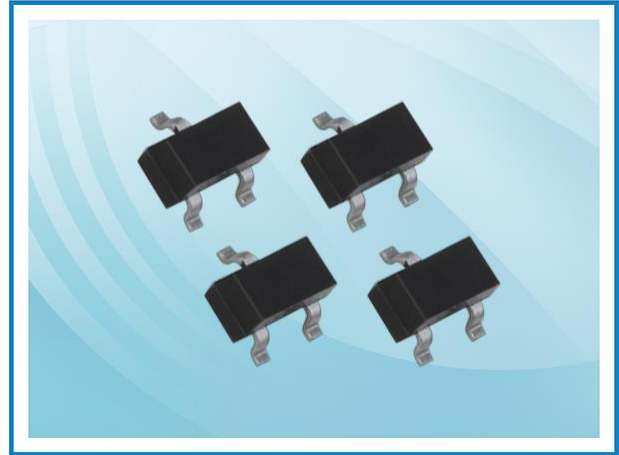


APTLC05M-B – ESD Protection Diode

Feature

- 260 Watts Peak Pulse Power per Line (tp=8/20μs)
- Solid-state silicon-avalanche technology
- Bidirectional configurations
- Low leakage current
- Low clamping voltage
- IEC61000-4-2 (ESD) ±30 kV (air), ±30 kV (contact)
- IEC61000-4-4 (EFT) 40 A (5/50ns)
- IEC 61000-4-5 (Lightning) 14 A (8/20μs)
- AEC-Q101 qualified



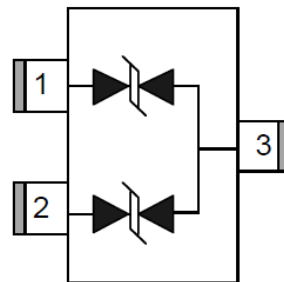
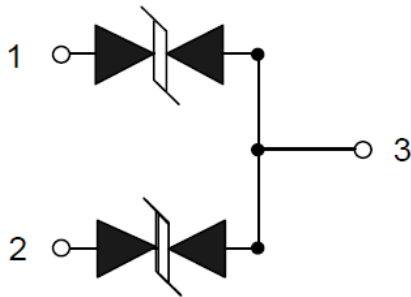
Applications

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

Mechanical Data

- SOT-23 package
- Molding compound flammability rating: UL94V-0
- 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	$V_{ESD}^{(1)}$	±30	kV
IEC61000-4-2 ESD Voltage – Contact Mode		±30	
Peak Pulse Power	$P_{PP}^{(2)}$	260	W
Peak Pulse Current	I_{PP}	14	A
Maximum Lead Solder Temperature (10 seconds duration)	T_L	260	°C
Junction Temperature	T_J	-55~125	°C
Storage Temperature Range	T_{stg}	-55~125	°C

Note:

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

APTLC05M-B – ESD Protection Diode

Electrical Characteristics (T=25°C)

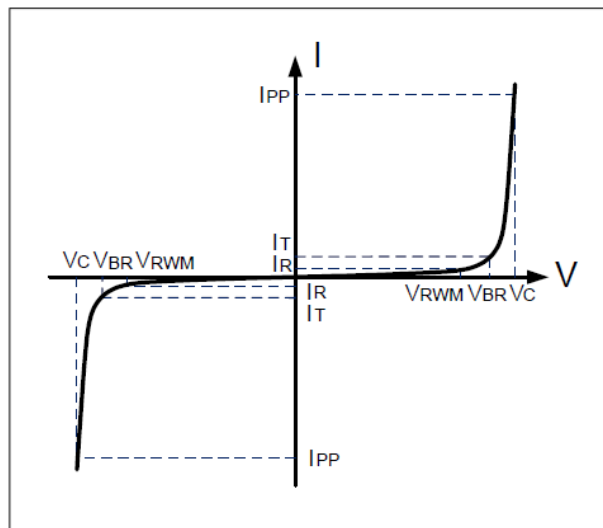
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Reverse Stand-off Voltage	$V_{RWM}^{(1)}$				5.0	V
Reverse Breakdown Voltage	V_{BR}	$I_T = 1 \text{ mA}$	6.0			V
Reverse Leakage Current	I_R	$V_{RWM} = 5 \text{ V}$		0.1	0.5	μA
Clamping Voltage	V_C	$I_{PP} = 14 \text{ A}$		19		V
Junction Capacitance	C_J	$V_R = 0 \text{ V}, f = 1 \text{ MHz}$		1.2		pF

Note:

1. Other voltages available upon request.
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 $T_A = 25^\circ\text{C}$ 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



APTLC05M-B – ESD Protection Diode

Typical Characteristics

Figure 1: Peak Pulse Power vs. Pulse Time

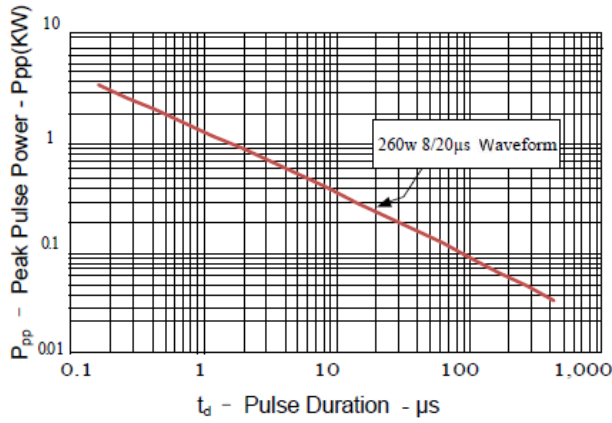


Figure 2: Power Derating Curve

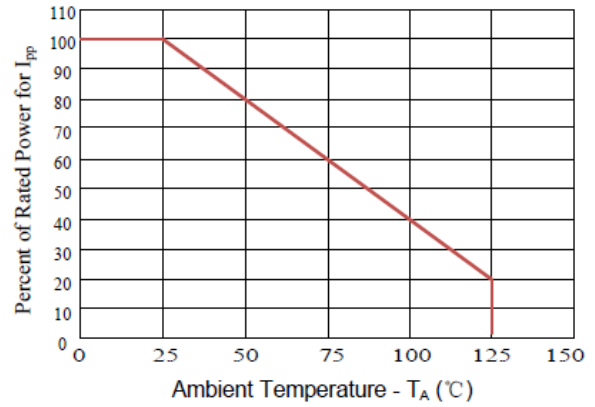


Figure 3: Pulse Waveform

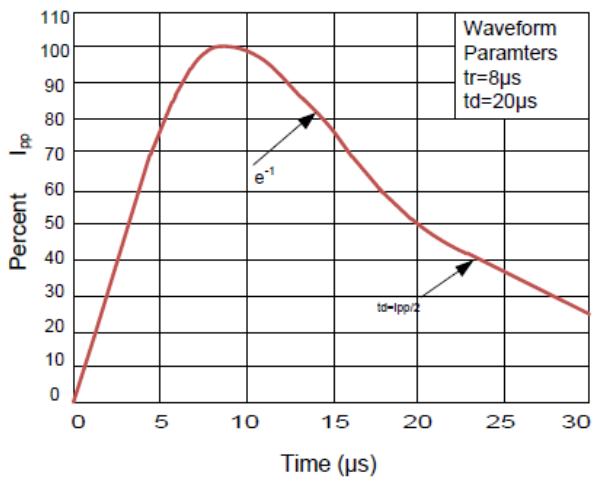
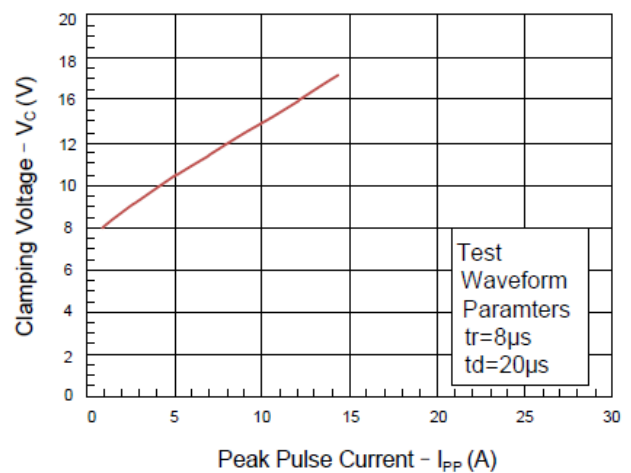
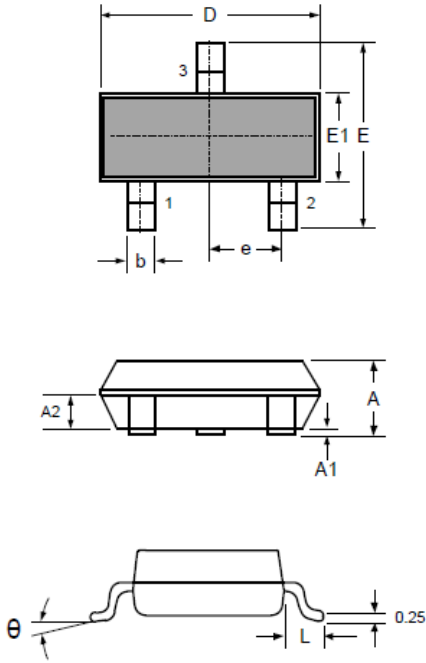


Figure 4: Clamping Voltage vs. Ipp



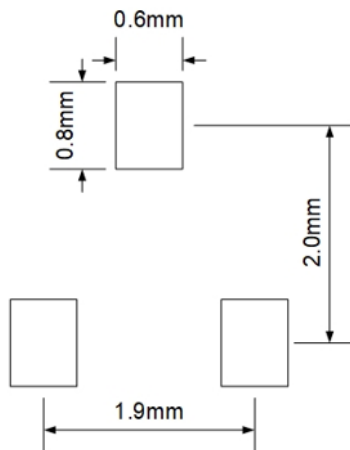
APTLC05M-B – ESD Protection Diode

SOT-23 Package Outline Dimensions

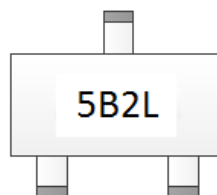


Symbol	Dimensions (mm)		Dimensions (inch)	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1		0.100		0.004
A2	0.900	1.050	0.035	0.041
D	2.800	3.000	0.110	0.118
b	0.300	0.500	0.012	0.020
E	2.250	2.550	0.089	0.100
E1	1.200	1.400	0.047	0.055
e	0.950 BSC		0.037 BSC	
L	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

Recommended Pad Layout (mm) :

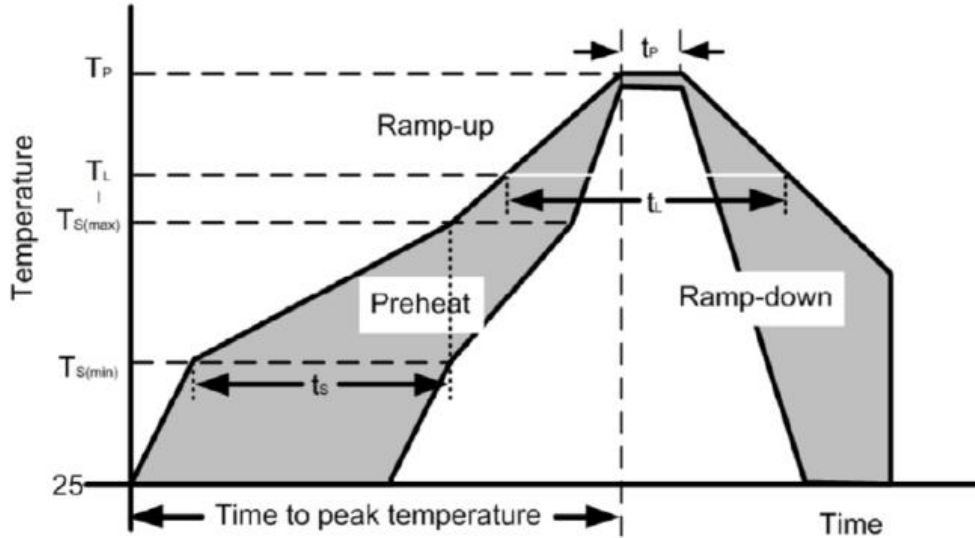


Marking



APTLC05M-B – ESD Protection Diode

Reflow Soldering Parameters

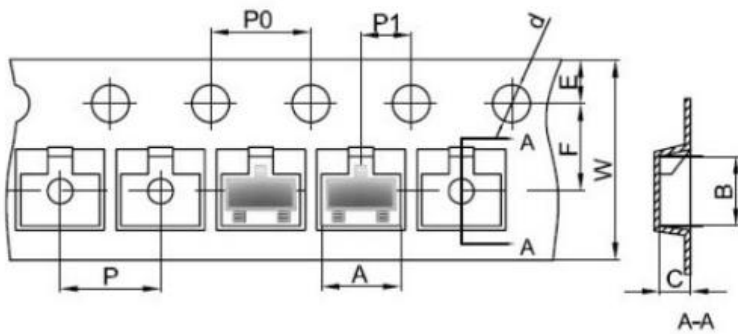


Reflow Condition	Pb-Free assembly
Pre Heat Temperature Min (Ts (min)) 150°C	Temperature Min (Ts (min)) 150°C
Pre Heat Temperature Min (Ts (max)) 200°C	Temperature Min (Ts (max)) 200°C
Pre Heat Time (min to max) (ts) 60-190 secs	Time (min to max) (ts) 60-190 secs
Average ramp up rate (Liquidus Temp) (TL) 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

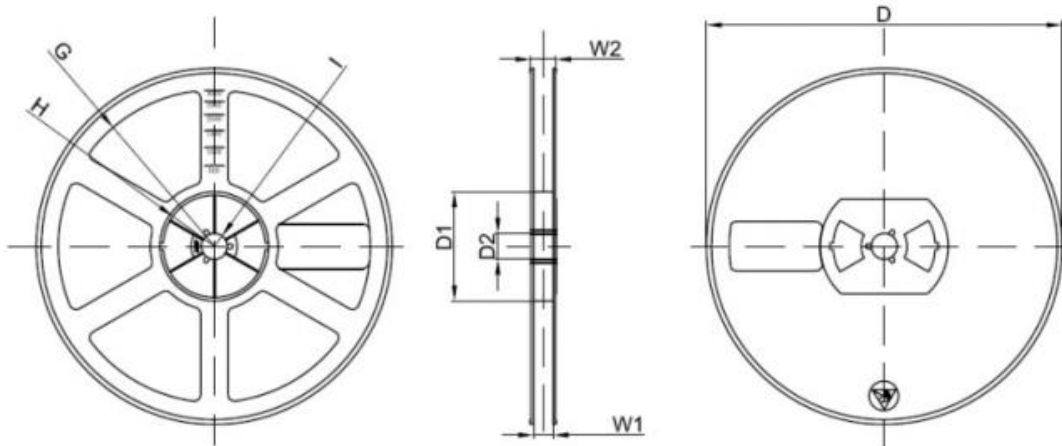
APTLC05M-B – ESD Protection Diode

Packaging Information

Order Code	Packaging	Reel Size	PCS/Reel
PTLC05M-B	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	∅1.50±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	∅178±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