

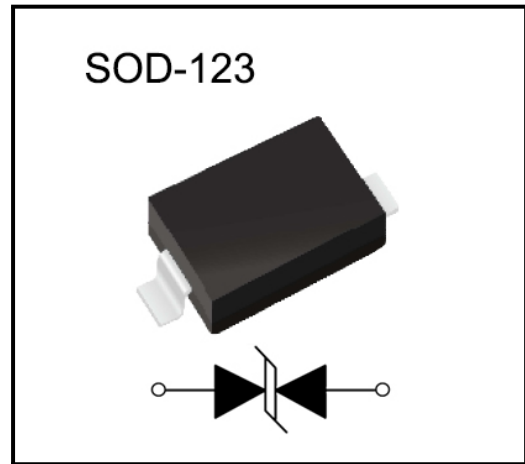
# SMF3.3CA

ESD Protection Diode

## Features

- 440W Peak pulse power per line ( $t_p = 8/20\mu s$ )
- Bidirectional configurations
- Solid-state silicon-avalanche technology
- Low clamping voltage
- Low leakage current
- Protection one data/power line to:
- IEC 61000-4-2  $\pm 30kV$  contact  $\pm 30kV$  air
- IEC 61000-4-4 (EFT) 40A (5/50ns)
- IEC 61000-4-5 (Lightning) 40A (8/20 $\mu s$ )

## Package



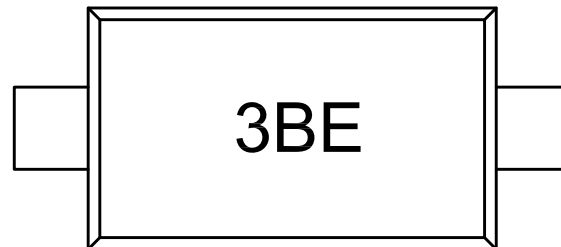
## Mechanical Characteristics

- Cell Phone Handsets and Accessories
- Microprocessor based equipment
- Personal Digital Assistants (PDA's)
- Notebooks, Desktops, and Servers
- Portable Instrumentation

## Applications

- SOD-123 package
- Molding compound flammability rating: UL 94V-0
- Packaging: Tape and Reel
- RoHS/WEEE Compliant

## Marking



## Ordering information

Order code	Package	Base qty	Delivery mode
SMF3.3CA	SOD-123	3000	Tape and reel

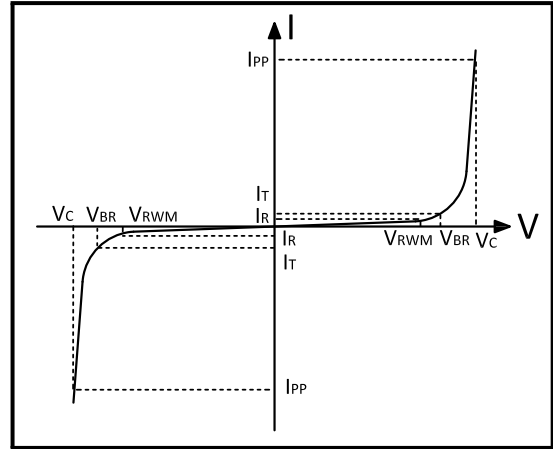


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Electrical Parameters ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

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



## Absolute Maximum Rating

Rating	Symler	Value	Units
Peak Pulse Power ( $t_p = 8/20\mu\text{s}$ )	$P_{PP}$	440	Watts
Peak Pulse Current ( $t_p = 8/20\mu\text{s}$ )	$I_{PP}$	40	A
ESD per IEC 61000-4-2 (Air)	$V_{ESD}$	30	KV
ESD per IEC 61000-4-2 (Contact)		30	
Lead Soldering Temperature	$T_L$	260(10seconds)	$^\circ\text{C}$
Junction Temperature	$T_J$	-55 to + 150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-55 to + 150	$^\circ\text{C}$

## Electrical Characteristics

Parameter	Symler	Conditions	Min	Typical	Max	Units
Reverse Stand-Off Voltage	$V_{RWM}$	-	-	-	3.3	V
Reverse Breakdown Voltage	$V_{BR}$	$I_T = 1\text{mA}$	4.2	5.0	5.8	V
Reverse Leakage Current	$I_R$	$V_{RWM} = 3.3\text{V}, T = 25^\circ\text{C}$	-	-	1.0	$\mu\text{A}$
Peak Pulse Current	$I_{PP}$	$t_p = 8/20\mu\text{s}$	-	40	-	A
Clamping Voltage	$V_C$	$I_{PP} = 40\text{A}, t_p = 8/20\mu\text{s}$	-	11	-	V
Junction Capacitance	$C_j$	$V_R = 0\text{V}, T = 25^\circ\text{C}, f = 1\text{MHZ}$	-	70	-	pF





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## Typical Characteristics

Figure 1: Peak Pulse Power vs. Pulse Time

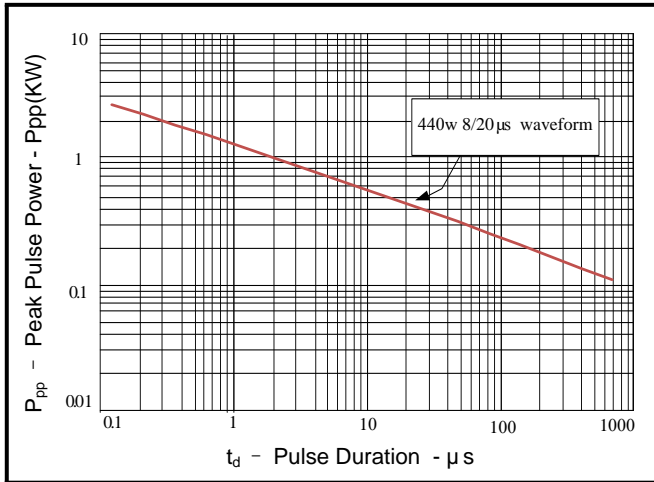


Figure 2: Power Derating Curve

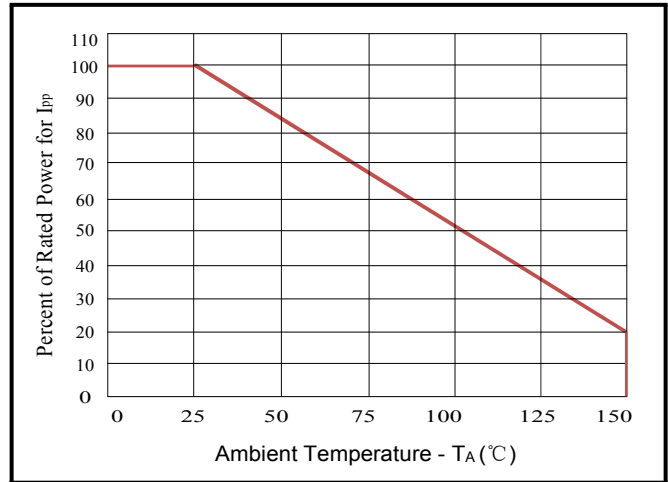


Figure 3: Pulse Waveform

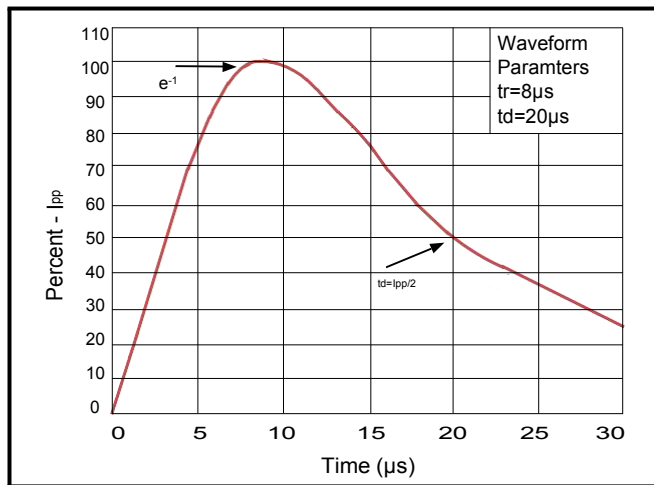
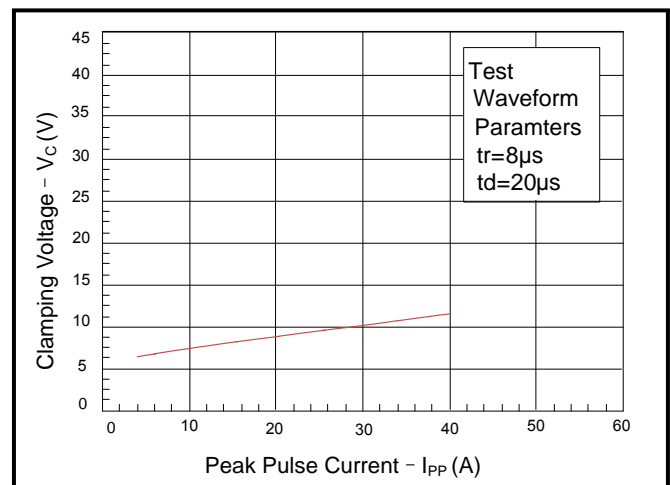


Figure 4: Clamping Voltage vs. Ipp

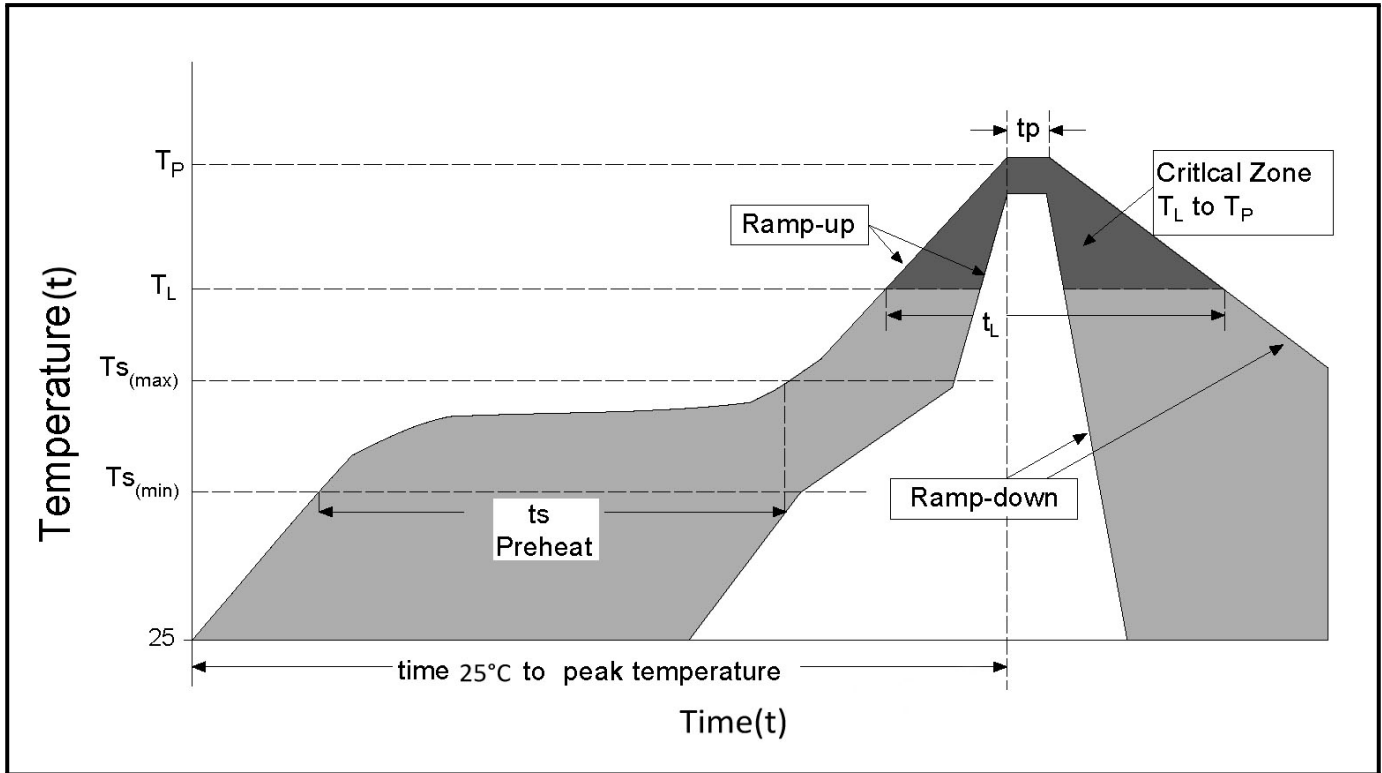




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## Soldering Parameters



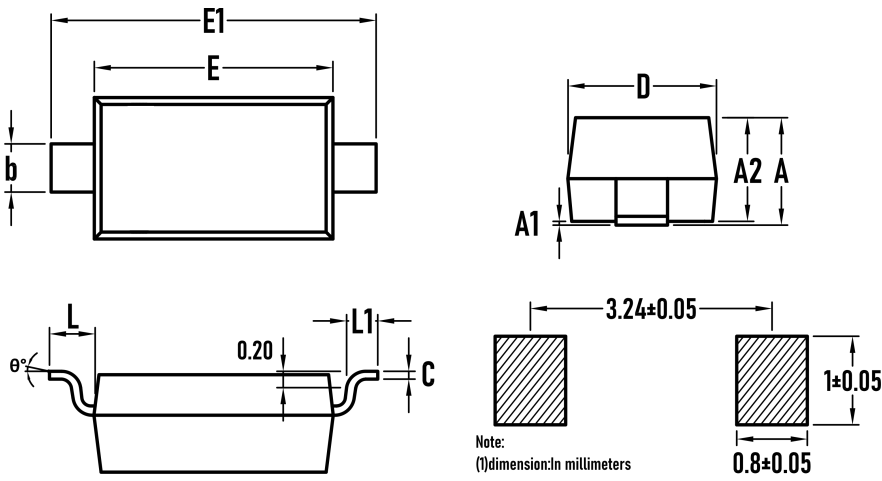
Reflow Condition		Lead-free assembly
Pre Heat	- Temperature Min ( $T_{S(min)}$ )	150°C
	- Temperature Max ( $T_{S(max)}$ )	200°C
	- Time (min to max) ( $t_s$ )	60 - 180 secs
Average ramp up rate (Liquidus Temp ( $T_L$ ) to peak)		3°C/second max
$T_{S(max)}$ to $T_L$ - Ramp-up Rate		3°C/second max
Reflow	- Temperature ( $T_L$ ) (Liquidus)	217°C
	- Time ( $t_L$ )	60 -150 secs
Peak Temperature ( $T_P$ )		260 <sup>+0/-5</sup> °C
Time within 5°C of actual peak Temperature ( $t_p$ )		20 - 40 secs
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (t)		8 minutes Max.
Do not exceed		260°C



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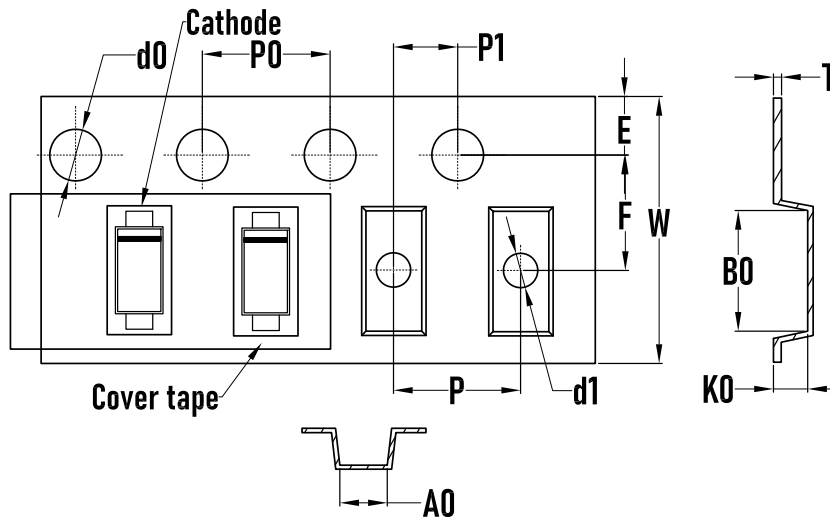
ESD Protection Diode

## Package Information - SOD-123



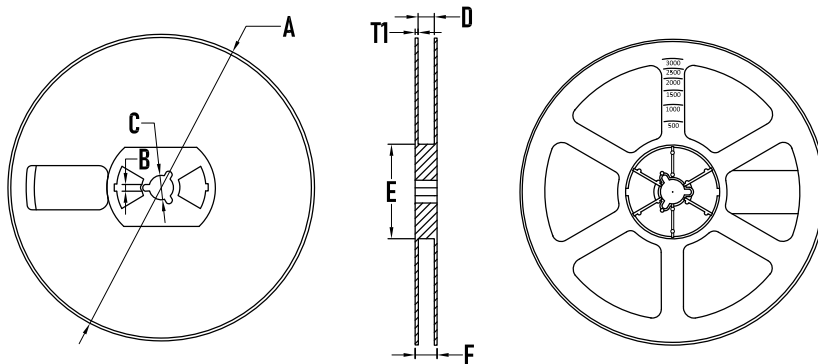
Symbol	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.950	1.350	0.037	0.053
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.450	0.650	0.018	0.026
c	0.080	0.150	0.003	0.006
D	1.500	1.700	0.059	0.067
E	2.600	2.800	0.102	0.110
E1	3.550	3.850	0.140	0.152
L	0.500REF		0.020REF	
L1	0.250	0.450	0.010	0.018
θ	0°	8°	0°	8°

## Packaging Tape - SOD-123



SYMBOL	MILLIMETER
A0	2.10±0.1
B0	4.0 ±0.1
d0	1.5±0.1
d1	1.0±0.1
E	1.75±0.1
F	3.50±0.1
K0	1.25±0.1
P	4.00±0.1
P0	4.00±0.1
P1	2.00±0.1
W	8.00±0.1
T	0.2±0.02

## Packaging Reel



SYMBOL	MILLIMETER
A	177.8±0.2
B	2.7±0.2
C	13.5±0.2
D	9.6±0.3
E	54.5±0.2
F	12.3±0.3
T1	1.0±0.2
Quantity	3000PCS

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