

Descriptions

The SP1.5P523A03P01 is designed to replace multilayer varistors (MLVs) in portable applications such as cell phones, notebook computer, and PDAs.

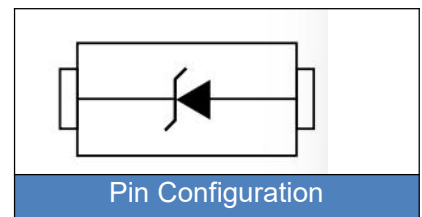
They offer superior electrical characteristics such as lower clamping voltage and no device degradation when compared to MLVs. They are designed to protect sensitive semiconductor components from damage or upset due to electrostatic discharge (ESD), lightning, electrical fast transients (EFT), and cable discharge events (CDE)



Features

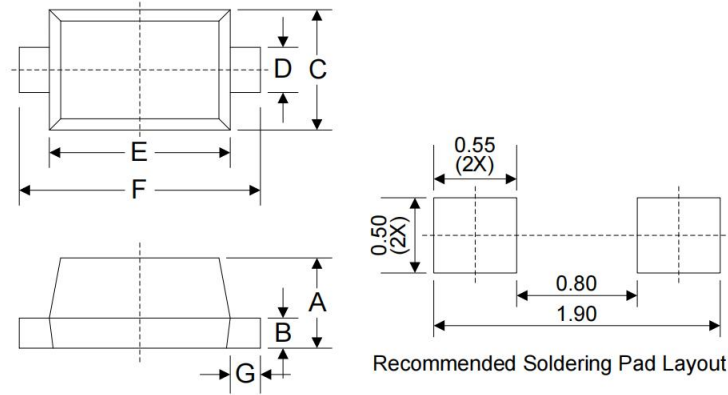
- ◆ 150W peak pulse power
- ◆ IEC61000-4-2 ESD 30KV Air, 30KV contact compliance
- ◆ SOD-523 surface mount package
- ◆ Working voltage: 3.3V
- ◆ Low leakage current
- ◆ Low operating and clamping voltages
- ◆ Solid-state silicon avalanche technology
- ◆ Lead Free/RoHS compliant
- ◆ Solder reflow temperature: Pure Tin-Sn, 260~270°C
- ◆ Flammability rating UL 94V-0
- ◆ Meets MSL level 1, per J-STD-020

Schematic



Dimensions (SOD-523)

Symbol	Dimension			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.50	0.70	0.020	0.028
B	0.07	0.20	0.003	0.008
C	0.70	0.90	0.028	0.035
D	0.25	0.35	0.010	0.014
E	1.10	1.30	0.043	0.051
F	1.50	1.70	0.059	0.067
G	0.15	0.25	0.006	0.010



Maximum Ratings($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Rating	Symbol	Value	Unit
Peak Pulse Power ($t_p = 8/20\mu\text{s}$)	P_{PPM}	150	W
ESD voltage (Contact discharge)	V_{ESD}	± 30	KV
ESD voltage (Air discharge)		± 30	
Operating junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^{\circ}\text{C}$

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

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V_{RWM}				3.3	V
Reverse breakdown voltage	V_{BR}	$I_{BR}=1.0\text{mA}$	5.0			V
Reverse leakage current	I_R	$V_R=3.3\text{V}$			1	μA
Clamping voltage ($t_p=8/20\mu\text{s}$)	V_C	$I_{PP}=1.0\text{A}$			5.8	V
Clamping voltage ($t_p=8/20\mu\text{s}$)	V_C	$I_{PP}=5.0\text{A}$			8.8	V
Peak Pulse Current($t_p=8/20\mu\text{s}$)	I_{PP}				5	A
Off state junction capacitance	C_J	0Vdc, $f=1\text{MHz}$		120		pF

Typical Characteristics Curves($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Figure 1.Pulse Waveforms

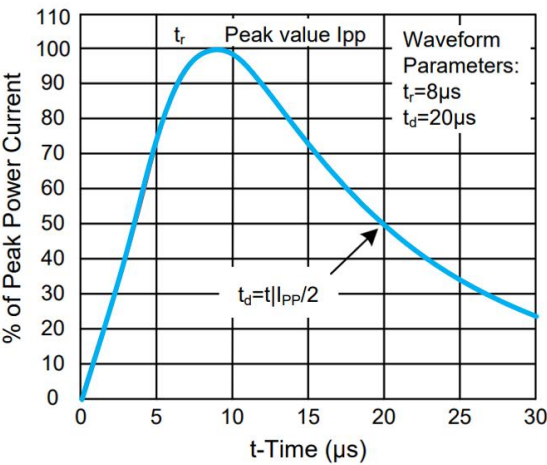


Figure 2. Power Derating Curve

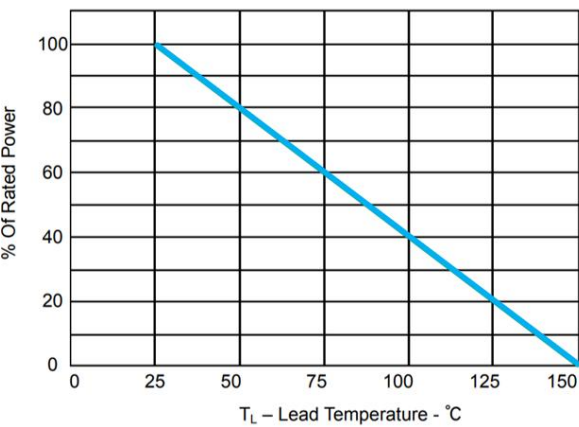


Figure 3.Clamping Voltage vs. Peak Pulse Current

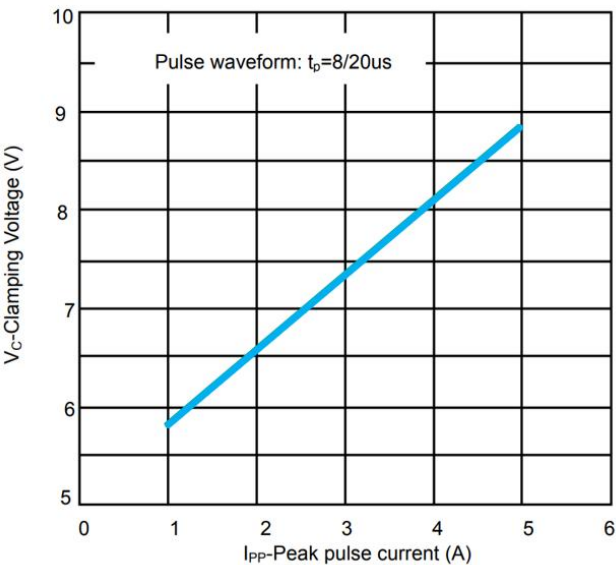
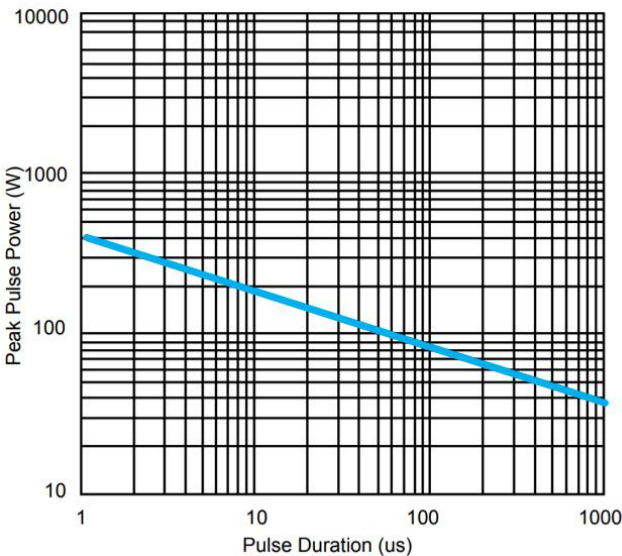
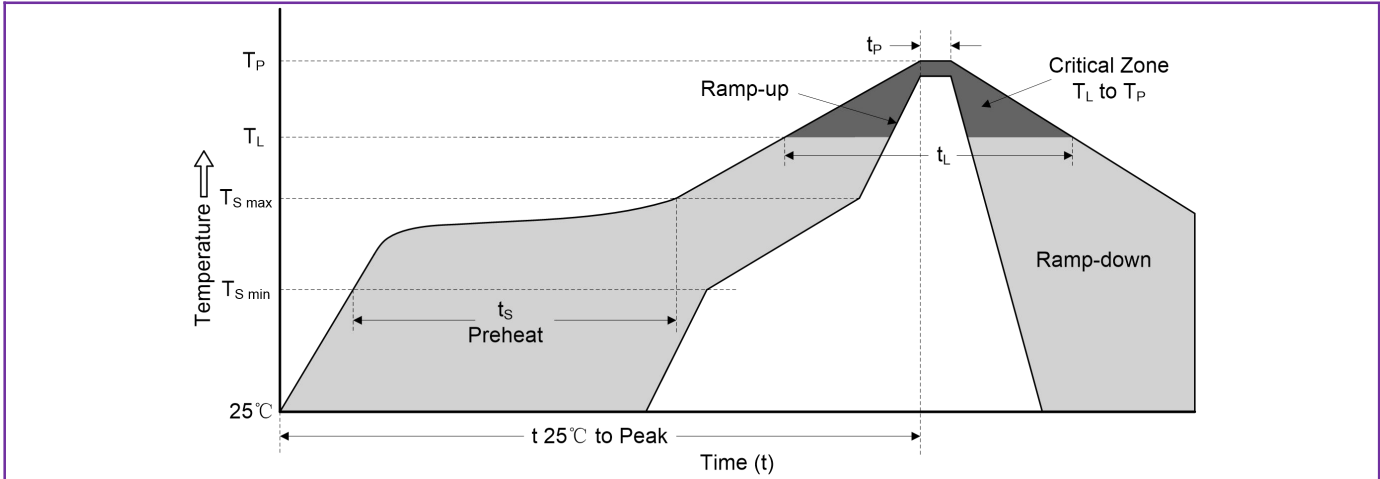


Figure 4. Non Repetitive Peak Pulse Power vs. Pulse Time

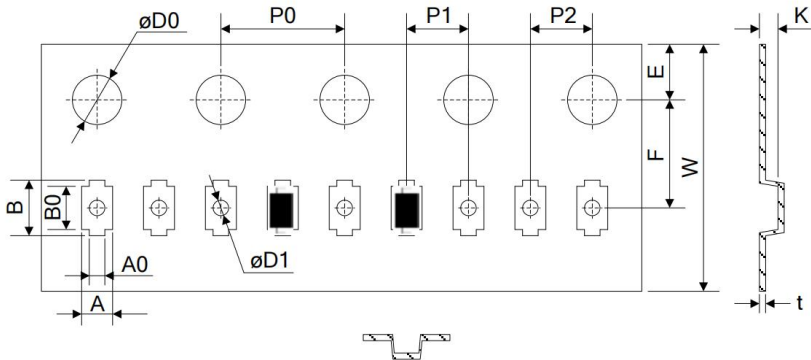
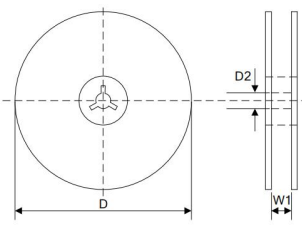


Reflow Soldering Parameters



Reflow Condition		Lead-free Assembly
Pre heat	-Temperature Min ($T_{S\ min}$)	150°C
	-Temperature Max ($T_{S\ max}$)	200°C
	-Time (min to max) (t_s)	60-180 seconds
Average ramp-up rate (T_L to T_P)		3°C/second max.
$T_{S\ max}$ to T_L -Ramp-up Rate		3°C/second max.
Reflow	-Temperature (T_L) (Liquidus)	217°C
	-Time (min to max) (t_s)	60-150 seconds
Peak Temperature (T_P)		260(+0/-5)°C
Time within 5°C of actual Peak Temperature (t_P)		20-40 seconds
Ramp-down Rate		6°C/second max.
Time 25°C to Peak Temperature(T_p)		8 minutes max.
Do not exceed		260°C

Packaging

Tape		Symbol	Dimension (mm)
		W	8.00±0.30
		P0	4.00±0.10
		P1	2.00±0.10
		P2	2.00±0.10
		D0	Φ1.55±0.10
		D1	Φ0.50±0.05
		E	1.75±0.10
		F	3.50±0.10
		A	1.00±0.10
		A ₁	0.50±0.10
		B	1.80±0.10
		B ₀	1.30±0.10
		K	0.65±0.10
		t	0.20±0.05
Reel		D	Φ178.0±2.0
		D2	Φ13.00
		W1	9.5
		Quantity: 3000PCS	