

ESDA3L03C THRU ESDA3L24C

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ESDA3L03C THRU ESDA3L24C**Low Capacitance Surface Mount Transient Voltage Suppressor Array 3.3V-24V****Features**

- This series is designed for average power 350W approximated ESD protection, different V_{RWM} , different peak pulse power available
- Bi-directional configuration
- Working voltages: 3.3V, 5.0V, 8.0V, 12V, 15V, 24V
- Protects one I/O line
- Low clamping voltage
- Low leakage current
- Suffix "-H" indicates Halogen-free parts, ex. ESDA3L03C-H

IEC compatibility

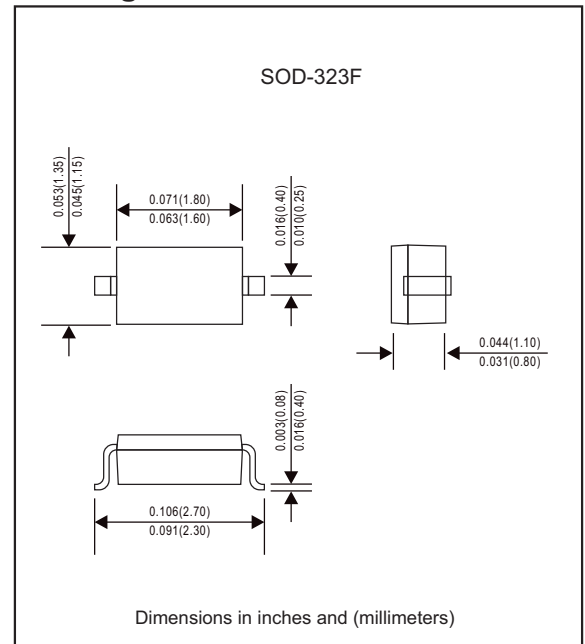
- IEC61000-4-2 (ESD) $\pm 15\text{kV}$ (air), $\pm 8\text{kV}$ (contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- IEC61000-4-5 (Lightning) 12A (8/20 μs)

Applications

- Cell phone handsets and accessories
- Microprocessor based equipment
- Personal digital assistants (PDA's)
- Notebooks, desktops, and servers
- Portable instrumentation
- Peripherals
- USB interface

Mechanical data

- Epoxy : UL94-V0 rated flame retardant
- Case : Molded plastic, SOD-323F
- Terminals :Plated terminals, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any
- Weight : Approximated 0.005 gram

Package outline**Maximum ratings** (at $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Lead soldering temperature	T_L	260 (10 sec.)	$^\circ\text{C}$
Operating junction temperature range	T_J	-55 to +150	$^\circ\text{C}$
Storage temperature range	T_{STG}	-55 to +150	$^\circ\text{C}$

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

Part No. (Note 1)	V_{RWM} (V) Max.	$V_{BR}(V)@I_T$ Min.	I_T (mA)	$V_C(V)$ @ $I_{PP}=1.0A$ Max.	I_{PP} (A)	$V_C(V)$ @ I_{PP} Max.	$I_R(\mu A)$ @ V_{RWM} Max.	PPK (W) Max.	$C_J(pF)$ (Note 2) Typ.
ESDA3L03C	3.3	4.0	1.0	7.5	8	13.9	40	111	1.0
ESDA3L05C	5.0	6.0	1.0	9.8	8	18.3	5	146	1.0
ESDA3L08C	8.0	8.5	1.0	13.4	8	18.5	2	148	1.0
ESDA3L12C	12.0	13.3	1.0	19.0	6	28.6	1	172	1.0
ESDA3L15C	15.0	16.7	1.0	24.0	5	31.8	1	159	1.0
ESDA3L24C	24.0	26.7	1.0	43.0	3	56.0	1	168	1.0

Notes1: Part numbers with an additional "C" suffix are bi-directional devices, i.e., ESDA3L03C.
 2: Off-state capacitance 1MHz, zero dc bias.

Rating and characteristic curves (ESDA3L03C THRU ESDA3L24C)

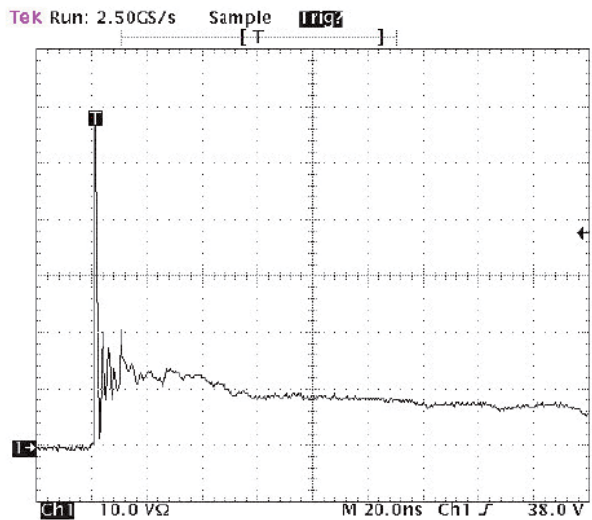


Figure 1. ESD Clamping Voltage Screenshot
Positive 8 kV contact per IEC 61000-4-2

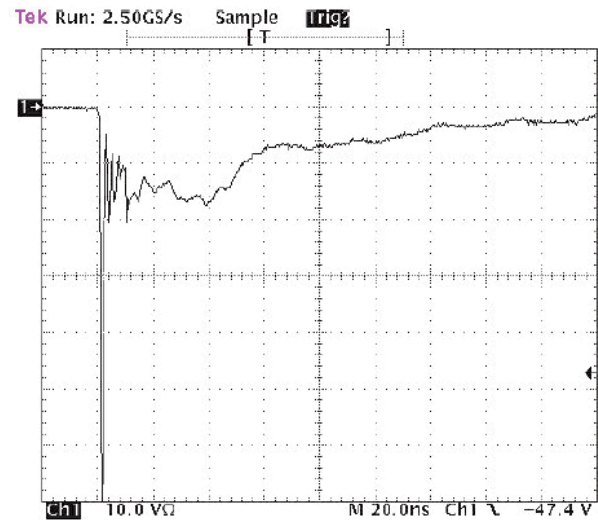


Figure 2. ESD Clamping Voltage Screenshot
Negative 8 kV contact per IEC 61000-4-2

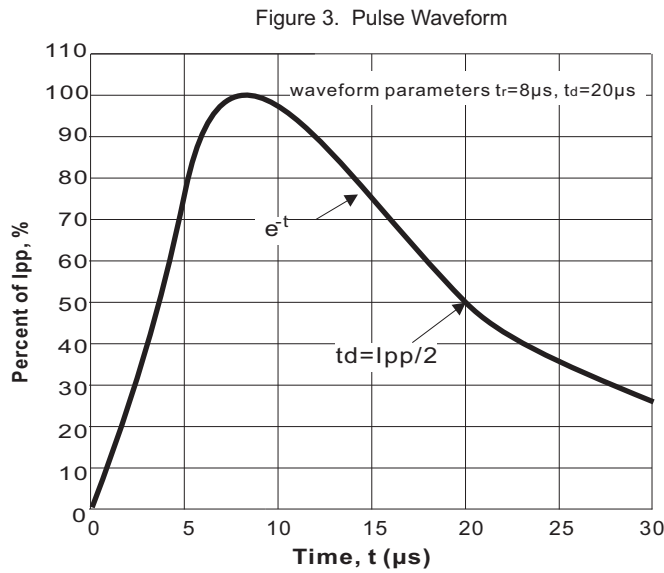
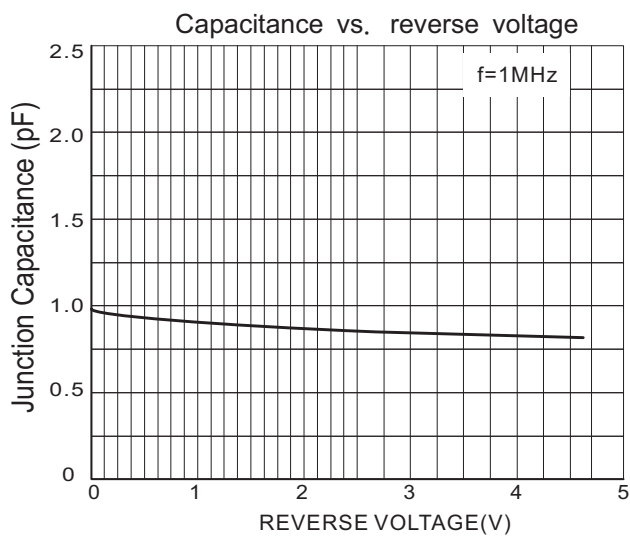
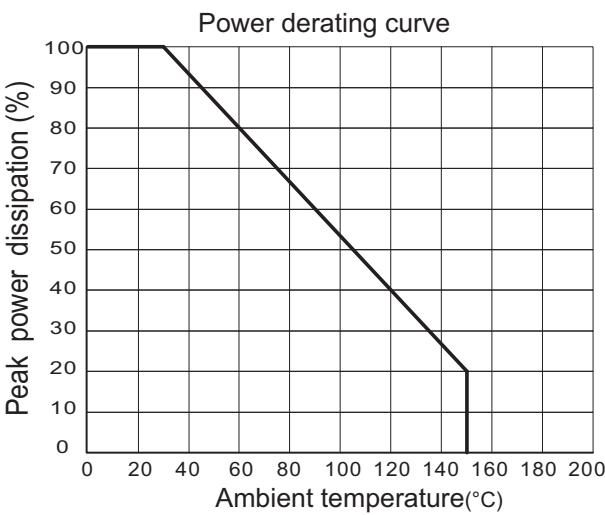
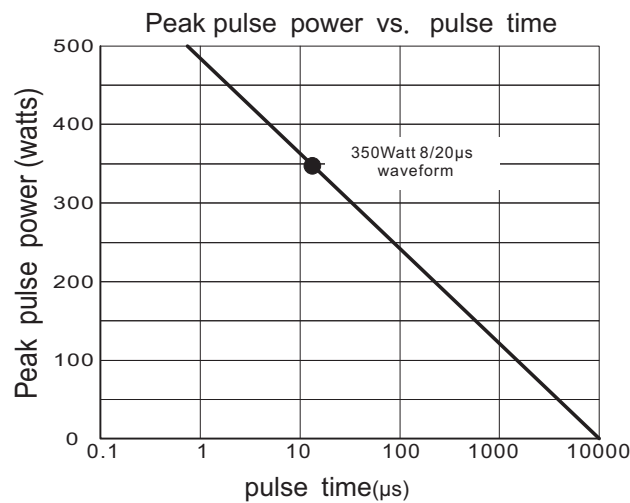
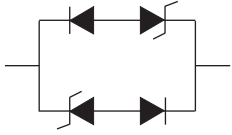


Figure 3. Pulse Waveform

Rating and characteristic curves (ESDA3L03C THRU ESDA3L24C)

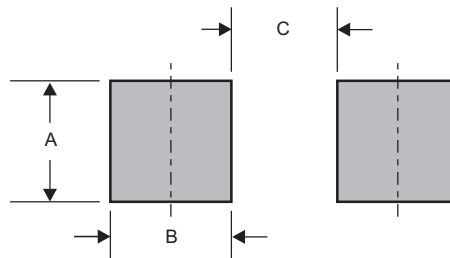


ESDA3L03C THRU ESDA3L24C**Pinning information**

Pin	Simplified outline	Symbol
Bi-Directional		

Marking

Type number	Marking code
ESDA3L03C	CC,3B
ESDA3L05C	AC,5B
ESDA3L08C	BC,8B
ESDA3L12C	DC,AB
ESDA3L15C	EC,BB
ESDA3L24C	HC,CB

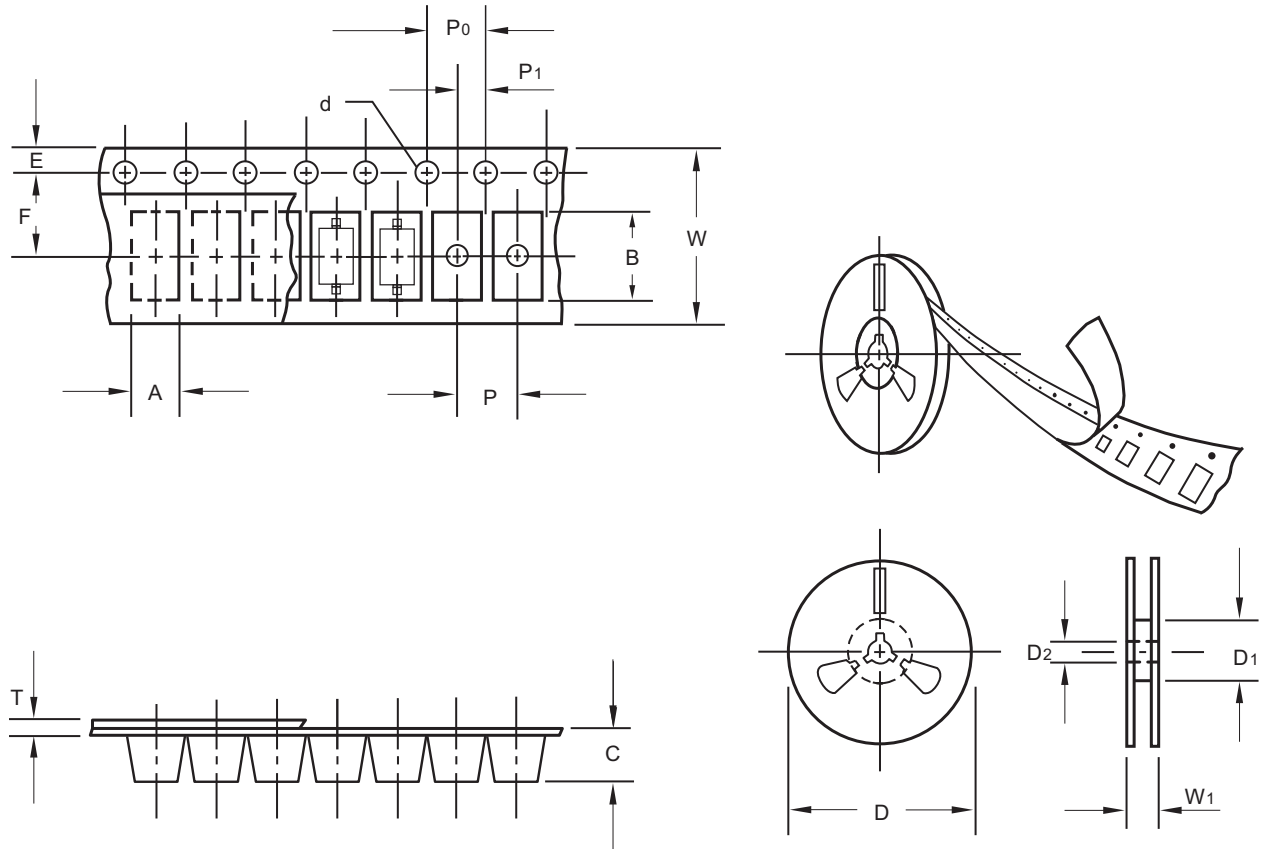
Suggested solder pad layout

Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SOD-323F	0.033 (0.83)	0.025 (0.63)	0.063 (1.60)

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Packing information



unit:mm

Item	Symbol	Tolerance	SOD-323F
Carrier width	A	0.1	1.48
Carrier length	B	0.1	3.30
Carrier depth	C	0.1	1.25
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D1	min	54.40
Feed hole diameter	D2	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	4.00
Sprocket hole pitch	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W1	1.0	11.40

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

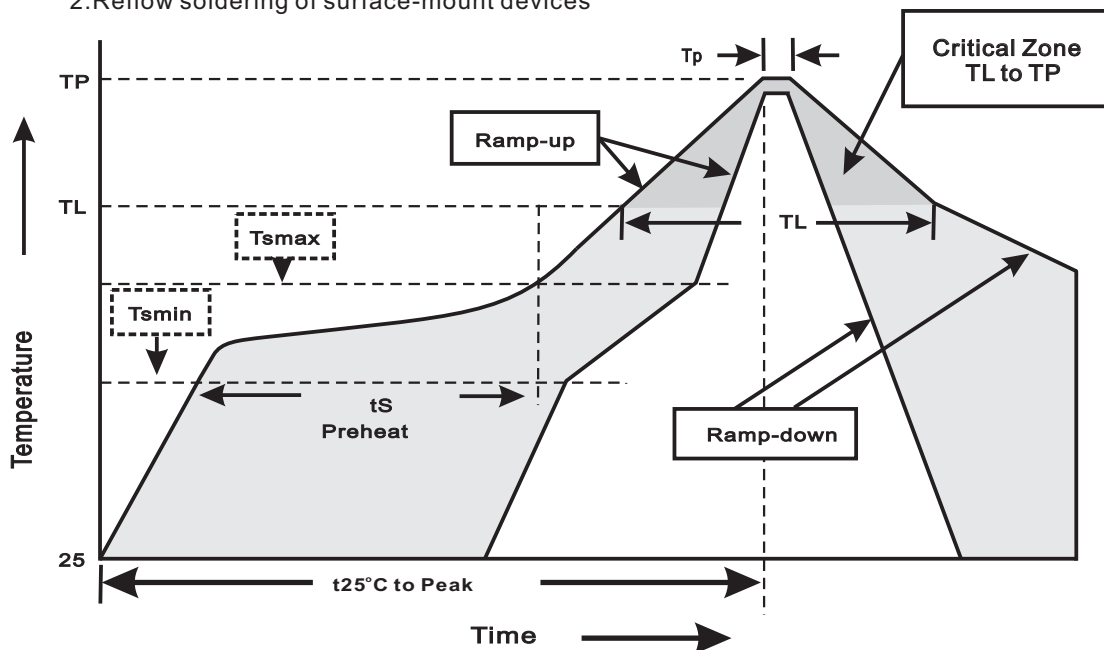
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Reel packing

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-323F	7"	3,000	4.0	30,000	183*123*183	178	382*257*387	240,000	8.0

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 _{smmin}) -Temperature Max(T _{smmax}) -Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{smmax} 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

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High reliability test capabilities

Item Test	Conditions	Reference
1. Solder Resistance	at $260 \pm 5^\circ\text{C}$ for 10 ± 2 sec.	MIL-STD-750D METHOD-2031
2. Solderability	at $245 \pm 5^\circ\text{C}$ for 5 sec.	MIL-STD-202F METHOD-208
3. High Temperature Reverse Bias	$V_{BR} = V_{BR \text{ Min}} * 80\%$ at $T_J = 150^\circ\text{C}$ for 168 hrs.	MIL-STD-750D METHOD-1038
4. Pressure Cooker	$15P_{SIG}$ at $T_A = 121^\circ\text{C}$ for 4 hrs.	JESD22-A102
5. Temperature Cycling	-55°C to $+125^\circ\text{C}$ dwelled for 30 min. and transferred for 5min. total 10 cycles.	MIL-STD-750D METHOD-1051
6. Humidity	at $T_A = 85^\circ\text{C}$, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1021
7. High Temperature Storage Life	at 175°C for 1000 hrs.	MIL-STD-750D METHOD-1031