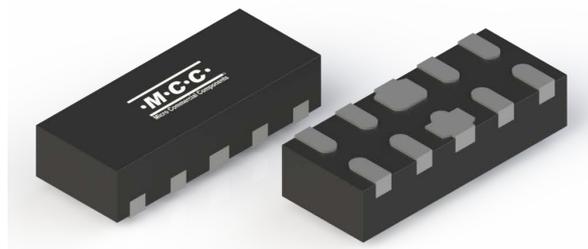


**4-Line Uni-directional Ultra Low Capacitance ESD**

**Features**

- Transient protection:
  - IEC 61000-4-2 (ESD)  $\pm 25\text{kV}$  (Air),  $\pm 20\text{kV}$  (Contact)
  - IEC 61000-4-5 (Lightning) 3A (8/20 $\mu\text{s}$ )
- Uni-directional ESD protection of four lines
- Reverse working voltage,  $V_{RWM}$ : 5V
- Capacitance: 0.4pF (typical)
- Clamping voltage: 15V (max)
- Reverse leakage current: 200nA max at  $V_R = 5\text{V}$
- Solid-state silicon-avalanche



**DFN2510-10**



**Applications**

- HDMI 1.3, HDMI 1.4, and HDMI 2.0
- USB 2.0, USB 3.0
- Digital Visual Interface (DVI)

**Mechanical Data**

- Package: DFN2510-10
- Moisture Sensitivity Level 1, per J-STD-020
- Halogen Free. "Green" Device (Note1)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

**Body Marking and Pin Layout**

Marking Code	Simplified Outline	Internal Structure
	<p>Transparent top view</p>	

**Ordering Information**

Product Name	Reel Size	Packing Type	Qty/Reel
ESDSL0534DFN10-TP	7"	Tape & Reel	3,000

For packaging details, visit our website at <https://www.mccsemi.com/Package/List>

**4-Line Uni-directional Ultra Low Capacitance ESD**

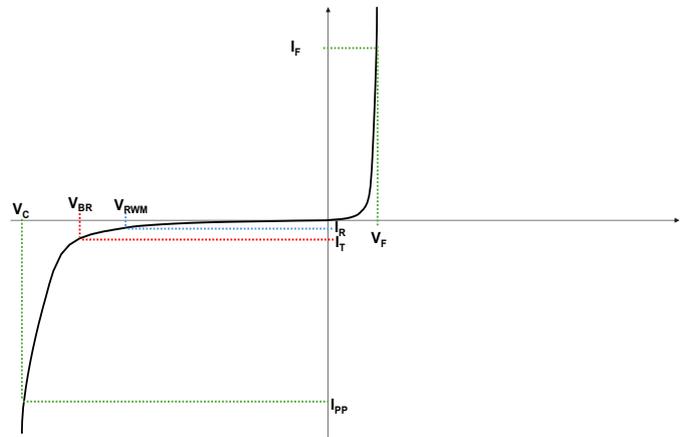
**Maximum Ratings (T<sub>A</sub>=25°C unless otherwise specified)**

Parameter		Symbol	Rating	Unit
IEC61000-4-2(ESD)	Air	V <sub>ESD</sub>	±25	kV
	Contact	V <sub>ESD</sub>	±20	kV
Peak Pulse Current (8/20µs) (Note 2)		I <sub>PP</sub>	3	A
Peak Pulse Power (8/20µs) (Note 2)		P <sub>PK</sub>	45	W
Operating Junction Temperature Range		T <sub>J</sub>	-55 to +125	°C
Storage Temperature Range		T <sub>STG</sub>	-55 to +150	°C

- Note:
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and 1000ppm antimony compounds.
  2. Non-repetitive current pulse 8/20µs exponential decay waveform according to IEC61000-4-5.

**Parameter Definition**

Symbol	Parameter
V <sub>RWM</sub>	Peak Reverse Working Voltage
I <sub>R</sub>	Reverse Leakage Current @ V <sub>RWM</sub>
V <sub>BR</sub>	Breakdown Voltage @ I <sub>T</sub>
I <sub>T</sub>	Test Current
I <sub>PP</sub>	Maximum Reverse Peak Pulse Current
V <sub>C</sub>	Clamping Voltage @ I <sub>PP</sub>
P <sub>PK</sub>	Peak Pulse Power
C <sub>J</sub>	Junction Capacitance
I <sub>F</sub>	Forward Current
V <sub>F</sub>	Forward Voltage @ I <sub>F</sub>



**Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise specified)**

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Reverse Working Voltage	V <sub>RWM</sub>				5	V
Reverse Breakdown Voltage	V <sub>BR</sub>	I <sub>T</sub> = 1mA	6		8.5	V
Reverse Leakage Current	I <sub>R</sub>	V <sub>RWM</sub> = 5V			0.2	µA
Forward Voltage	V <sub>F</sub>	I <sub>F</sub> = 15mA			1.2	V
Clamping Voltage (Note3)	V <sub>C</sub>	I <sub>PP</sub> = 1A, t <sub>p</sub> = 8/20µs			9	V
		I <sub>PP</sub> = 3A, t <sub>p</sub> = 8/20µs			15	
Junction Capacitance	C <sub>J</sub>	V <sub>R</sub> = 0V, f = 1MHz; I/O to GND		0.4	0.5	pF
Junction Capacitance	C <sub>J</sub>	V <sub>R</sub> = 0V, f = 1MHz; I/O to I/O		0.2	0.25	pF
Dynamic Resistance (Note4)	R <sub>DYN</sub>	TLP, t <sub>p</sub> = 100ns		0.68		Ω

- Note:
3. Non-repetitive current pulse 8/20µs exponential decay waveform according to IEC61000-4-5.
  4. TLP parameter: Z<sub>0</sub> = 50Ω, t<sub>p</sub> = 100ns, t<sub>r</sub> = 2ns, averaging window from 60ns to 80ns. R<sub>DYN</sub> is calculated from 4A to 16A.

4-Line Uni-directional Ultra Low Capacitance ESD

Curve Characteristics

Fig. 1 - 8 X 20µs Pulse Waveform

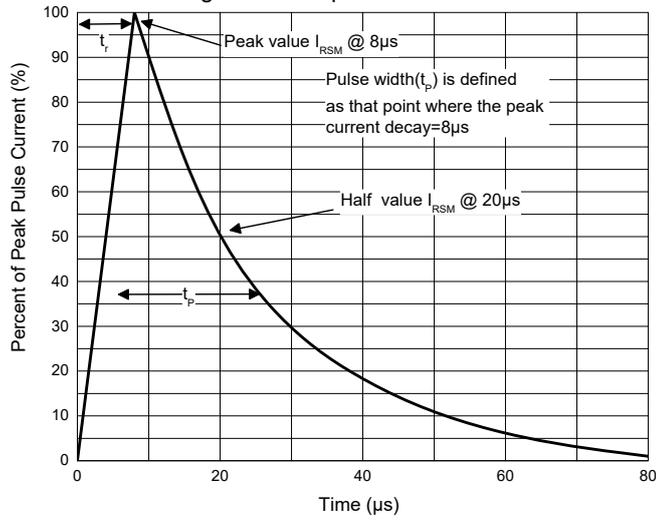


Fig. 2 - Non-Repetitive Peak Pulse Power

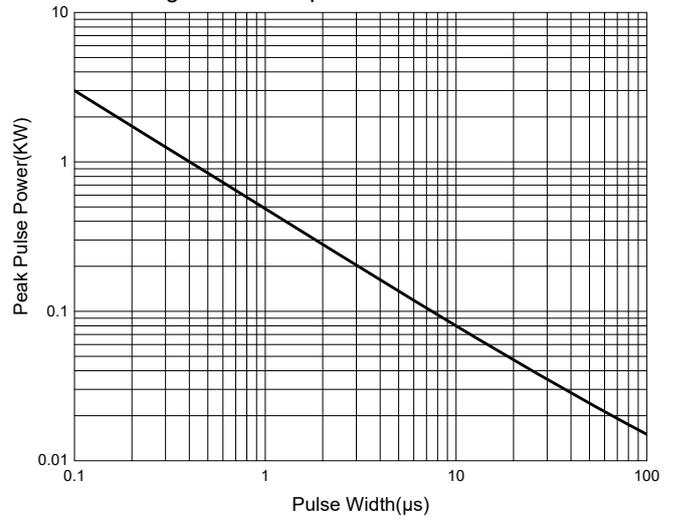


Fig. 3 - Capacitance Characteristics

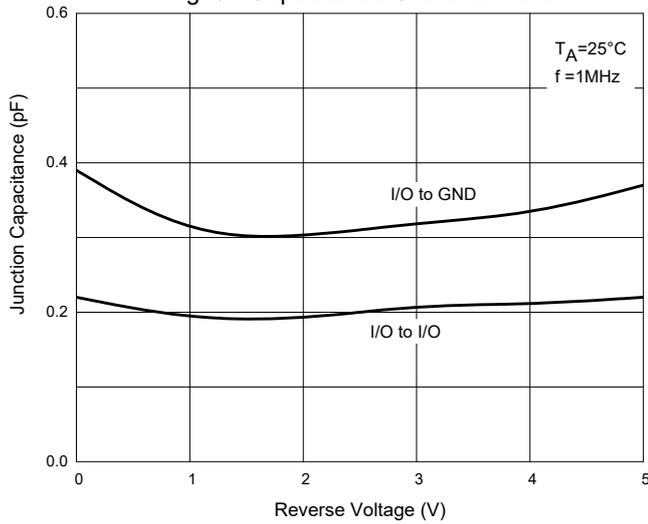


Fig. 4 - Clamping Voltage Characteristics

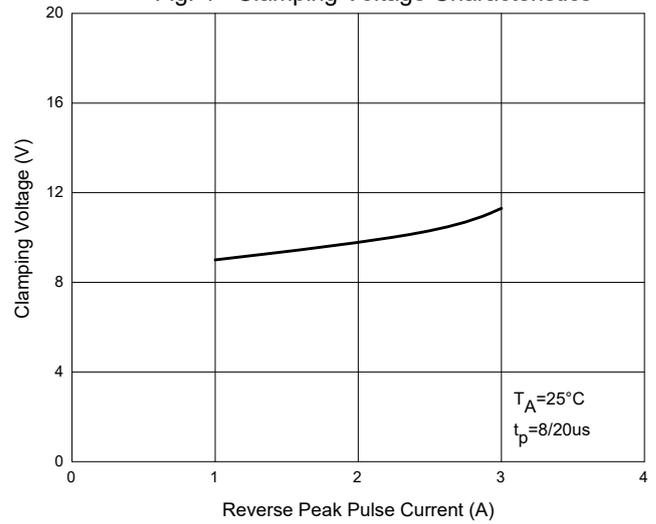


Fig. 5 - TLP Curve

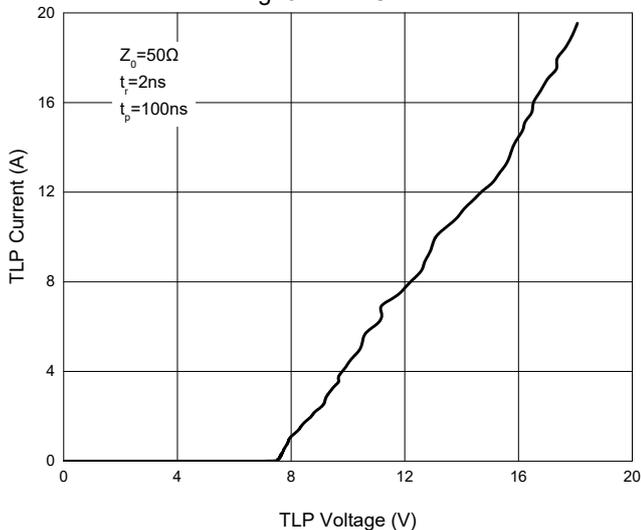
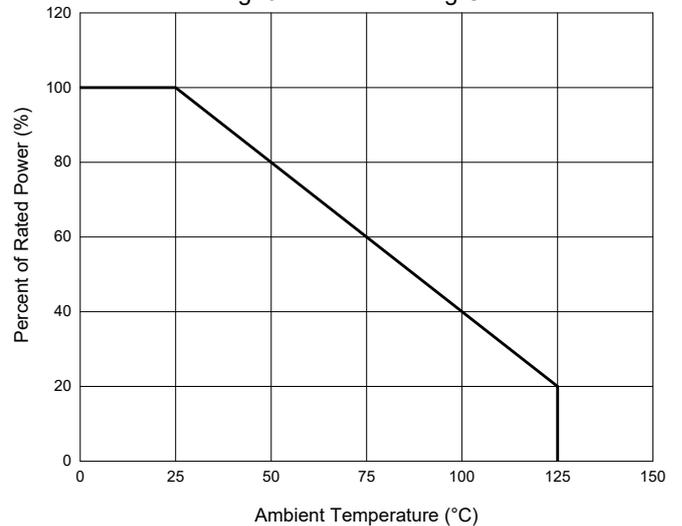
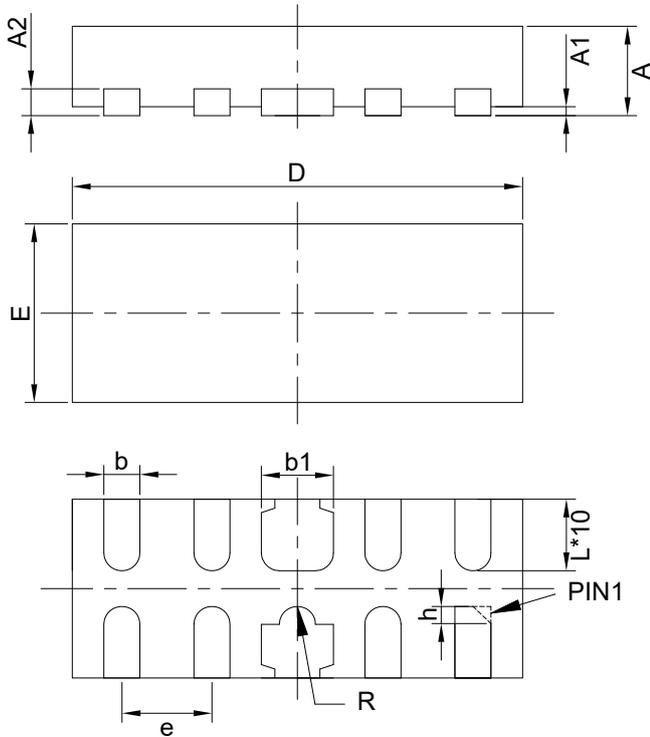


Fig. 6 - Pulse Derating Curve

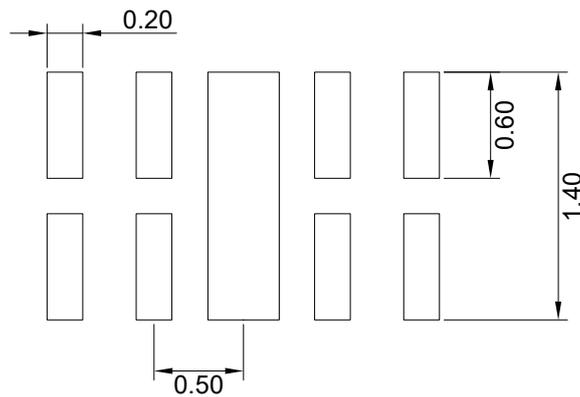


Package Outline



DIM	INCH		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.018	0.026	0.45	0.65	
A1	0.000	0.002	0.00	0.05	
A2	0.006		0.15		TYP
b	0.005	0.010	0.13	0.25	
b1	0.012	0.020	0.30	0.50	
D	0.094	0.102	2.40	2.60	
e	0.020		0.50		TYP
E	0.035	0.043	0.90	1.10	
L	0.011	0.020	0.28	0.50	
h	0.004		0.10		TYP
R	0.004		0.10		TYP

Suggested Pad Layout (Unit:mm)



Notes:

1. The suggested land pattern dimensions have been provided for reference only.
2. For further information, please refer to document IPC-7351A.

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