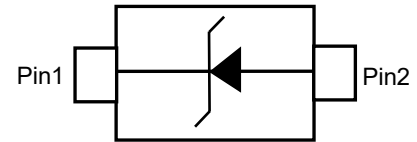


Description

The ESDA-1K is a single line Transil diode designed specifically for the protection of integrated circuits in portable equipment and miniaturized electronics devices subject to ESD and EOS transient overvoltages.



Features

- Breakdown voltage: 12 V, 18 V
- Unidirectional device
- High peak power dissipation: 450 W (8/20 μ s waveform)
- ESD protection level better than IEC 61000-4-2 level 4: 30 kV contact discharge.
- Low leakage current < 0.5 μ A at 5 V
- PCB area: 1.3 mm²

Applications

- Computers
- Printers
- Communication systems
- Cellular phone handsets and accessories
- Video equipment

Benefits

- High EOS and ESD protection level
- High integration
- Suitable for high density board
- Small package

Characteristics

Absolute maximum ratings ($T_{amb} = 25\text{ }^{\circ}\text{C}$)

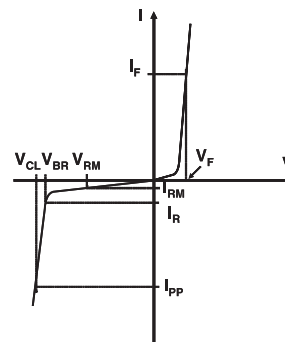
Symbol	Parameter		Value	Unit
V_{PP}	Peak pulse voltage	IEC 61000-4-2 air discharge	30	kV
		IEC 61000-4-2 contact discharge	30	
T_j	Operating Junction temperature rage		-40 to +150	$^{\circ}\text{C}$
T_{stg}	Storage temperature range		-65 to +150	$^{\circ}\text{C}$
T_L	Maximum lead temperature for soldering during 10 s		260	$^{\circ}\text{C}$

Absolute maximum ratings ($t_{amb} = 25\text{ }^{\circ}\text{C}$) - product specific parameters

Order code	I_{PP} (A) peak pulse current (8/20 μs)	P_{PP} (W) peak pulse power (8/20 μs)
ESDA12-1K	16	450
ESDA18-1K	12	400

Electrical characteristics (definitions)

Symbol	=	Parameter
V_{BR}	=	Breakdown voltage
V_{CL}	=	Clamping voltage
I_{RM}	=	Leakage current @ V_{RM}
V_{RM}	=	Stand-off voltage
I_F	=	Forward current
I_{PP}	=	Peak pulse current
I_R	=	Breakdown current
V_F	=	Forward voltage drop
R_d	=	Dynamic impedance
αT	=	Voltage temperature



Electrical characteristics (values, $T_{amb} = 25\text{ }^{\circ}\text{C}$)

Order code	$V_{BR} @ I_R$			$I_{RM} @ V_{RM}$		$V_{CL} @ I_{PP} (8/20\text{ }\mu\text{s})$				$C_{line}^{(1)}$
	Min.	Typ.		Max.		Max.		Max.		Max.
	V	V	mA	μA	V	V	A	V	A	pF
ESDA12-1K	12	13	1	0.5	10	16.5	1	28	16	150
ESDA18-1K	18	19	1	0.5	15	24	1	34	12	105

1. $V_R = 0\text{ V}$, $F_{osc} = 1\text{ MHz}$, $V_{osc} = 30\text{ mV}$

Figure 3. Peak pulse power dissipation versus exponential pulse duration (typical values)

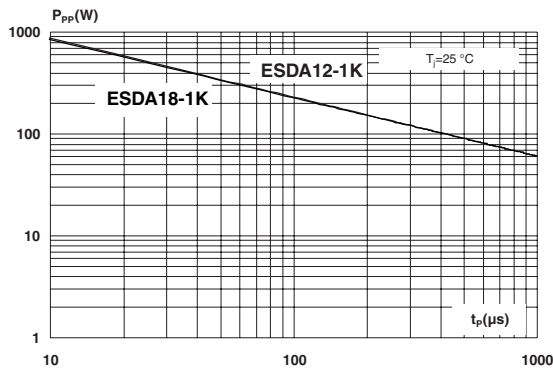


Figure 4. Peak pulse power dissipation versus initial junction temperature (typical values)

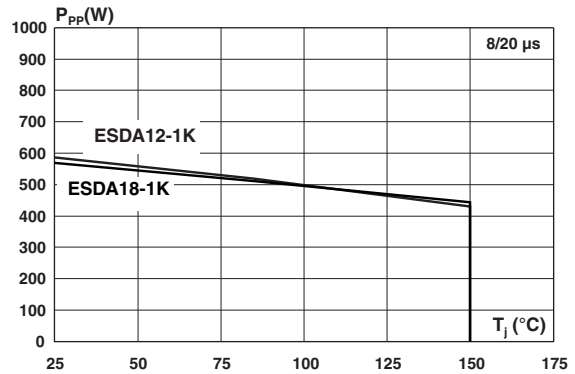


Figure 5. Clamping voltage versus peak pulse current (typical values)

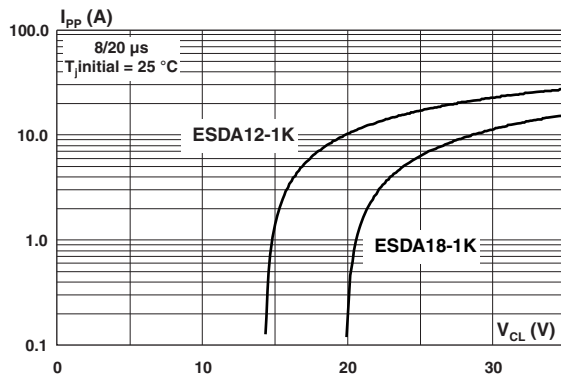


Figure 6. Leakage current versus junction temperature (typical values)

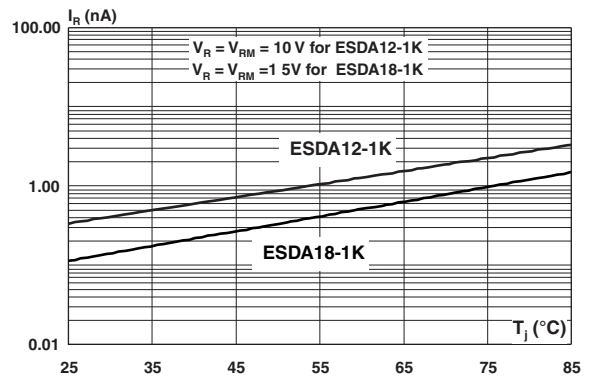


Figure 7. ESD response to IEC 61000-4-2 (+15 kV air discharge) ESDA12-1K

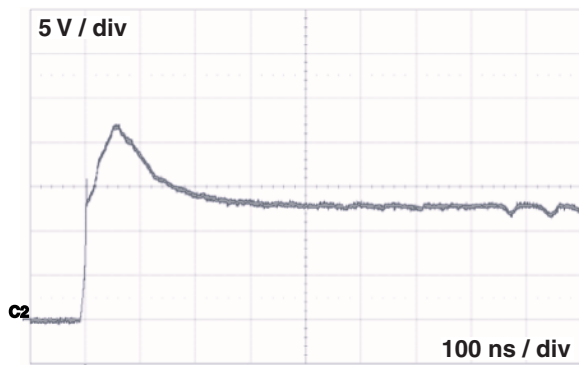
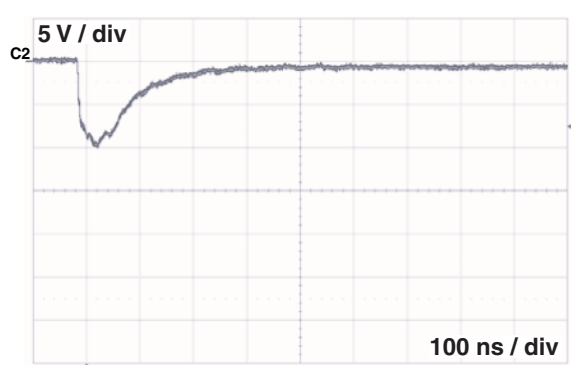
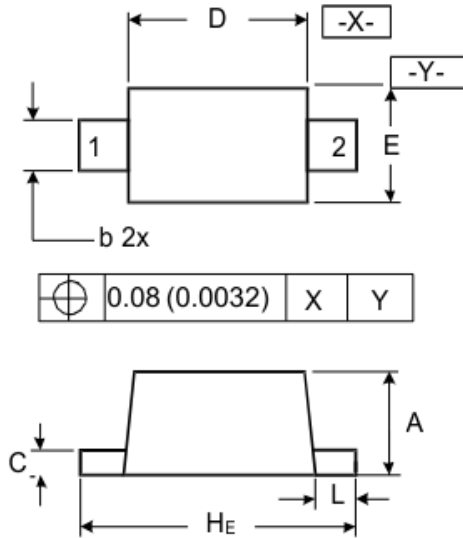


Figure 8. ESD response to IEC 61000-4-2 (-15 kV air discharge) ESDA12-1K



Package outline dimensions

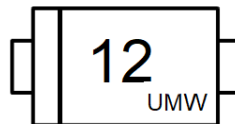
SOD-523



DIMENSIONS

SYMBOL	MILLIMETER		INCHES	
	MIN	MAX	MIN	MAX
A	0.50	0.70	0.020	0.028
b	0.25	0.35	0.010	0.014
C	0.07	0.20	0.0028	0.0079
D	1.10	1.30	0.043	0.051
E	0.70	0.90	0.028	0.035
H _E	1.50	1.70	0.059	0.067
L	0.15	0.25	0.006	0.010

Marking



Ordering information

Order code	Package	Base qty	Delivery mode	Marking
UMW ESDA12-1K	SOD-523	3000	Tape and reel	12 UMW
UMW ESDA18-1K	SOD-523	3000	Tape and reel	18 UMW