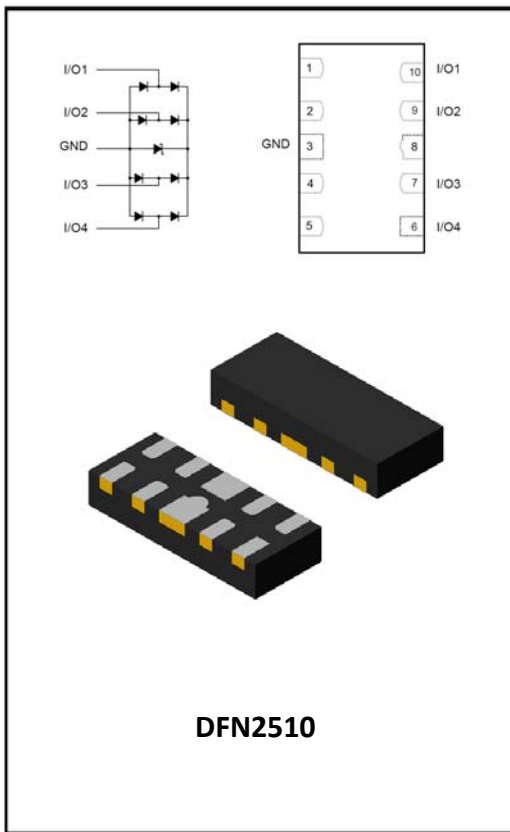


## 4-Line, Uni-directional, Ultra-low Capacitance, Transient Voltage Suppressor



### Features

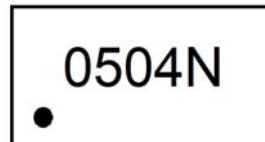
- Stand-off voltage: 5V Max
- Transient protection for each line according to IEC61000-4-2(ESD):  $\pm 10\text{kV}$  (contact)  
IEC61000-4-5(surge): 5A (8/20 $\mu\text{s}$ )
- Ultra-low capacitance:  $C_J = 0.8\text{ pF}$  Max
- Low leakage current
- Low clamping voltage
- Up to 4 lines protects
- RoHS Compliant

### Applications

- HDMI1.3 /1.4/2.0, USB 2.0/3.0 Type C
- Monitors and flat panel displays
- Set-top box and Digital TV
- MDDI ports
- Video graphics cards
- Digital Video Interface (DVI)
- Notebook Computers
- PCI Express and Serial SATA Ports

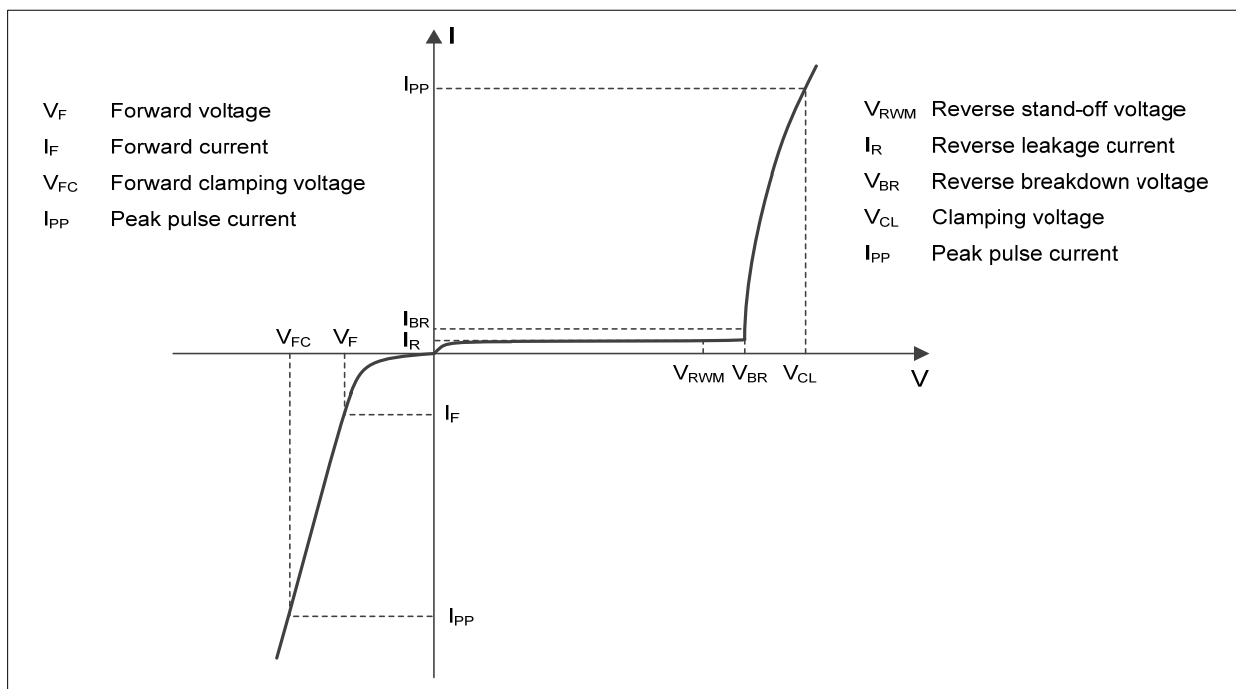
### Mechanical Data

- Lead Finish: Matte Tin
- Case Material: "Green" Molding Compound.
- Moisture Sensitivity: Level 3 per J-STD-020
- Marking Information: See Below



0504N : Device Marking Code  
Dot denotes Pin1

### ■Definitions of electrical characteristics





### ■Maximum Ratings

PARAMETER	SYMBOL	LIMITS	UNIT
Peak pulse power ( $t_p = 8/20\mu s$ )	$P_{pk}$	90	W
Peak pulse current ( $t_p = 8/20\mu s$ )	$I_{pp}$	5	A
ESD according to IEC61000-4-2 air discharge	$V_{ESD}$	$\pm 15$	KV
ESD according to IEC61000-4-2 contact discharge		$\pm 8$	
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	$I_R$	$\mu A$	$V_{RWM} = 5.0V$ , any I/O pin to ground			0.9
Reverse breakdown voltage	$V_{(BR)}$	V	$I_T = 1mA$ , any I/O pin to ground	6.1		8.5
Clamping voltage <sup>3)</sup>	$V_{CL}$	V	$I_{PP} = 1A$ , $t_p = 8/20\mu s$			11
		V	$I_{PP} = 5A$ , $t_p = 8/20\mu s$			18
Junction capacitance	CJ	pF	$V_R = 0V$ , $f = 1MHz$ Any I/O pin to GND			0.8
			$V_R = 0V$ , $f = 1MHz$ Between any I/O pin			0.4

Notes:

- 1) TLP parameter:  $Z_0 = 50\Omega$ ,  $t_p = 100ns$ ,  $t_r = 2ns$ , averaging window from 60ns to 80ns.
- 2) Contact discharge mode, according to IEC61000-4-2.
- 3) Non-repetitive current pulse, according to IEC61000-4-5.

### ■Ordering Information (Example)

PREFERED P/N	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
0504N	3000	30000	120000	7 reel

■ Characteristics (Typical)

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

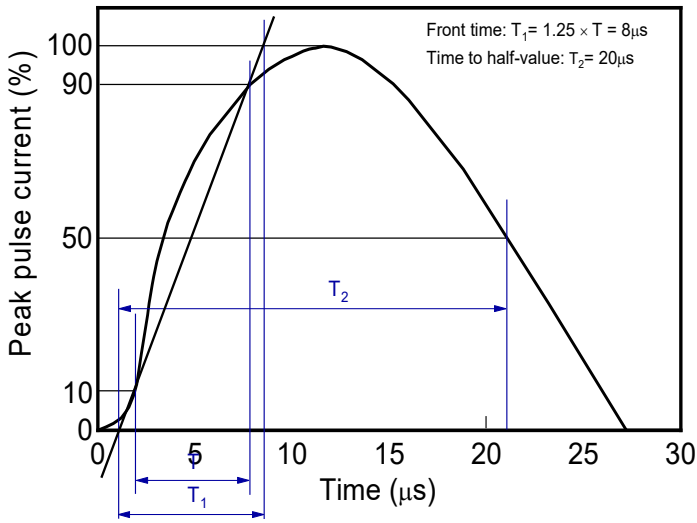


Fig.2 Contact discharge current waveform per IEC61000-4-2



Fig.3 Clamping voltage vs. Peak pulse current

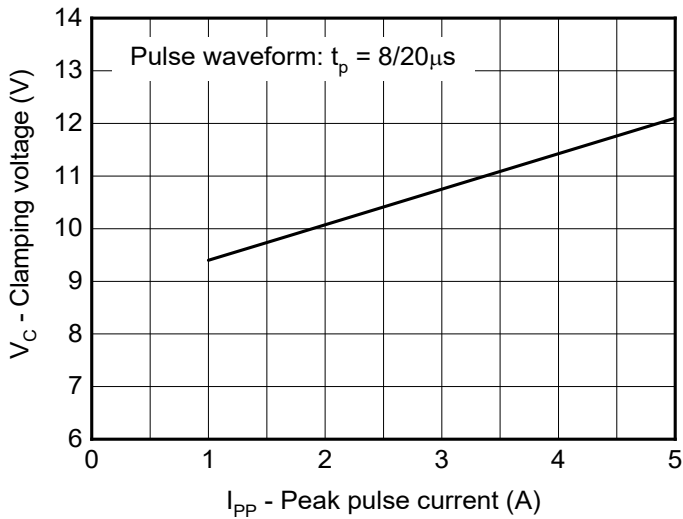


Fig.4 Capacitance vs. Reverse voltage

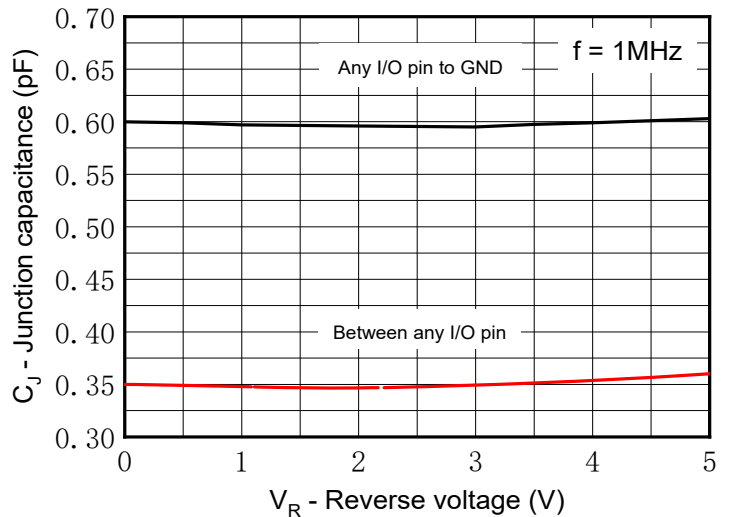


Fig.5 Non-repetitive peak pulse power vs. Pulse time

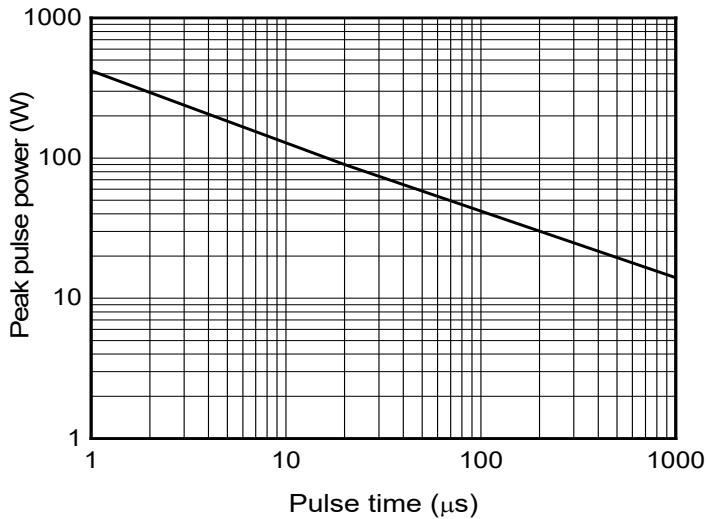
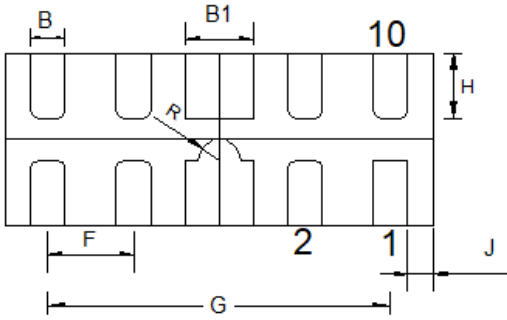
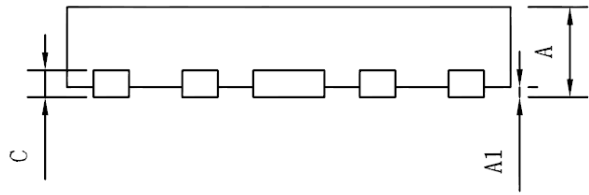
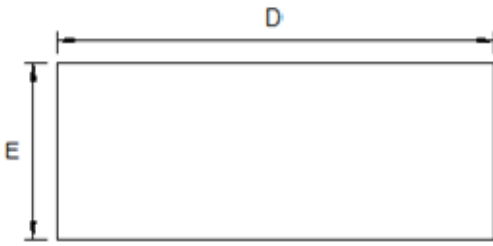


Fig.6 Power derating vs. Ambient temperature

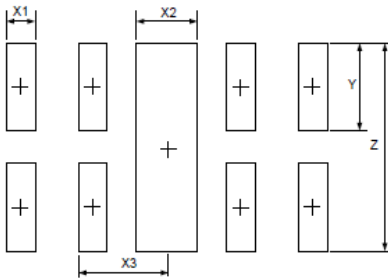


## ■ Outline Dimensions



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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