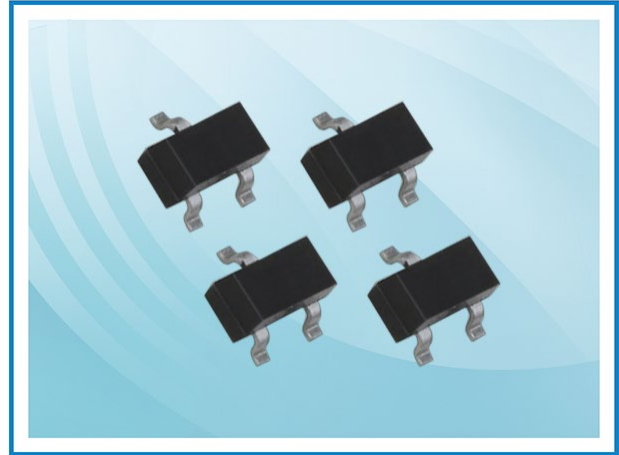


## PT05MLC – ESD Protection Diode

### Feature

- 45 Watts Peak Pulse Power per Line (tp = 8/20 μs)
- Bidirectional and unidirectional configurations
- Solid-state silicon-avalanche technology
- Low clamping voltage
- Low leakage current
- Low capacitance (Cj = 0.4 pF typ.)
- Protection two data lines
- IEC61000-4-2 (ESD) ±25 kV (air), ±25 kV (contact)
- IEC61000-4-4 (EFT) 40 A (5/50 ns)
- IEC 61000-4-5 (Lightning) 3.5 A (8/20 μs)



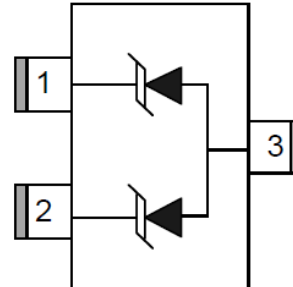
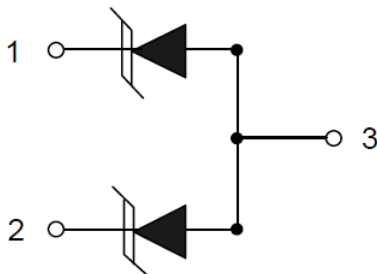
### Applications

- Datalines
- Automatic Teller Machines
- Net works
- Power line

### Mechanical Data

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

### Schematic and PIN Configuration



SOT-23 (Top View)

### Maximum Rating

Parameter	Symbol	Limit	Unit
IEC61000-4-2 ESD Voltage – Air Mode	V <sub>ESD</sub> <sup>(1)</sup>	±25	kV
IEC61000-4-2 ESD Voltage – Contact Mode		±25	
Peak Pulse Power	P <sub>PP</sub> <sup>(2)</sup>	45	W
Peak Pulse Current	I <sub>PP</sub> <sup>(2)</sup>	3.5	A
Maximum Lead Solder Temperature (10 seconds duration)	T <sub>L</sub>	260	°C
Junction Temperature	T <sub>J</sub> <sup>(3)</sup>	-55~125	°C
Storage Temperature Range	T <sub>stg</sub>	-55~125	°C

Note:

1. Device stressed with ten non-repetitive ESD pulses.
2. Non-repetitive current pulse 8/20 μs exponential decay waveform according to IEC61000-4-5.
3. All ratings are measured at environmental temperature of TA = 25 °C unless otherwise noted.

## PT05MLC – ESD Protection Diode

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

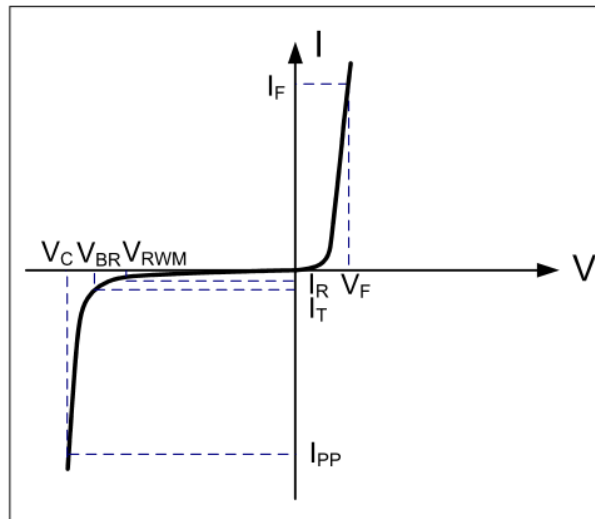
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Reverse Stand-off Voltage	$V_{RWM}^{(1)}$				5.0	V
Reverse Breakdown Voltage	$V_{BR}$	$I_T = 1 \text{ mA}$	6.0			V
Reverse Leakage Current	$I_R$	$V_{RWM} = 5 \text{ V}, T = 25 \text{ }^\circ\text{C}$			1.0	$\mu\text{A}$
Clamping Voltage	$V_C^{(2)}$	$I_{PP} = 3.5 \text{ A}, t_p = 8/20 \text{ } \mu\text{s}$		12	18	V
Junction Capacitance	$C_J$	$V_R = 0\text{V}, f = 1 \text{ MHz (IO-IO)}$		0.4	0.7	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 @ $I_{PP}$
$ssV_{RWM}$	Working Peak Reverse Voltage
$I_R$	Maximum Reverse Leakage Current @ $V_{RWM}$
$V_{BR}$	Breakdown Voltage @ $I_T$
$I_T$	Test Current
$V_F$	Forward Voltage @ $I_F$



## PT05MLC – ESD Protection Diode

### Typical Characteristics

Figure 1: Peak Pulse Power vs. Pulse Time

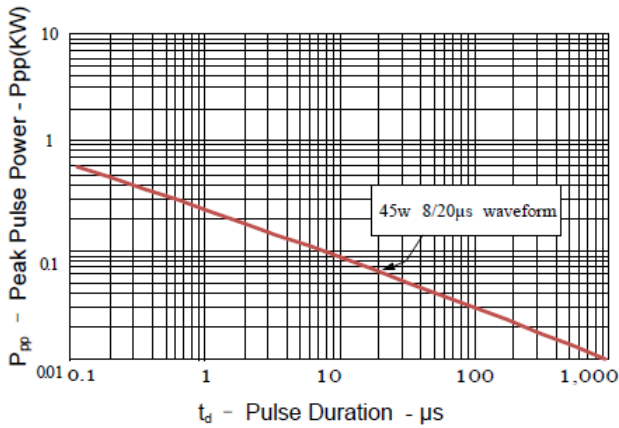


Figure 2: Power Derating Curve

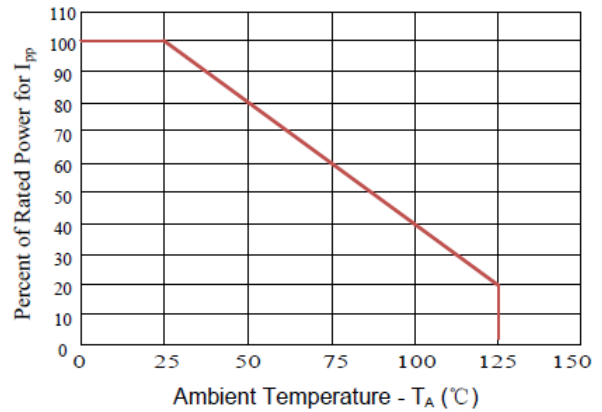


Figure 3: Pulse Waveform

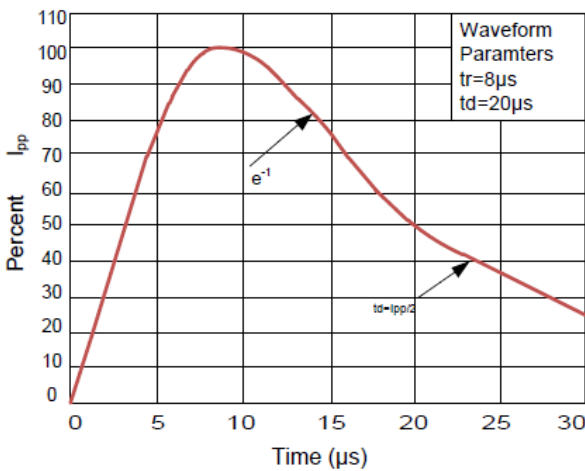


Figure 4: Clamping Voltage vs. Ipp

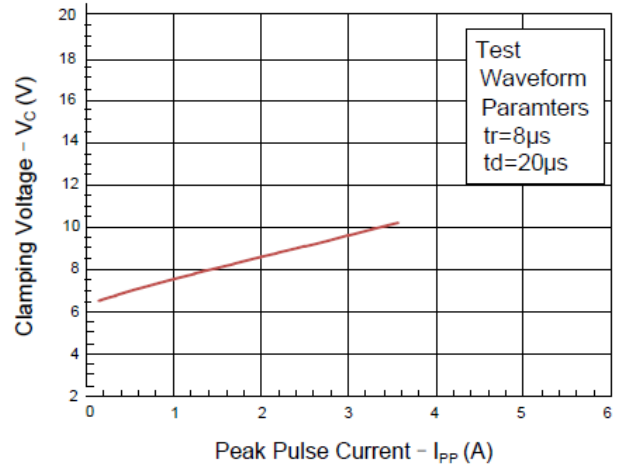
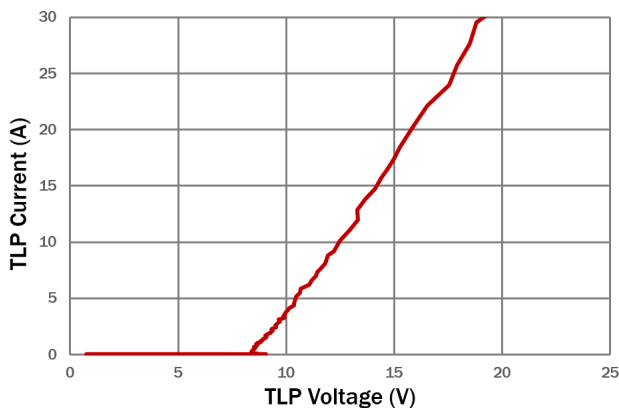
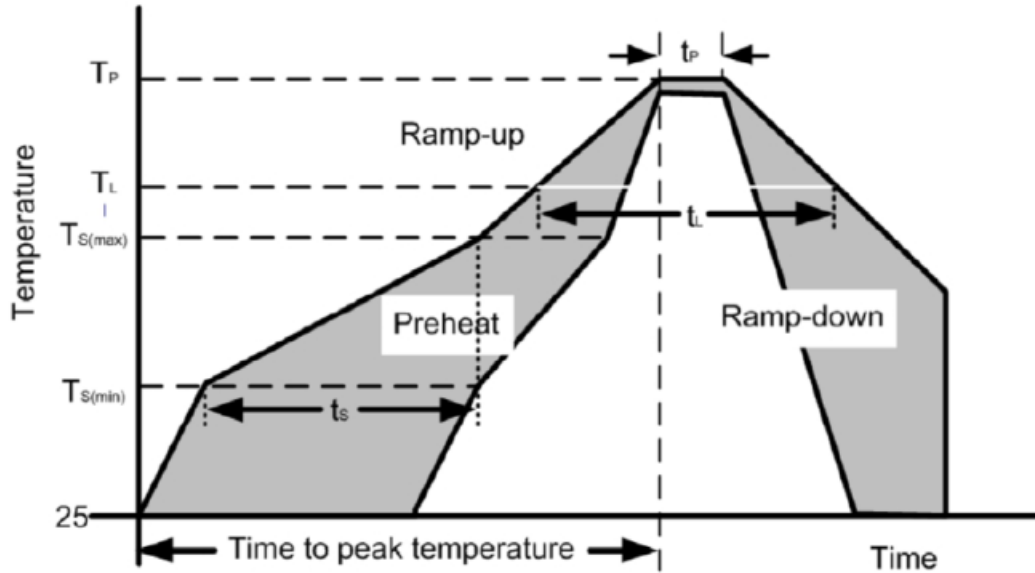


Figure 5: TLP Positive I-V Curve



## PT05MLC – ESD Protection Diode

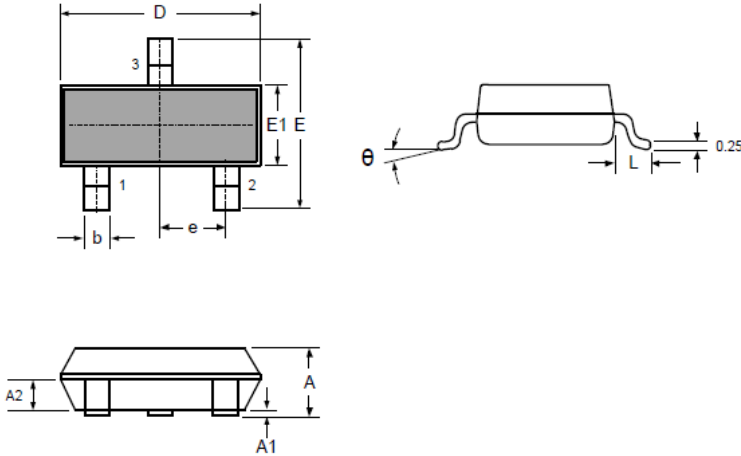
### Soldering Parameters



Reflow Condition	Pb-Free assembly
Pre Heat Temperature Min (Ts (min) ) 150°C	Temperature Min (Ts (min) ) 150°C
Pre Heat Temperature Min (Ts (max) ) 200°C	Temperature Min (Ts (max) ) 200°C
Pre Heat Time (min to max) (ts) 60-190 secs	Time (min to max) (ts) 60-190 secs
Average ramp up rate (Liquidus Temp) (TL) to peak	5°C/seconds max
Ts(max)to TL—Ramp-up Rate	5°C/seconds max
Reflow Temperature (TL) (Liquidus)	217°C
Reflow Temperature (tl)	60-150 seconds
Peak Temperature (Tp)	260+0/-5°C
Time within actual peak Temperature (tp)	20-40 seconds
Ramp-down Rate	5°C/seconds max
Time 25°C to peak Temperature (Tp)	8 minutes Max.
Do not exceed	280°C

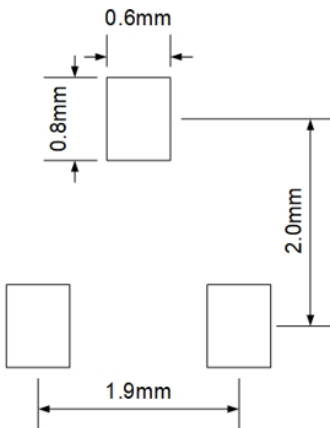
## PT05MLC – ESD Protection Diode

### SOT-23 Package Outline Dimensions

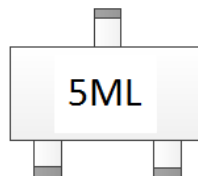


Symbol	Dimensions (mm)	
	Min	Max
A	0.90	1.15
A1	0.00	0.10
A2	0.90	1.05
b	0.30	0.50
D	2.80	3.00
E	2.25	2.55
E1	1.20	1.40
e	0.95 BSC	
L	0.30	0.50
$\theta$	0°	8°

### Recommended Pad Layout (mm):



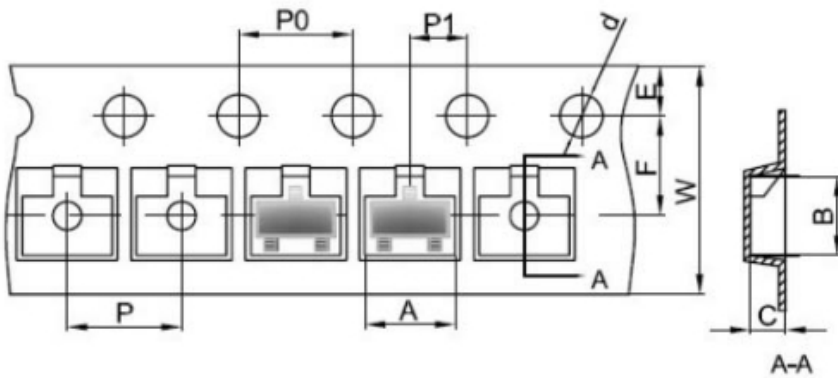
### Marking



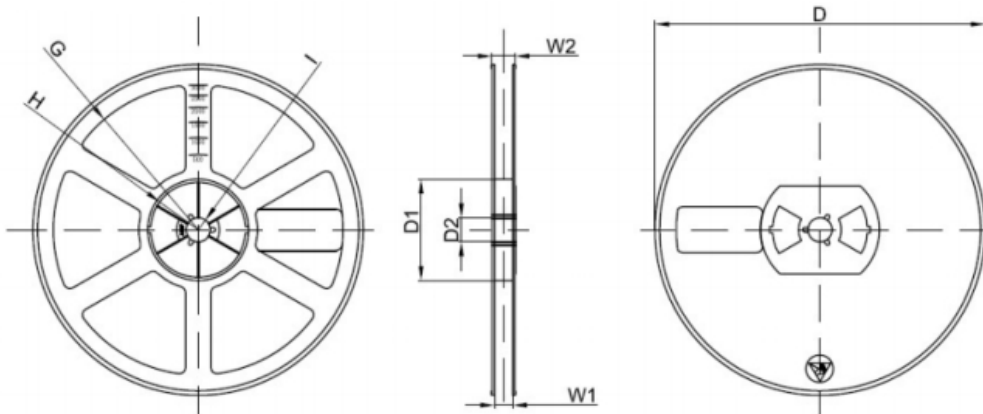
## PT05MLC – ESD Protection Diode

### Packaging Information

Order Code	Packaging	Reel Size	PCS/Reel
PT05MLC	SOT-23	7 inch	3,000



Symbol	Dimension (mm)
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±0.10
P1	2.00±0.1
W	8.00+0.3/-0.1



Symbol	Dimension (mm)
D	Ø178±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