

Description

The AR3318PR is an Uni-directional TVS diode, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive high-speed data lines. The AR3318PR has an ultra-low capacitance with a typical value at 0.25pF, and complies with the IEC 61000-4-2 (ESD) with $\pm 20\text{kV}$ air and $\pm 20\text{kV}$ contact discharge. The small size, ultra-low capacitance and high ESD surge protection make AR3318PR an ideal choice to protect cell phone, digital visual interfaces and other high speed ports.

Features

- Ultra low leakage: nA level
- Low operating voltage: 3.3V
- Low clamping voltage
- 8-pin leadless package
- Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
 - Air discharge: $\pm 20\text{kV}$
 - Contact discharge: $\pm 20\text{kV}$
 - IEC61000-4-5 (Lightning) 3A (8/20 μs)
- RoHS Compliant

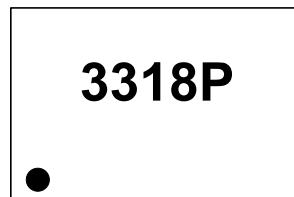
Mechanical Characteristics

- Package: DFN5515-18
- Case Material: “Green” Molding Compound
- Terminal Connections: See Diagram Below
- Marking Information: See Below

Applications

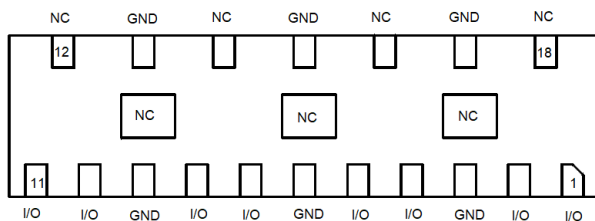
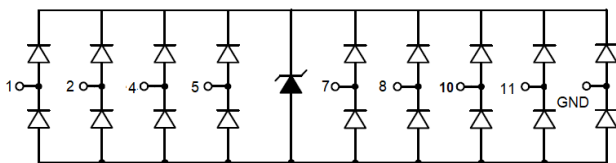
- Cellular Handsets and Accessories
- USB Ports
- Digital Visual Interface
- MMC/SD Ports

Marking Information



3318P = Device Marking Code

Equivalent Circuit and Pin Configuration



Bottom View

Circuit and Pin Schematic

Ordering Information

| Part Number | Packaging | Reel Size |
|-------------|------------------|-----------|
| AR3318PR | 3000/Tape & Reel | 7 inch |

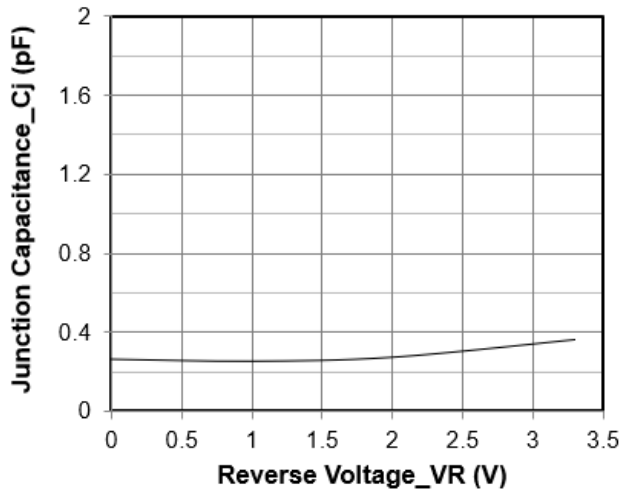
Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|--|------------------|----------------------|------------------|
| Peak Pulse Power (8/20 μs) | Ppk | 45 | W |
| Peak Pulse Current (8/20 μs) | I _{PP} | 3 | A |
| ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact) | V _{ESD} | ± 20 ± 20 | kV |
| Operating Temperature Range | T _J | -55 to +125 | $^\circ\text{C}$ |
| Storage Temperature Range | T _{stg} | -55 to +150 | $^\circ\text{C}$ |

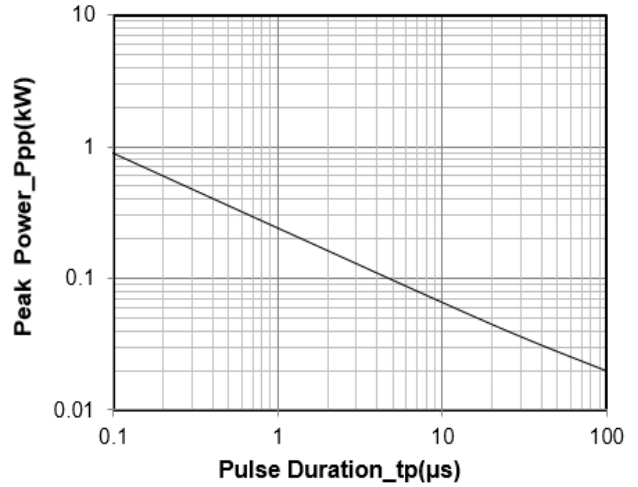
Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise specified)

| Parameter | Symbol | Min | Typ | Max | Unit | Test Condition |
|-------------------------|------------------|-----|------|-----|---------------|--|
| Reverse Working Voltage | V _{RWM} | | | 3.3 | V | |
| Breakdown Voltage | V _{BR} | 3.5 | | | V | I _T = 1mA |
| Reverse Leakage Current | I _R | | | 0.2 | μA | V _{RWM} = 3.3V |
| Clamping Voltage | V _C | | | 10 | V | I _{PP} = 1A (8 x 20 μs pulse), any I/O pin to ground |
| Clamping Voltage | V _C | | | 15 | V | I _{PP} = 3A (8 x 20 μs pulse), any I/O pin to ground |
| Junction Capacitance | C _J | | 0.25 | | pF | V _R = 0V, f = 1MHz, any I/O pin to ground |

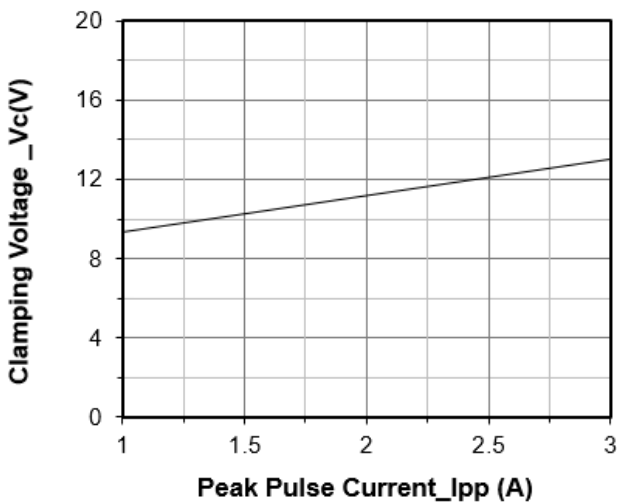
Typical Performance Characteristics (TA=25°C unless otherwise Specified)



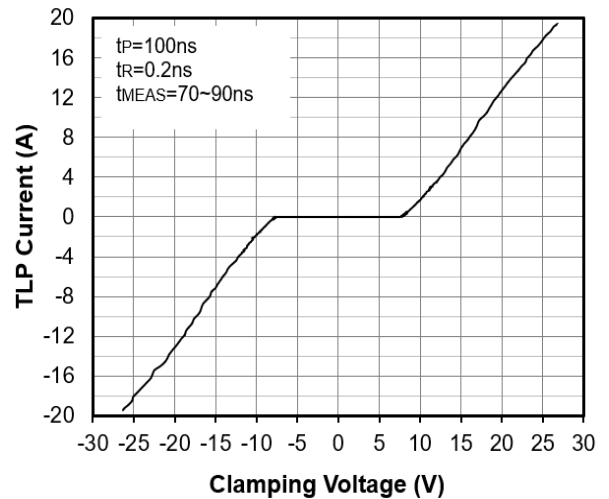
Junction Capacitance vs. Reverse Voltage



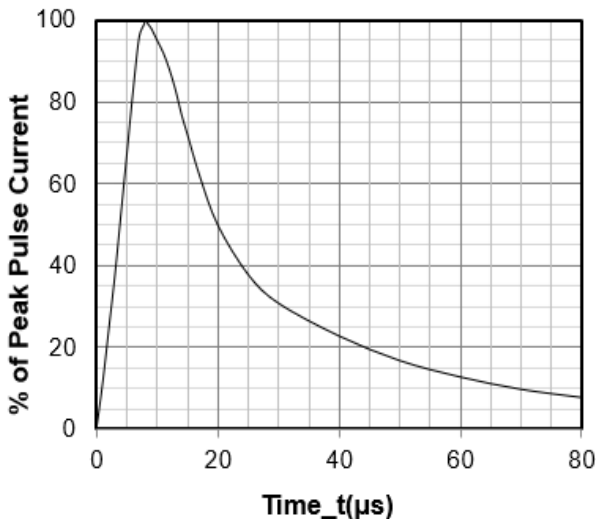
Peak Pulse Power vs. Pulse Time



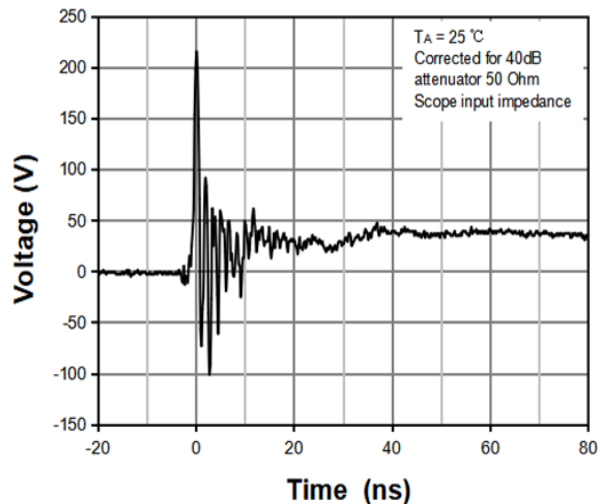
Clamping Voltage vs. Peak Pulse Current (tp = 8/20μs)



TLP Measurement

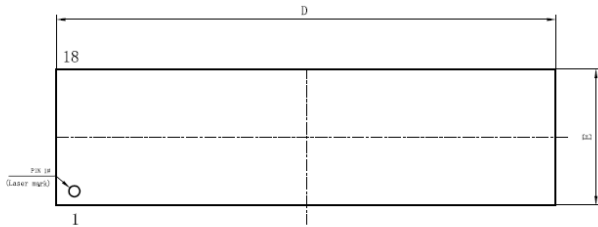


8 X 20μs Pulse Waveform

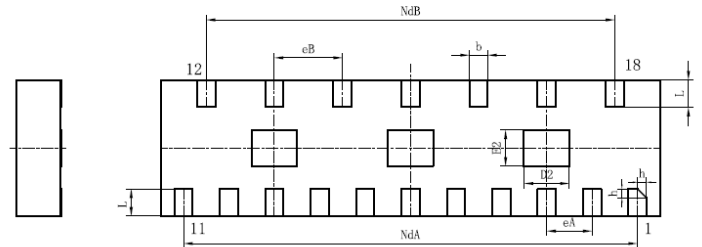


ESD Clamping Voltage

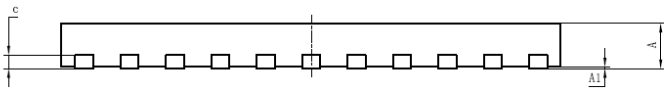
8 kV Contact per IEC61000-4-2

DFN5515-18 Package Outline Drawing


TOP VIEW



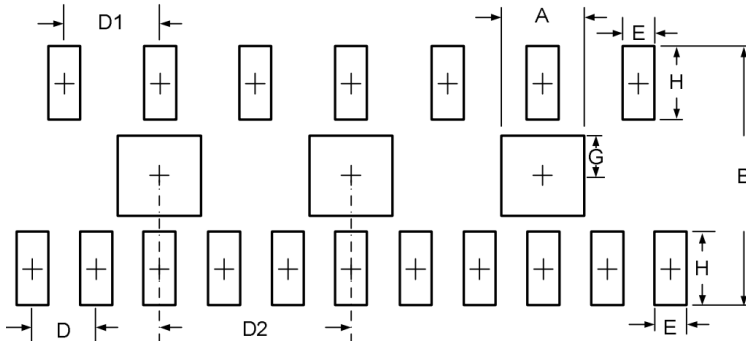
BOTTOM VIEW



SIDE VIEW

| SYM | DIMENSIONS | | |
|-----|-------------|------|------|
| | MILLIMETERS | | |
| | MIN | NOM | MAX |
| A | 0.45 | 0.50 | 0.55 |
| A1 | - | 0.02 | 0.05 |
| b | 0.15 | 0.20 | 0.25 |
| c | 0.10 | 0.15 | 0.20 |
| D | 5.45 | 5.50 | 5.55 |
| D2 | 0.45 | 0.50 | 0.55 |
| NdA | 5.00BSC | | |
| eA | 0.50BSC | | |
| eB | 0.75BSC | | |
| NdB | 4.50BSC | | |
| E | 1.45 | 1.50 | 1.55 |
| E2 | 0.35 | 0.40 | 0.45 |
| L | 0.20 | 0.30 | 0.40 |
| h | 0.05 | 0.10 | 0.15 |

Suggested Land Pattern



| SYM | DIMENSIONS | |
|-----|-------------|--------|
| | MILLIMETERS | INCHES |
| A | 0.60 | 0.024 |
| B | 1.80 | 0.071 |
| D | 0.50 | 0.020 |
| D1 | 0.75 | 0.030 |
| D2 | 1.50 | 0.059 |
| E | 0.30 | 0.012 |
| G | 0.50 | 0.020 |
| H | 0.50 | 0.020 |

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