

ESDA3L03CW Thru ESDA3L24CW

List

List.....	1
Features.....	2
Applications.....	2
Package outline.....	2
Mechanical data.....	2
Maximum ratings.....	2
Electrical characteristics.....	2
Rating and characteristic curves.....	3
Pinning information.....	4
Marking.....	4
Suggested solder pad layout.....	4
Packing information.....	5
Reel packing.....	6
Suggested thermal profiles for soldering processes.....	6
High reliability test capabilities.....	7

ESDA3L03CW Thru ESDA3L24CW

**350W Low Capacitance Bi-Directional
TVS For ESD Protection : 3.0V ~ 24V**

Features

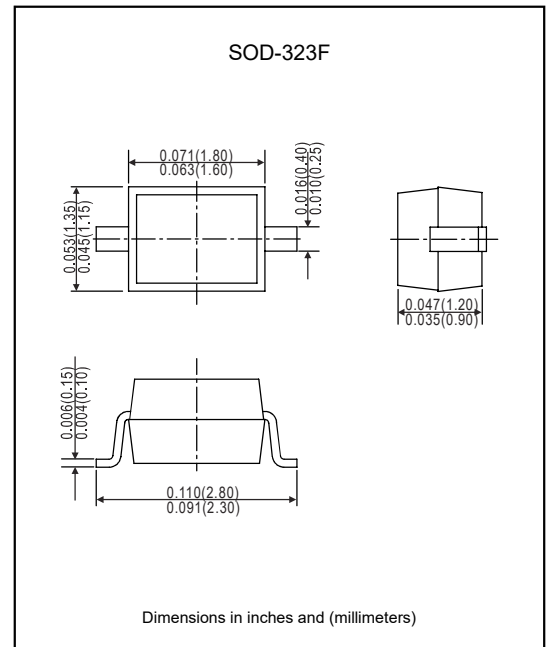
- 350 Watts peak pulse power ($t_p=8/20\mu s$).
- Protects one power or I/O port.
- Low clamping and operating voltages.
- Low leakage current
- Transient protection for high speed data lines to:
IEC 61000-4-2(ESD) $\pm 30KV$ (Air), $\pm 30KV$ (Contact).
IEC 61000-4-4(ESD) 40A (5/50ns).
- Solid-state silicon avalanche technology.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free parts, ex. ESDA3L03CW-H.

Applications

- Cell phone handsets and accessories.
- Microprocessor based equipment.
- Portable instrumentation.
- Personal digital assistant (PDA).

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.

Package outline**Maximum ratings** (At $T_A=25^\circ C$ unless otherwise noted)

Parameter	Symbols	Ratings	Units
Peak pulse power (8/20 μs)	P_{PK}	350	W
Lead soldering temperature (10 seconds duration)	T_L	260	$^\circ C$
Operating temperature	T_J	+125	$^\circ C$
Storage temperature	T_{STG}	-55 to +150	$^\circ C$

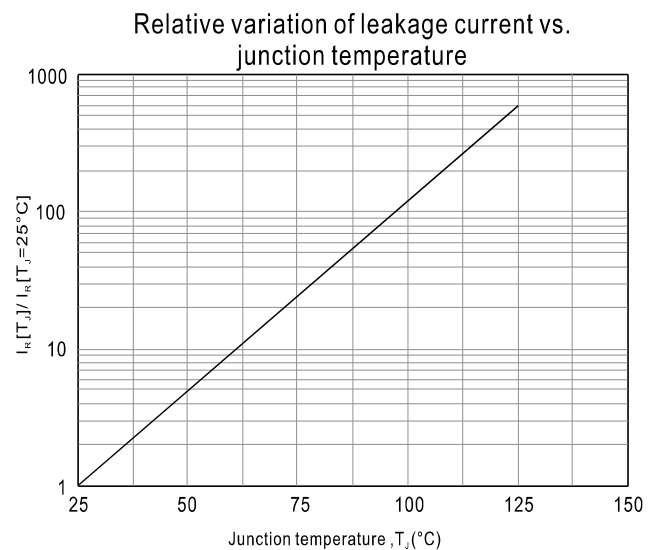
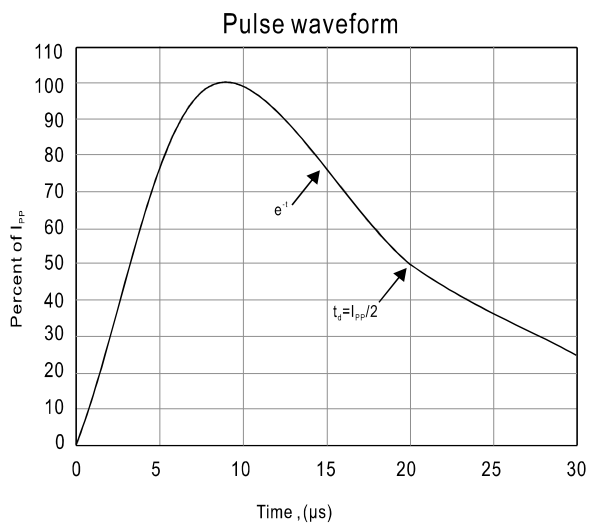
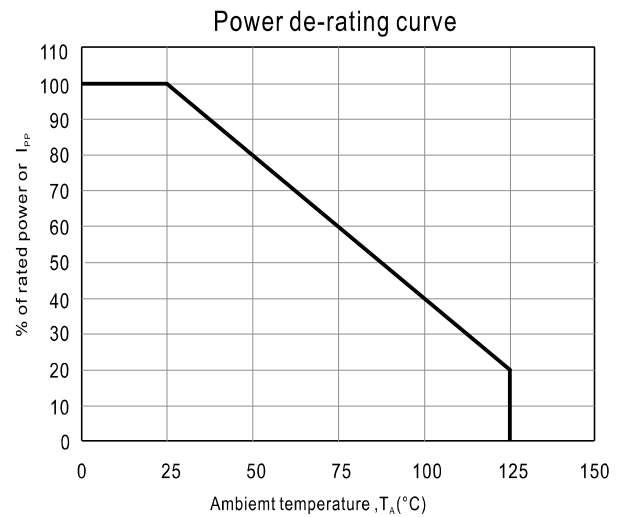
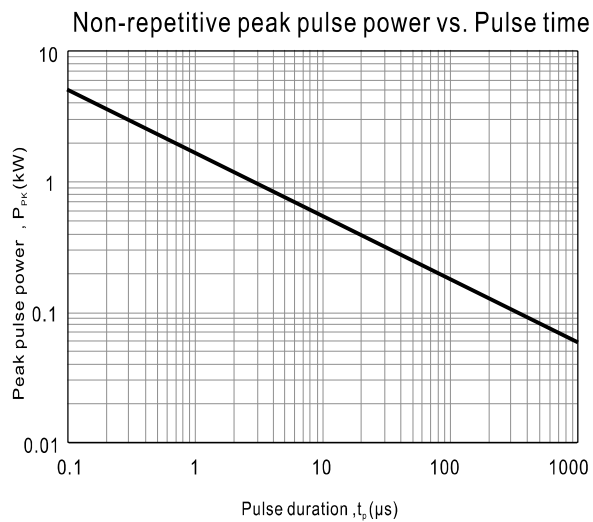
Electrical characteristics (At $T_A=25^\circ C$ unless otherwise noted)

Part No.	Reverse wroking voltage $V_{BR}@I_R$		Breakdown voltage $V_{BR}@I_{mA}$	Clamping voltage $V_C@1A$	Clamping voltage $V_C@I_{PP}$		Junction capacitance C_J	
	V	$\mu A(max.)$	V(min.)	V(max.)	V(max.)	A	pF (typ.) (note)	pF (max.) (note)
ESDA3L03CW	3	20	4	8.5	13.9	20	1	1.5
ESDA3L05CW	5	1	6	9.8	18.5	17	1	1.5
ESDA3L08CW	8	1	8.5	13.4	20.1	15	1	1.5
ESDA3L12CW	12	1	13.3	19	28.6	12	1	1.5
ESDA3L15CW	15	1	16.7	24	31.8	10	1	1.5
ESDA3L24CW	24	1	26.7	43	56	6	1	1.5

Note: 1. Off-state capacitance 1MHz, zero DC bias.

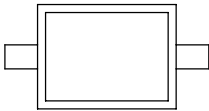
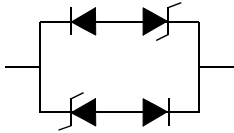
ESDA3L03CW Thru ESDA3L24CW

Rating and characteristic curves



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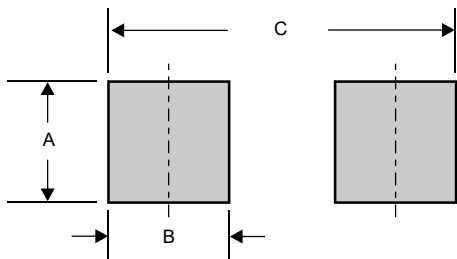
Pinning information

Pin	Simplified outline	Symbol
Bi-Directional		

Marking

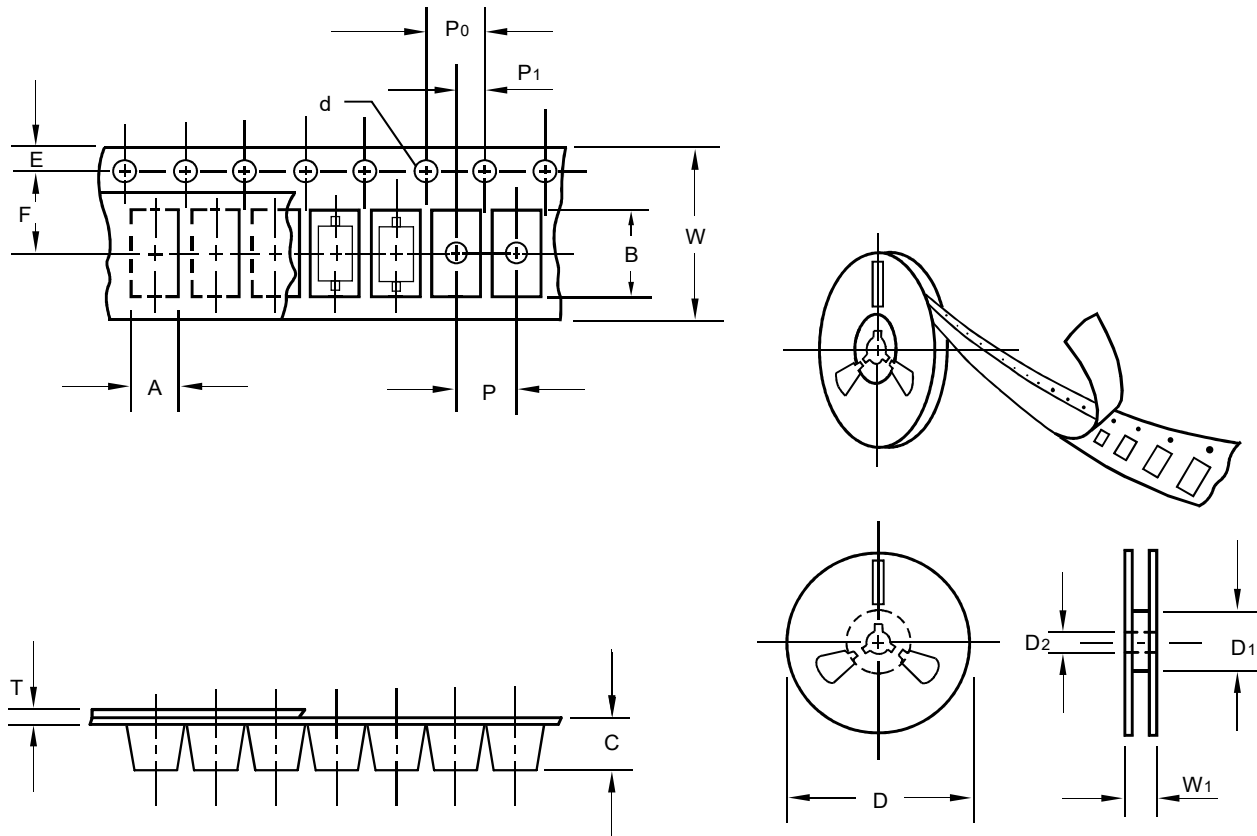
Type number	Marking code
ESDA3L03CW	CC
ESDA3L05CW	AC
ESDA3L08CW	BC
ESDA3L12CW	DC
ESDA3L15CW	EC
ESDA3L24CW	HC

Suggested solder pad layout



Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SOD-323F	0.031 (0.80)	0.031 (0.80)	0.118 (3.00)

ESDA3L03CW Thru ESDA3L24CW**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	D ₁	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D ₁	min	54.40
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	4.00
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.

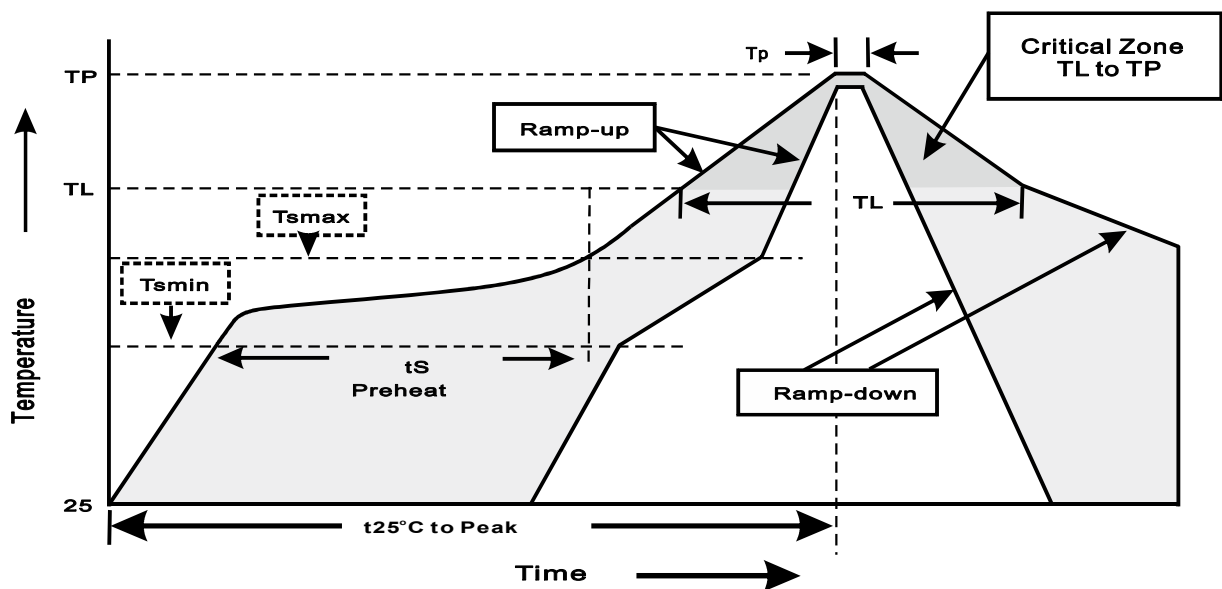
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Reel packing

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

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)	$<3^{\circ}\text{C}/\text{sec}$
Preheat - Temperature Min($T_{\text{smín}}$) - Temperature Max($T_{\text{smáx}}$) - Time(min to max)(t_s)	150°C 200°C 60~120sec
$T_{\text{smáx}}$ to T_L - Ramp-upRate	$<3^{\circ}\text{C}/\text{sec}$
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	$<6^{\circ}\text{C}/\text{sec}$
Time 25°C to Peak Temperature	$<6\text{minutes}$

ESDA3L03CW Thru ESDA3L24CW**High reliability test capabilities**

Item Test	Conditions	Reference
1. Solder Resistance	at 260±5°C for 10±2sec.	MIL-STD-750D METHOD-2031
2. Solderability	at 245±5°C for 5 sec.	MIL-STD-202F METHOD-208
3. High Temperature Reverse Bias	$V_{BR}=V_{BR\text{ Min}}*80\%$ at $T_J=125^\circ\text{C}$ 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°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