

## Features

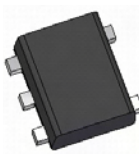
- Quad TVS in Common Anode Configuration
- Ultra-Small Surface Mount Package
- Ideal For Transient Suppression and ESD Protection
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green Device" (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

## ESD Capability

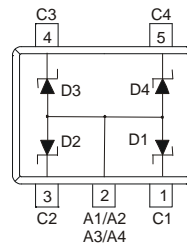
- IEC 61000-4-2 Contact Method  $\pm 8kV$
- IEC 61000-4-2 Air Discharge Method  $\pm 15kV$

## Mechanical Data

- Case: SOT-953
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Finish: Matte Tin, Annealed Over Copper Leadframe. Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 3
- Ordering Information: See Page 3
- Weight: 0.002 grams (approximate)



Top View



Device Schematic

## Thermal Characteristics

| Characteristic   | Symbol          | Value       | Unit          |
|--|-----------------|-------------|---------------|
| Peak Power Dissipation, 8x20 $\mu$ S Waveform (Note 5) | $P_{pk}$        | 18          | W             |
| Thermal Resistance, Junction-to-Ambient (Note 4)       | $R_{\theta JA}$ | 417         | $^{\circ}C/W$ |
| Operating and Storage Temperature Range                | $T_J, T_{STG}$  | -55 to +150 | $^{\circ}C$   |

## Electrical Characteristics @ $T_A = 25^{\circ}C$ unless otherwise specified

| Type Number | Marking Code | Breakdown Voltage (Note 3) |         |         | Leakage Current (Note 3) |     | Capacitance @0V Bias(pF) (Note 6) |     | Capacitance @3V Bias(pF) (Note 6) |     |
|-------------|--------------|----------------------------|---------|---------|--------------------------|-----|-----------------------------------|-----|-----------------------------------|-----|
|             |              | $V_{BR} @ I_T = 5mA$       |         |         | $I_{RM} @ V_{RM}$        |     | $C_T$                             |     | $C_T$                             |     |
|             |              | Min (V)                    | Nom (V) | Max (V) | Max( $\mu A$ )           | (V) | Typ                               | Max | Typ                               | Max |
| DUP412VP5   | V1           | 11.4                       | 12      | 12.7    | 0.5                      | 9.0 | 6.5                               | 10  | 3.5                               | 5   |

- Notes:
1. No purposefully added lead.
  2. Diodes Inc.'s "Green" policy can be found on our website at [http://www.diodes.com/products/lead\\_free/index.php](http://www.diodes.com/products/lead_free/index.php).
  3. Short duration pulse test used to minimize self-heating effect.
  4. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. Suggested Pad Layout Document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
  5. Non-repetitive current pulse per Figure 3 and derate above  $T_A = 25^{\circ}C$  per Figure 1.
  6. Per element,  $f = 1MHz, T_A = 25^{\circ}C$

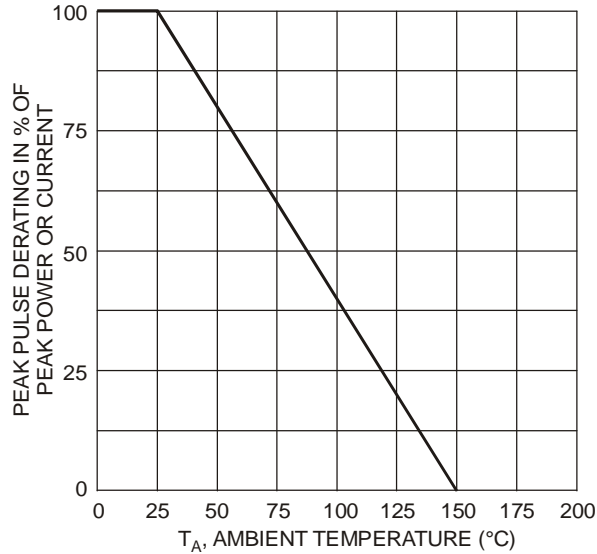


Fig. 1 Pulse Derating Curve

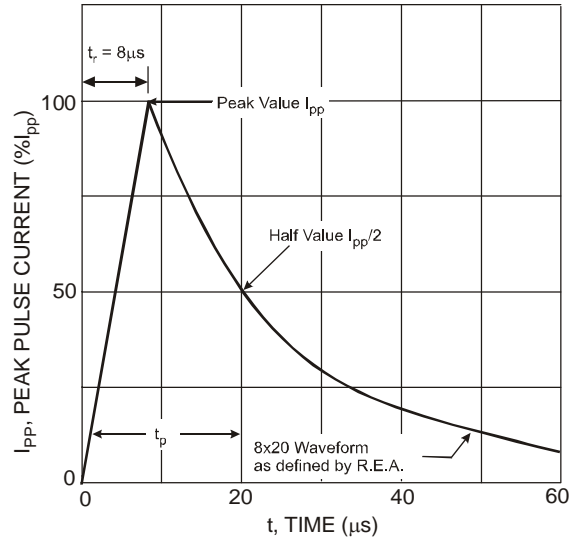


Fig. 2 Pulse Waveform

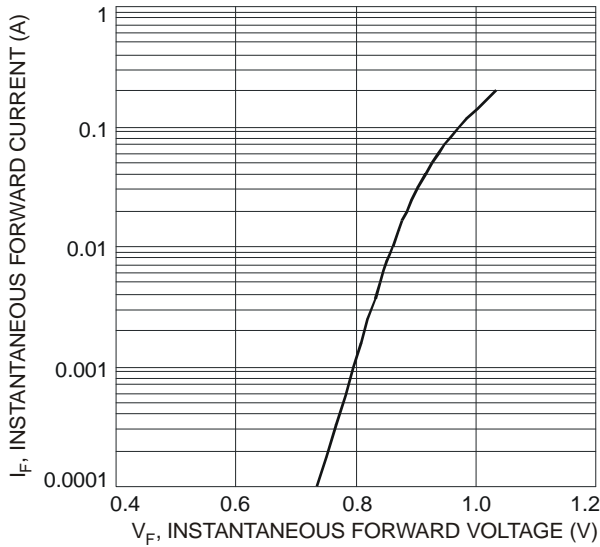


Fig. 3 Typical Forward Characteristics

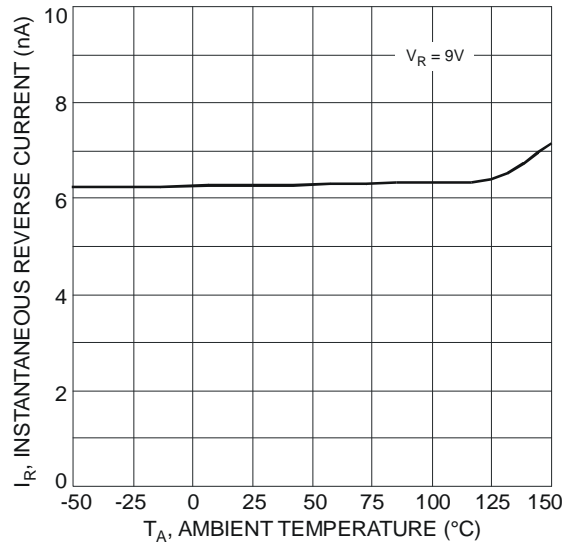


Fig. 4 Instantaneous Reverse Current vs. Ambient Temperature

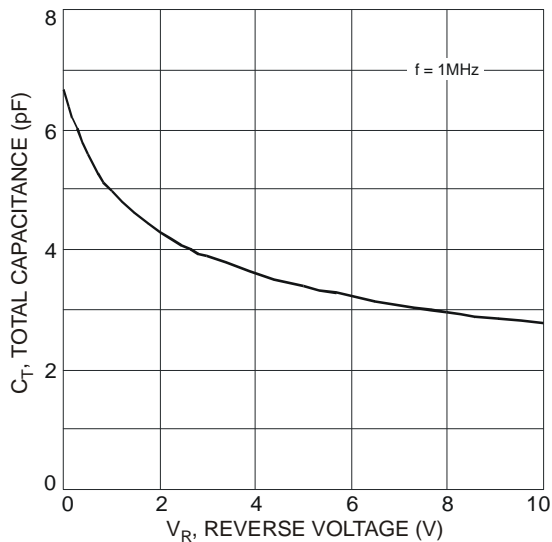


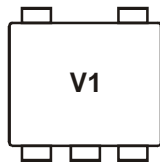
Fig. 5 Typical Total Capacitance vs. Reverse Voltage (Per Element)

**Ordering Information** (Note 7)

| Part Number | Case    | Packaging          |
|-------------|---------|--------------------|
| DUP412VP5-7 | SOT-953 | 10,000/Tape & Reel |

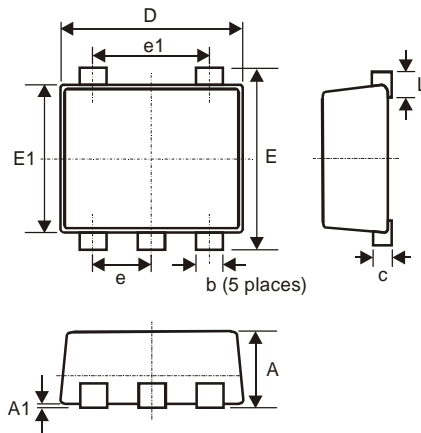
Notes: 7. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

**Marking Information**



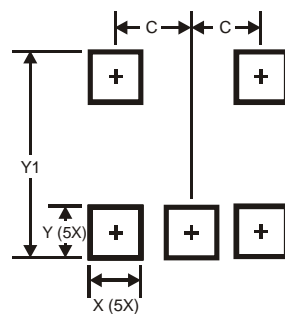
V1 = Product type marking code

**Package Outline Dimensions**



| SOT-953              |      |      |      |
|----------------------|------|------|------|
| Dim                  | Min  | Max  | Typ  |
| A                    | 0.40 | 0.50 | 0.45 |
| A1                   | 0    | 0.05 | —    |
| b                    | 0.10 | 0.20 | 0.15 |
| c                    | 0.12 | 0.18 | 0.15 |
| D                    | 0.95 | 1.05 | 1.00 |
| E                    | 0.95 | 1.05 | 1.00 |
| E1                   | 0.75 | 0.85 | 0.80 |
| e                    | —    | —    | 0.35 |
| e1                   | —    | —    | 0.70 |
| L                    | 0.05 | 0.15 | 0.10 |
| All Dimensions in mm |      |      |      |

**Suggested Pad Layout**



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 0.350         |
| X          | 0.200         |
| Y          | 0.200         |
| Y1         | 1.100         |

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