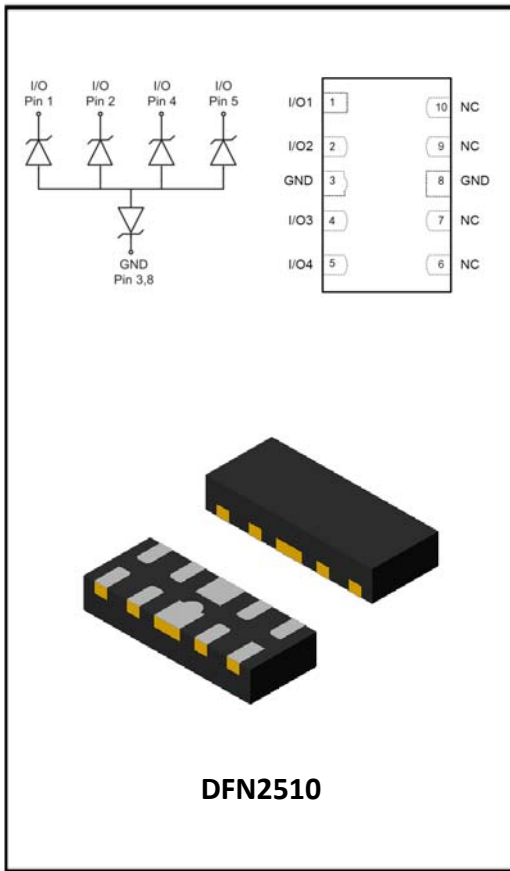


4-Line, Bi-directional, Ultra-low Capacitance, Transient Voltage Suppressor



Features

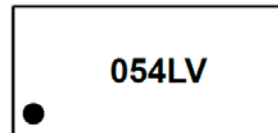
- Operating voltage: 5V
- Transient protection for each line according to IEC61000-4-2(ESD): $\pm 20\text{kV}$ (contact)
IEC61000-4-5(surge): 3A (8/20 μs)
- Ultra low capacitance: $C_j=0.15\text{pF}$ typ
- Ultra low leakage
- Low clamping voltage
- Up to 4 lines protects
- RoHS Compliant

Applications

- HDMI 1.3/1.4/2.0, USB 2.0/3.0 and MDDI ports
- Monitors and flat panel displays
- Set-top box and Digital TV
- Video graphics cards
- Digital Visual Interface (DVI)
- Notebook Computers
- PCI Express and Serial SATA Ports

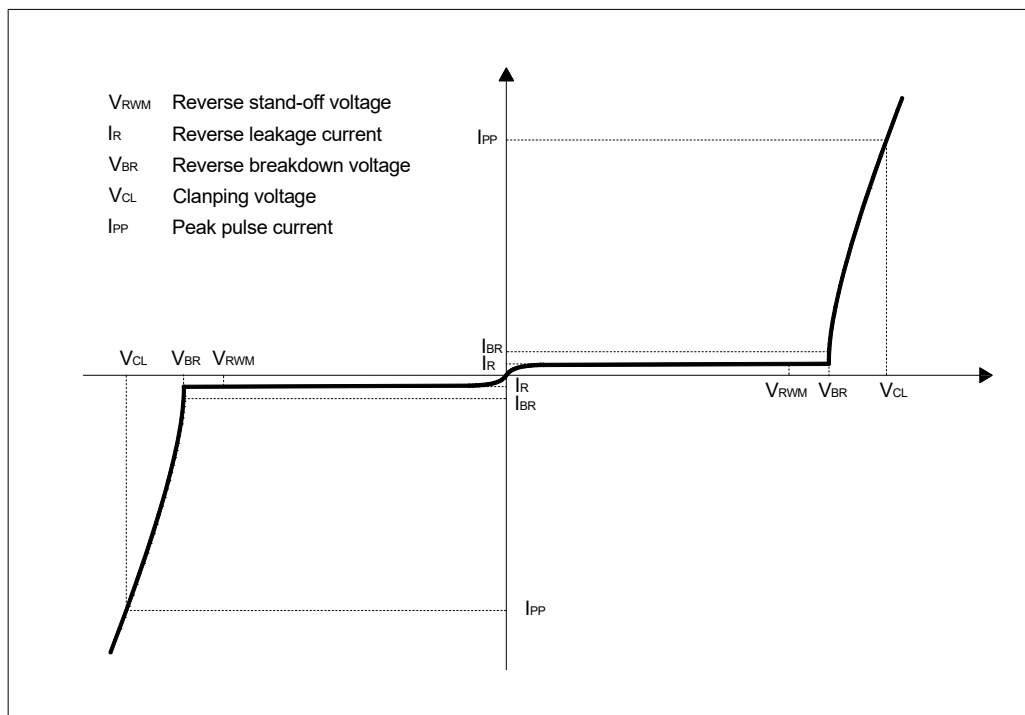
Mechanical Data

- Package: DFN2510-10 (2.5 \times 1.0 \times 0.5mm)
- Terminals: Tin plated leads, solderabl per J-STD-002 and JESD22-B102
- Moisture Sensitivity: Level 3 per J-STD-020
- Marking Information: See Below



054LV= Device Marking Code
Dot denotes Pin1

Definitions of electrical characteristics





ESDULC0504P5

■Maximum Ratings

| PARAMETER | SYMBOL | LIMITS | UNIT |
|---|-----------|----------|-------------|
| Peak pulse power ($t_p = 8/20\mu s$) | P_{pk} | 45 | W |
| Peak pulse current ($t_p = 8/20\mu s$) | I_{pp} | 3 | A |
| ESD according to IEC61000-4-2 air discharge | V_{ESD} | ± 20 | KV |
| ESD according to IEC61000-4-2 contact discharge | | ± 20 | |
| Junction temperature | T_J | -55~125 | $^{\circ}C$ |
| Storage temperature | T_{STG} | -55~150 | $^{\circ}C$ |

■Electrical Characteristics ($T_a=25^{\circ}C$ Unless otherwise specified)

| PARAMETER | Symbol | UNIT | Conditions | Min | Typ | Max |
|---------------------------------|-----------|---------|---|-----|------|-----|
| Reverse maximum working voltage | V_{RWM} | V | Any I/O pin to ground | | | 5.0 |
| Reverse leakage current | I_R | μA | $V_{RWM} = 5.0V$, any I/O pin to ground | | | 0.5 |
| Reverse breakdown voltage | V_{BR} | V | $I_T = 1mA$, any I/O pin to ground | 6.0 | | |
| Clamping voltage ¹⁾ | V_{CL} | V | $I_{PP} = 3A$, $t_p = 8/20\mu s$ | | 15 | 16 |
| Junction capacitance | CJ | pF | $V_R = 0V$, $f = 1MHz$ Any I/O pin to GND | | 0.15 | 0.2 |

Notes:

(1). Non-repetitive current pulse, according to IEC61000-4-5

■Ordering Information (Example)

| PREFERED P/N | PACKING CODE | UNIT WEIGHT(mg) | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|--------------|--------------|------------------|----------------------|-------------------------|----------------------------|---------------|
| ESDULC0504P5 | F1 | Approximate 3.48 | 3000 | 30000 | 120000 | 7 reel |



■ Characteristics (Typical)

Fig.1 8/20 μ s waveform per IEC61000-4-5

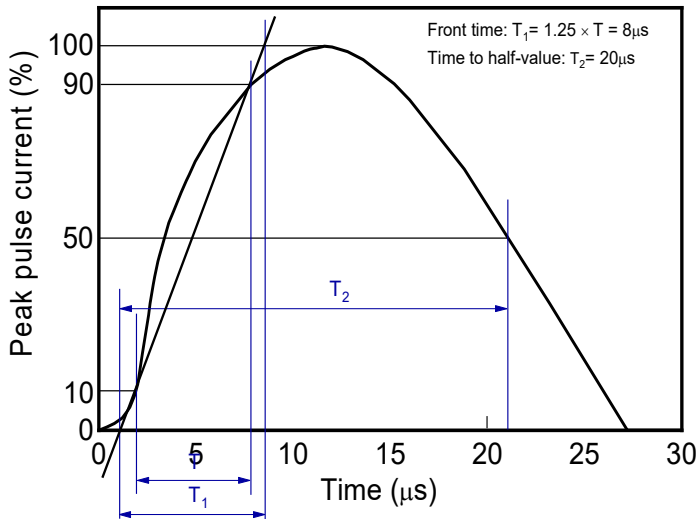


Fig.2 Contact discharge current waveform per IEC61000-4-2

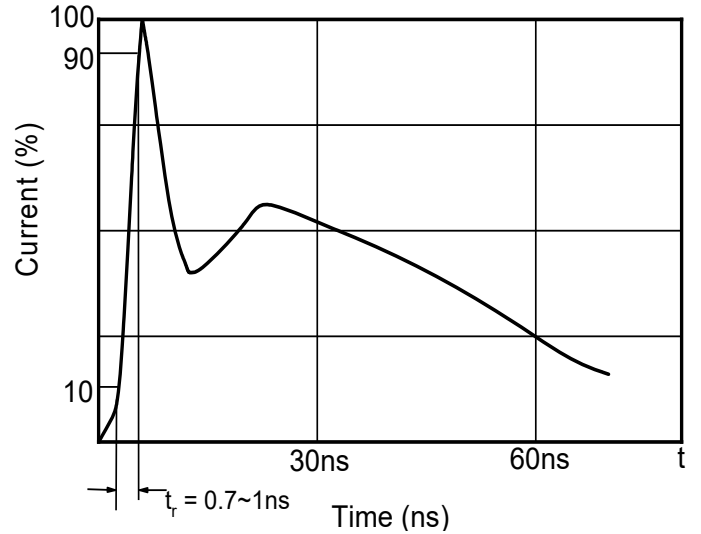


Fig.3 Clamping voltage vs. Peak pulse current

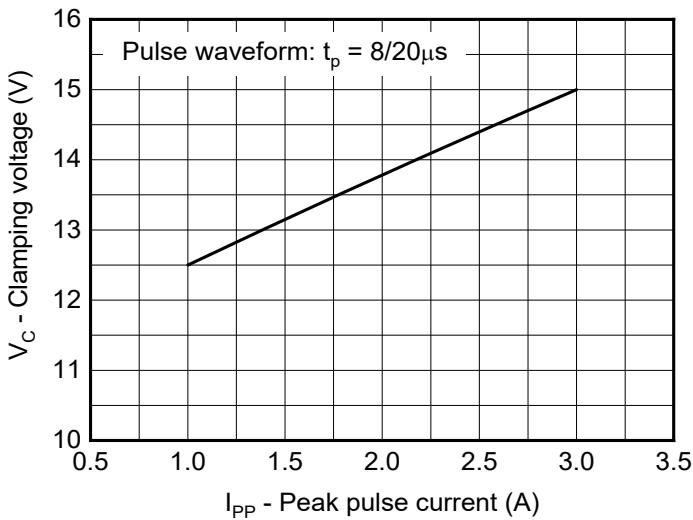


Fig.4 Capacitance vs. Reverse voltage

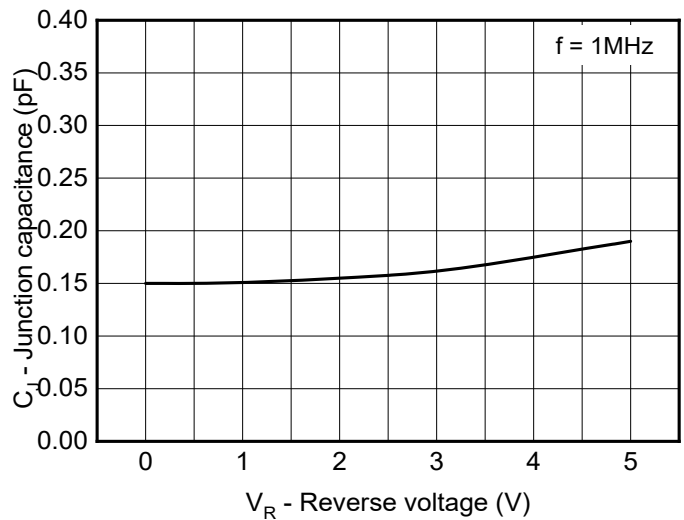


Fig.5 Non-repetitive peak pulse power vs. Pulse time

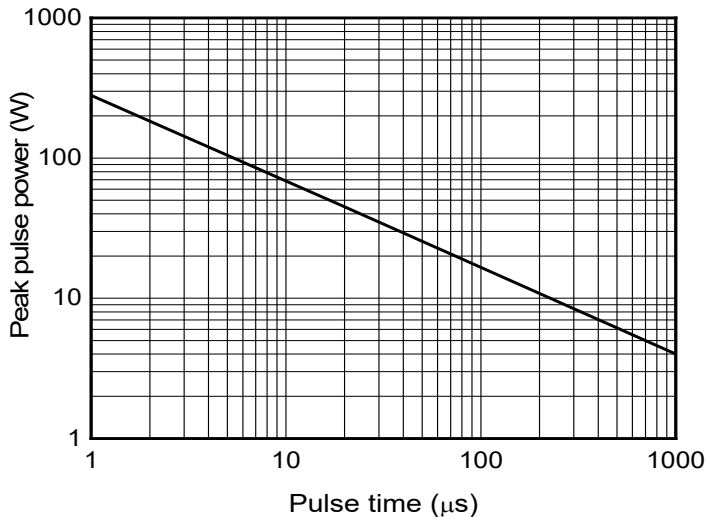


Fig.6 Power derating vs. Ambient temperature

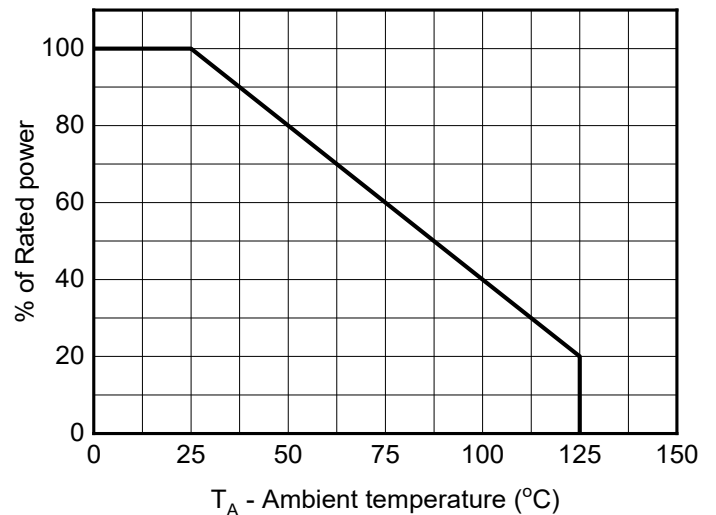
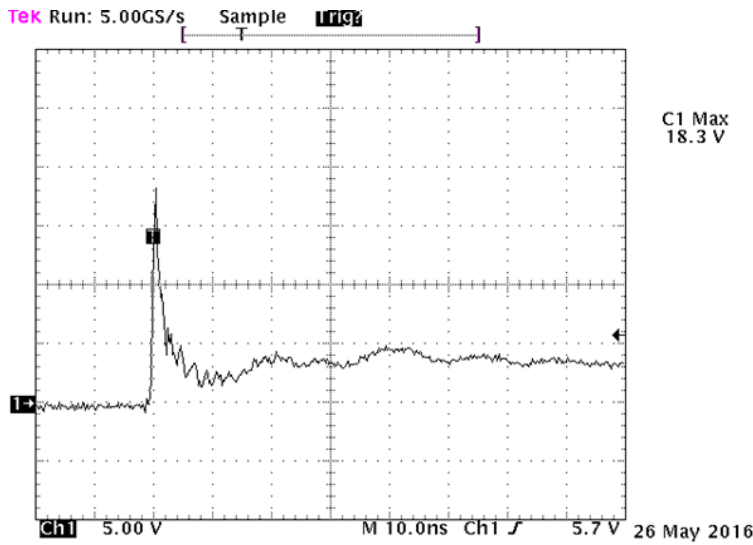
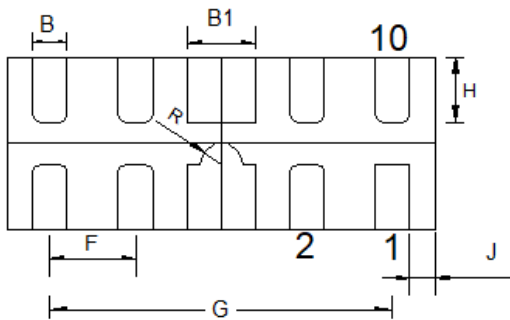
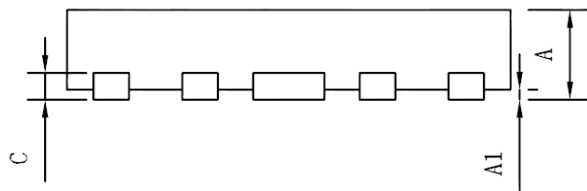
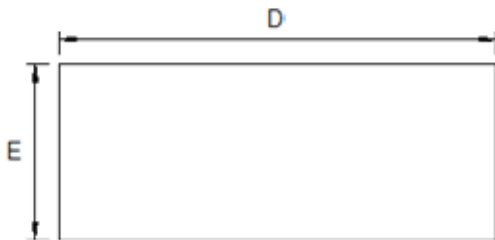


Fig.7 ESD clamping
(+8kV contact discharge per IEC61000-4-2)

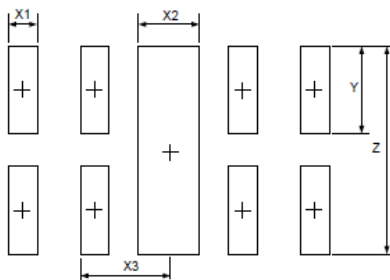


■ Outline Dimensions



| SYMBOL | MILLIMETER | | |
|--------|------------|------|------|
| | MIN | NOM | MAX |
| A | 0.40 | 0.45 | 0.50 |
| A1 | -- | 0.02 | 0.05 |
| B | 0.15 | 0.20 | 0.25 |
| B1 | 0.35 | 0.40 | 0.45 |
| C | 0.10 | 0.15 | 0.20 |
| D | 2.45 | 2.50 | 2.55 |
| E | 0.95 | 1.00 | 1.05 |
| F | 0.50 BSC | | |
| G | 2.00 BSC | | |
| H | 0.30 | 0.38 | 0.46 |
| R | 0.125 BSC | | |
| J | 0.10 | 0.15 | 0.20 |

■ Soldering Footprint



| SYM | DIMENSIONS | |
|-----|-------------|--------|
| | MILLIMETERS | INCHES |
| X1 | 0.200 | 0.008 |
| X2 | 0.400 | 0.016 |
| X3 | 0.600 | 0.024 |
| Y | 0.600 | 0.024 |
| Z | 1.400 | 0.056 |

Notes:

This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.



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