

1.Description

The ESD5471S is a bi-directional TVS (Transient Voltage Suppressor). It is specifically designed to protect sensitive electronic components which are connected to low speed data lines and control lines from over-stress caused by ESD (Electrostatic Discharge), EFT (Electrical Fast Transients) and Lightning.

3.Features

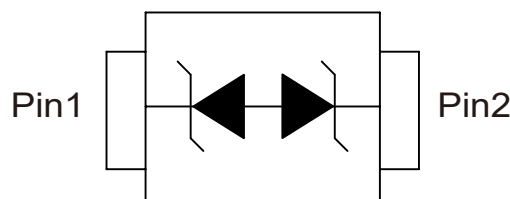
- Reverse stand-off voltage: $\pm 5V$ Max
- Transient protection for each line according to
 - IEC61000-4-2 (ESD): $\pm 30kV$ (contact and air discharge)
 - IEC61000-4-4 (EFT): 40A (5/50ns)
 - IEC61000-4-5 (surge): 6A (8/20 μs)

2.Applications

- Cellular handsets
- Tablets
- Laptops
- Other portable devices
- Network communication devices

- Capacitance: $C_J = 9pF$ typ.
- Low leakage current
- Low clamping voltage:
 - $V_{CL} = 12V$ typ. @ $I_{PP} = 16A$ (TLP)
- Solid-state silicon technology

4.Pinning information



SOD-523

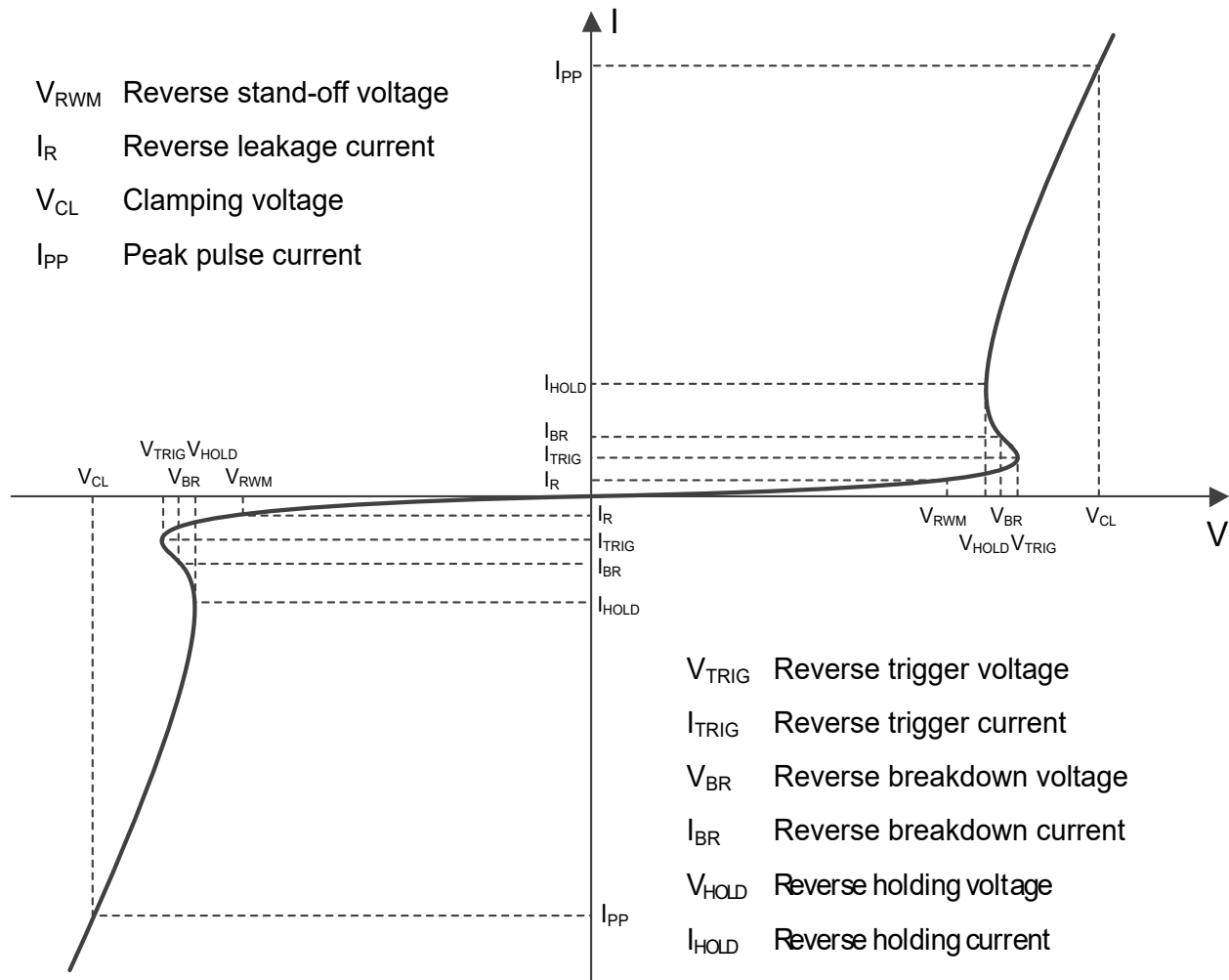


5. Absolute Maximum Ratings

Parameter	Symbol	Value	Units
Peak pulse power ($t_p=8/20\mu s$)	P_{PK}	72	W
Peak pulse current ($t_p=8/20\mu s$)	I_{PP}	6	A
ESD according to IEC61000-4-2 air discharge	V_{ESD}	± 30	kV
ESD according to IEC61000-4-2 contact discharge		± 30	kV
Junction temperature	T_J	125	$^{\circ}C$
Operating temperature	T_{OP}	-40 to 85	$^{\circ}C$
Lead temperature	T_L	260	$^{\circ}C$
Storage temperature	T_{STG}	-55 to 150	$^{\circ}C$



6. Electrical characteristics ($T_A=25^\circ\text{C}$, unless otherwise noted)



Definitions of electrical characteristics



7. Electrical Characteristic ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Reverse stand-off voltage	V _{RWM}				±5	V
Reverse leakage current	I _R	V _{RWM} =5V			1	μA
Reverse breakdown voltage	V _(BR)	I _{BR} =1mA	5.1			V
Reverse holding voltage	V _{HOLD}	I _{HOLD} =50mA	5.1			V
Clamping voltage ¹⁾	V _{CL}	I _{PP} =16A, t _p =100ns		12		V
Clamping voltage ²⁾		V _{ESD} =8kV		12		V
Clamping voltage ³⁾		I _{PP} =1A, t _p =8/20μs			8	V
		I _{PP} =6A, t _p =8/20μs			12	V
Dynamic resistance ¹⁾	R _{DYN}			0.28		Ω
Junction capacitance	C _J	V _R =0V, f=1MHz		9	12	pF
		V _R =5V, f=1MHz		6	8	pF

Notes:

- 1) TLP parameter: $Z_0=50\Omega$, $t_{\text{p}}=100\text{ns}$, $t_{\text{r}}=2\text{ns}$, averaging window from 60ns to 80ns. R_{DYN} is calculated from 4A to 16A.
- 2) Contact discharge mode, according to IEC61000-4-2.
- 3) Non-repetitive current pulse, according to IEC61000-4-5



8.1 Typical characteristic

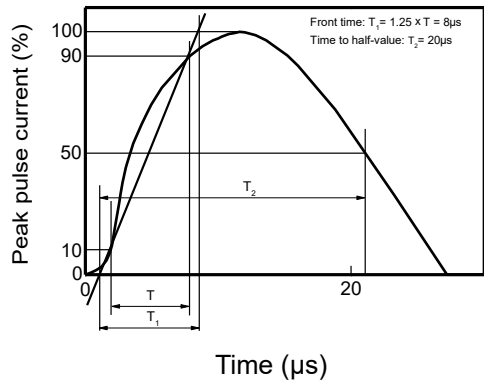
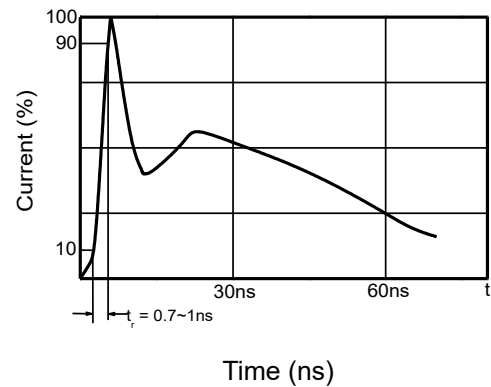
Figure 1: 8/20 μ s waveform per IEC61000-4-5

Figure 2: Contact discharge current waveform per IEC61000-4-2

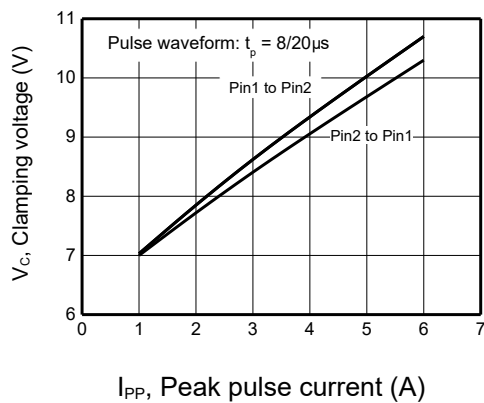


Figure 3: Clamping voltage vs. Peak pulse current

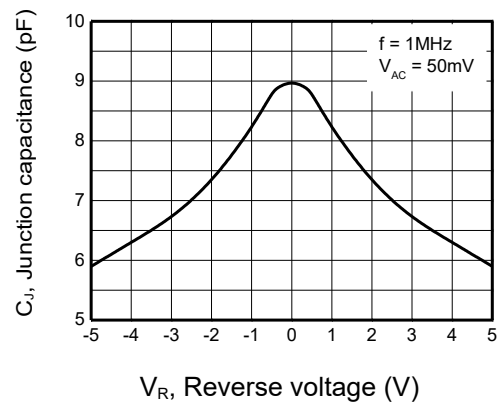


Figure 4: Capacitance vs. Reverse voltage

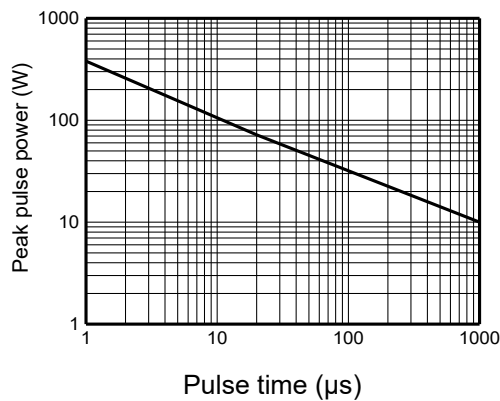


Figure 5: Non-repetitive peak pulse power vs. Pulse time

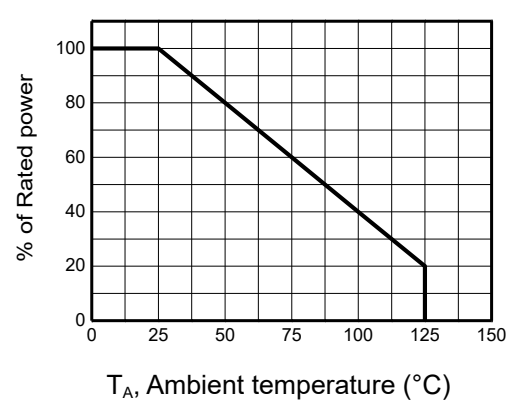
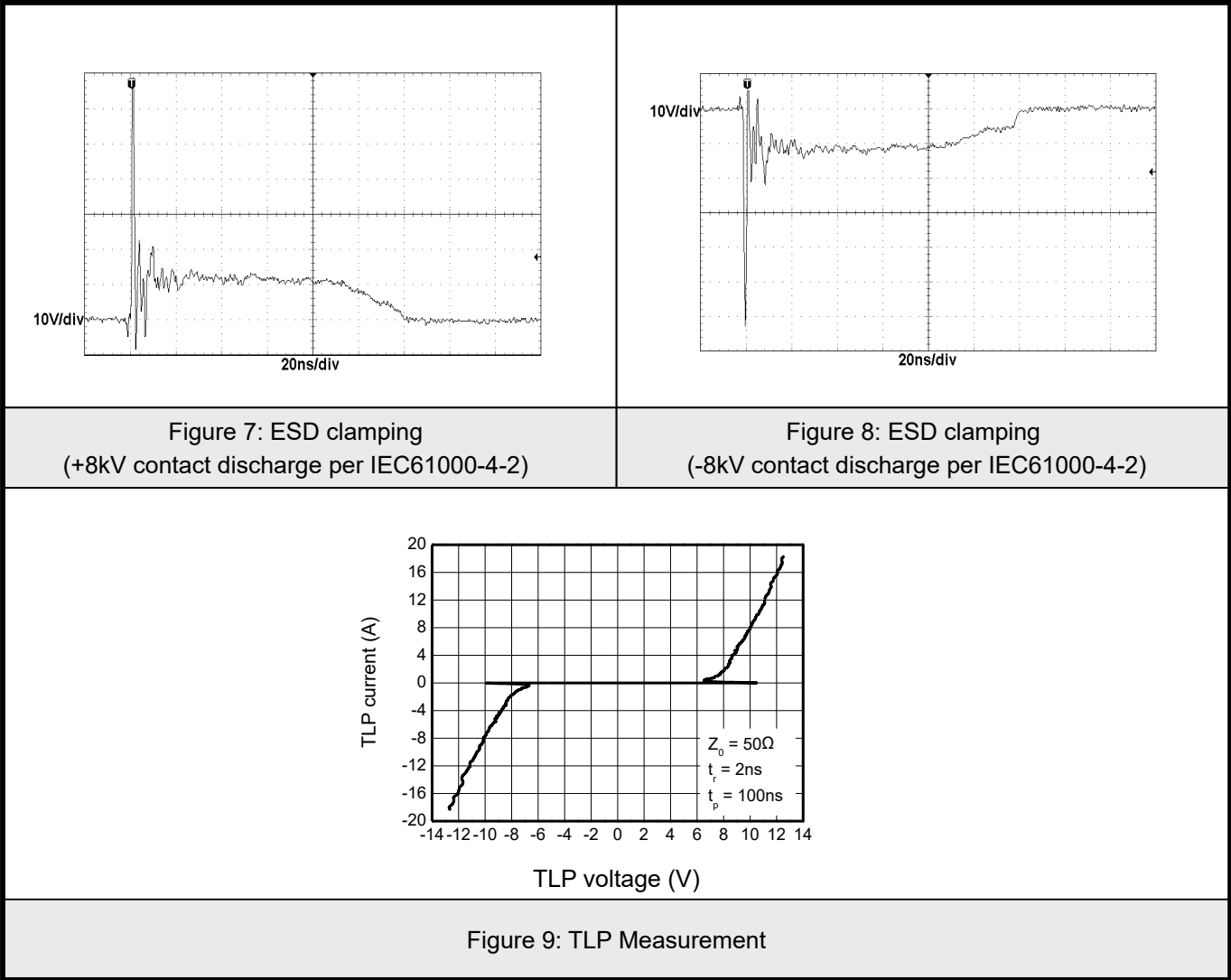


Figure 6: Power derating vs. Ambient temperature

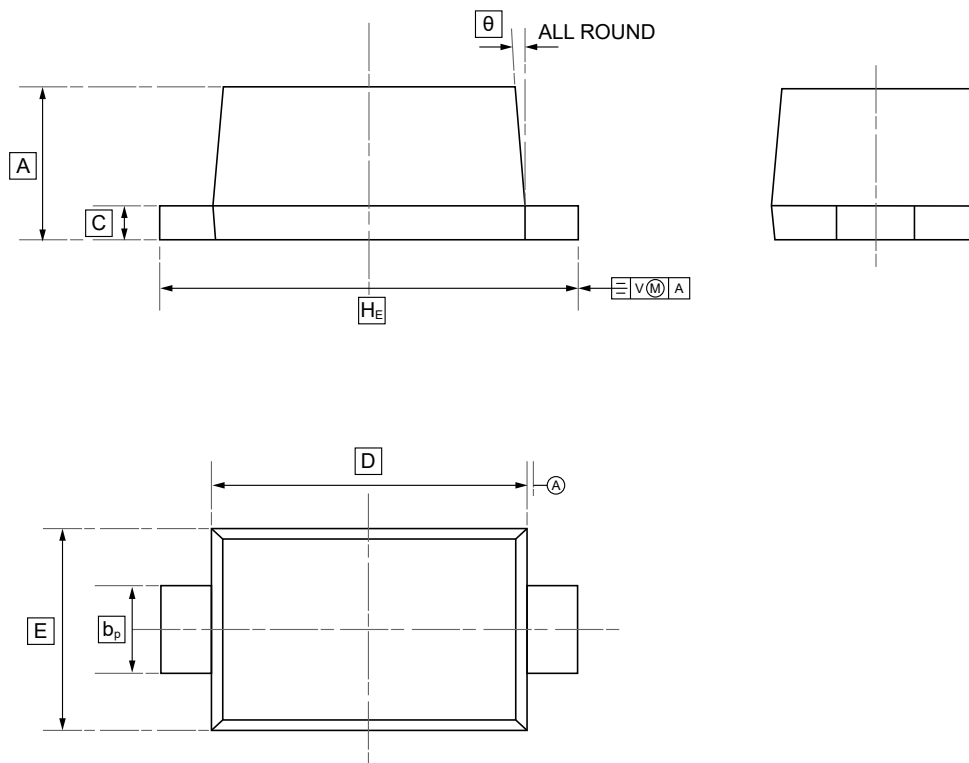


8.2Typical characteristic





9.SOD-523 Package Outline Dimensions



DIMENSIONS (mm are the original dimensions)

Symbol	A	b _p	C	D	E	H _E	θ
Min	0.58	0.3	0.100	1.15	0.75	1.5	5°
Max	0.68	0.4	0.135	1.25	0.85	1.7	



10.Ordering information



yww: Batch Code

Order Code	Package	Base QTY	Delivery Mode
UMW ESD5471S	SOD-523	3000	Tape and reel



11.Disclaimer

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