UMW ESD5471S

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.

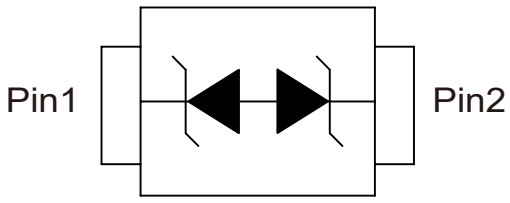
2.Applications

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

3.Features

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

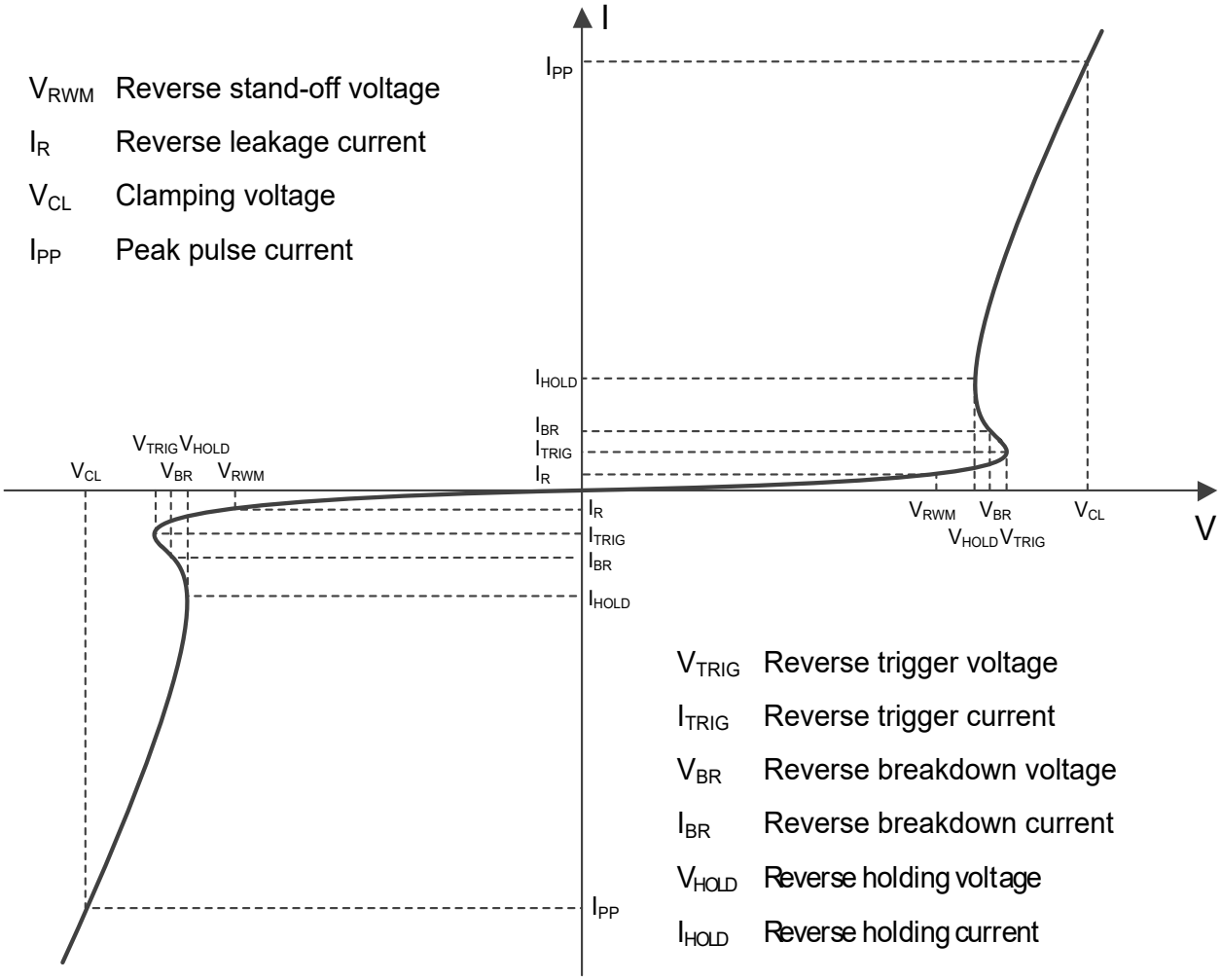


SOD-523

5.Absolute Maximum Ratings

Parameter	Symbol	Value	Units
Peak pulse power (t_p=8/20μs)	P_{PK}	72	W
Peak pulse current (t_p=8/20μs)	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	°C
Operating temperature	T_{OP}	-40 to 85	°C
Lead temperature	T_L	260	°C
Storage temperature	T_{STG}	-55 to 150	°C

6.Electrical characteristics (T_A=25°C, unless otherwise noted)



Definitions of electrical characteristics

7.Electrical Characteristic (T_A=25°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=50Ω , t_p=100ns, t_r=2ns, 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

8.1Typical characteristic

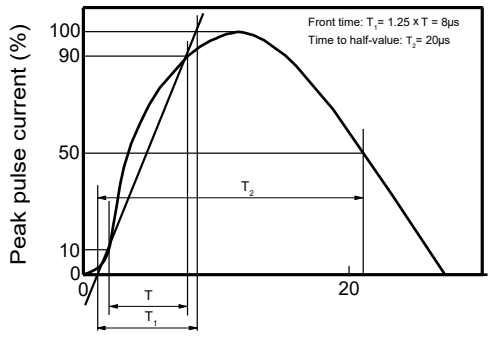


Figure 1: 8/20μs waveform per IEC61000-4-5

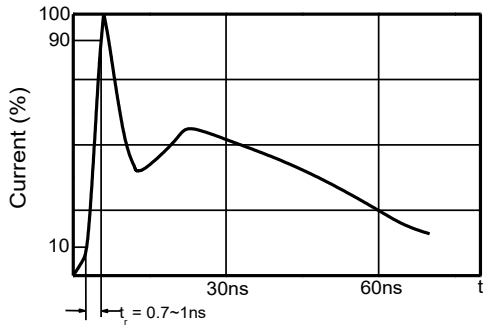


Figure 2: Contact discharge current waveform per IEC61000-4-2

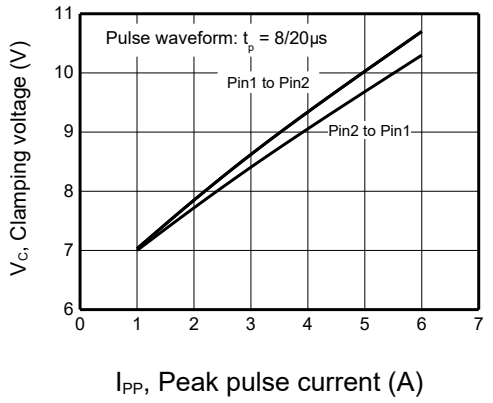


Figure 3: Clamping voltage vs. Peak pulse current

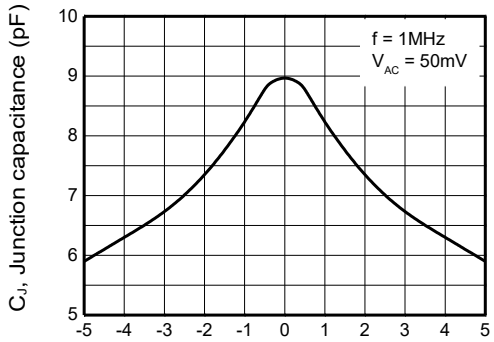


Figure 4: Capacitance vs. Reverse voltage

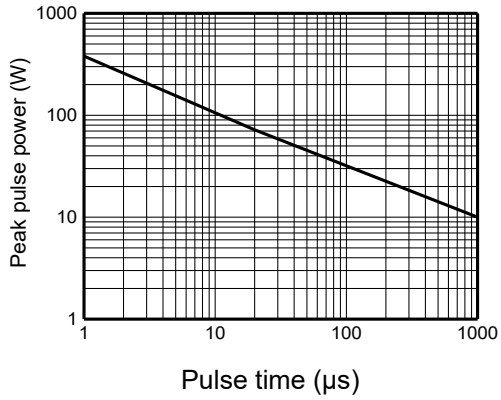


Figure 5: Non-repetitive peak pulse power vs. Pulse time

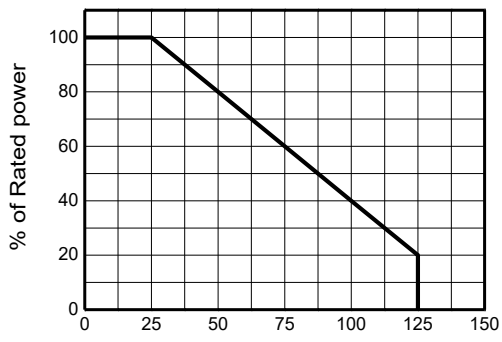


Figure 6: Power derating vs. Ambient temperature

8.2Typical characteristic

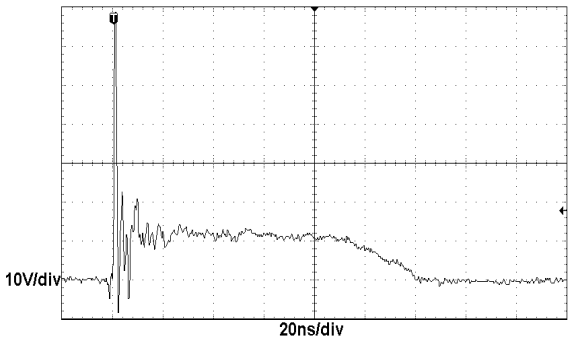


Figure 7: ESD clamping
(+8kV contact discharge per IEC61000-4-2)

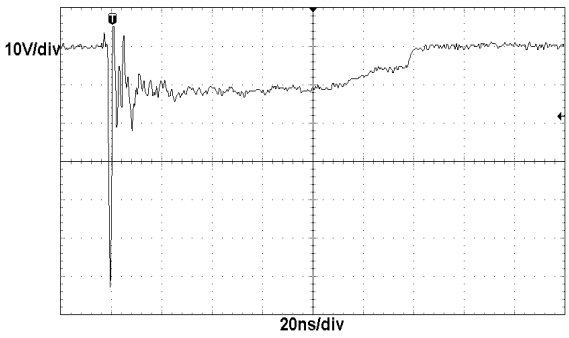


Figure 8: ESD clamping
(-8kV contact discharge per IEC61000-4-2)

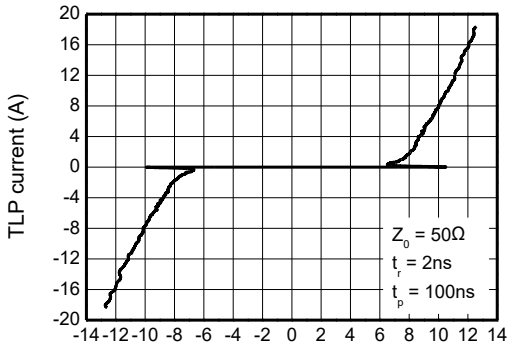
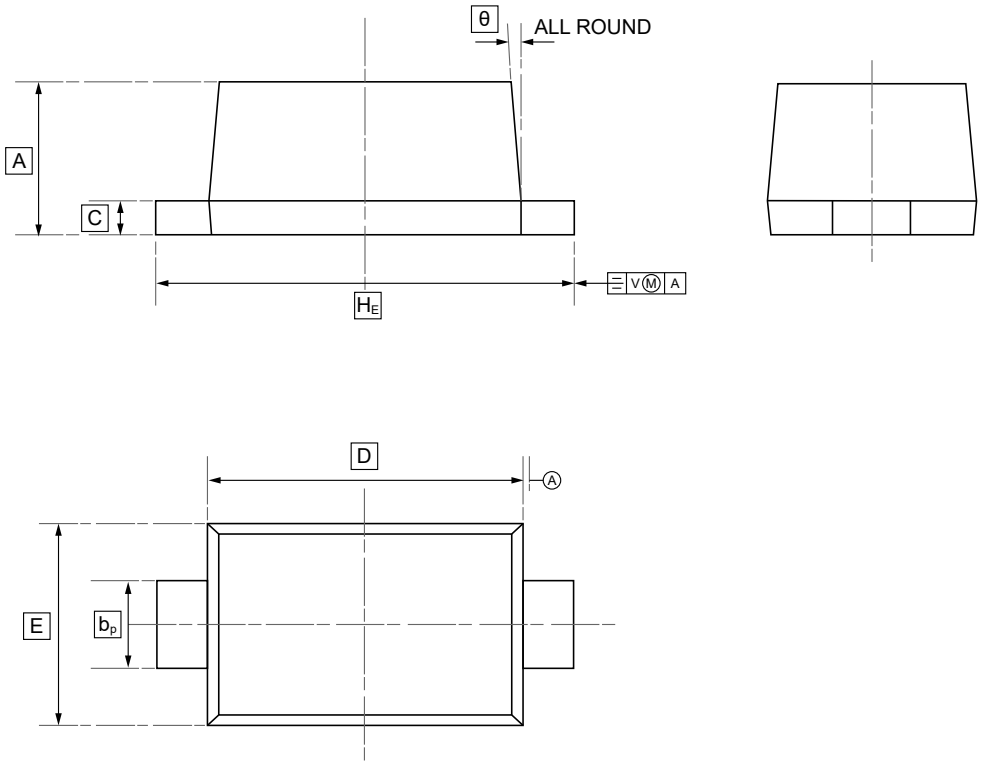


Figure 9: TLP Measurement

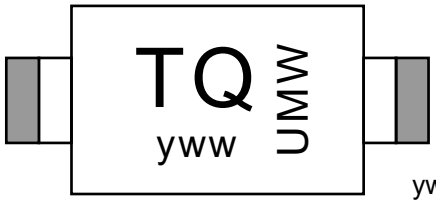
9.SOD-523 Package Outline Dimensions



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

UMW reserves the right to make changes to all products, specifications. Customers should obtain the latest version of product documentation and verify the completeness and currency of the information before placing an order.

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