ESD3Z1524

List

ESD3Z1524

Surface Mount Bi-Directional TVS
For ESD Protection Diode : 15V / -24V

Features

- 160W peak pulse power (8/20μs).
- Low Channel input capacitance.
- Protects one data line of the LIN.
- Complies with following standards:
- IEC 61000-4-2 (ESD) immunity test : Air discharge: ±30kV.
  Contact discharge: ±30kV.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free part, ex.ESD3Z1524-H.

Applications

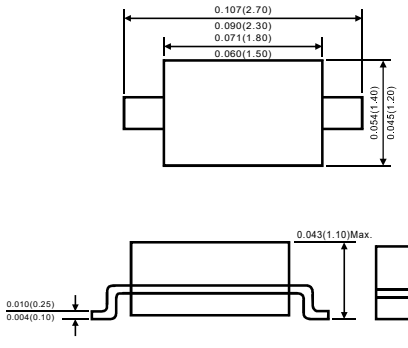
- LIN Bus protection.

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.
- Weight : Approximated 0.005 gram.

Package outline

SOD-323F



Dimensions in inches and (millimeters)

Maximum ratings (At T_A=25°C unless otherwise noted)

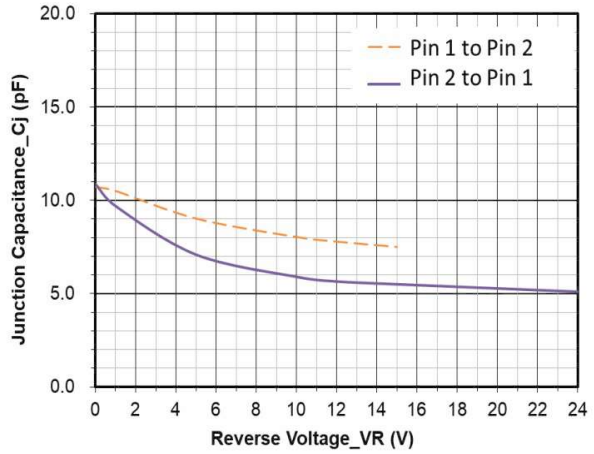
Parameter	Symbol	Value	Unit
Peak pulse power (t_P = 8/20μs)	P_{PK}	160	W
Peak Pulse Current (t_P = 8/20μs), (Pin 1 to Pin 2)	I_{PP}	5	A
Peak Pulse Current (t_P = 8/20μs), (Pin 2 to Pin 1)		3	
ESD Per IEC 61000-4-2 (Air)	V_{ESD}	±30	KV
ESD Per IEC 61000-4-2 (Contact)		±30	
Operating temperature range	T_{OPT}	-55 to +85	℃
Storage temperature range	T_{STG}	-55 to +150	℃

Electrical characteristics (At T_A=25°C unless otherwise noted)

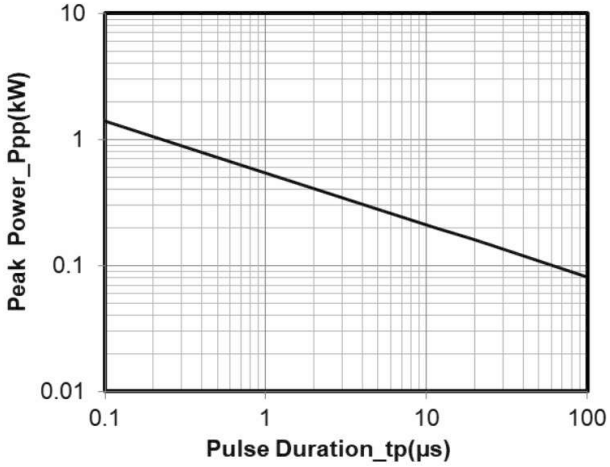
Parameter	Symbol	Conditions	Pin1 to 2 (15V TVS)			Pin1 to 2 (24V TVS)			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Reverse working voltage	V_{RWM}				24				V
Breakdown voltage	V_{BR}	I_T = 1mA	17.1			25.4			V
Reverse leakage current	I_R	$V_R = V_{RWM}$			50			50	nA
Clamping voltage	V_C	I_{PP} = 1A (t_P = 8/20μs)			25			35	V
		I_{PP} = 3A (t_P = 8/20μs)						50	
		I_{PP} = 5A (t_P = 8/20μs)			35				
Junction capacitance	C_{J1}	V_R = 0V, f = 1MHz			13			13	pF
	C_{J2}	$V_R = V_{RWM}$, f=1MHz			10			8	

ESD3Z1524

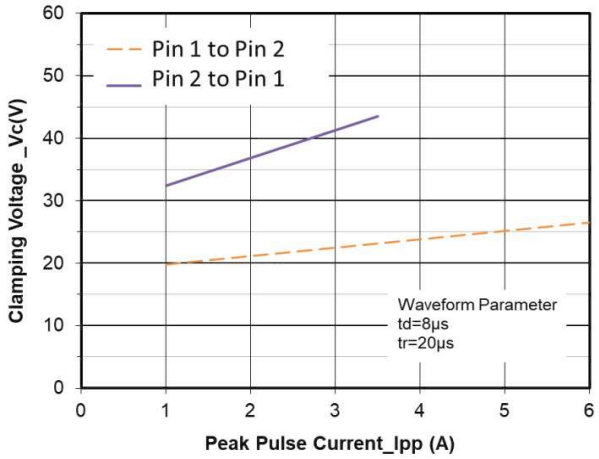
Rating and characteristic curves



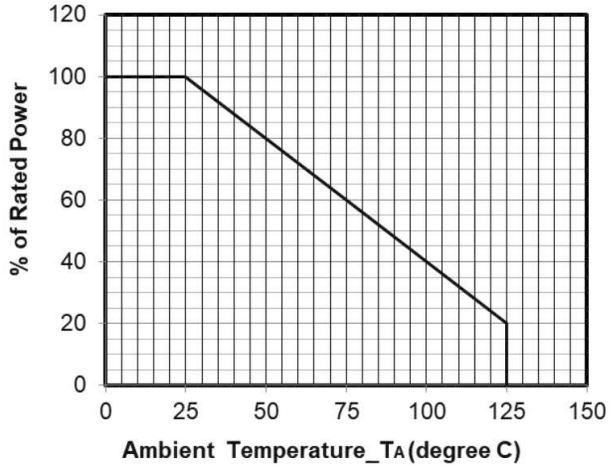
Junction Capacitance vs. Reverse Voltage



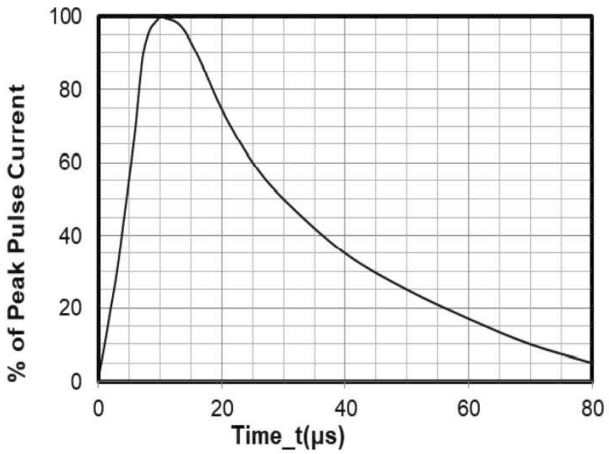
Peak Pulse Power vs. Pulse Time



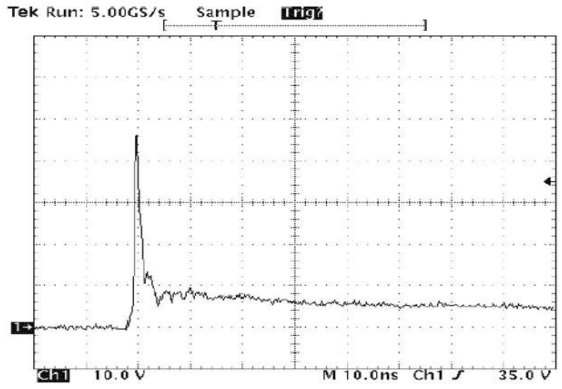
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



8 X 20μs Pulse Waveform



Note：Data is taken with a 10x attenuator

ESD Clamping Voltage

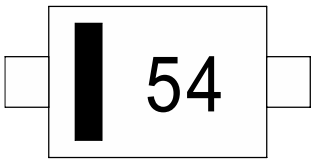
8 kV Contact per IEC61000−4−2

ESD3Z1524

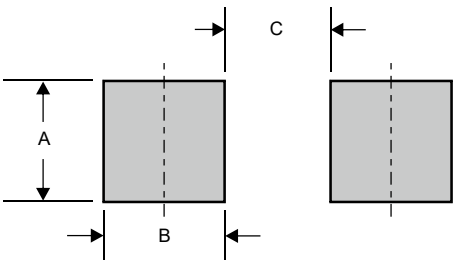
Pinning information

Pin Configuration	Simplified outline	Symbol
Pin 1 Cathode Pin 2 Anode		

Marking



Suggested solder pad layout

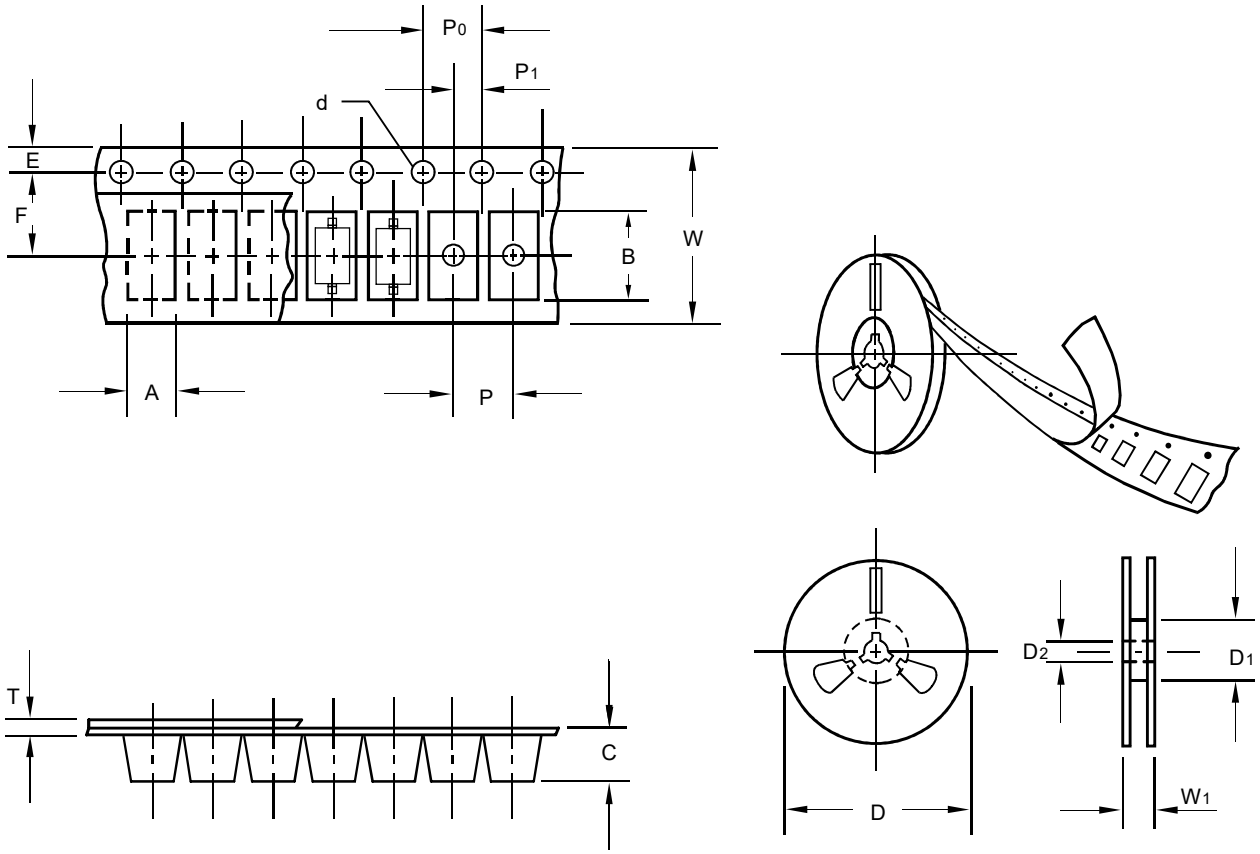


Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SOD-323F	0.031 (0.80)	0.031 (0.80)	0.056 (1.40)

ESD3Z1524

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	55.00
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	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	9.50

Note:Devices are packed in accor dance with EIA standar RS-481-A and specifications listed above.

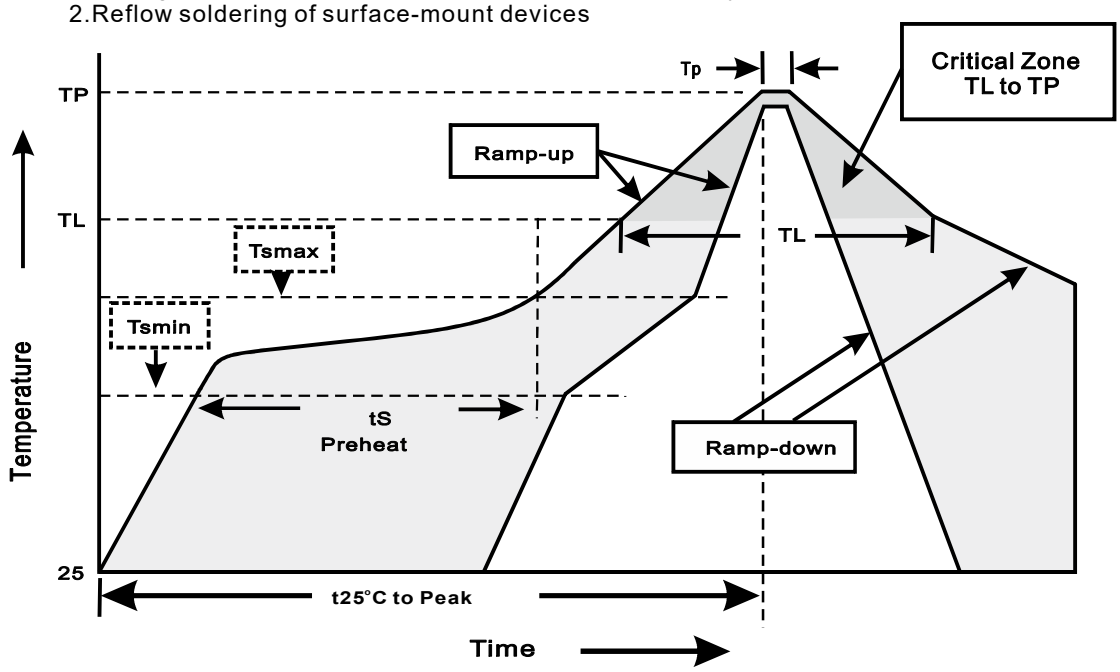
ESD3Z1524

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(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(t_s)	 150°C 200°C 60~120sec
Tsmax 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