

ESDH3L5.0C-H

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Surface Mount Low Capacitance Bi-Directional TVS For ESD Protection: 5.0V

Features

- 176 Watts peak pulse power. ($t_p=8/20\mu s$)
- Solid-state silicon avalanche technology.
- Capacitance: 0.45pF (typ.).
- Low leakage current.
- Low clamping voltage.
- Complies with following standards:
 - IEC 61000-4-2 (ESD) ± 30 kV (Air), ± 30 kV (Contact)
 - IEC 61000-4-4 (EFT) 40A (5/50ns).
 - IEC 61000-4-5 (Lightning) 8A (8/20 μs).
- Lead-free parts meet RoHS requirements.
- Halogen-free (IEC61249-2-21) .

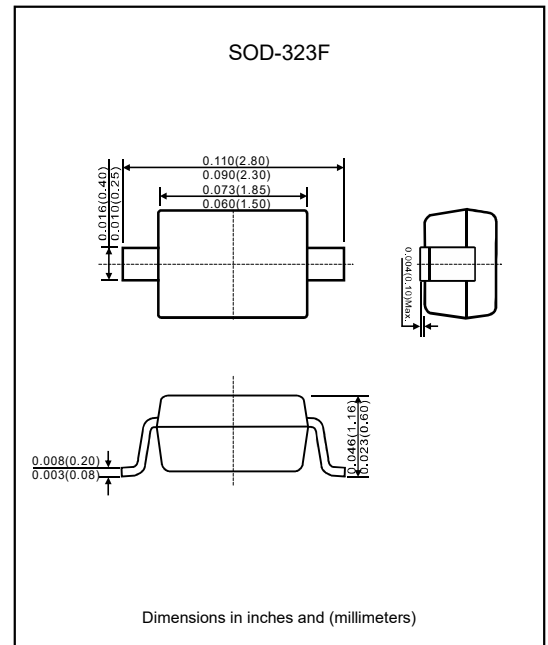
Applications

- USB ports, smart phone, and wireless systems.
- Ethernet 10/100/1000 base T.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant.
- Case : Molded plastic, SOD-323F.
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026.
- Mounting Position : Any.

Package outline



Maximum ratings (At $T_A=25^\circ\text{C}$ unless otherwise noted)

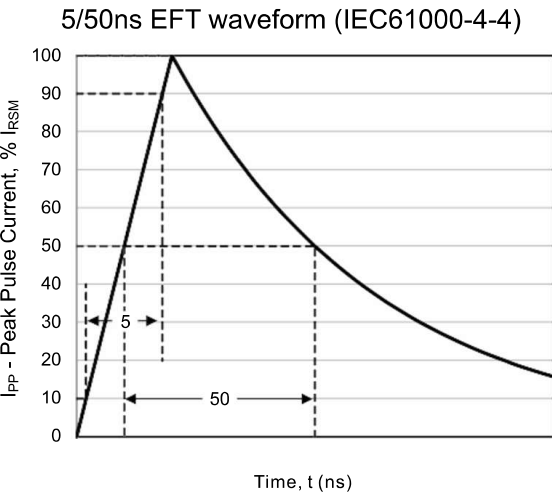
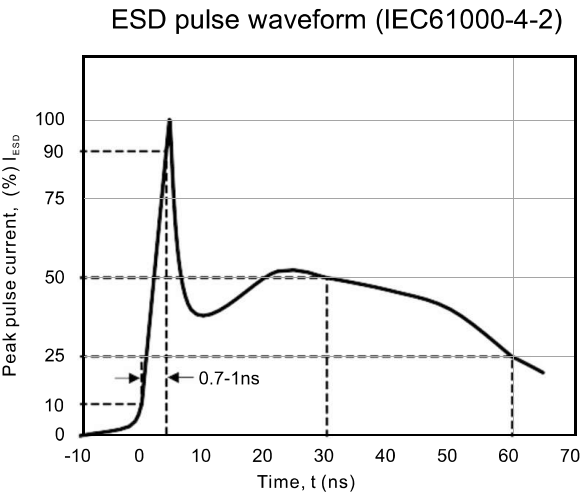
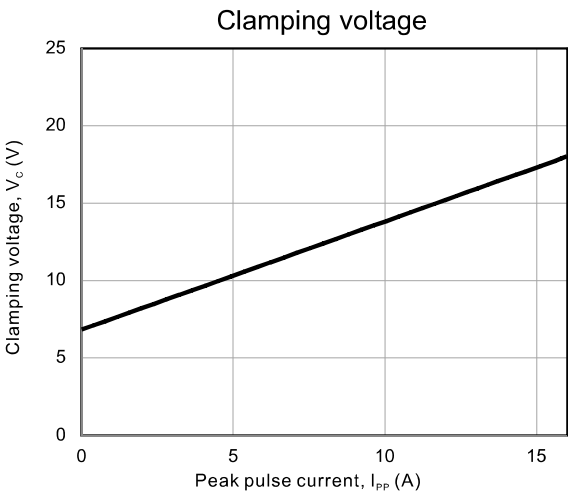
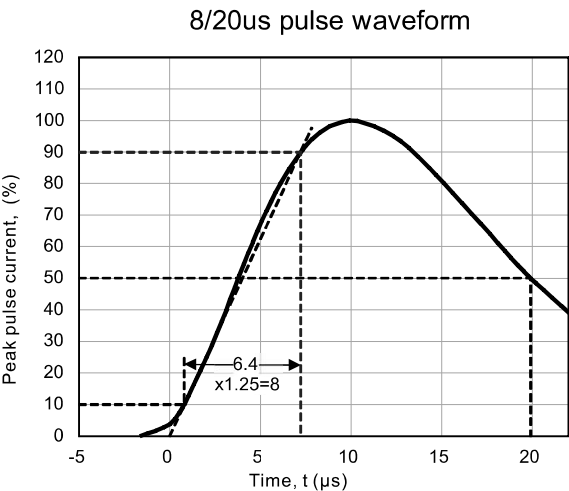
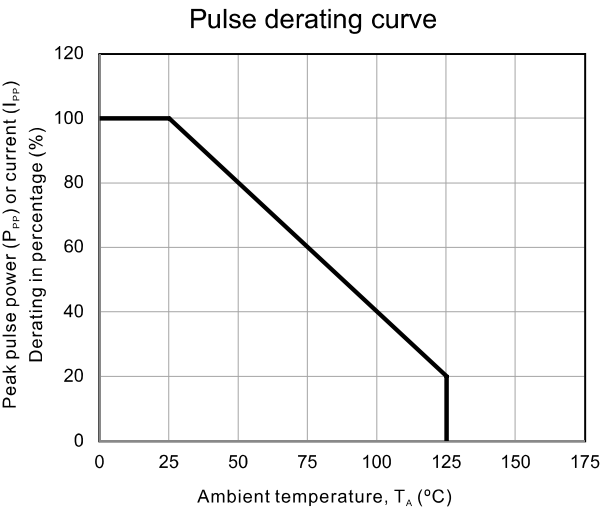
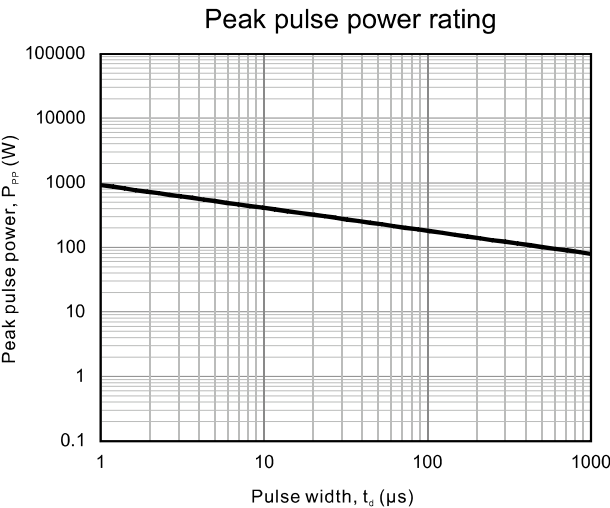
Parameter	Symbol	Ratings	Unit
Peak pulse power (8/20 μs)	P_{PK}	176	W
Peak pulse current (8/20 μs)	I_{PP}	8	A
ESD per IEC 61000-4-2 (Air)	V_{ESD}	± 30	kV
ESD per IEC 61000-4-2 (Contact)		± 30	
Lead soldering temperature (10 seconds duration)	T_L	260	$^\circ\text{C}$
Operating temperature range	T_J	-55 to +125	$^\circ\text{C}$
Storage temperature range	T_{STG}	-55 to +150	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Reverse working voltage	V_{RWM}				5	V
Breakdown voltage	V_{BR}	$I_R = 1\text{mA}$	6.5			V
Reverse leakage current	I_R	$V_{RWM} = 5\text{V}$			0.1	μA
ESD Clamping voltage	V_C	$I_{PP} = 1\text{A}, t_p = 8/20\mu s$		10		V
		$I_{PP} = 8\text{A}, t_p = 8/20\mu s$		18	22	
Junction capacitance	C_J	$V_R = 0\text{V}, f = 1.0\text{MHz}$		0.45	0.8	pF

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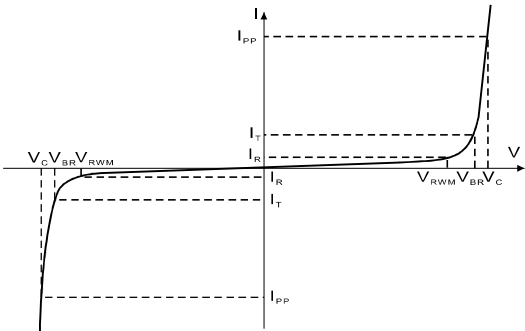
Rating and characteristic curves



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Rating and characteristic curves

Symbol	Parameter
I_{PP}	Reverse peak pulse current
V_C	Clamping voltage @ I_{PP}
V_{RWM}	Reverse working voltage
I_R	Reverse leakage current
V_{BR}	Breakdown voltage
I_T	Test current
V_F	Forward voltage
I_F	Forward current



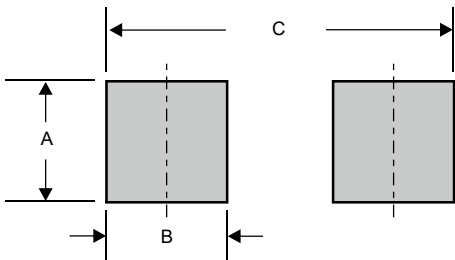
Pinning information

Pin	Simplified outline	Symbol
Bi-directional		

Marking

Type number	Marking code
ESDH3L5.0C-H	AC

Suggested solder pad layout

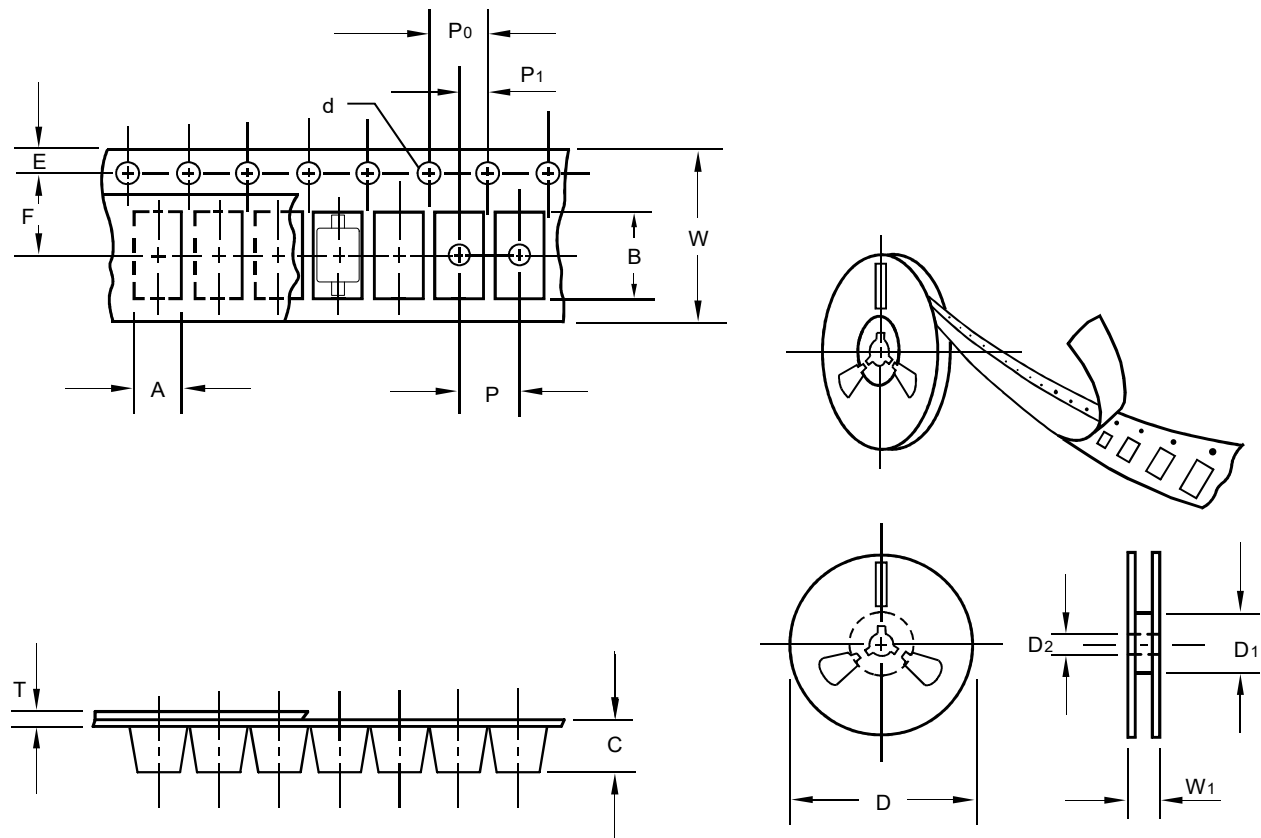


Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SOD-323F	0.031 (0.80)	0.031 (0.80)	0.124 (3.15)

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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	53.40
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	9.50

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

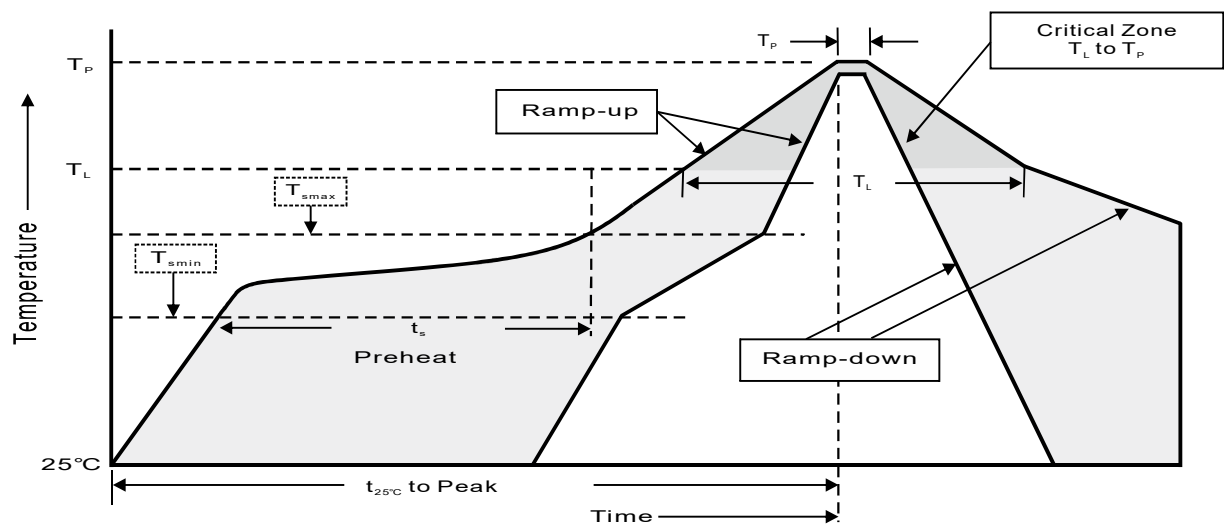
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Reel packing

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 °C/sec
Preheat - Temperature Min (T_{smin}) - Temperature Max (T_{smax}) - Time (Min to Max) (t_s)	150°C 200°C 60 ~ 120 sec
T_{smax} to T_L - Ramp-up rate	< 3 °C/sec
Time maintained above : - Temperature (T_L) - Time (T_L)	217°C 60 ~ 260 sec
Peak temperature (T_p)	255 °C -0/+5°C
Time with 5°C of actual peak temperature (T_p)	10 ~30 sec
Ramp-down rate	< 6 °C/sec
Time 25°C to peak temperature	< 6 minutes