

ESD9Z5.0LC

List

List.....	1
Package outline.....	2
Features.....	2
Mechanical data.....	2
Maximum ratings	2
Electrical characteristics.....	2
Rating and characteristic curves.....	3
Electrical parameters.....	4
Pinning information.....	4
Suggested solder pad layout.....	4
Packing information.....	5
Reel packing.....	6
Suggested thermal profiles for soldering processes.....	6

ESD9Z5.0LC

80W Surface Mount Bi-Directional TVS For ESD Protection Diode - 5.0V

Features

- 80 Watts peak pulse power ($t_p=8/20\mu s$).
- Protects one line.
- Replacement for MLV(0402).
- Low clamping voltage.
- Low leakage
- Working voltage : 5.0V
- Solid-state silicon-avalanche technology.
- Provide transient protection:
 - IEC 61000-4-2 (ESD) $\pm 30KV$ (Air), $\pm 30KV$ (Contact).
 - IEC 61000-4-4 (EFT) 40A (5/50ns).
 - IEC 61000-4-5 (Lightning) 5A (8/20 μs).
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free part, ex.ESD9Z5.0LC-H

Applications

- Cellular Handsets & Accessories.
- Personal Digital Assistants (PDAs)
- Notebooks & Handhelds.
- Portable Instrumentation

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOD-923FL
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.00044 gram

Maximum ratings (at $T_A=25^\circ C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak pulse power ($t_p=8/20\mu s$)	P_{PP}	80	W
Peak pulse current ($t_p=8/20\mu s$)	I_{PP}	5	A
Operating temperature	T_J	+125	$^\circ C$
Storage temperature	T_{STG}	-55 to +150	$^\circ C$

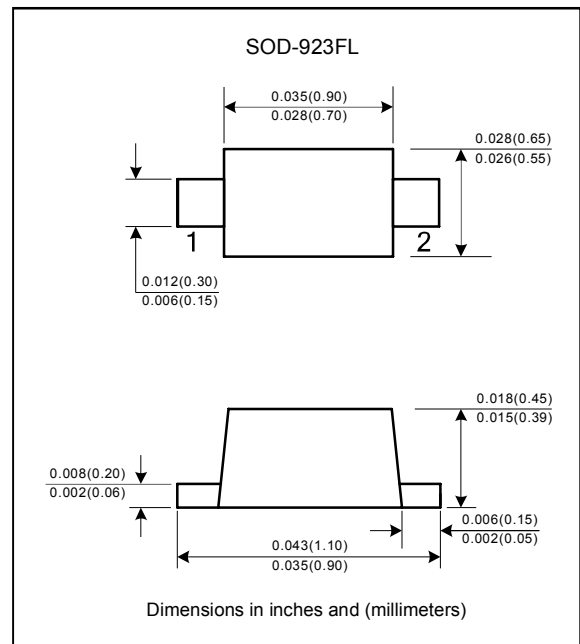
Electrical characteristics (at $T_A=25^\circ C$ unless otherwise noted)

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Reverse stand-off voltage		V_{RWM}			5.0	V
Breakdown voltage	$I_T=1mA$	V_{BR}	6.0			V
Reverse leakage current	$V_{RWM}=5V$	I_R			0.2	μA
Clamping voltage	$I_{PP}=1A$, $t_p=8/20\mu s$	V_C		9	10	V
	$I_{PP}=5A$, $t_p=8/20\mu s$			9.5	12	
Dynamic resistance ^{1,2}	$T_{LP}=0.2/100ns$	R_{DYN}		0.3		Ω
Junction capacitance	$V_R=0V$, $f=1MHz$	C_J		8	9.6	pF

Note :

1. T_{LP} Setting : $t_p=100ns$, $t_r=0.2ns$, I_{TLP} and V_{TLP} Sample window : $t_1=70ns$ to $t_2=90ns$.
2. Dynamic resistance calculated from $I_{PP}=4A$ to $I_{PP}=16A$ using "Best Fit".

Package outline



Rating and characteristic curves(ESD9Z5.0LC)

Figure 1 : Peak Pulse Power vs. Pulse Time

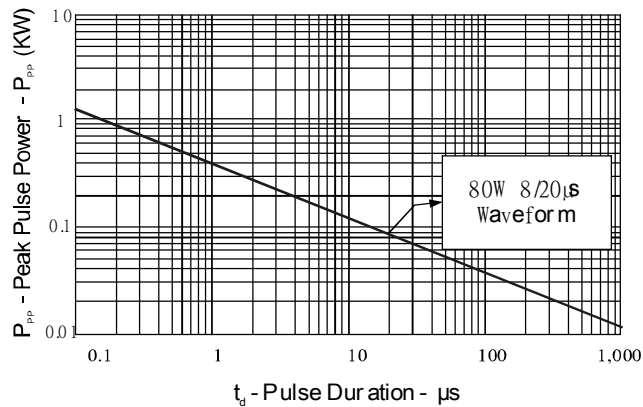


Figure 2 : Power Derating Curve

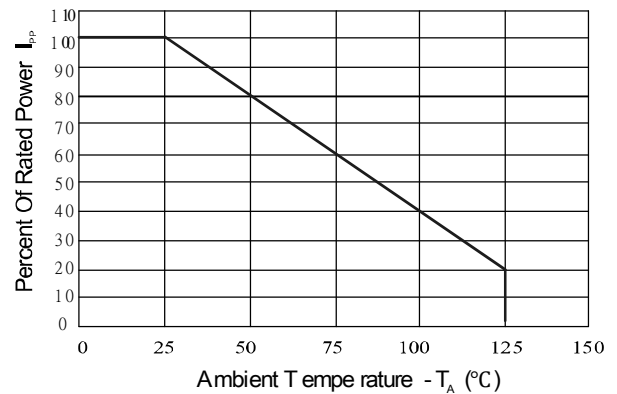


Figure 3 : Clamping Voltage vs. Peak Current

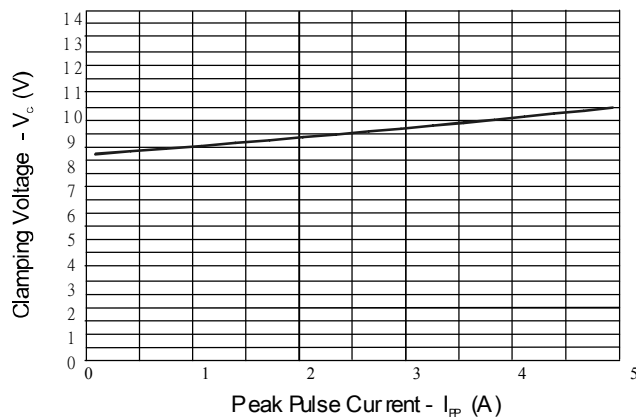


Figure 4 : Normalized Junction Capacitance vs. Reverse Voltage

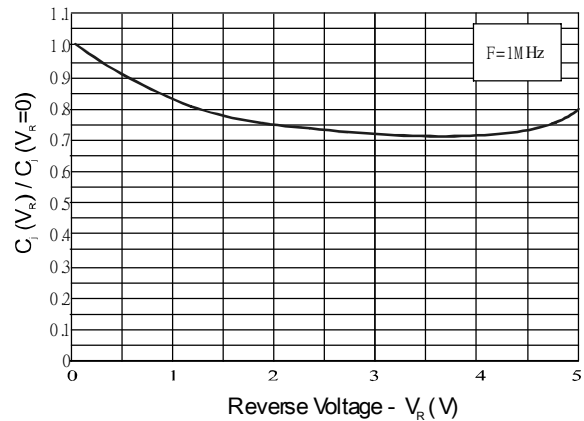


Figure 5 : T_{LP} Positive I-V Curve

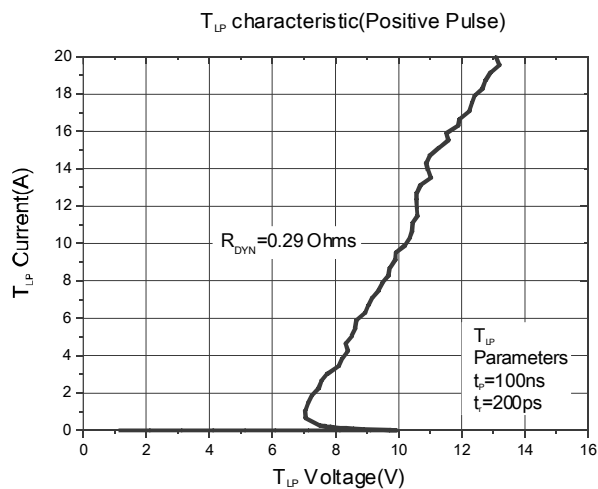
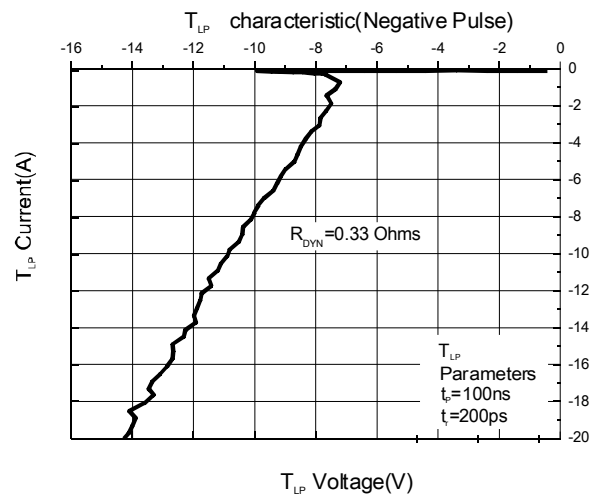
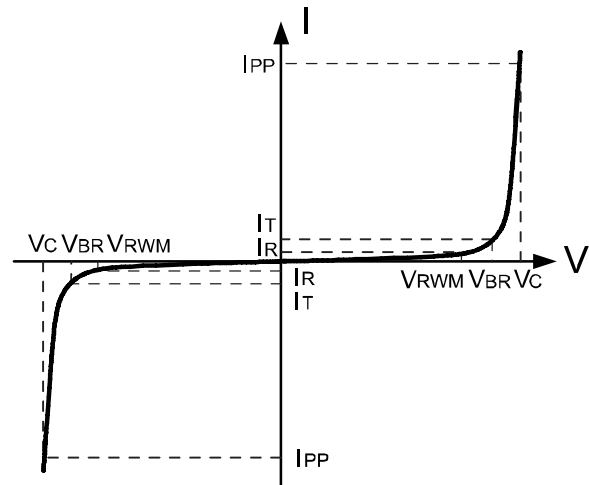


Figure 6 : T_{LP} Negative I-V Curve



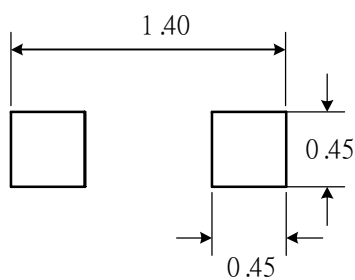
ESD9Z5.0LC**Electrical Parameters ($T_A=25^{\circ}\text{C}$)**

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

**Pinning information**

Making Code	Symbol

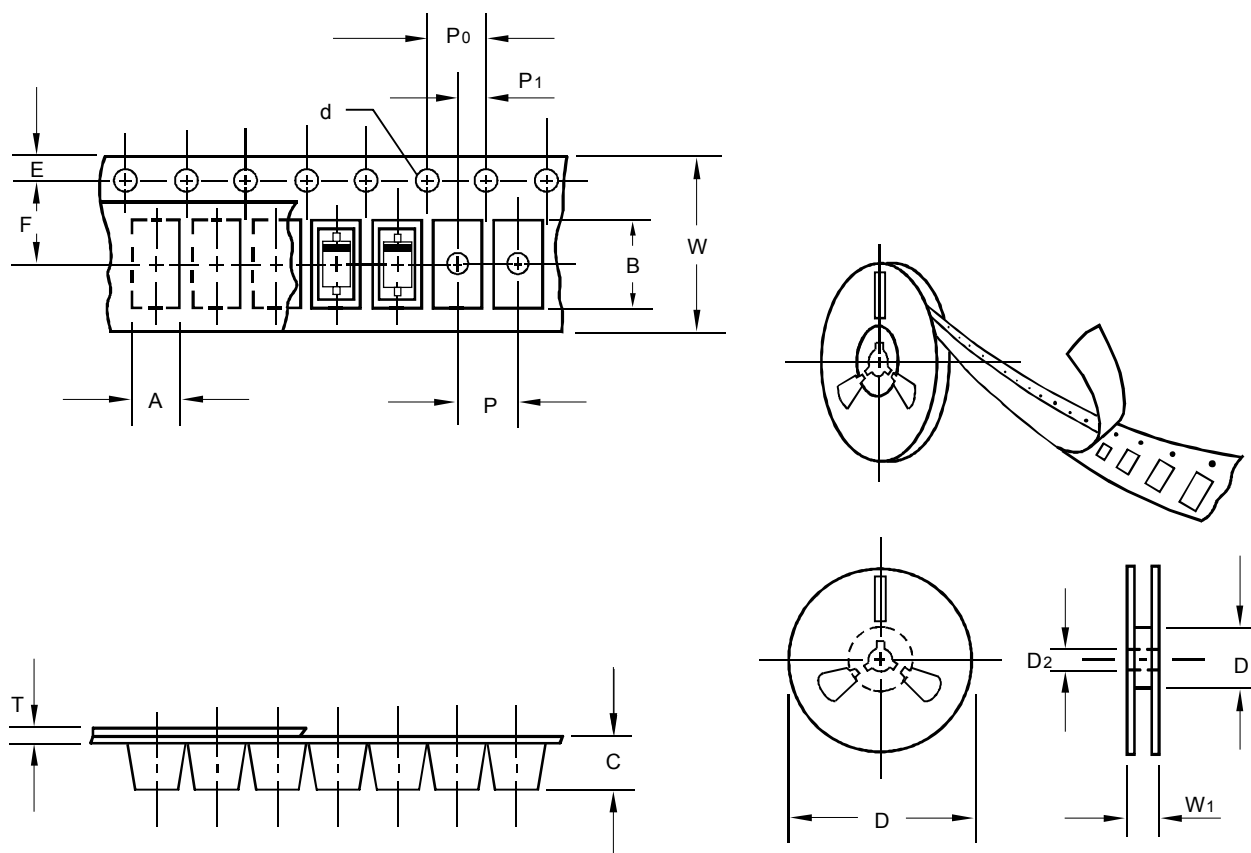
C=Specific Device Code.
E=Month Code

Suggested solder pad layout

DIMENSIONS : MILLIMETERS

ESD9Z5.0LC

Packing information



unit:mm

Item	Symbol	Tolerance	SOD-923FL
Carrier width	A	0.05	0.70
Carrier length	B	0.05	1.12
Carrier depth	C	0.05	0.48
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D ₁	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D ₁	min	62.00
Feed hole diameter	D ₂	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.50
Punch hole pitch	P	0.1	2.00
Sprocket hole pitch	P ₀	0.1	4.00
Embossment center	P ₁	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W ₁	1.0	11.40

Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

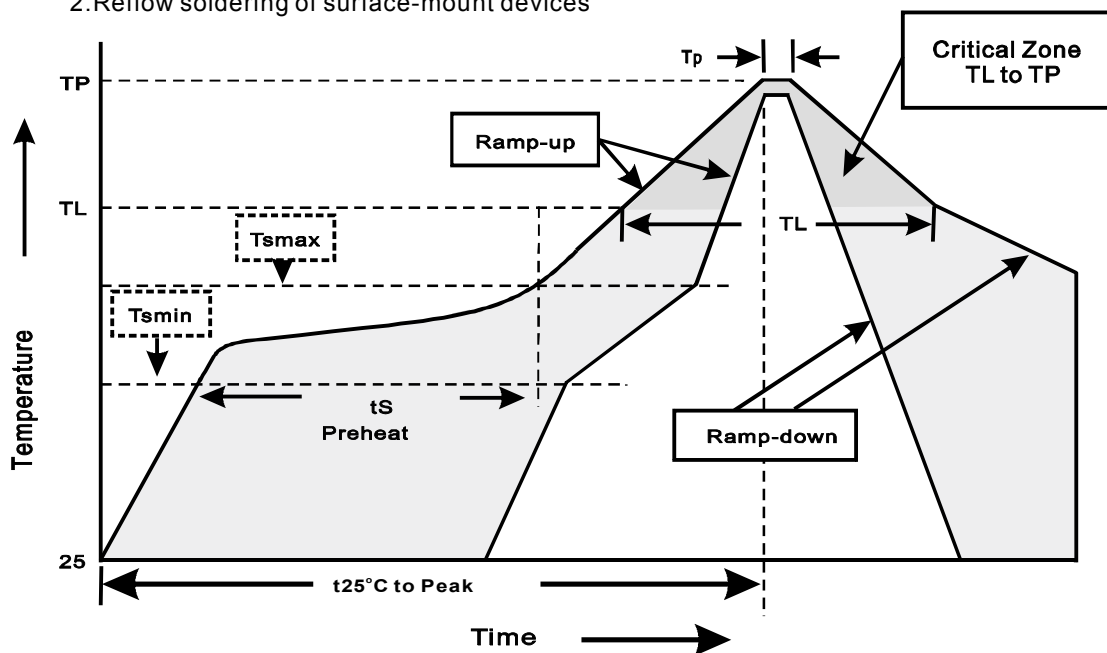
ESD9Z5.0LC

Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)	CARTON (pcs)	APPROX. GROSS WEIGHT (kg)
SOD-923FL	7"	8,000	2.0	80,000	183*183*123	178	382*262*387	640,000	9.50

Suggested thermal profiles for soldering processes

- 1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(T _L to T _P)	<3°C/sec
Preheat -Temperature Min(T _{smin}) -Temperature Max(T _{smax}) -Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{smax} to T _L -Ramp-upRate	<3°C/sec
Time maintained above: -Temperature(T _L) -Time(t _L)	217°C 60~260sec
Peak Temperature(T _P)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t _p)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes