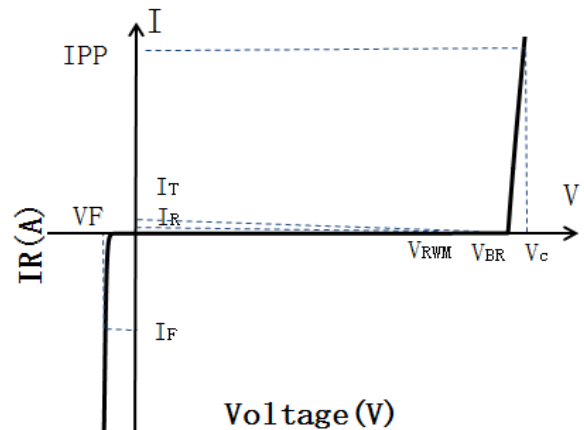


Absolute Maximum Ratings (TA=25°C unless otherwise specified)

| Rating | Symbol | Value | Units |
|--|-----------|--------------|-------|
| Peak Pulse Power ($t_p = 8/20\mu s$) | P_{PP} | 100 | W |
| Peak Pulse Current ($t_p = 8/20\mu s$) | I_{PP} | 5 | A |
| ESD per IEC 61000-4-2(Air) | V_{ESD} | ± 25 | kV |
| ESD per IEC 61000-4-2(contact) | | ± 20 | |
| Operating Temperature | T_J | -55 to + 125 | °C |
| Storage Temperature | T_{STG} | -55 to +150 | °C |

Portion Electronics Parameter

| Symbol | Parameter |
|----------|------------------------------------|
| I_T | Test Current |
| I_{PP} | Maximum Reverse Peak Pulse Current |
| V_C | Clamping Voltage @ I_C |



Electrical Characteristics (TA=25°C unless otherwise specified)

| Parameter | Symbol | Conditions | Min | Typical | Max | Units |
|---------------------------|-----------|--------------------------------|-----|---------|-----|---------|
| Reverse Stand-Off Voltage | V_{RWM} | | | | 5.0 | V |
| Reverse Breakdown Voltage | V_{BR} | $I_T = 1mA$ | 5.6 | | | V |
| Reverse Leakage Current | I_R | $V_{RWM} = 5.0V$ | | 0.01 | 1 | μA |
| Clamping Voltage | V_C | $I_{PP} = 1A, t_p = 8/20\mu s$ | | 8 | 9.5 | V |
| | | $I_{PP} = 5A, t_p = 8/20\mu s$ | | 15 | 20 | V |
| Junction Capacitance | C_j | $V_R = 0V, f = 1MHz, IO-GND$ | | 0.25 | 0.4 | pF |
| Junction Capacitance | C_j | $V_R = 0V, f = 1MHz, IO-IO$ | | 0.4 | 0.8 | pF |

Typical Characteristics (TA=25°C unless otherwise Specified)

Fig.1 Peak Pulse Power Rating Curve

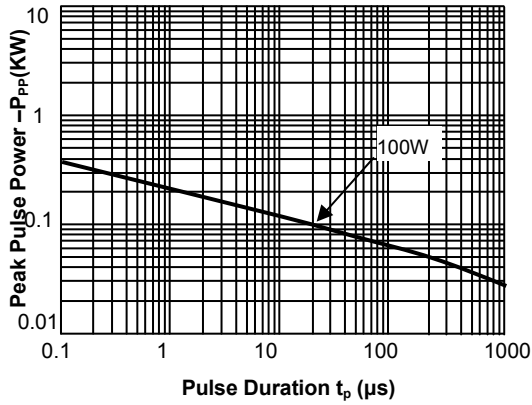


Fig.2 Pulse Derating Curve

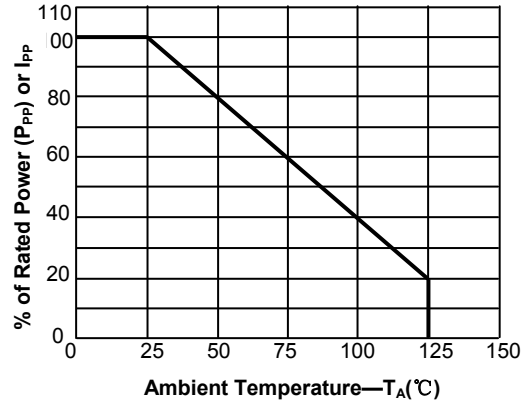


Fig.3 Pulse Waveform-8/20μs

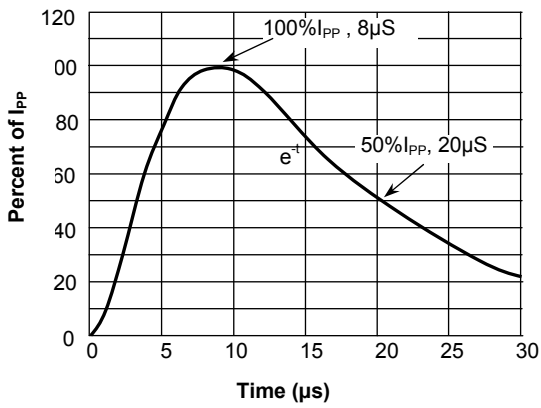
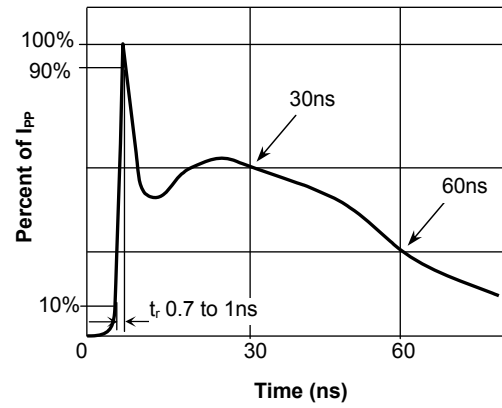
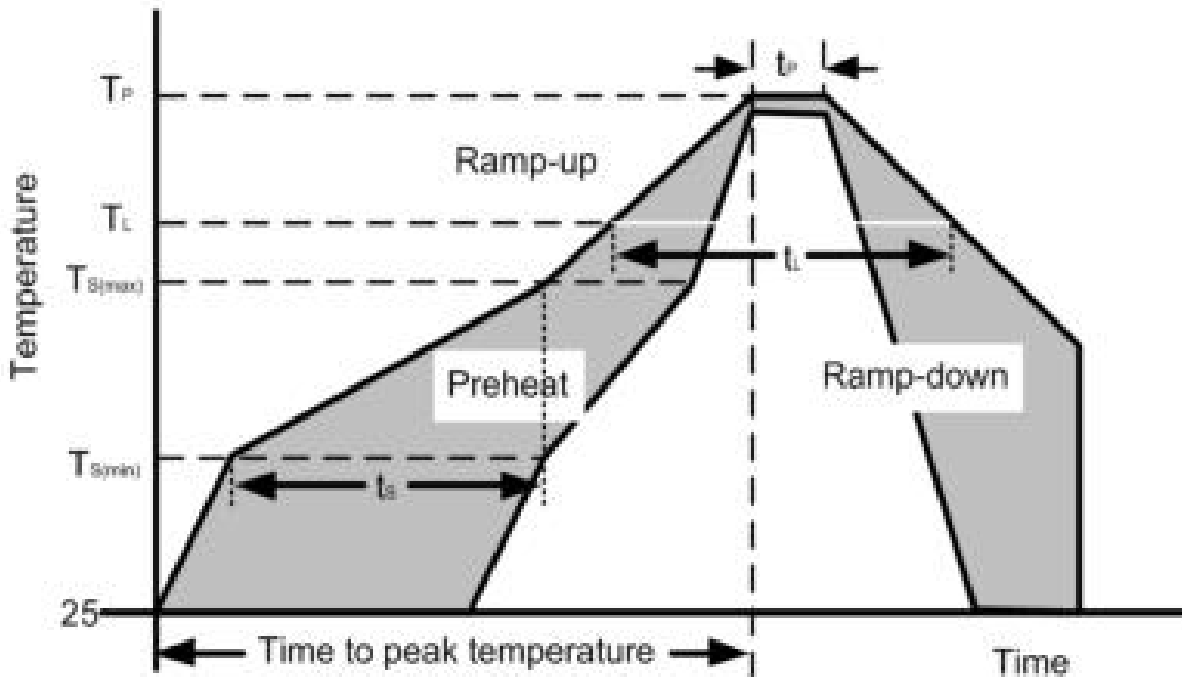


Fig.4 Pulse Waveform-ESD(IEC61000-4-2)

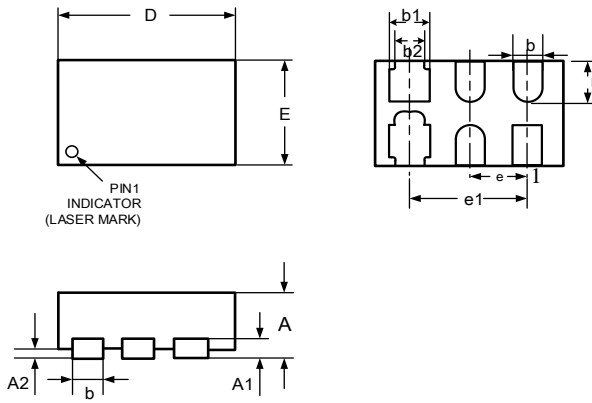


Soldering Parameters

| Reflow Condition | | Pb – Free assembly |
|--|----------------------------------|--------------------|
| Pre Heat | Temperature Min ($T_{S(min)}$) | 150°C |
| | Temperature Max ($T_{S(max)}$) | 200°C |
| | Time (min to max) (t_s) | 60 – 190 secs |
| Average ramp up rate (Liquidus Temp) (T_L) to peak | | 5°C/second max |
| $T_{S(max)}$ to T_L — Ramp-up Rate | | 5°C/second max |
| Reflow | Temperature (T_L) (Liquidus) | 217°C |
| | Temperature (t_L) | 60 – 150 seconds |
| Peak Temperature (T_P) | | 260+0/-5 °C |
| Time within actual peak Temperature (t_p) | | 20 – 40 seconds |
| Ramp-down Rate | | 5°C/second max |
| Time 25°C to peak Temperature (T_P) | | 8 minutes Max. |
| Do not exceed | | 280°C |

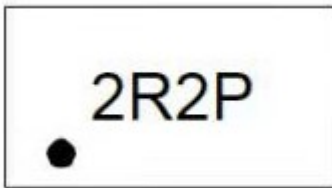


DFN1610 Package Outline Drawing



| DIM | MILLIMETERS | | INCHES | |
|-----|-------------|------|----------|-------|
| | MIN | MAX | MIN | MAX |
| D | 1.55 | 1.65 | 0.061 | 0.065 |
| E | 0.95 | 1.05 | 0.037 | 0.041 |
| L | 0.33 | 0.43 | 0.013 | 0.017 |
| b | 0.15 | 0.25 | 0.006 | 0.010 |
| b1 | 0.35 | 0.45 | 0.014 | 0.018 |
| b2 | 0.25 | 0.35 | 0.010 | 0.014 |
| e | 0.50BSC | | 0.020BSC | |
| e1 | 1.00BSC | | 0.039BSC | |
| A | 0.45 | 0.55 | 0.018 | 0.022 |
| A1 | 0.15REF | | 0.006REF | |
| A2 | 0.00 | 0.05 | 0.000 | 0.002 |

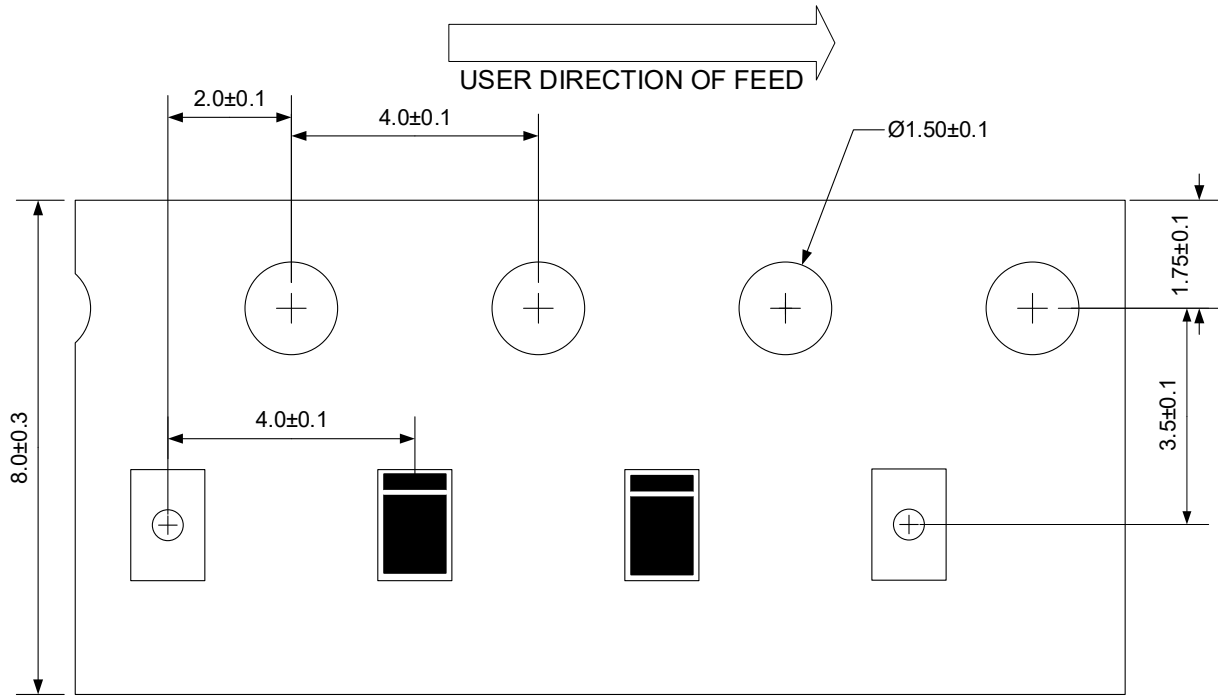
Marking



Order Information

| Order code | Package | Packaging | Reel Size |
|--------------|-----------|------------------|-----------|
| MDFN1610A52U | DFN1610-2 | 3000/Tape & Reel | 7 inch |

Load with information



Unit:mm

