1.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.

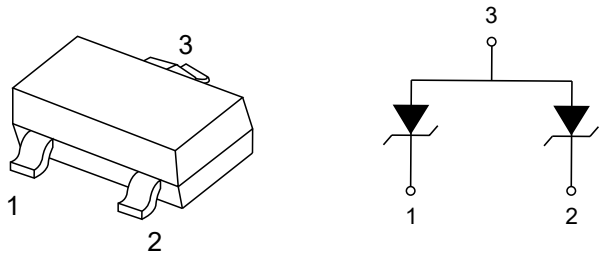
2.Applications

- 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

3.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

4.Pinning information



SOT-23

5.Absolute Maximum Ratings

Parameter	Symbol	Value	Units
Peak Pulse Power (t_p=8/20μs waveform)	P_{PP}	500	W
ESD voltage (Contact discharge)	V_{ESD}	±30	kV
ESD voltage (Air discharge)		±30	kV
Storage & junction temperature range	T_J,T_{STG}	-55 to 150	°C

6.Electrical Characteristics(T_J=25°C)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
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 (t_p=8/20μs)	V_C	I_{PP}=1A			19	V
Clamping voltage (t_p=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

7.Typical characteristic

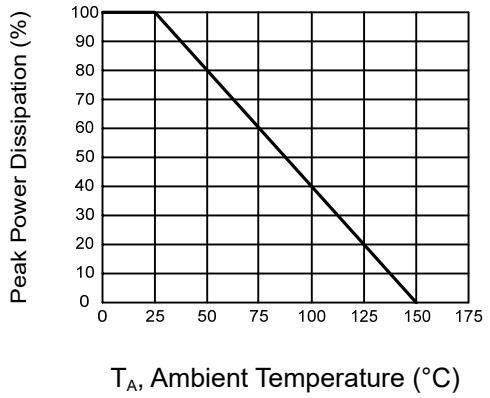


Figure 1: Power Derating Curve

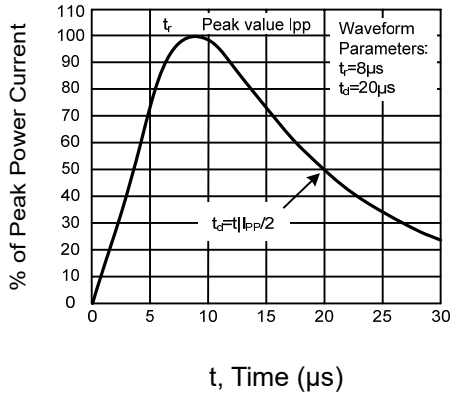


Figure 2: Pulse Waveforms

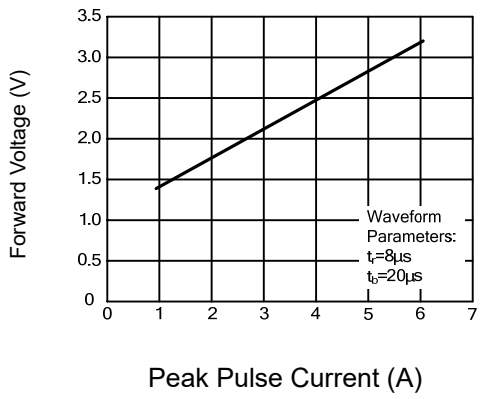


Figure 3: Forward Voltage vs. Forward Current

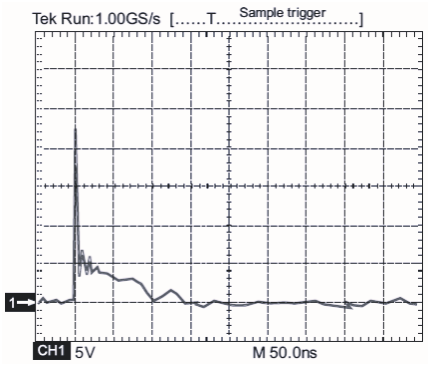
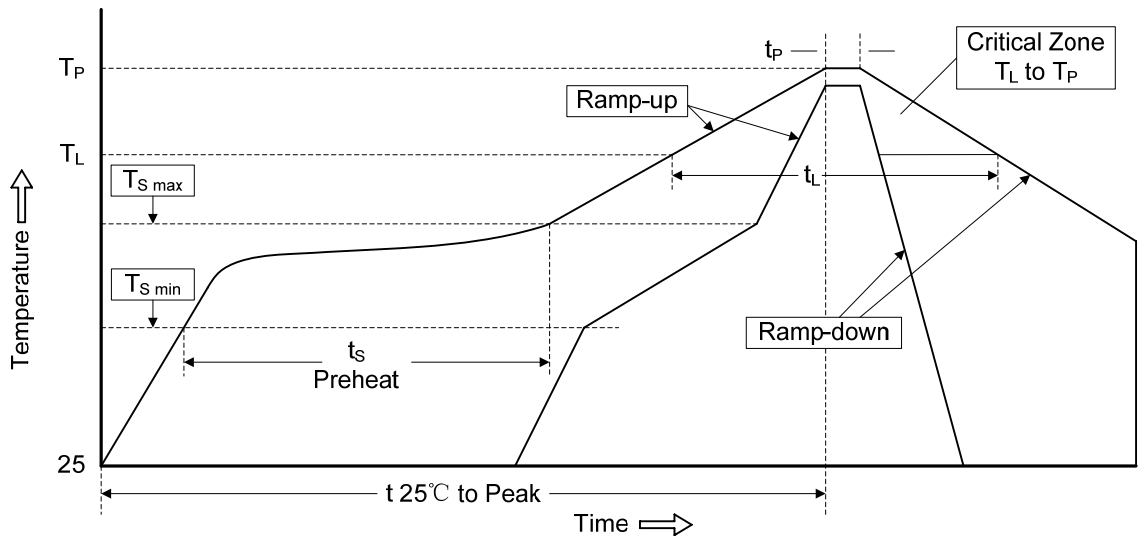


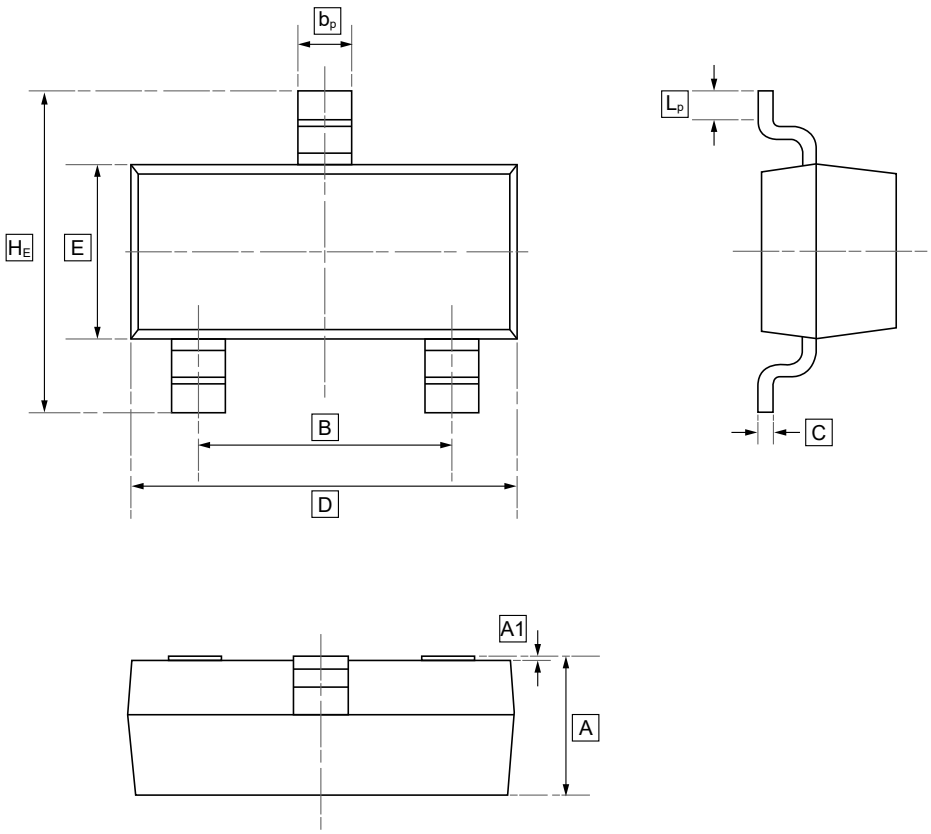
Figure 4: ESD Clamping(8kV Contact IEC61000-4-2)

8.Recommended Soldering Conditions

Reflow Condition		Pb-Free Assembly
Pre Heat	-Temperature Min ($T_{s(min)}$)	150°C
	-Temperature Max ($T_{s(max)}$)	200°C
	-Time (Min to Max) (t_s)	60-180 secs.
Average ramp-up rate (T_L to T_P)		3°C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Time maintained above:	-Temperature(T_L)	217°C
	-Time(T_L)	60-150 secs.
Peak Temp (T_p)		260°C
Time within 5°C of actual Peak Temp (T_p)		20-40 seconds
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temperature		8 min. Max



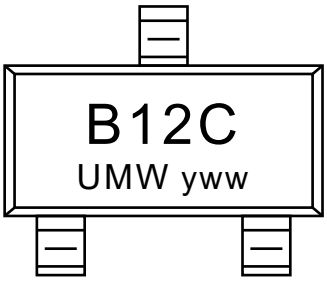
9.SOT-23 Package Outline Dimensions



DIMENSIONS (mm are the original dimensions)

Symbol	A	B	b_p	C	D	E	H_E	A1	L_p
Min	0.95	1.78	0.35	0.08	2.70	1.20	2.20	0.013	0.20
Max	1.40	2.04	0.50	0.19	3.10	1.65	3.00	0.100	0.50

10.Ordering information



yww: Batch Code

Order Code	Package	Base QTY	Delivery Mode
UMW SET23A12L02-E18	SOT-23	3000	Tape and reel

11.Disclaimer

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