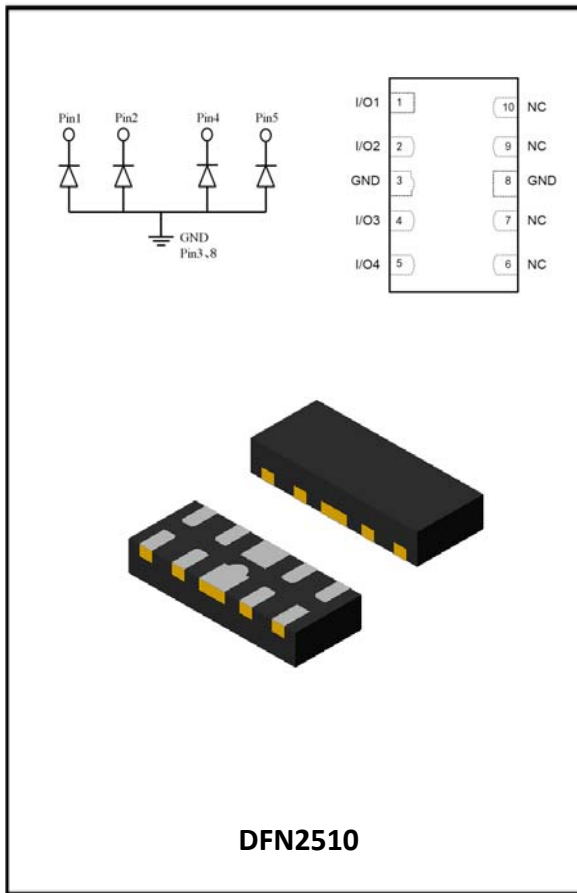


## 4-Line, Uni-directional, Ultra-low Capacitance, Transient Voltage Suppressor



### Features

- Stand-off voltage: 3.3V Max
- Transient protection for each line according to IEC61000-4-2(ESD):  $\pm 15\text{kV}$  (contact) IEC61000-4-5(surge): 7A (8/20 $\mu\text{s}$ )
- Ultra-low capacitance:  $C_J = 0.4 \text{ pF typ}$
- Low leakage current
- Low clamping voltage
- Up to 4 lines protects
- RoHS Compliant

### Applications

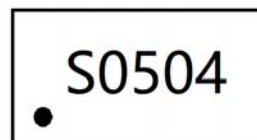
- HDMI 2.0, USB 3.0/3.1 Type C
- Monitors and flat panel displays
- Set-top box and Digital TV
- MDDI ports
- Video graphics cards
- Digital Video Interface (DVI)
- Notebook Computers
- PCI Express and Serial SATA Ports

#### Caution:

*This Device is designed for signal line protection only. Not intended to be used under bias, not for application with a power line.*

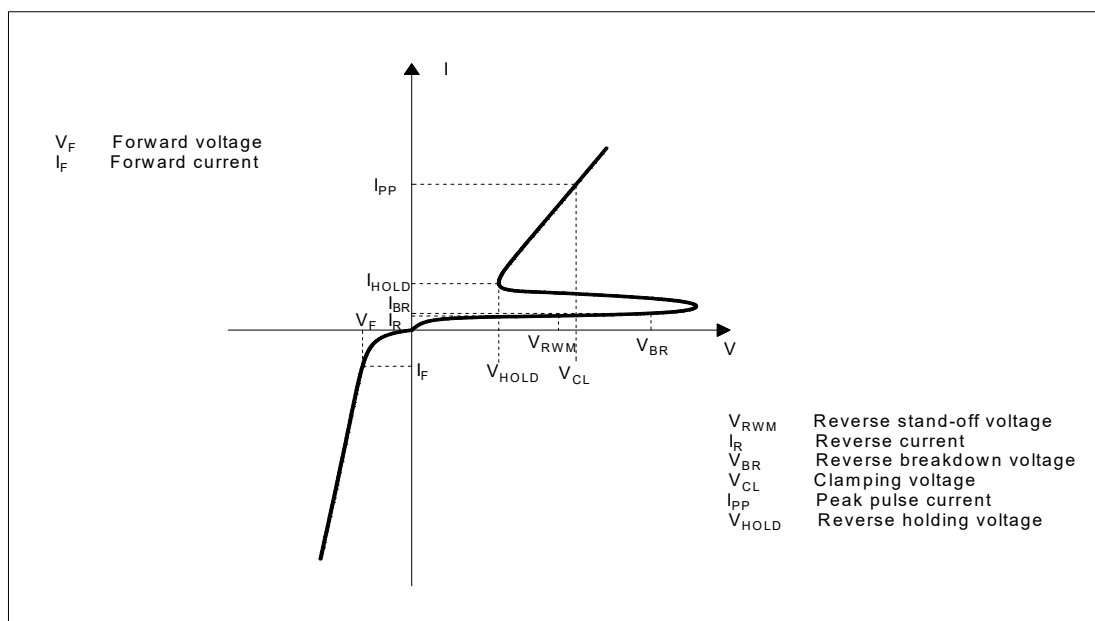
### Mechanical Data

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



0524L: Device Marking Code  
Dot denotes Pin1

### ■ Definitions of electrical characteristics





# SESDULC3304P5

## ■Maximum Ratings

PARAMETER	SYMBOL	LIMITS	UNIT
Peak pulse power ( $t_p = 8/20\mu s$ )	$P_{pk}$	56	W
Peak pulse current ( $t_p = 8/20\mu s$ )	$I_{pp}$	7	A
ESD according to IEC61000-4-2 air discharge	$V_{ESD}$	$\pm 15$	KV
ESD according to IEC61000-4-2 contact discharge		$\pm 15$	
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			3.3
Reverse leakage current	$I_R$	nA	$V_{RWM} = 3.3V$ , any I/O pin to ground			200
Reverse breakdown voltage	$V_{(BR)}$	V	$I_T = 1mA$ , any I/O pin to ground	6.0	8.0	10.0
Reverse holding voltage	$V_{HOLD}$	V	$I_{HOLD} = 50mA$ , any I/O pin to ground		2	
Clamping voltage <sup>1)</sup>	$V_{CL}$	V	$I_{PP} = 16A$ , $t_p = 100ns$		3.2	
Clamping voltage <sup>2)</sup>	$V_{CL}$	V	$I_{PP} = 1A$ , $t_p = 8/20\mu s$		2.5	5
		V	$I_{PP} = 7A$ , $t_p = 8/20\mu s$		4.5	8
Junction capacitance	CJ	pF	$V_R = 0V$ , $f = 1MHz$ Any I/O pin to GND		0.4	0.55
			$V_R = 1.5V$ , $f = 1MHz$ Any I/O pin to GND		0.3	0.45

Notes:

- 1) TLP parameter:  $Z_0 = 50\Omega$ ,  $t_p = 100ns$ ,  $t_r = 2ns$ , averaging window from 60ns to 80ns.
- 2) 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
SESDULC3304P5	F1	Approximate 3.48	3000	30000	120000	7 reel



## ■ Characteristics (Typical)

Fig.1 8/20 $\mu$ s waveform per IEC61000-4-5

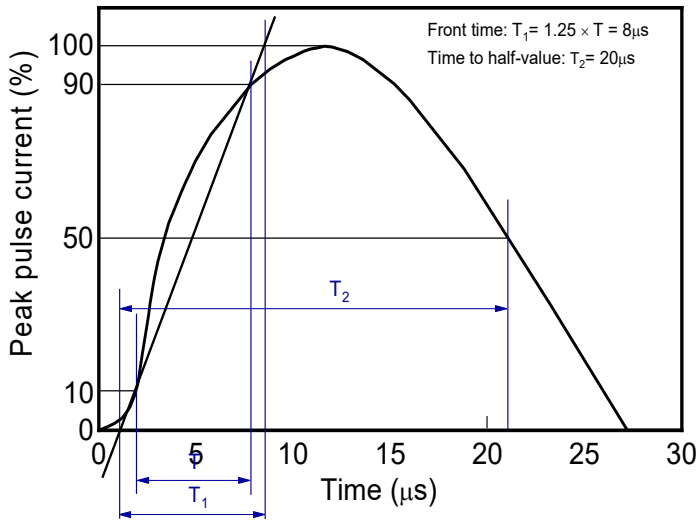


Fig.2 Contact discharge current waveform per IEC61000-4-2

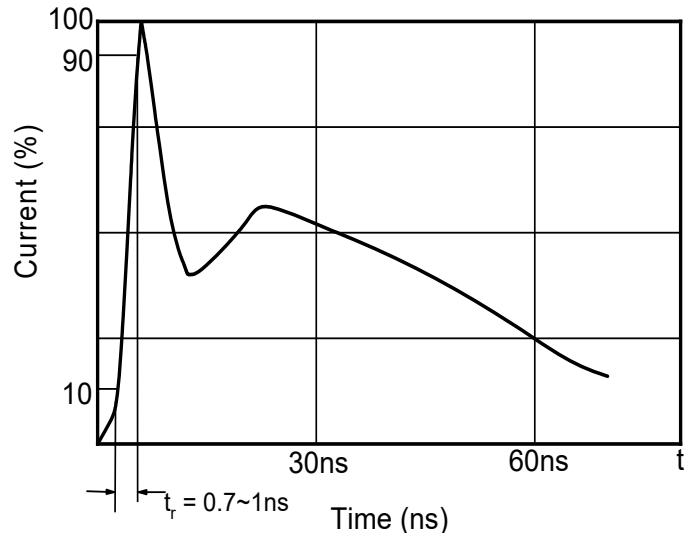


Fig.3 Clamping voltage vs. Peak pulse current

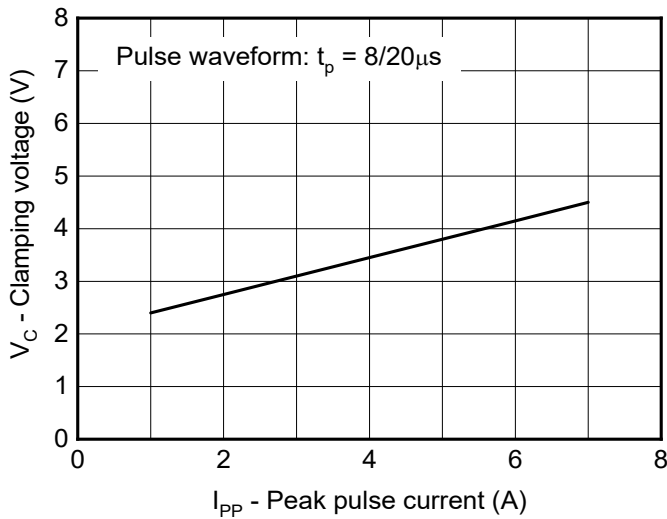


Fig.4 Capacitance vs. Reverse voltage

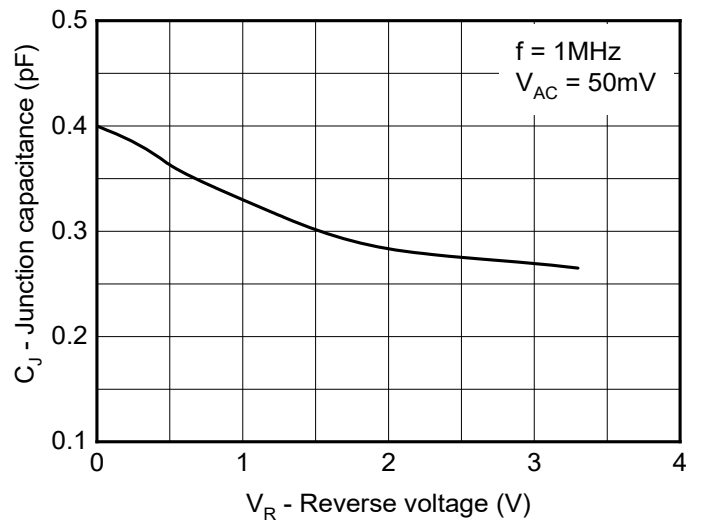


Fig.5 Non-repetitive peak pulse power vs. Pulse time

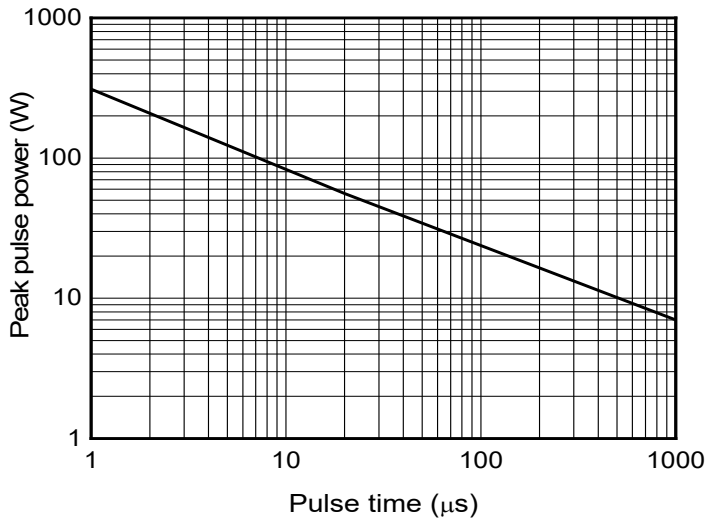
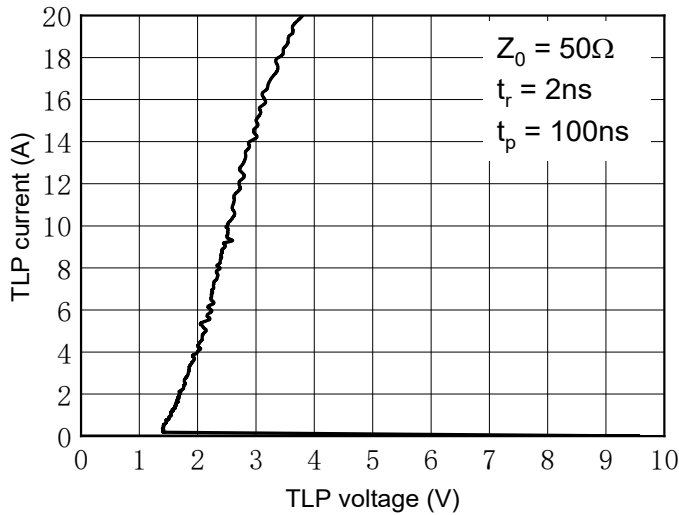


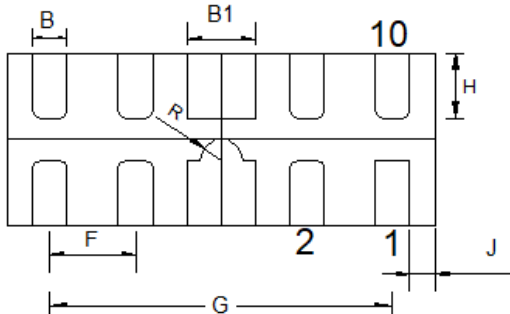
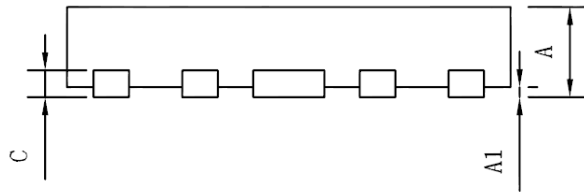
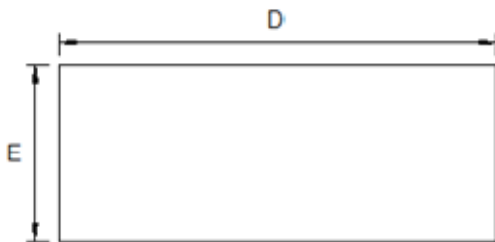
Fig.6 Power derating vs. Ambient temperature



Fig.7 TLP Measurement

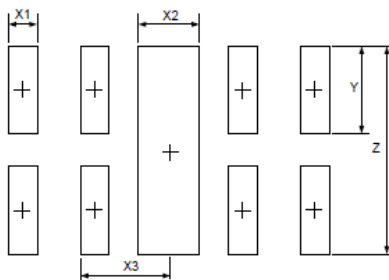


## Outline Dimensions



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.



## SESDULC3304P5

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