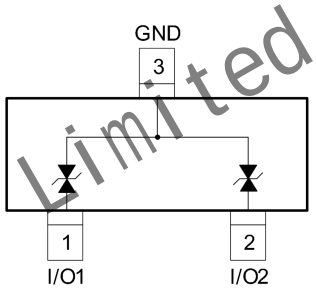
2-Lines, Bi-directional, Transient Voltage Suppressors

Features

- Stand-off voltage: ±5V Max.
- Transient protection for each line according to
  IEC61000-4-2(ESD): ±30kV (contact)
  IEC61000-4-4 (EFT): 40A (5/50ns)
  IEC61000-4-5(surge): 7A (8/20μs)
- Ultra-low capacitance: C_J = 17pF typ.
- Low leakage current:
- Low clamping voltage: V_{CL} =9.3V typ. @ I_{PP} = 16A (TLP)
- Solid-state silicon technology

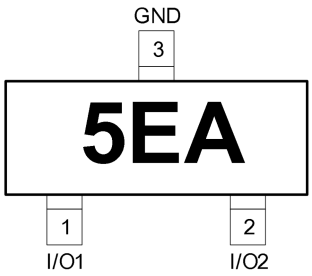
SOT-523 (Bottom View)



Pin configuration

Applications

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



5EA= Device code

Marking (Top View)

Descriptions

AE0512PKL0 is a bi-directional TVS (Transient Voltage Suppressor). It has been 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.

AE0512PKL0 may be used to provide ESD protection up to ±30KV (contact discharge) according to IEC61000-4-2, and withstand peak pulse current up to 7A (8/20μs) according to IEC61000-4-5.

AE0512PKL0 is available in SOT-523 package. Standard products are Pb-free and Halogen-free.

Order information

Device	Package	Shipping
AE0512PKL0	SOT-523	3000/Tape & Reel

Absolute maximum ratings

Parameter	Symbol	Rating	Unit
Peak pulse power (t_p = 8/20μs)	P_{pk}	77	W
Peak pulse current (t_p = 8/20μs)	I_{PP}	7	A
ESD according to IEC61000-4-2 air discharge	V_{ESD}	±30	kV
ESD according to IEC61000-4-2 contact discharge		±30	
Junction temperature	T_J	125	°C
Operating temperature	T_{OP}	-40~85	°C
Lead temperature	T_L	260	°C
Storage temperature	T_{STG}	-55~150	°C

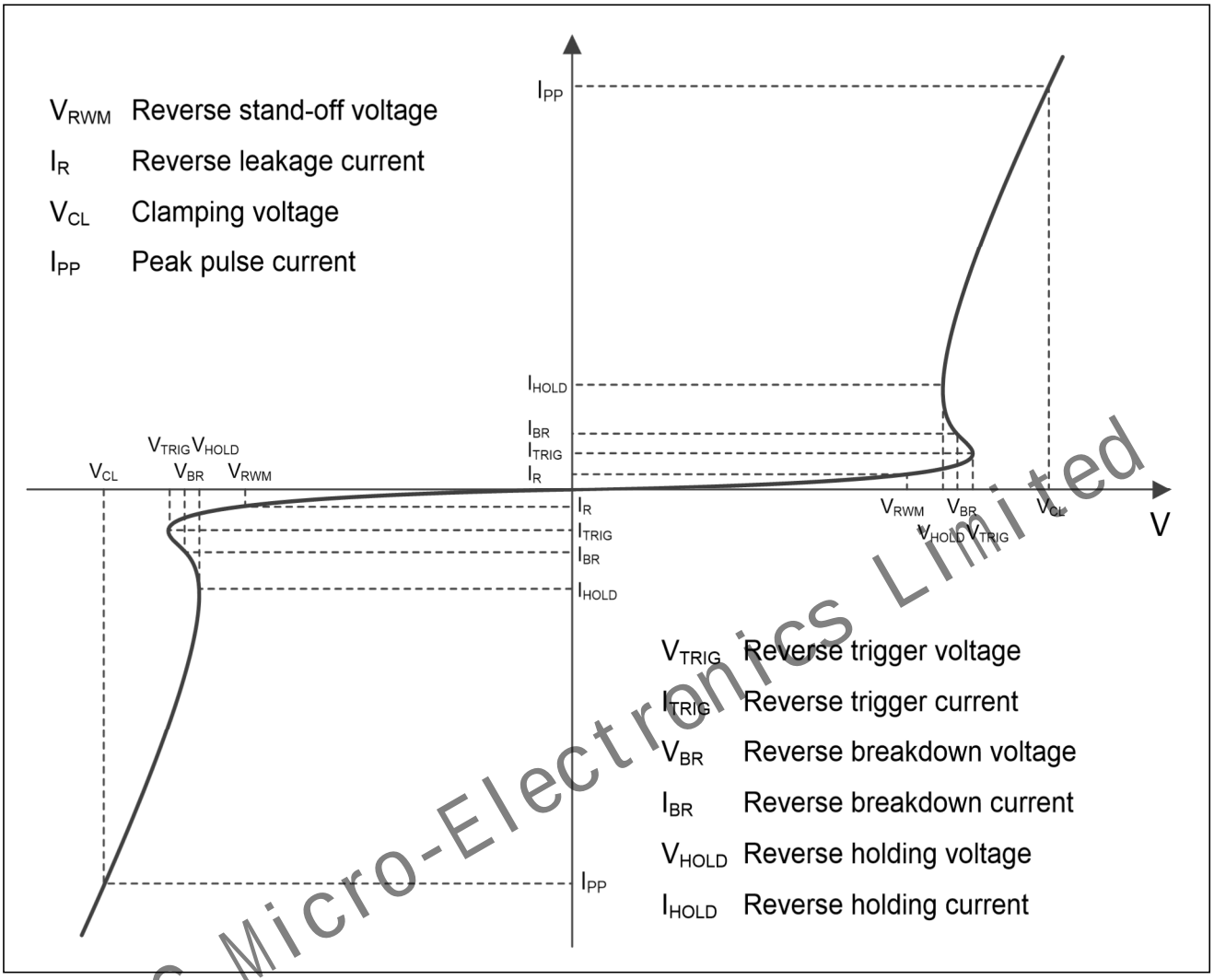
Electrical characteristics (T_A = 25 °C, unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse maximum working voltage	V_{RWM}				±5.0	V
Reverse leakage current	I_R	V_{RWM} =5.0V			100	nA
Reverse breakdown voltage	V_{BR}	I_{BR} = 1mA	5.5	6.5		V
Reverse holding voltage	V_{HOLD}	I_{HOLD} =50mA	5.5	6.5		V
Clamping voltage 1)	V_{CL}	I_{PP} = 16A, t_p = 100ns		10.0		V
Dynamic resistance 1)	R_{DYN}			0.2		Ω
Clamping voltage 2)	V_{CL}	V_{ESD} = 8kV		10.0		V
Clamping voltage 3)	V_{CL}	I_{PP} = 1A, t_p = 8/20μs		6.2	7	V
		I_{PP} = 7A, t_p = 8/20μs		9.3	11	V
Junction capacitance	C_J	V_R = 0V, f = 1MHz		17	20	pF
	C_J	V_R = 2.5V, f = 1MHz		15	18	pF

Notes:

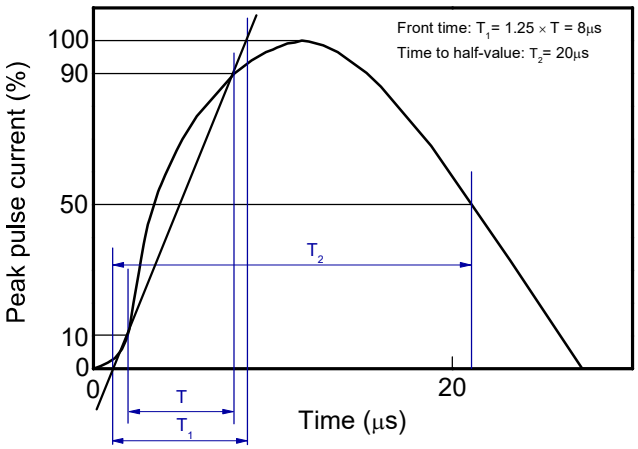
1) *TLP parameter: Z_0 = 50Ω, t_p = 100ns, t_r = 2ns, averaging window from 60ns to 80ns. R_{DYN} is calculated from 4A to 16A.*
2) *Contact discharge mode, according to IEC61000-4-2.*
3) *Non-repetitive current pulse, according to IEC61000-4-5.*

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

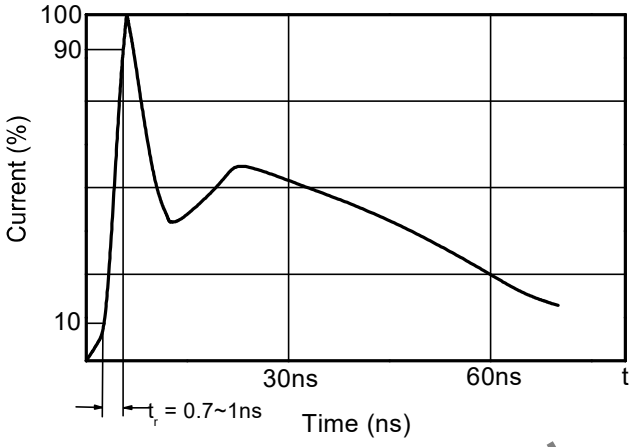


Definitions of electrical characteristics

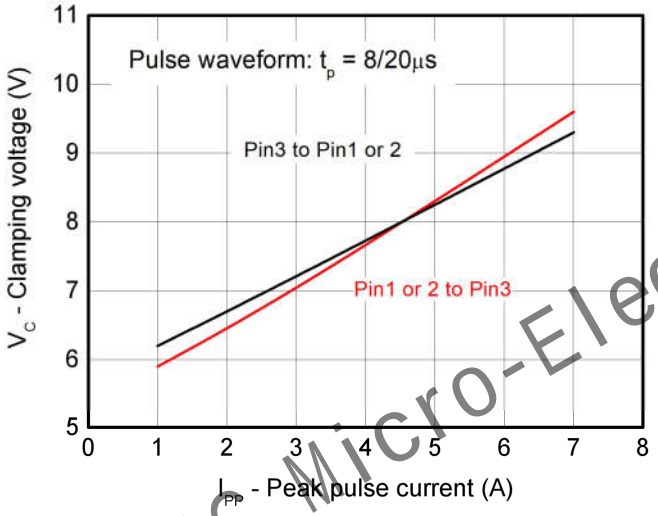
Typical characteristics (TA = 25 oC, unless otherwise noted)



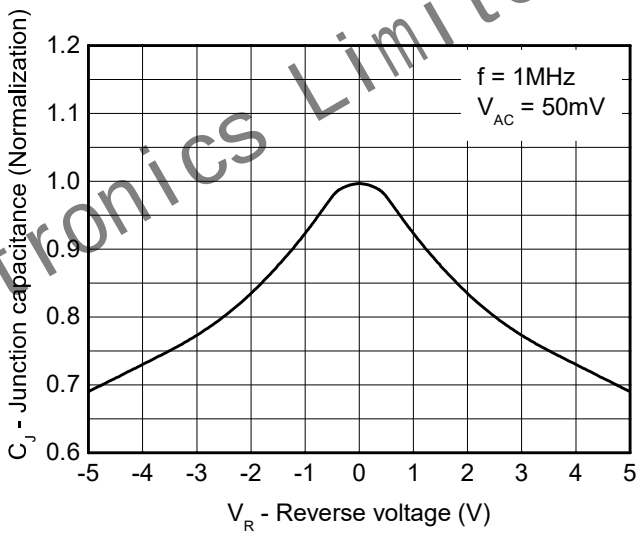
8/20μs waveform per IEC61000-4-5



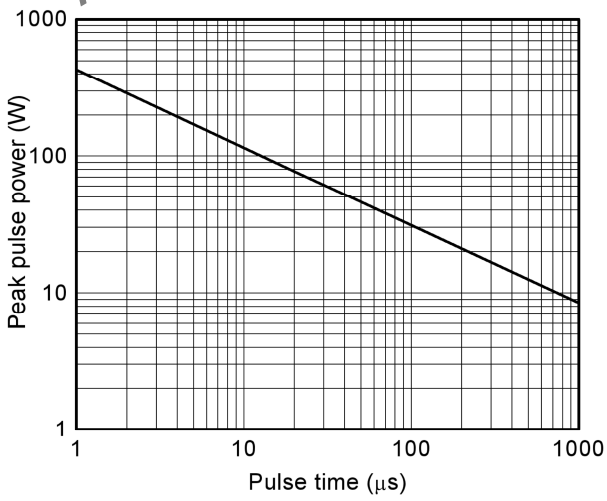
Contact discharge current waveform per IEC61000-4-2



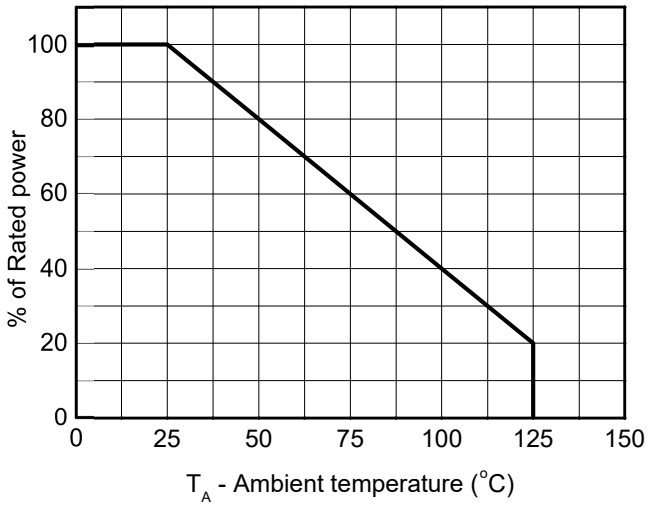
Clamping voltage vs. Peak pulse current



Capacitance vs. Reverse voltage

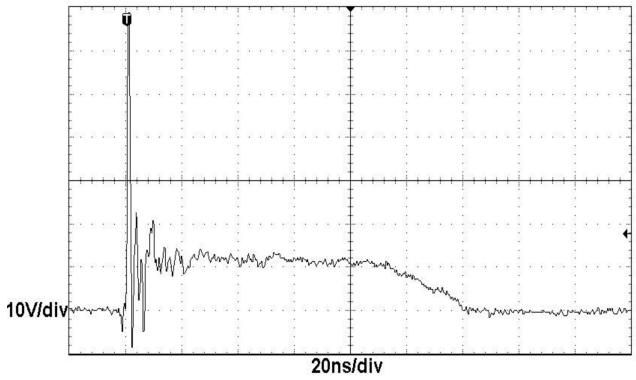


Non-repetitive peak pulse power vs. Pulse time

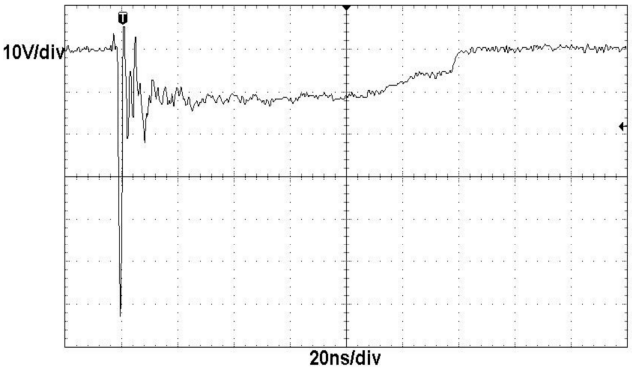


Power derating vs. Ambient temperature

Typical characteristics (TA = 25 oC, unless otherwise noted)



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



ESD clamping
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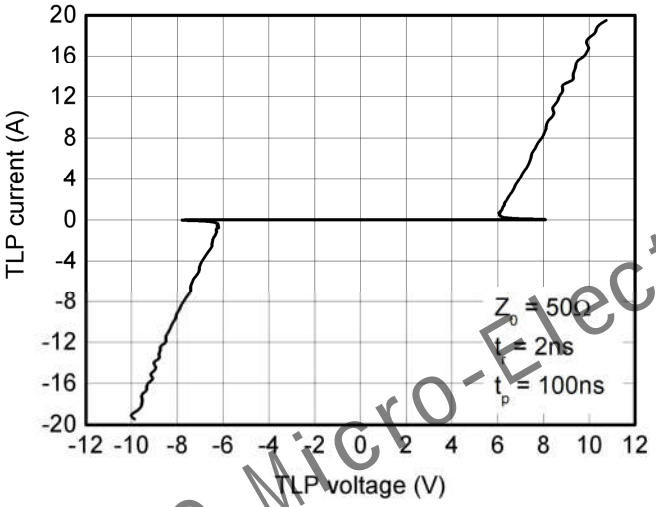
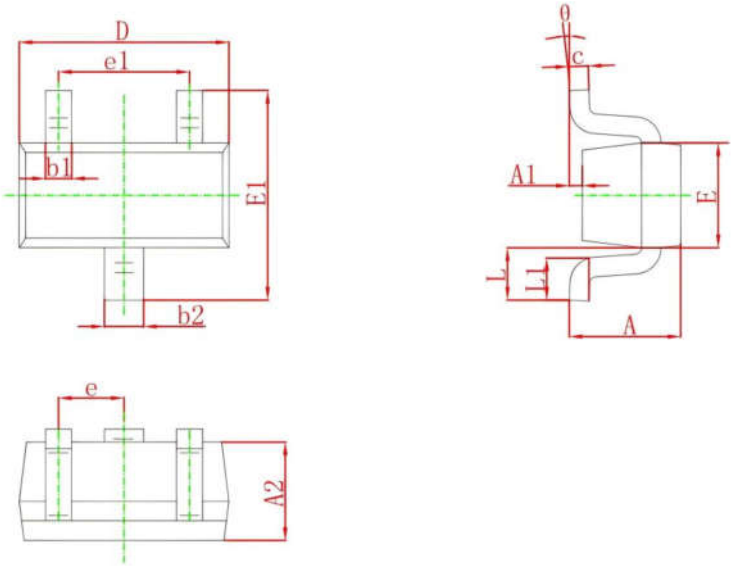


TLP Measurement

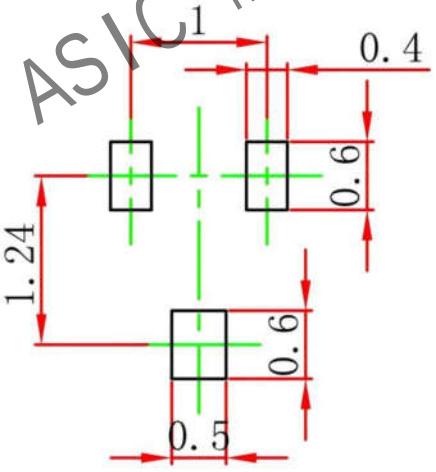
PACKAGE OUTLINE DIMENSIONS

SOT-523



Symbol	Dimensions in millimeters		
	Min.	Typ.	Max.
A	0.680	-	0.900
A1	0.000	-	0.100
A2	0.630	-	0.830
b1	0.150	-	0.250
b2	0.250		0.350
c	0.050	-	0.200
D	1.480	-	1.700
E	0.700	-	0.900
E1	1.450	-	1.850
e	0.500TYP		
e1	0.900	-	1.100
L	0.400REF		
L1	0.200	-	0.500
θ	0°	-	8°

Recommend land pattern (Unit: mm)



Notes:

This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.