

**Features**

- Low Capacitance
- Low Operating Voltage
- Low Clamping Voltage
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free. "Green" Device (Note 1)
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

**Maximum Ratings**

- Operating Junction Temperature Range: -55°C to +125°C
- Storage Temperature Range: -55°C to +150°C

| MCC Part Number | Device Marking |
|-----------------|----------------|
| ESDLC0504P3     | 53M            |

**DP, DM, USB ID (Pins 1, 2, 3)**

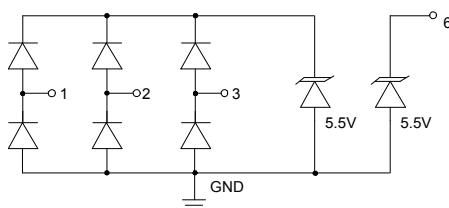
| IEC61000-4-2(ESD)          | Air Contact     | ±25KV<br>±20KV |
|----------------------------|-----------------|----------------|
| IEC61000-4-4 (EFT) @5/50ns |                 | 40A            |
| Peak Pulse Current(8/20µs) | I <sub>PP</sub> | 5A             |
| Peak Pulse Power (8/20µs)  | P <sub>PK</sub> | 60W            |

**VBus (Pin 6)**

| IEC61000-4-2(ESD)          | Air             | ±25KV |
|----------------------------|-----------------|-------|
| IEC61000-4-4 (EFT) @5/50ns |                 | 40A   |
| Peak Pulse Current(8/20µs) | I <sub>PP</sub> | 6A    |
| Peak Pulse Power (8/20µs)  | P <sub>PK</sub> | 75W   |

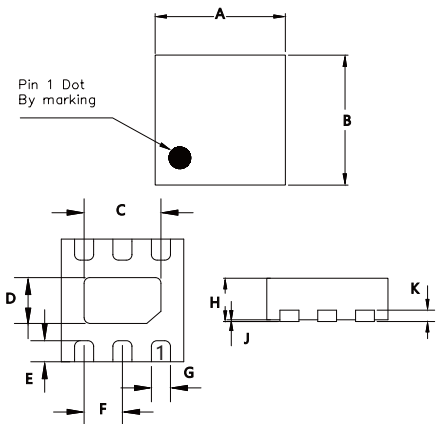
Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

**Circuit and Pin Schematic**



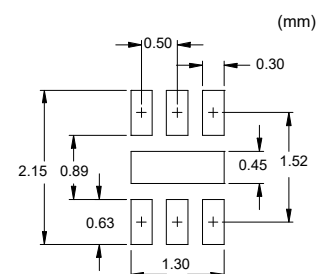
**ESD Protection Device**

**DFN1616-6**



| DIM | INCHES |       | MM   |      | NOTE |
|-----|--------|-------|------|------|------|
|     | MIN    | MAX   | MIN  | MAX  |      |
| A   | 0.061  | 0.065 | 1.55 | 1.65 |      |
| B   | 0.061  | 0.065 | 1.55 | 1.65 |      |
| C   | 0.035  | 0.041 | 0.90 | 1.05 |      |
| D   | 0.020  | 0.026 | 0.50 | 0.65 |      |
| E   | 0.008  | 0.012 | 0.20 | 0.30 |      |
| F   | 0.020  |       | 0.50 |      | TYP. |
| G   | 0.008  | 0.012 | 0.20 | 0.30 |      |
| H   | 0.020  | 0.024 | 0.50 | 0.60 |      |
| J   | 0.000  | 0.002 | 0.00 | 0.05 |      |
| K   | 0.006  |       | 0.15 |      | TYP. |

**SUGGESTED SOLDER PAD LAYOUT**



**Electrical Characteristics @ 25°C (Unless Otherwise Specified)**

| Parameter                 | Symbol    | Conditions   | Min. | Typ. | Max. | Units         |
|---------------------------|-----------|--|------|------|------|---------------|
| Reverse Working Voltage   | $V_{RWM}$ | Pin 1, 2, or 3 to Ground   |      |      | 5.5  | V             |
| Reverse Breakdown Voltage | $V_{BR}$  | $I_T = 1\text{mA}$ , Pin 6 to Ground                                   | 6.5  |      |      | V             |
| Reverse Leakage Current   | $I_R$     | $V_{RWM} = 5\text{V}$ , Pin 6 to Ground                                |      |      | 0.5  | $\mu\text{A}$ |
| Clamping Voltage          | $V_C$     | $I_{PP} = 1\text{A}$ , $t_P = 8/20\mu\text{s}$ , Any I/O Pin to Ground |      |      | 9.5  | V             |
| Clamping Voltage          | $V_C$     | $I_{PP} = 5\text{A}$ , $t_P = 8/20\mu\text{s}$ , Any I/O Pin to Ground |      |      | 12   | V             |
| Junction Capacitance      | $C_J$     | $V_R = 0\text{V}$ , $f = 1\text{MHz}$ , Between Any I/O Pins           |      |      | 0.4  | pF            |
| Junction Capacitance      | $C_J$     | $V_R = 0\text{V}$ , $f = 1\text{MHz}$ , Any I/O Pin to Ground          |      |      | 0.8  | pF            |
| <b>VBus TVS</b>           |           |  |      |      |      |               |
| Reverse Working Voltage   | $V_{RWM}$ | Pin 6 to Ground  |      |      | 5.5  | V             |
| Reverse Breakdown Voltage | $V_{BR}$  | $I_T = 1\text{mA}$ , Pin 6 to Ground                                   | 6    | 7    | 9    | V             |
| Reverse Leakage Current   | $I_R$     | $V_{RWM} = 5.5\text{V}$ , Pin 6 to Ground                              |      |      | 3    | $\mu\text{A}$ |
| Clamping Voltage          | $V_C$     | $I_{PP} = 1\text{A}$ , $t_P = 8/20\mu\text{s}$ , Pin 6 to Ground       |      |      | 8    | V             |
| Clamping Voltage          | $V_C$     | $I_{PP} = 6\text{A}$ , $t_P = 8/20\mu\text{s}$ , Pin 6 to Ground       |      |      | 12.5 | V             |
| Junction Capacitance      | $C_J$     | $V_R = 0\text{V}$ , $f = 1\text{MHz}$ , Pin 6 to Ground                |      |      | 60   | pF            |

## Curve Characteristics

Fig. 1 - 8 X 20 $\mu$ s Pulse Waveform

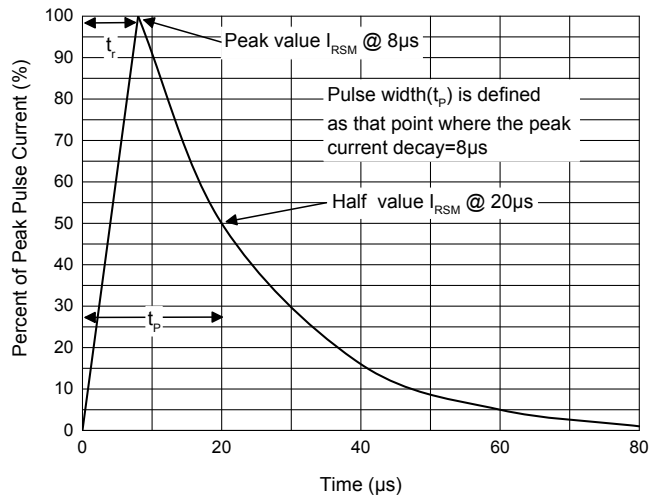


Fig. 2 - Pulse Derating Curve

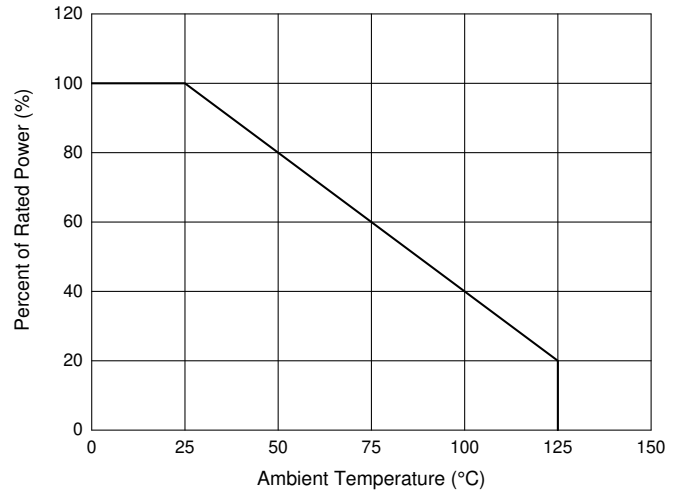


Fig. 3 - Capacitance Characteristics

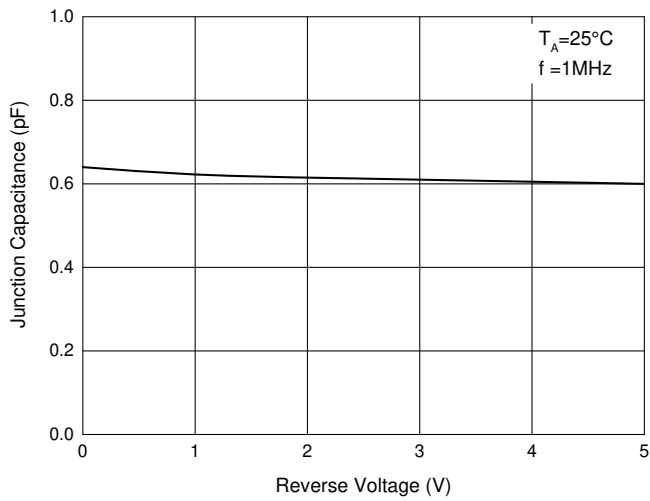
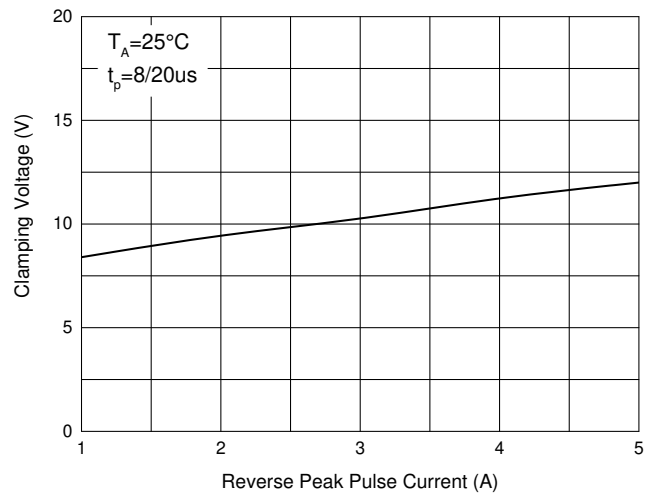


Fig. 4 - Clamping Voltage Characteristics



## Ordering Information

| Device         | Packing               |
|----------------|-----------------------|
| Part Number-TP | Tape&Reel: 3Kpcs/Reel |

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