

Electrostatic Discharged Protection Devices (ESD) Data Sheet

Description

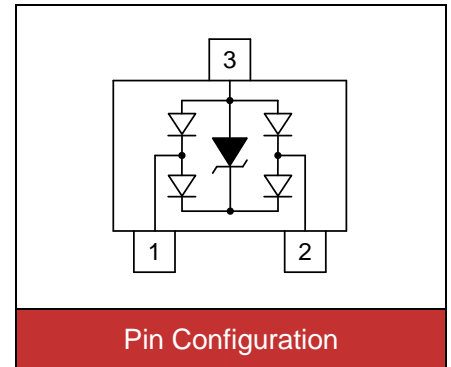
This is ultra low capacitance TVS arrays designed to protect high speed data interfaces. It has been specifically designed to protect sensitive components which is connected to high-speed data and transmission lines from overvoltage caused by electrostatic (ESD), cable discharge events (CDE) and electrical fast transients (EFT).



Contact : ±8kV
Air : ±15kV

Features

- IEC61000-4-2 ESD 15KV Air, 8KV contact compliance
- Protects two high speed data lines
- Working voltage: 5V
- Ultra low capacitance and clamping voltages
- Low leakage current
- Solid-state silicon avalanche technology
- Lead Free/RoHS compliant
- Solder reflow temperature: Pure Tin-Sn, 260~270°C
- Flammability rating UL 94V-0
- Meets MSL level 1, per J-STD-020
- UAT52A05L02 (Marking: B L5), SOT-523
- UBT23A05L02 (Marking: B 5U), SOT-23



Applications

- HDMI interface protection
- GaAs photodetector protection
- Mobile display digital interface
- HBT power Amp protection
- RF/Antenna circuits
- Infiniband transceiver protection
- USB 2.0 & Firewire ports

Maximum Ratings

Rating	Symbol	Value	Unit
Peak pulse current (tp=8/20µs waveform)	I _{PP}	3	A
ESD voltage (Contact discharge)	V _{ESD}	±8	kV
ESD voltage (Air discharge)		±15	
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}				5	V
Reverse breakdown voltage	V _{BR}	I _{BR} =1mA	6			V
Reverse leakage current	I _R	V _R =5V Each I/O pin			0.5	μA
Clamping voltage (tp=8/20μs)	V _C	I _{PP} =1A			9.8	V
Clamping voltage (tp=8/20μs)	V _C	I _{PP} =3A			15	V
Off state junction capacitance	C _J	0Vdc, f=1MHz Between I/O pins and GND		0.8		pF
Off state junction capacitance	C _J	0Vdc, f=1MHz Between I/O pins		0.4		pF

Typical Characteristics Curves

Figure 1. Pulse Waveforms

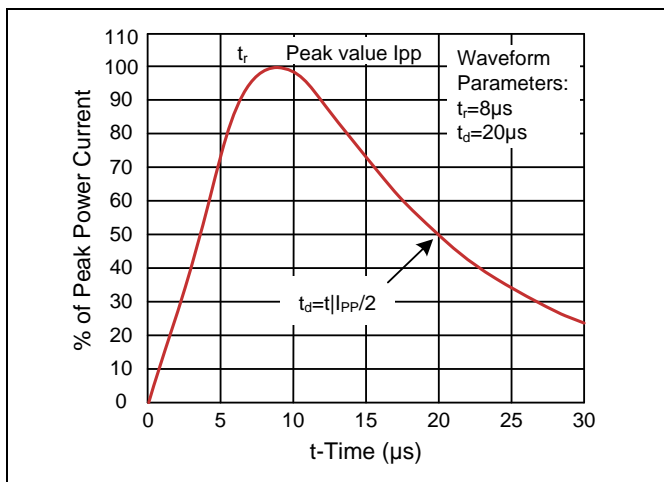


Figure 2. Capacitance vs. Reverse Voltage

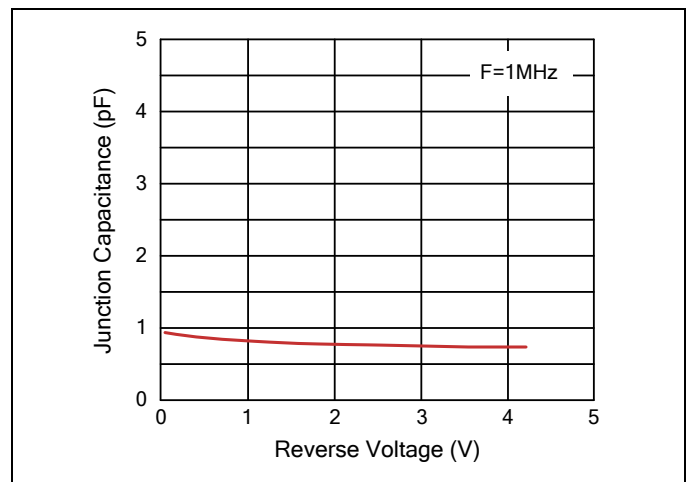
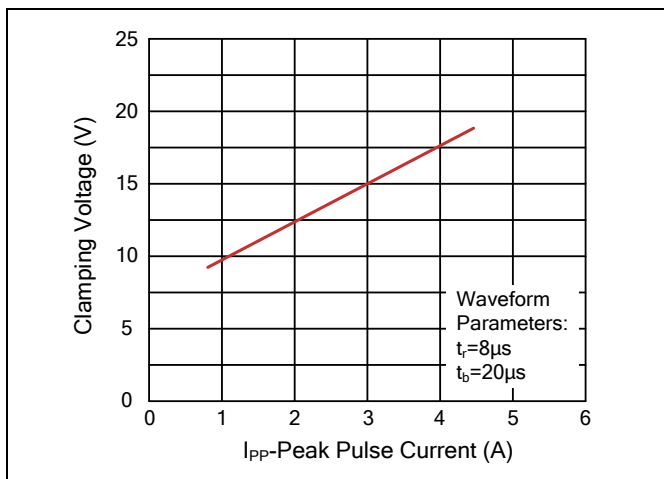
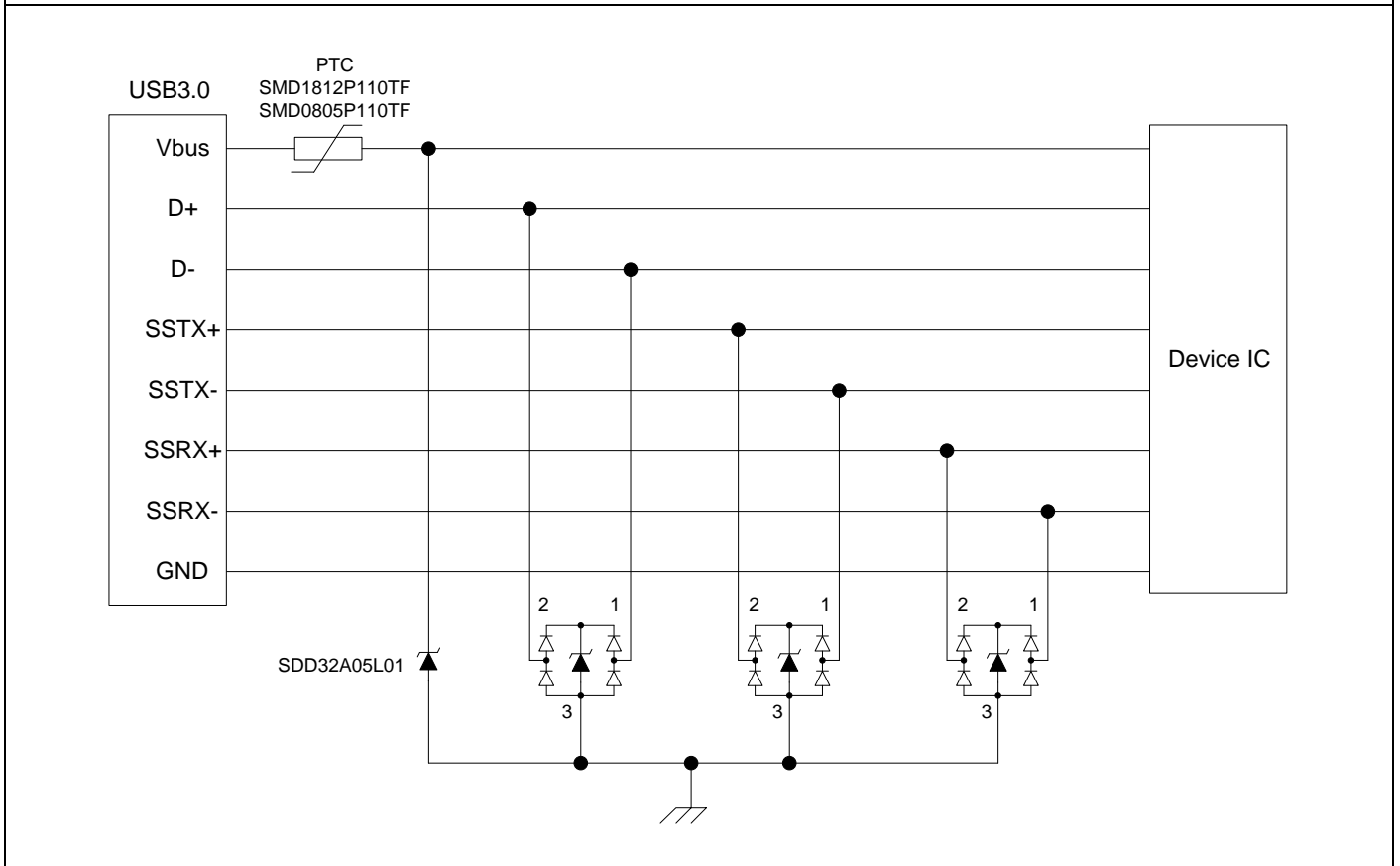
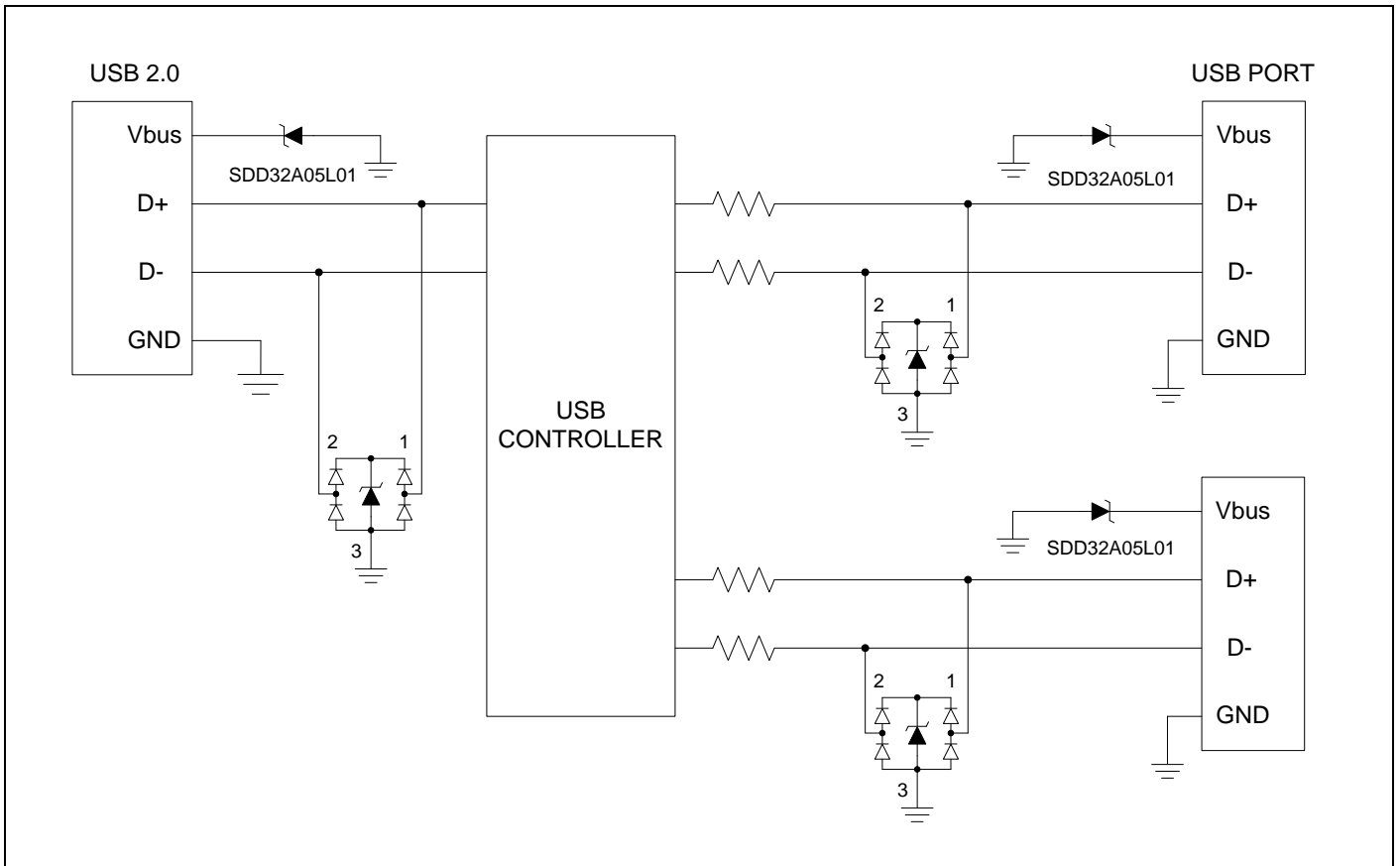


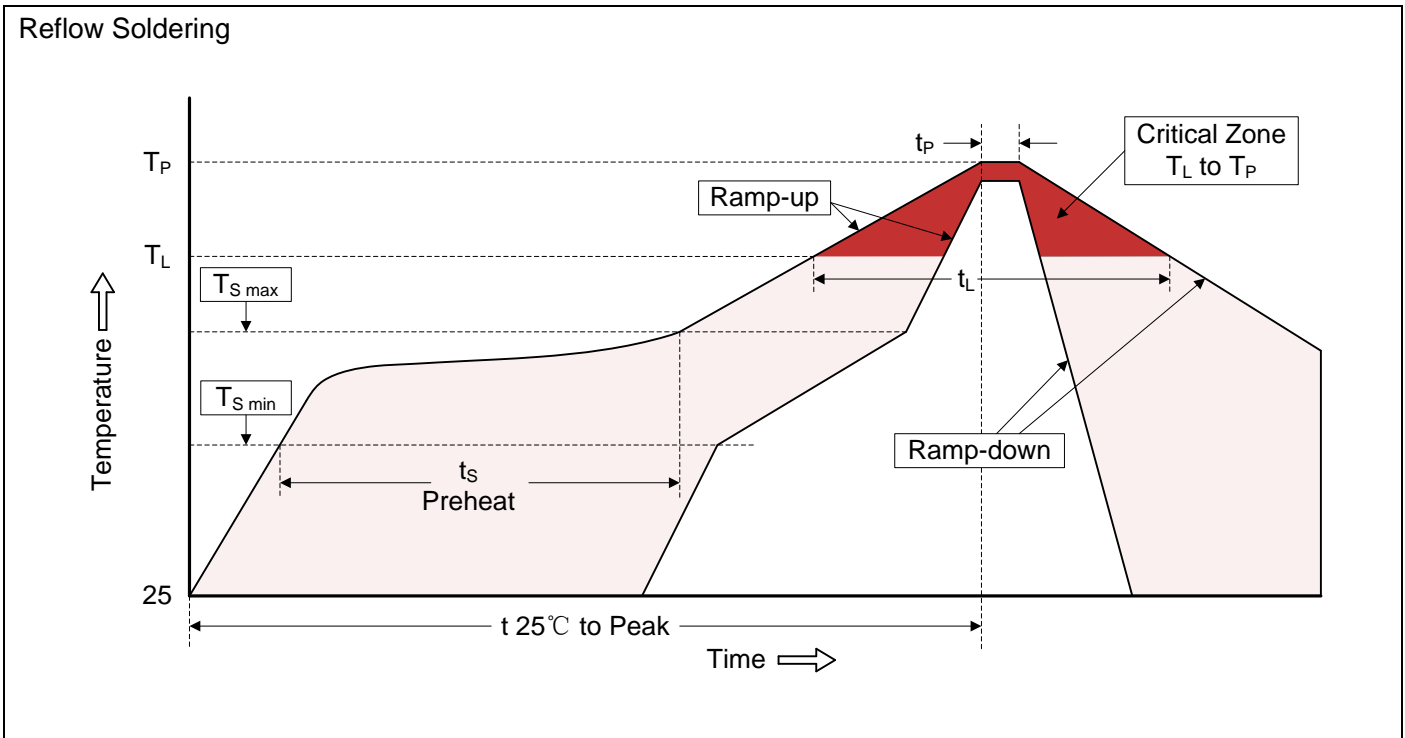
Figure 3. Clamping Voltage vs. Peak Pulse Current



Applications Information



Recommended Soldering Conditions

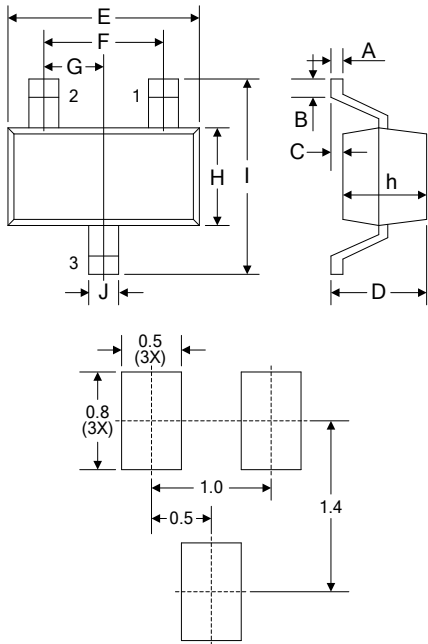


Recommended Conditions

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.

Dimensions

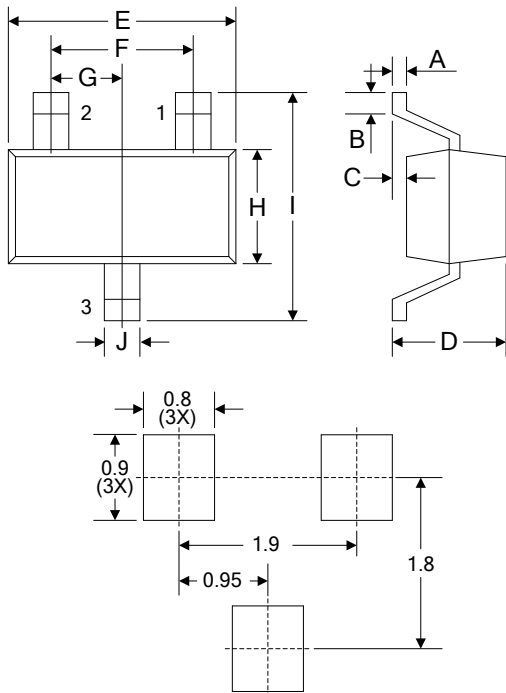
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Recommended Soldering Pad Layout

Symbol	Dimension			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.10	0.20	0.004	0.008
B	0.28	0.44	0.011	0.017
C	-	0.10	-	0.004
D	0.70	0.90	0.028	0.035
E	1.50	1.70	0.058	0.067
F	0.90	1.10	0.035	0.043
G	0.50TYP		0.020TYP	
H	0.75	0.85	0.030	0.033
I	1.45	1.75	0.057	0.069
J	0.15	0.35	0.006	0.014
h	0.70	0.80	0.028	0.031

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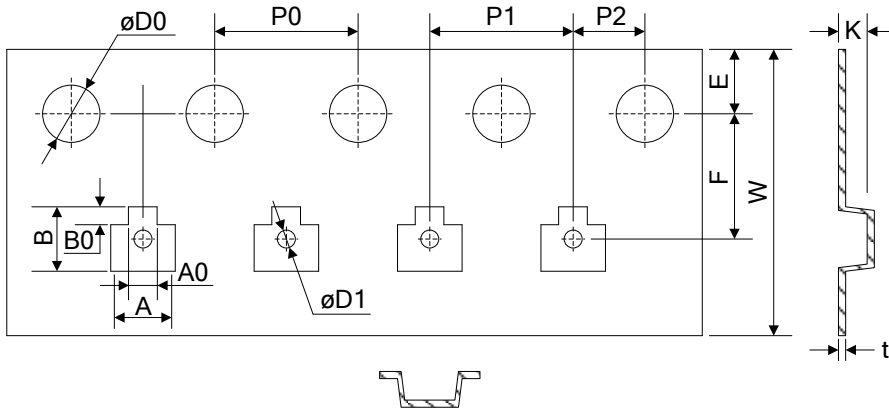
Recommended Soldering Pad Layout

Symbol	Dimension			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.08	0.18	0.003	0.007
B	0.15	-	0.006	-
C	-	0.13	-	0.005
D	0.89	1.09	0.035	0.043
E	2.80	3.05	0.110	0.120
F	1.90		0.075	
G	0.95		0.037	
H	1.19	1.40	0.047	0.055
I	2.10	2.49	0.083	0.098
J	0.35	0.50	0.014	0.020

Packaging

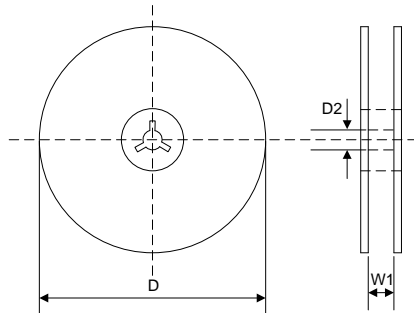
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Tape



Symbol	Dimension (mm)
W	8.00±0.30
P0	4.00±0.10
P1	4.00±0.10
P2	2.00±0.10
D0	Φ1.55±0.10
D1	Φ0.50±0.05
E	1.75±0.10
F	3.50±0.10
A	1.80±0.10
A0	0.80±0.10
B	1.80±0.10
B0	0.45±0.10
K	0.85±0.10
t	0.20±0.05

Reel



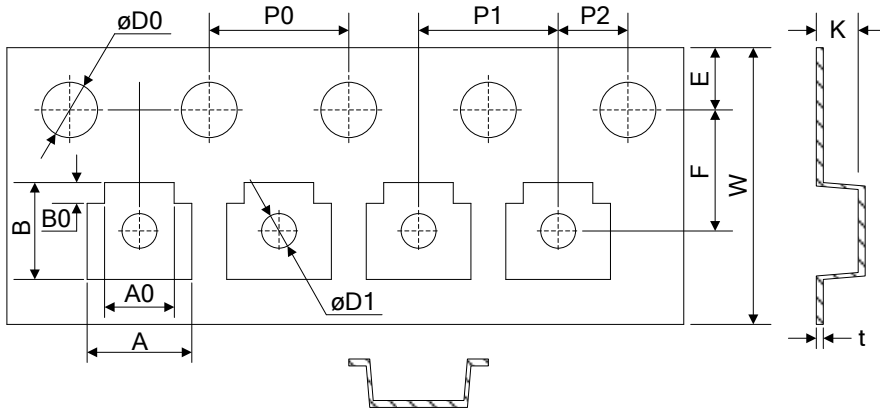
D	Φ178.0±2.0
D2	Φ13.0
W1	9.5

Quantity: 3000PCS

Packaging

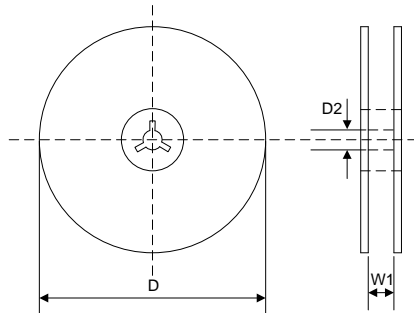
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Tape



Symbol	Dimension (mm)
W	8.00±0.30
P0	4.00±0.10
P1	4.00±0.10
P2	2.00±0.10
D0	Φ1.55±0.10
D1	Φ1.00±0.05
E	1.75±0.10
F	3.50±0.10
A	3.10±0.10
A0	2.10±0.10
B	2.75±0.10
B0	0.65±0.10
K	1.10±0.10
t	0.20±0.05

Reel



D	Φ178.0±2.0
D2	Φ13.0
W1	9.5

Quantity: 3000PCS