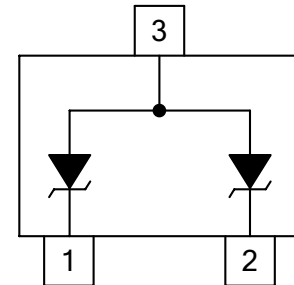


Description

SET23A12L02-E18 is designed to protect components which are connected to data and transmission lines from voltage surges caused by electrostatic discharge (ESD), electrical fast transients (EFT) and lightning. TVS diodes are characterized by their high surge capability, low operating and clamping voltages, and fast response time. This makes them ideal for use as board level protection of sensitive semiconductor components.

The low profile SOT-23 package allows flexibility in the design of crowded circuit boards.



Features

- IEC61000-4-2 ESD 30KV Air, 30KV contact compliance
- Protects one bidirectional line or two unidirectional lines
- Working voltage: 12V
- Low leakage current
- Low operating and clamping voltages
- Solder reflow temperature: Pure Tin-Sn, 260~270°C

Applications

- Cellular handsets and accessories
- Personal digital assistants (PDA's)
- Portable instrumentation
- Set Top Box (STB)
- Servers, notebook, and desktop PC
- Wireless bus protection
- RS-232, RS-422, RS-423 protection

Maximum Ratings

Rating	Symbol	Value	Unit
Peak pulse power (tp=8/20μs waveform)	P _{PP}	500	W
ESD voltage (Contact discharge)	V _{ESD}	±30	kV
ESD voltage (Air discharge)		±30	
Storage & operating temperature range	T _{STG} , T _J	-55~+150	°C

Electrical Characteristics (T_J=25°C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V _{RWM}				12	V
Reverse breakdown voltage	V _{BR}	I _{BR} =1mA	13.3			V
Reverse leakage current	I _R	V _R =12V Each I/O pin			1	μA
Clamping voltage (tp=8/20μs)	V _C	I _{PP} =1A			19	V
Clamping voltage (tp=8/20μs)	V _C	I _{PP} =18A			27	V
Off state junction capacitance	C _J	0Vdc, f=1MHz Between I/O pins and GND		100		pF

Typical Characteristics Curves

Figure 1. Power Derating Curve

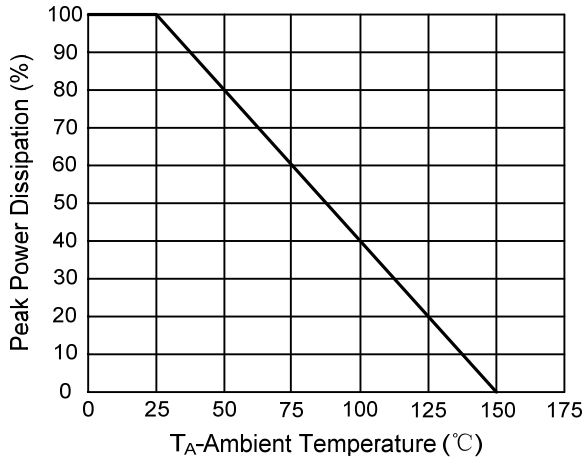


Figure 2. Pulse Waveforms

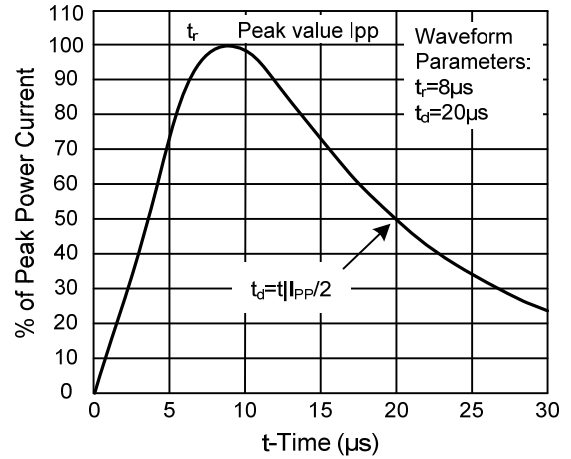


Figure 3. Forward Voltage vs. Forward Current

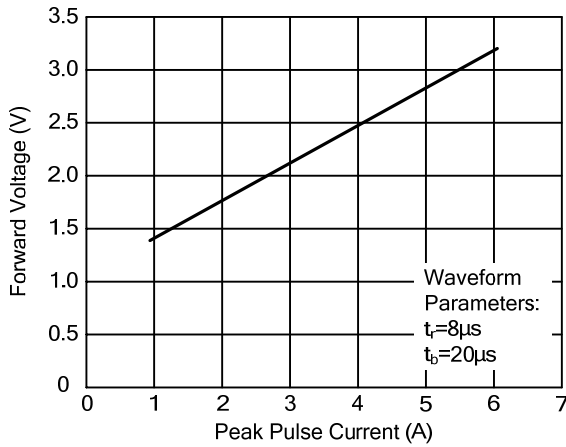
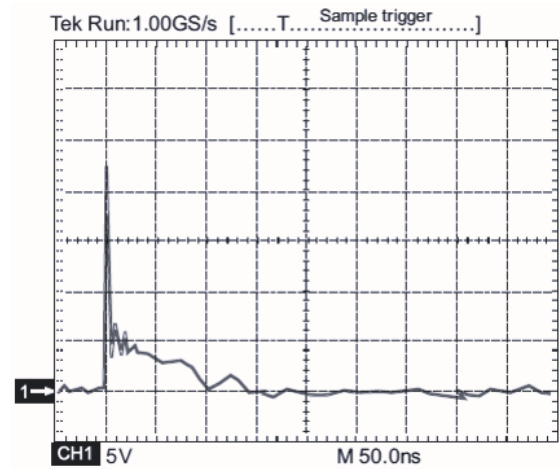
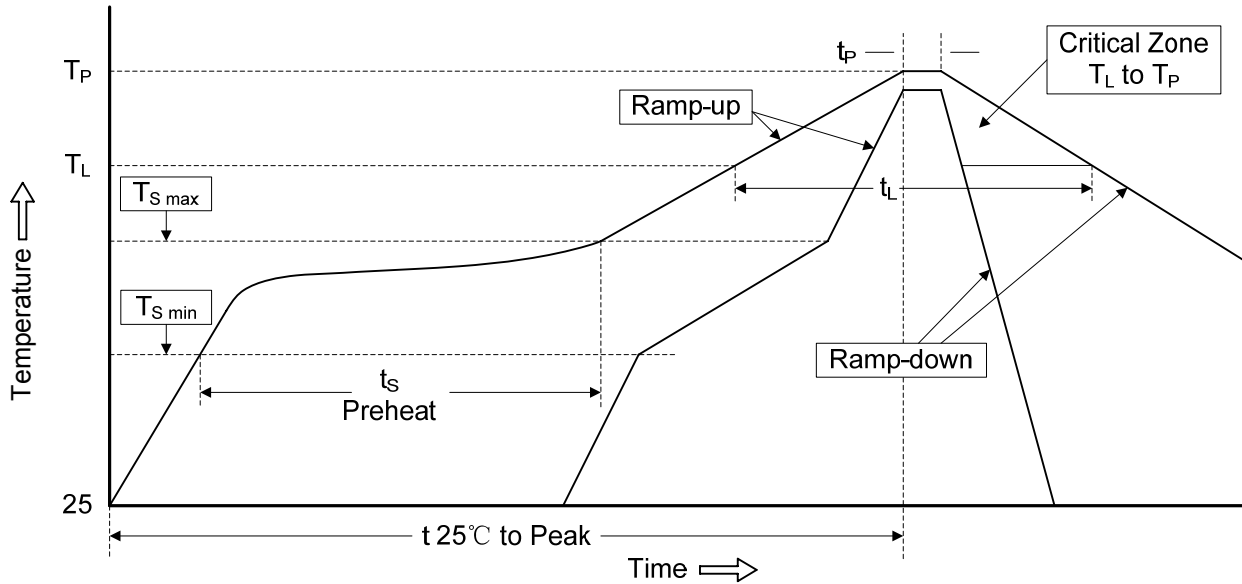


Figure 4. ESD Clamping(8kV Contact IEC61000-4-2)



Recommended Soldering Conditions

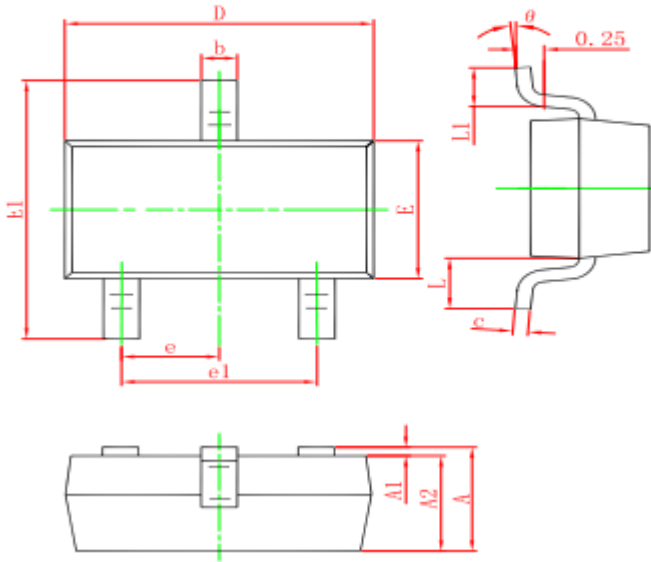
Reflow Soldering



Recommended Conditions

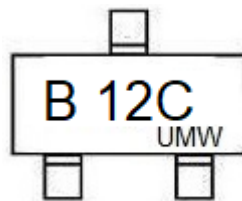
Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3°C/second max.
Preheat -Temperature Min ($T_{S\ min}$) -Temperature Max ($T_{S\ max}$) -Time (min to max) (t_s)	150°C 200°C 60-180 seconds
$T_{S\ max}$ to T_L -Ramp-up Rate	3°C/second max.
Time maintained above: -Temperature (T_L) -Time (t_L)	217°C 60-150 seconds
Peak Temperature (T_P)	260°C
Time within 5°C of actual Peak Temperature (t_p)	20-40 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.

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 SET23A12L02-E18	SOT-23	3000	Tape and reel