

1. Synopsis

1-1. Feature List

- With TVS Diode
- ESD Protection: Level 4, Contact: $\pm 8\text{KV}$
- Low Clamping Voltage
- 90 Watts Peak Pulse Power Per Line ($t_p = 8/20\mu\text{s}$)
- Ultra Low Capacitance: 15pF Max.
- Protection One Line I/O Port

1-2. Applications

- Lan Equipment
- Wireless System
- VIDEO / DVI
- Smart Watches
- Tablets
- USB 2.0 Power and Data Line Protection

1-3. IEC Compatibility

- ESD / Transient Protection According to:
 - IEC61000-4-2(ESD): $\pm 8\text{KV}$ (Contact) / $\pm 15\text{KV}$ (Air)
 - IEC61000-4-4(EFT): 40A-5/50ns
 - IEC61000-4-5(Surge): 5A-8/20us

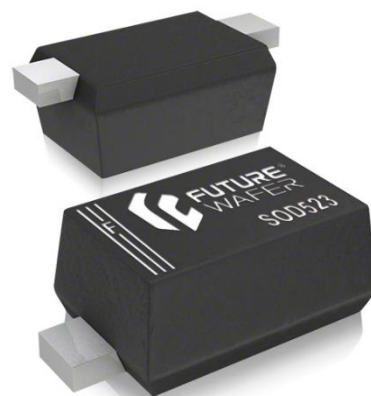
1-4. Mechanical Characteristics

- Molded JEDEC SOD523FL Package
- Packing: Tape and Reel
- Flammability rating UL 94V-0
- Halogen Free
- JEDEC MSL Classification: LEVEL 1

1-5. Absolute Maximum Ratings

Maximum Ratings@25°C Unless Otherwise Specified

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Units
Working Voltage	V_{RWM}		-5.0	-	+5.0	V
Peak Pulse Power	P_{PP}	$t_p = 8/20\mu\text{s}$, Current Waveform	-	-	90	W
Peak Pulse Current	I_{PP}		-5	-	+5	A
Electrostatic Discharge	$V_{ESD} \text{ (Contact)}$	$R = 330\Omega$, $C = 150\text{pF}$	-8	-	+8	KV
	$V_{ESD} \text{ (Air)}$		-15	-	+15	
Operating Temperature	T_J		-55	-	+150	°C
Storage Temperature	T_{STG}		-65	-	+150	



SOD523FL



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3. Electrical Property

3-1. Electrical Characteristics

3-1-1. DC Characteristics

DC Characteristics						
Parameter	Symbol	Test Condition	Values			Units
			Min.	Typ.	Max.	
Breakdown Voltage	V_{BR}	$I_t = 1\text{mA}, T_A = 25^\circ\text{C}$	5.8	7.0	8.8	V
Leakage Current	I_L	$V = 5.0\text{V}, T_A = 25^\circ\text{C}$	-	-	0.5	μA

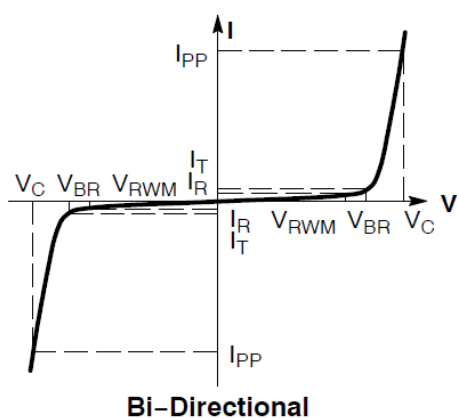
3-1-2. AC Characteristics

AC Characteristics						
Parameter	Symbol	Test Condition	Values			Units
			Min.	Typ.	Max.	
Line Capacitance	C_L	$V = 0\text{V}, f = 1\text{MHz}$	-	-	15	pF

3-1-3. Protection Characteristics

Protection Characteristics						
Parameter	Symbol	Test Condition	Values			Units
			Min.	Typ.	Max.	
Clamping Voltage	$V_{CL, SURGE}$	$I_{PP} = 1\text{A}, 8/20\mu\text{s}$	-	12	-	V
		$I_{PP} = 5\text{A}, 8/20\mu\text{s}$	-	15.5	18	

3-2. I-V Curve Characteristics $T_A = (25^\circ\text{C})$



Symbol	Parameter
V_{RWM}	Working Peak Reverse Voltage
I_R	Maximum Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
V_F	Forward Voltage @ I_F
I_F	Forward Current
I_T	Test Current
I_{PP}	Maximum Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}

3-3. Ratings and Characteristics Curve

Fig 1. Non-repetitive Peak Pulse Power vs. Pulse Time

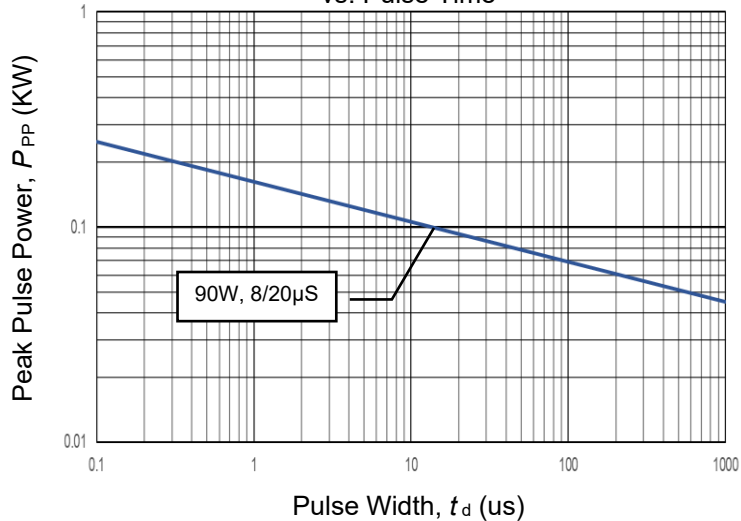


Fig 2. V_C & I_{PP} Drawing

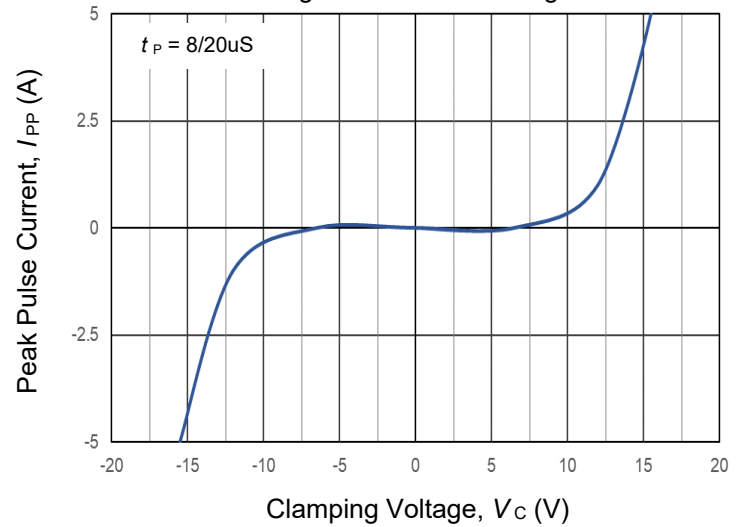


Fig 3. Power Derating Curve

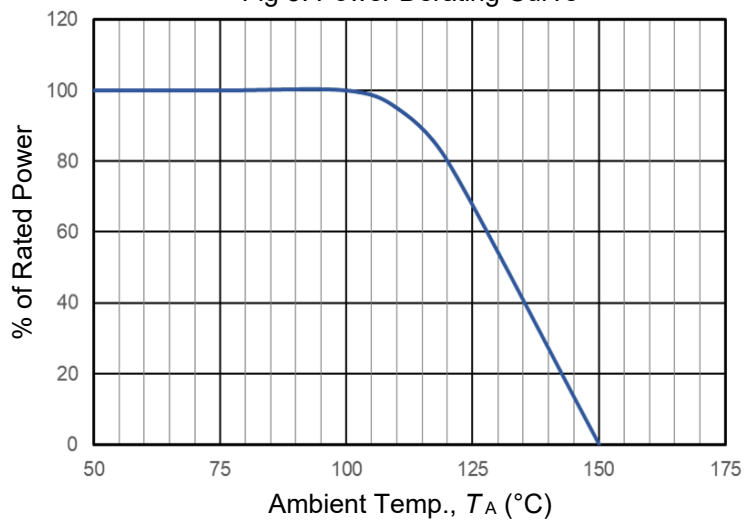


Fig 4. Normalized Capacitance vs. Reverse Voltage

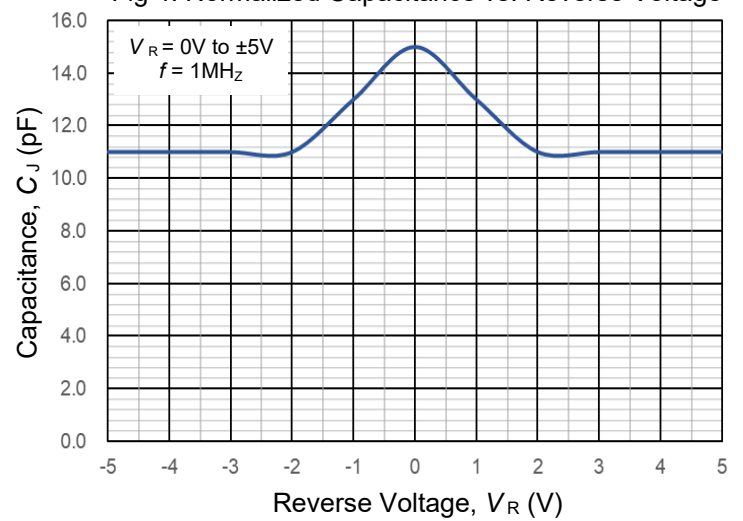
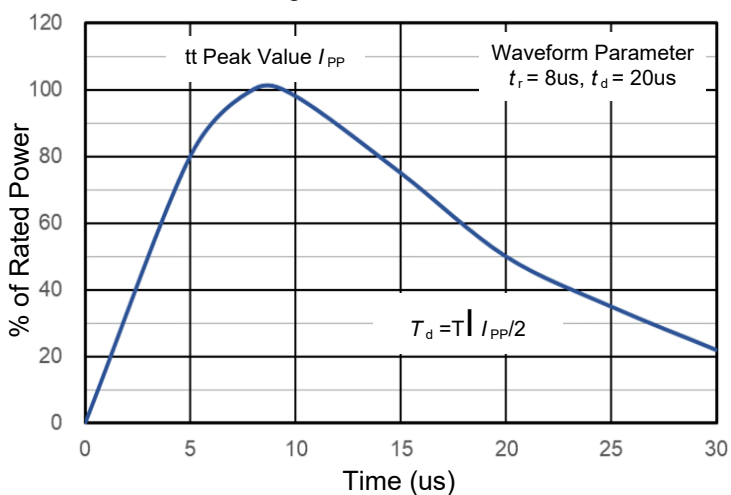


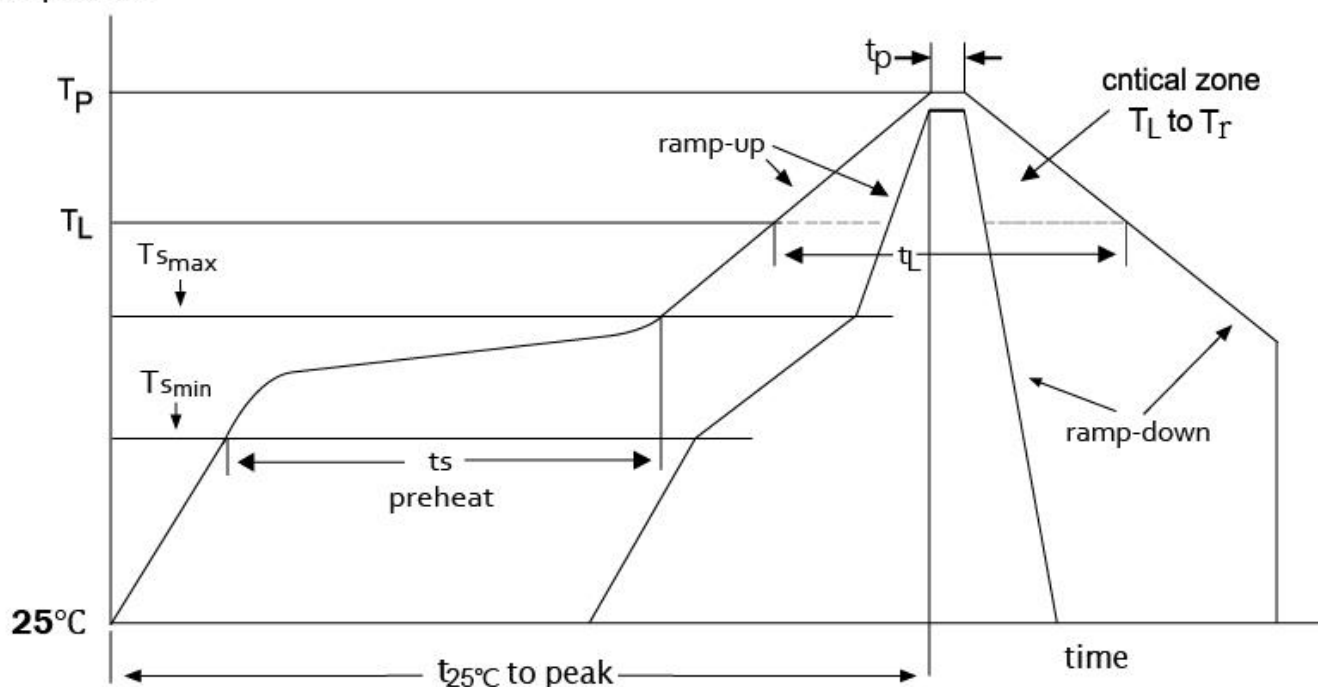
Fig 5. Pulse Waveform



4. Soldering Parameters

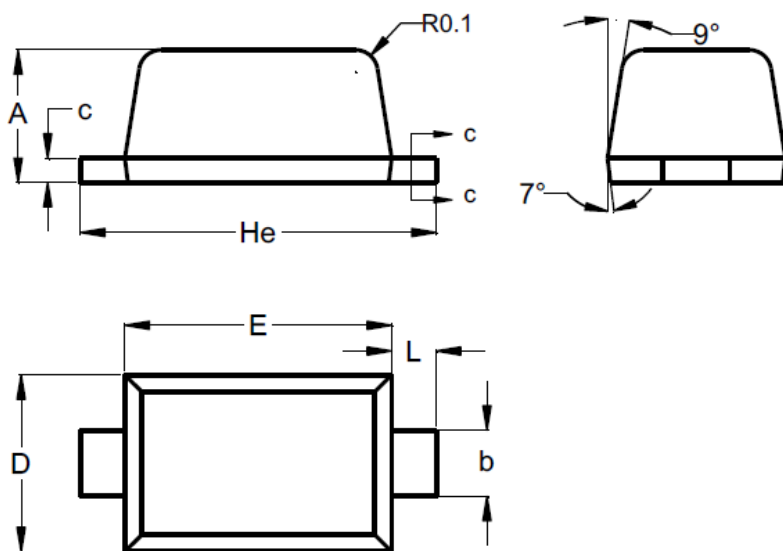
Profile Feature	SnPb eutectic assembly	Pb-free assembly
Average ramp-up rate (T _{smax} to T _p)	3 °C/s maximum	3 °C/s maximum
Preheat		
Temperature minimum (T _{smin})	100 °C	150 °C
Temperature maximum (T _{smax})	150 °C	200 °C
Time (t _{smin} to t _{smax})	60 s to 120 s	60 s to 180 s
Time maintained above		
Temperature (T _L)	183 °C	217 °C
Time (t _L)	60 s to 150 s	60 s to 150 s
Peak/classification temperature (T)	235 °C	260 °C
Number of allowed reflow cycles	3	3
Time within 5 °C of actual peak temperature (t _p)	10 s to 30 s	20 s to 40 s
Ramp-down rate	6 °C/s maximum	6 °C/s maximum
Time 25 °C to peak temperature	6 minutes maximum	8 minutes maximum

temperature



5. Package Information

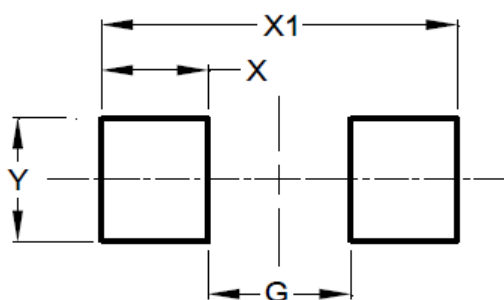
5-1. Dimension


SOD523FL

Symbol	Min.	Max.
A	0.55	0.65
b	0.26	0.34
c	0.11	0.17
D	0.75	0.85
E	1.15	1.25
He	1.55	1.65
L	0.10	0.30

Unit:mm

5-2. PCB Pad Layout Recommendation

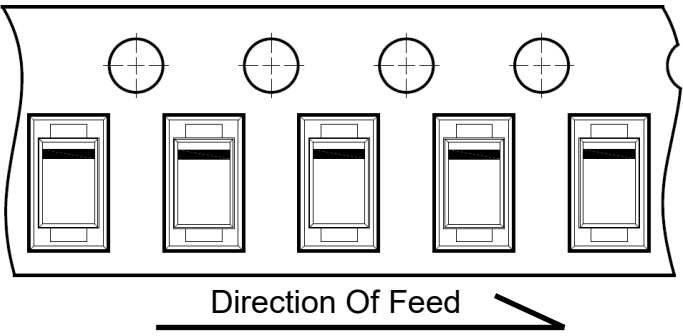

SOD-523FL

Dim	Values
G	0.8
X	0.6
X1	2.0
Y	0.7

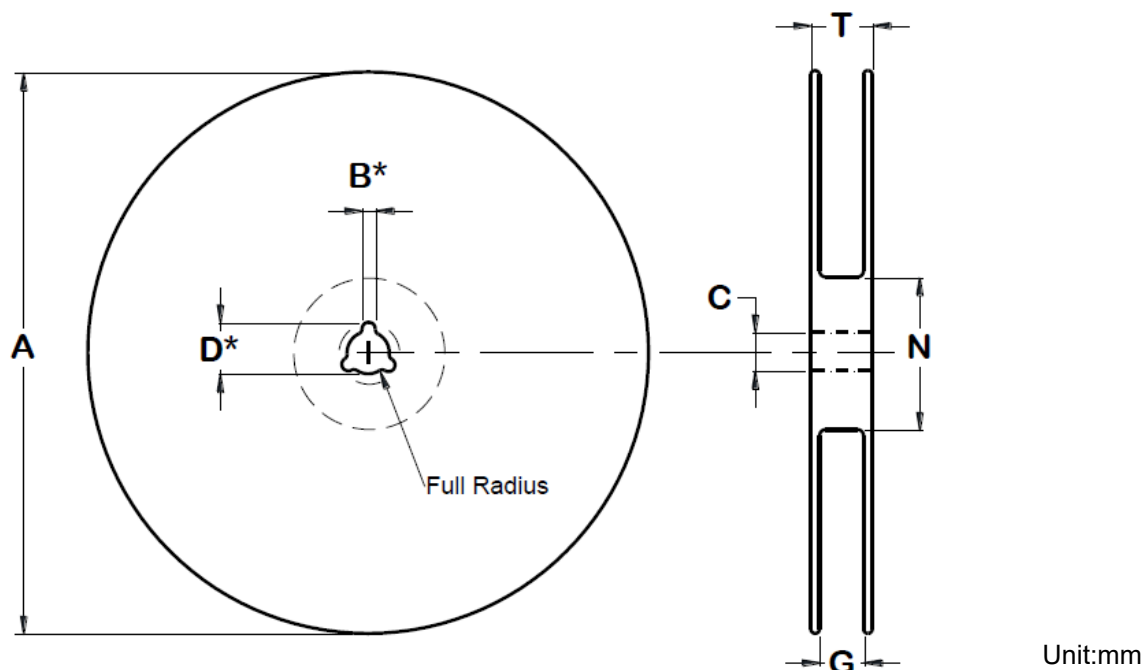
Unit:mm

6. Packing

6-1. Taping and Reel Specification

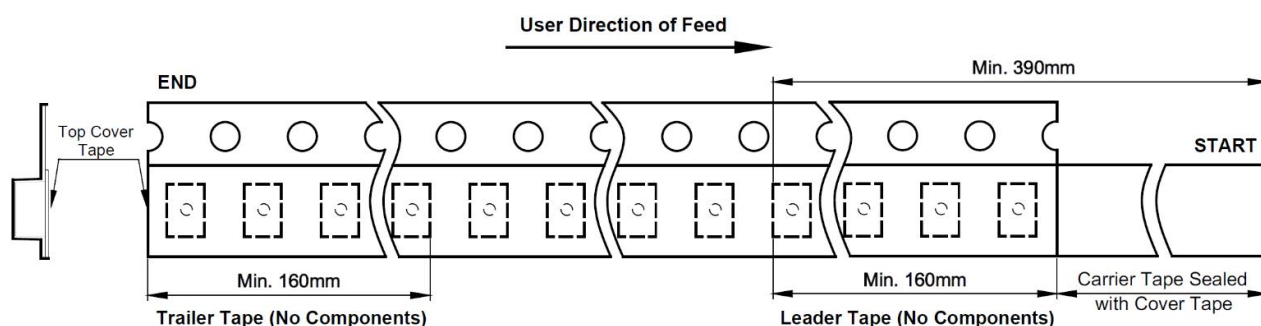
Taping Width	Tape Orientation
8mm	

6-2. Surface Mount Reel Specification



Dimension	Tape Width	Reel Size	A	B	C	D	N	G	T
Value	8 mm	7"	178 ±2	2.0 +0.5-0	13 +0.5-0.2	20.5 ±0.2	55 ±5	8.4 +1.5/-0.0	14.4

6-3. Tape Leader and Trailer Specification



7. Ordering Information

Part Number	Marking Code	Component Package	Quantity	Packaging Option
FESD05VBL	V5	SOD523FL	8,000 PCS	Tape & Reel - 8mm tape & 7"reel

8. Version

8-1. History

Version	Date	File No.	Recording	Basis
A	22-Jun-2017	F117251	New Create	Market
B	26-Feb-2019		Update Company Info.	System
2.0	13-Dec-2021		Update Version	System