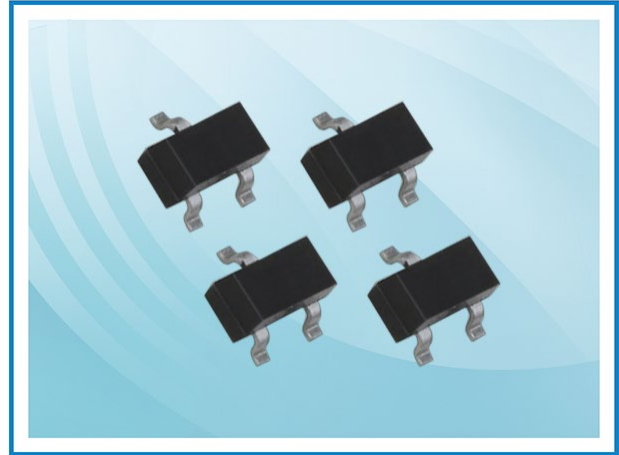


## AS23T12C – ESD Protection Diode

### Feature

- 350 Watts Peak Pulse Power per Line ( $t_p=8/20 \mu s$ )
- Solid-state silicon-avalanche technology
- Bidirectional configurations
- Low leakage current
- Low clamping voltage
- IEC61000-4-2 (ESD)  $\pm 30$  kV (air),  $\pm 30$  kV (contact)
- IEC61000-4-4 (EFT) 40 A (5/50 ns)
- IEC 61000-4-5 (Lightning) 12 A (8/20  $\mu s$ )
- AEC-Q101 qualified



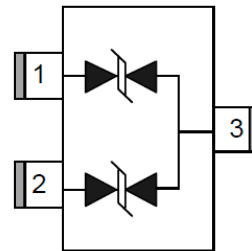
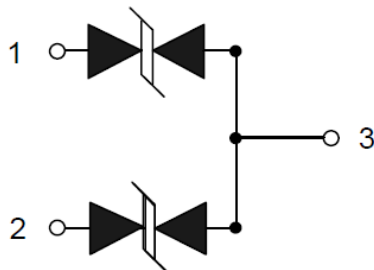
### Applications

- Data lines
- Automatic Teller Machines
- Net works
- Power line

### Mechanical Data

- SOT-23 package
- Molding compound flammability rating: UL94V-0
- Marking: Marking Code
- Packaging: Tape and Reel
- RoHS Compliant

### Schematic and PIN Configuration



SOT-23 (Top View)

### Maximum Rating

Parameter	Symbol	Limit	Unit
IEC61000-4-2 ESD Voltage – Air Mode	$V_{ESD}^{(1)}$	$\pm 30$	kV
IEC61000-4-2 ESD Voltage – Contact Mode		$\pm 30$	
Peak Pulse Power	$P_{PP}^{(2)}$	350	W
Peak Pulse Current	$I_{PP}$	12	A
Maximum Lead Solder Temperature (10 seconds duration)	$T_L$	260	$^{\circ}C$
Junction Temperature	$T_J$	-55~125	$^{\circ}C$
Storage Temperature Range	$T_{stg}$	-55~125	$^{\circ}C$

Note:

1. Device stressed with ten non-repetitive ESD pulses.
2. Non-repetitive current pulse 8/20  $\mu s$  exponential decay waveform according to IEC61000-4-5.
3. All ratings are measured at environmental temperature of  $T_A = 25^{\circ}C$  unless otherwise noted.

## AS23T12C – ESD Protection Diode

### Electrical Characteristics (T=25 °C)

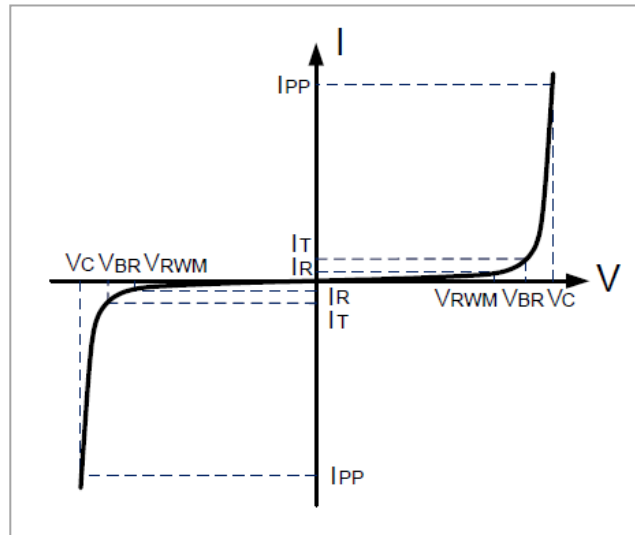
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Reverse Stand-off Voltage	$V_{RWM}^{(1)}$				12	V
Reverse Breakdown Voltage	$V_{BR}$	$I_T = 1 \text{ mA}$	13.3			V
Reverse Leakage Current	$I_R$	$V_{RWM} = 12 \text{ V}$			0.5	$\mu\text{A}$
Clamping Voltage	$V_C$	$I_{PP} = 12 \text{ A}$			30	V
Junction Capacitance	$C_J$	$V_R = 0 \text{ V}, f = 1 \text{ MHz}$		45	50	pF

Note:

1. Other voltages available upon request.
2. Non-repetitive current pulse 8/20  $\mu\text{s}$  exponential decay waveform according to IEC61000-4-5.
3. All ratings are measured at environmental temperature of  $T_A = 25 \text{ }^\circ\text{C}$  unless otherwise noted

### Electrical Parameters

Symbol	Parameter
$I_{PP}$	Maximum Reverse Peak Pulse Current
$V_C$	Clamping Voltage @ $I_{PP}$
$V_{RWM}$	Working Peak Reverse Voltage
$I_R$	Maximum Reverse Leakage Current @ $V_{RWM}$
$V_{BR}$	Breakdown Voltage @ $I_T$
$I_T$	Test Current



## AS23T12C – ESD Protection Diode

### Typical Characteristics

Figure 1: Peak Pulse Power vs. Pulse Time

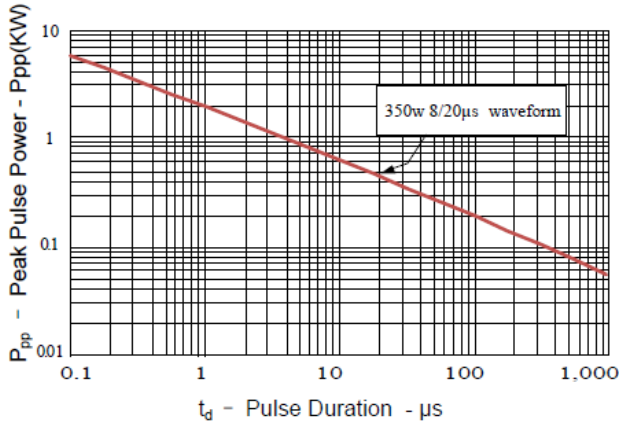


Figure 2: Power Derating Curve

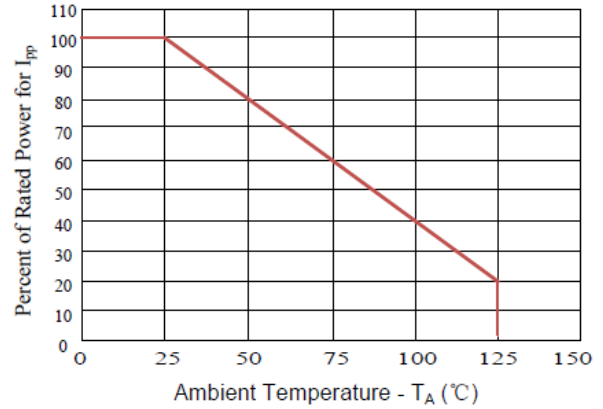


Figure 3: Pulse Waveform

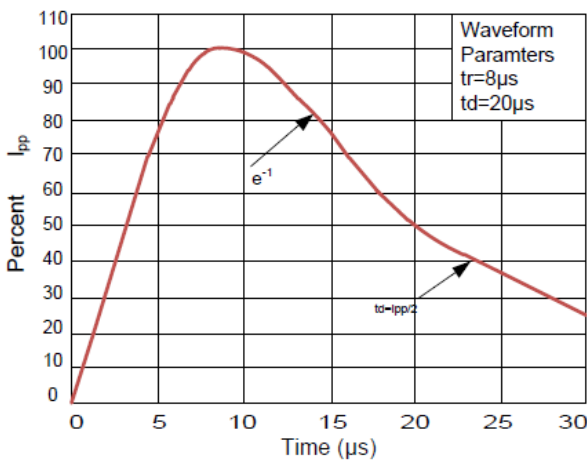


Figure 4: Clamping Voltage vs. Ipp

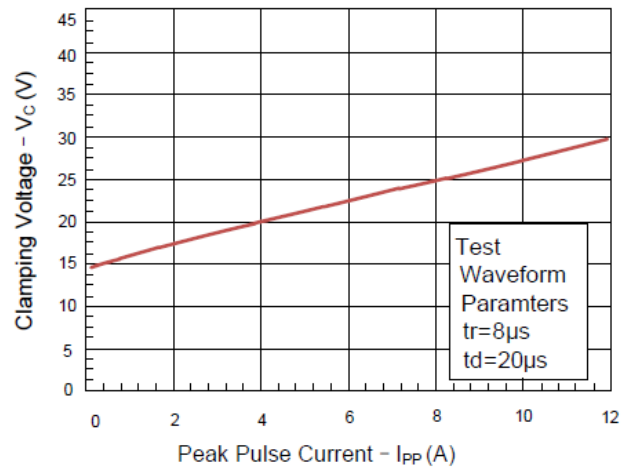


Figure 5: TLP Positive I-V Curve

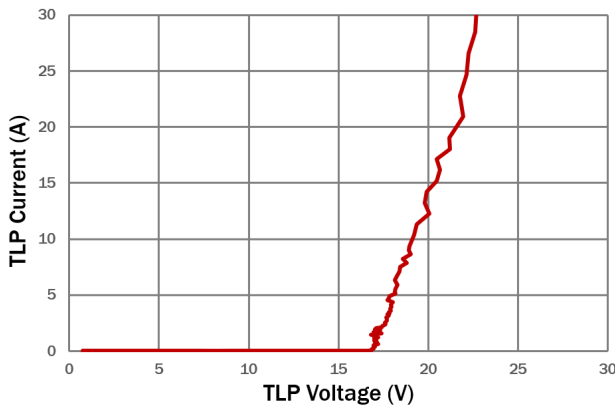
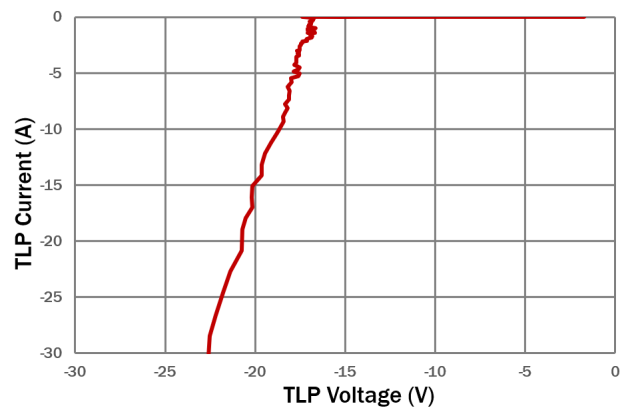


Figure 6: TLP Negative I-V Curve

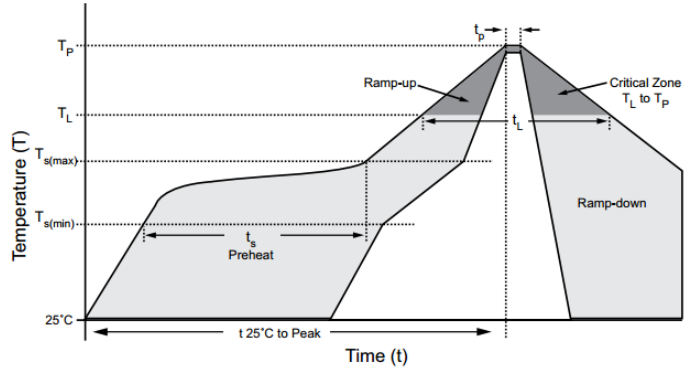


## AS23T12C – ESD Protection Diode

### Reflow Soldering Parameters

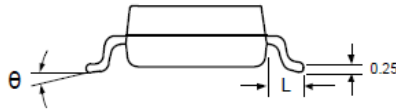
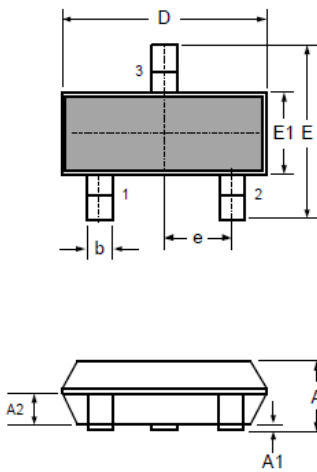
Lead Free Reflow Soldering Recommendations

<b>Preheat</b>	
- Temperature Min ( $T_{s\_min}$ )	150 °C
- Temperature Max ( $T_{s\_max}$ )	200 °C
- Time ( $T_{s\_min}$ to $T_{s\_max}$ )	60-180 seconds
- Average Ramp-Up Rate	1~3 °C/second
<b>Peak Temperature</b>	260 °C max.
<b>Time within 5°C of actual Peak Temperature (<math>t_p</math>)</b>	40 seconds max.
<b>Ramp-Down Rate</b>	6 °C /second max.



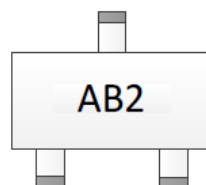
**Note:** If the soldering temperatures exceed the recommended profile, devices may not meet the performance requirements.

### SOT-23 Package Outline Dimensions



Symbol	Dimensions (mm)	
	Min	Max
A	0.90	1.15
A1	0.00	0.10
A2	0.90	1.05
b	0.30	0.50
D	2.80	3.00
E	2.25	2.55
E1	1.20	1.40
e	0.95 BSC	
L	0.30	0.50
$\theta$	0°	8°

### Marking

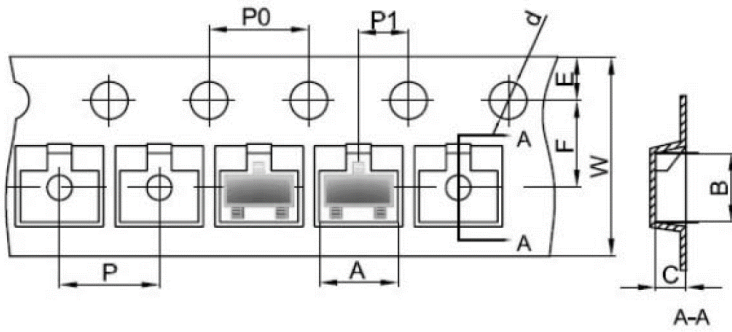


## AS23T12C – ESD Protection Diode

### Packaging Information

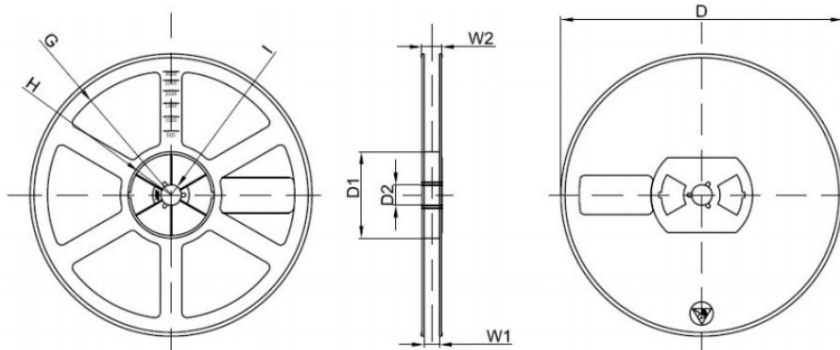
Order Code	Packaging	Reel Size	PCS/Reel
AS23T12C	SOT-23	7 inch	3,000

SOT-23 Embossed Carrier Tape (Unit: mm)



Carrier Tape	SOT-23 (mm)	Tolerance
A	3.15	±0.1
B	2.77	±0.1
C	1.22	±0.1
d	Ø1.50	±0.1
E	1.75	±0.1
F	3.50	±0.1
P0	4.00	±0.1
P	4.00	±0.1
P1	2.00	±0.1
W	8.00	+0.3/-0.1

SOT-23 Reel



Reel Option	7" dia (mm)	Tolerance
D	Ø178.00	±2
D1	54.40	±1
D2	13.00	±1
G	R78.00	±1
H	R25.60	±1
I	R6.50	±1
W1	9.50	±1
W2	12.30	±1