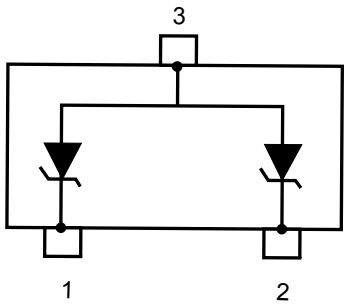
Description

This device is a diode array designed to protect 1 line or 2 lines against ESD transients.

The device is ideal for applications where both reduced line capacitance and board space saving are required.

It can also be used as bidirectional suppressor by connecting only pin 1 and 2.



Features

- Unidirectional device
- Low leakage current (I_R max. < 20 µA at V_{BR})
- 300 W peak pulse power (8/20 µs)

Applications

Where transient overvoltage protection in ESD sensitive equipment is required, such as:

- Entertainment
- Signal communications
- Connectivity
- Comfort and convenience

Benefits

- High ESD protection level: up to 30 kV
- High integration
- Suitable for high density boards

Characteristics Absolute maximum ratings (T_{amb} = 25 °C)

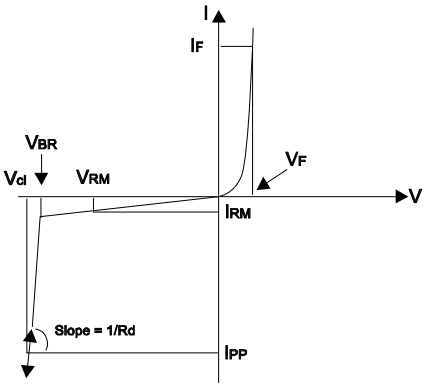
Symbol	Parameter		Value	Unit
V_{pp}	Peak pulse voltage(1)	IEC 61000-4-2: Contact discharge Air discharge	 30 30	kV
P_{pp}	Peak pulse power (8/20 µs)		300	W
I_{pp}	Peak pulse current (8/20 µs)	ESDA37L	6.3	A
T_j	Operating junction temperature range		-40 to 150	°C
T_{stg}	Storage junction temperature range		-65 to 150	°C
T_L	Maximum lead temperature for soldering during 10 s at 5 mm from case		260	°C

Notes:

(1)For a surge greater than the maximum values, the diode will fail in short-circuit.

Electrical characteristics (definitions)

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



Electrical characteristics (T_{amb} = 25 °C)

Order code	V_{BR} at I_R			I_{RM} at V_{RM}		R_d[1]	αT[2]	C_{line}	V_F at I_F	
	Min.	Max.		Max.		Typ.	Max.	Typ. at 0 V bias	Max.	
	V	V	mA	µA	V	mΩ	10^{-4}/°C	pF	V	mA
ESDA37L	36	43.3	1	1	36	2400	10	48	0.9	10

Notes:

(1)Square pulse I_{pp} = 15 A, t_p = 2.5 µs

(2)Δ V_{BR} = αT x (T_{amb} -25 °C) x V_{BR} (25 °C)

Characteristics (curves)

Figure 3: Variation of peak pulse power versus initial junction temperature

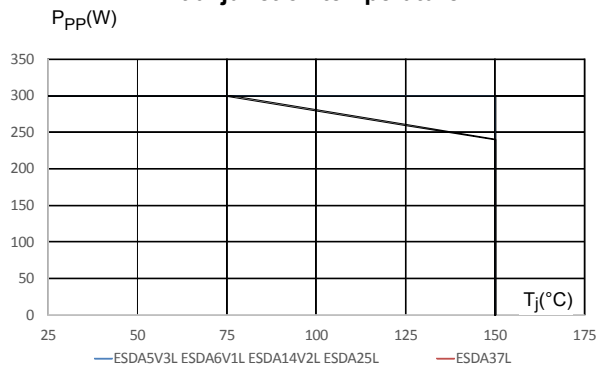


Figure 4: Peak pulse power versus exponential pulse duration

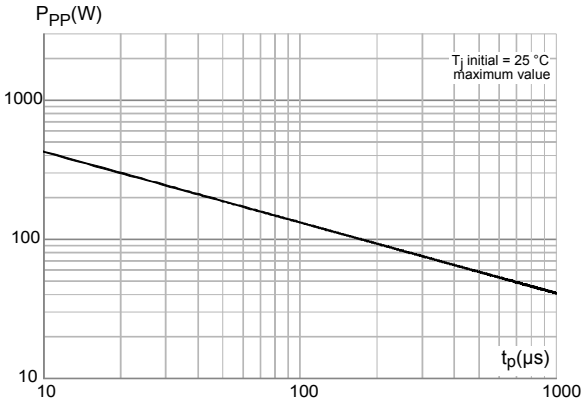


Figure 5: Variation of clamping voltage versus peak pulse current (max. values, 8/20 µs waveform)

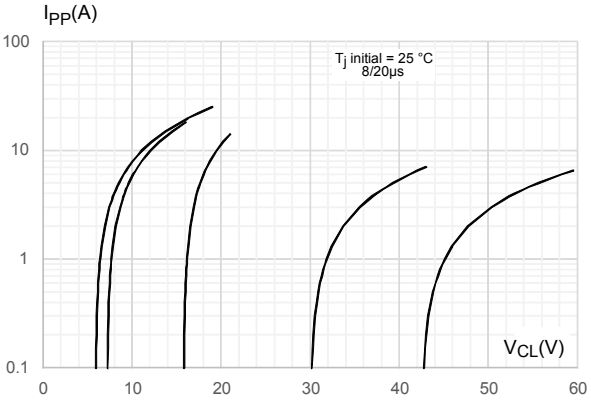
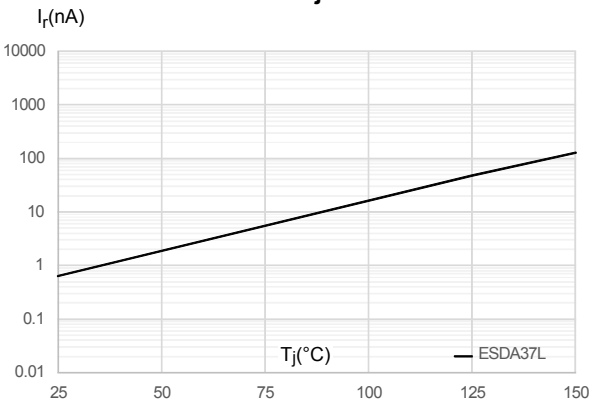
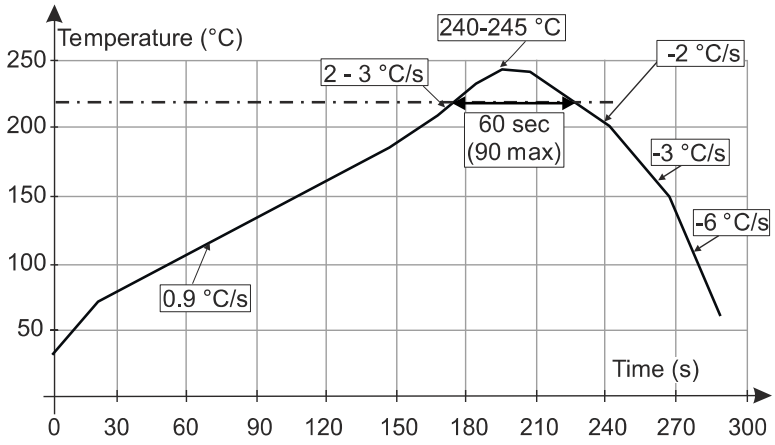


Figure 6: Relative variation of leakage current at $V_R = V_{RM}$ versus junction values

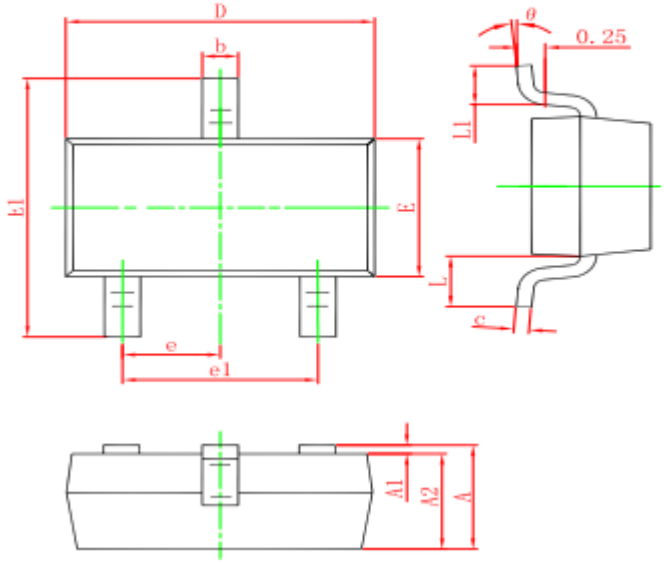


Reflow profile

Figure 9: ST ECOPACK® recommended soldering reflow profile for PCB mounting

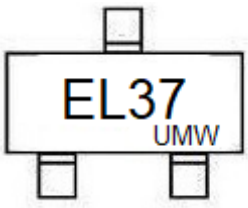


SOT-23 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

Marking



Ordering information

Order code	Package	Baseqty	Deliverymode
UMW ESDA37L	SOT-23	3000	Tape and reel