

## Electrostatic Discharged Protection Devices (ESD) Data Sheet

### Description

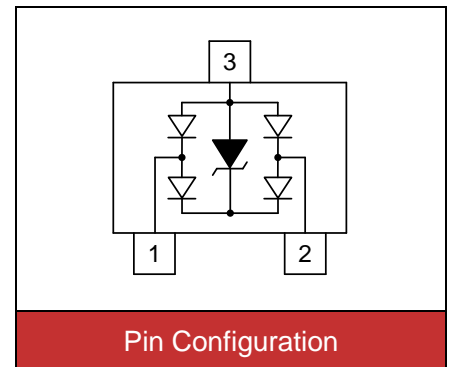
This is ultra low capacitance TVS arrays designed to protect high speed data interfaces. It has been specifically designed to protect sensitive components which is connected to high-speed data and transmission lines from overvoltage caused by electrostatic (ESD), cable discharge events (CDE) and electrical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



Contact :  $\pm 8\text{kV}$   
Air :  $\pm 15\text{kV}$

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

### Maximum Ratings

Rating	Symbol	Value	Unit
Peak pulse current (tp=8/20μs waveform)	$I_{PP}$	3	A
ESD voltage (Contact discharge)	$V_{ESD}$	$\pm 8$	kV
ESD voltage (Air discharge)		$\pm 15$	
Storage & operating temperature range	$T_{STG}, T_J$	-55~+150	°C

**Electrical Characteristics ( $T_J=25^{\circ}\text{C}$ )**

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	$V_{RWM}$				5	V
Reverse breakdown voltage	$V_{BR}$	$I_{BR}=1\text{mA}$	6			V
Reverse leakage current	$I_R$	$V_R=5\text{V}$ Each I/O pin			0.5	$\mu\text{A}$
Clamping voltage ( $t_p=8/20\mu\text{s}$ )	$V_C$	$I_{PP}=1\text{A}$			9.8	V
Clamping voltage ( $t_p=8/20\mu\text{s}$ )	$V_C$	$I_{PP}=3\text{A}$			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

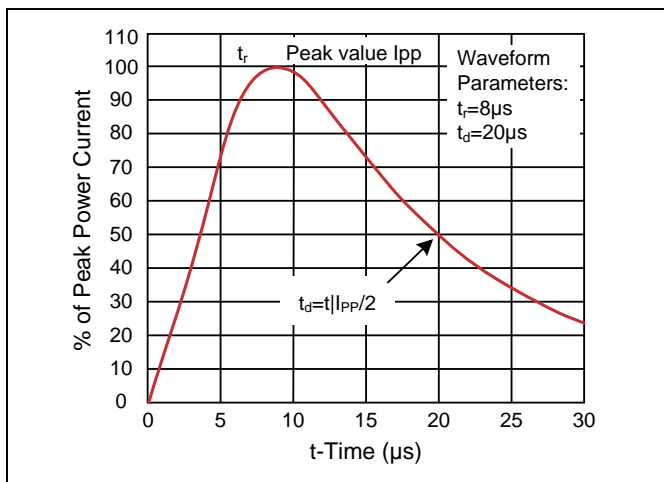


Figure 2. Capacitance vs. Reverse Voltage

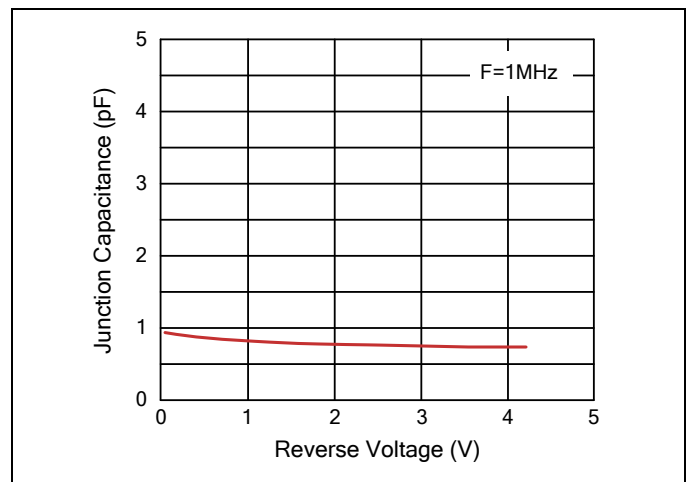
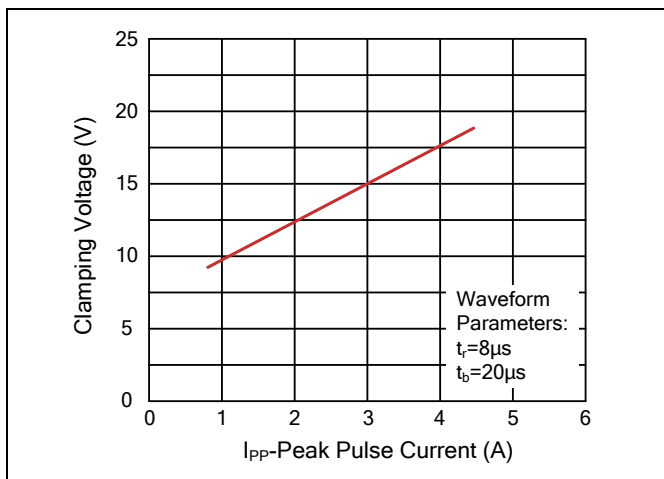
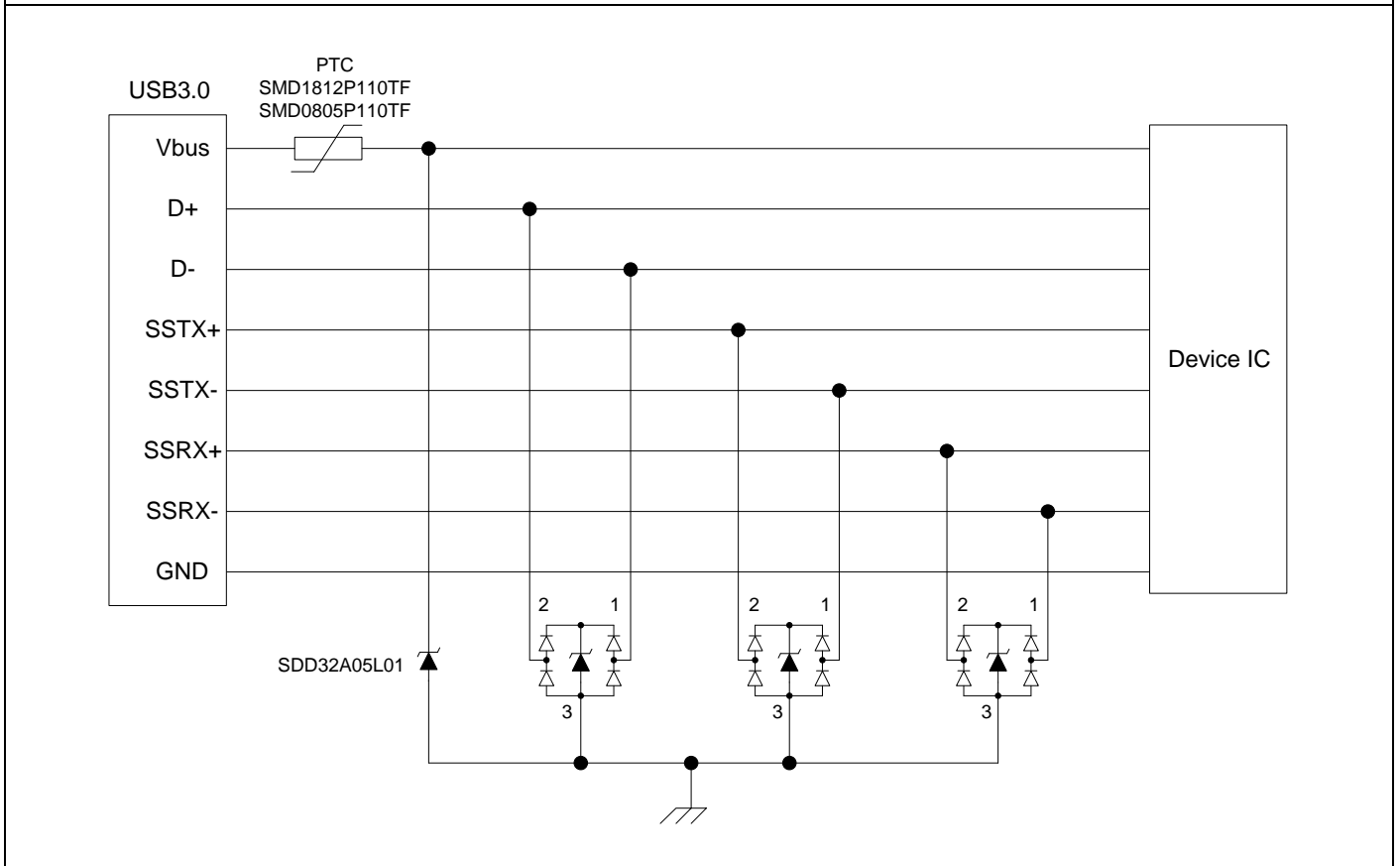
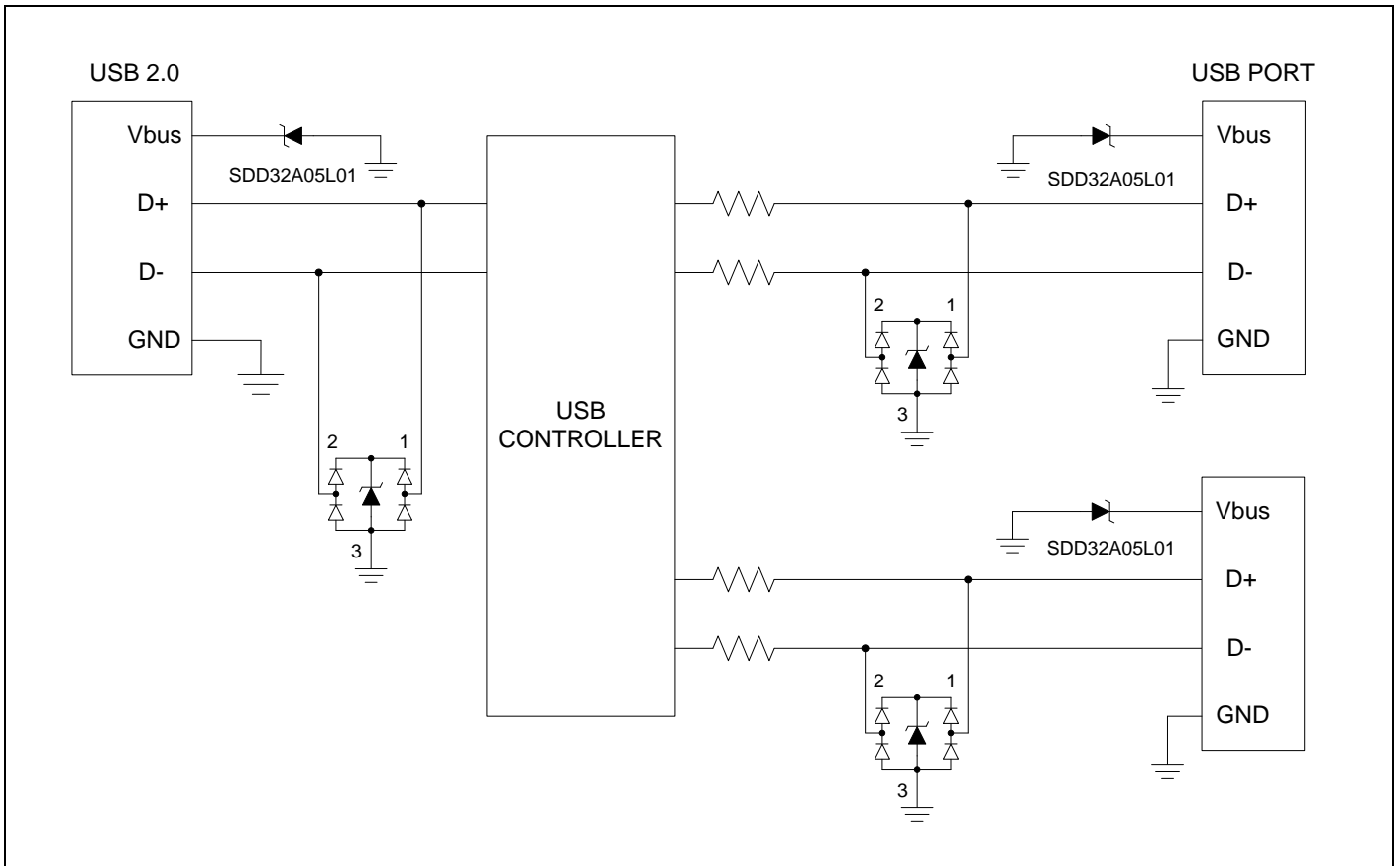


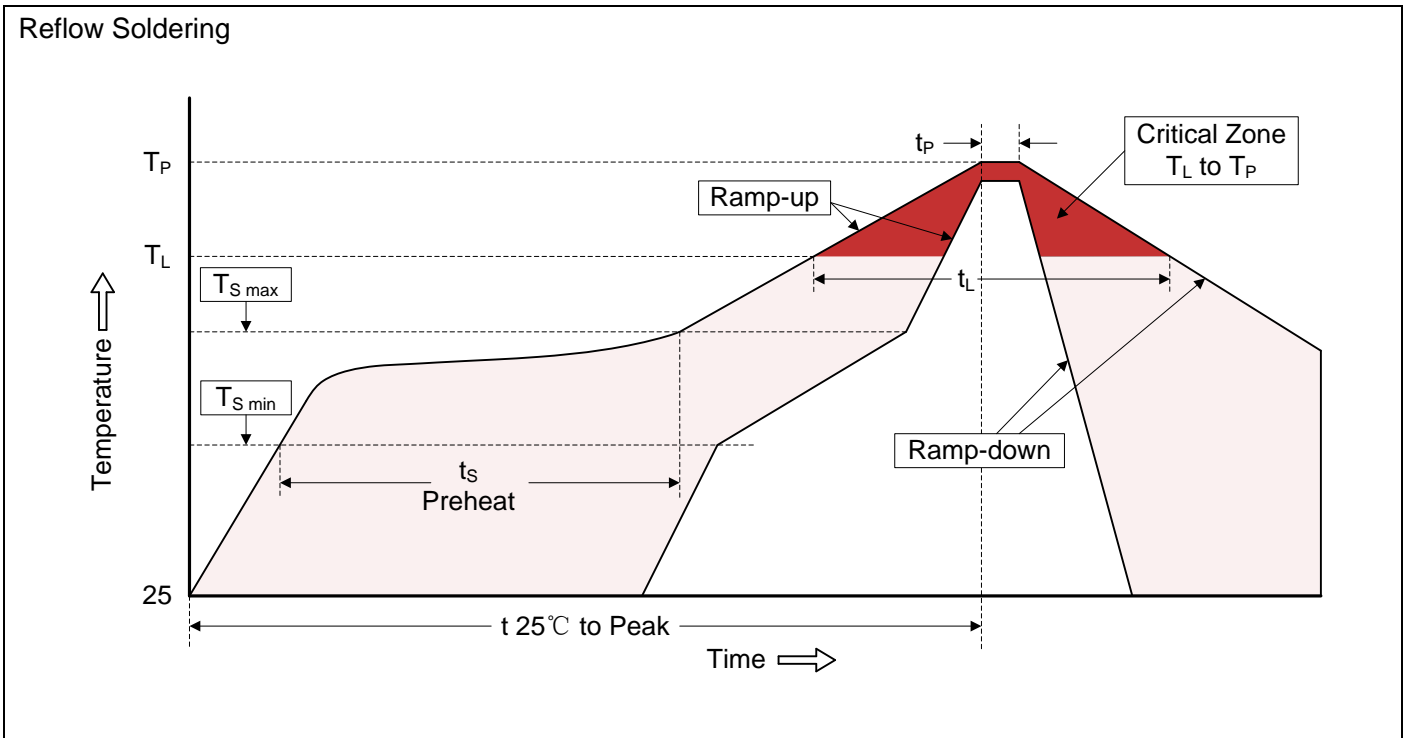
Figure 3. Clamping Voltage vs. Peak Pulse Current



**Applications Information**



**Recommended Soldering Conditions**

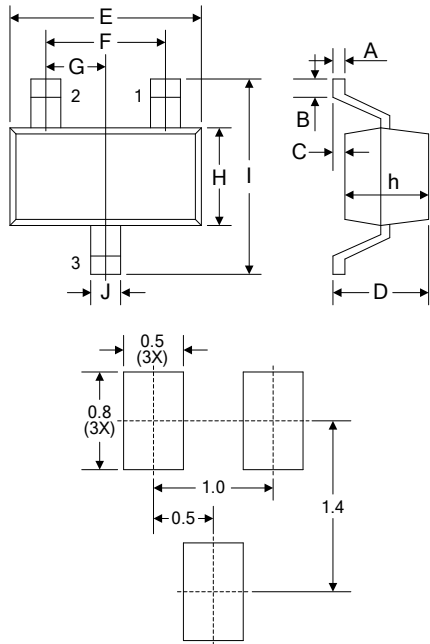


Recommended Conditions

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**

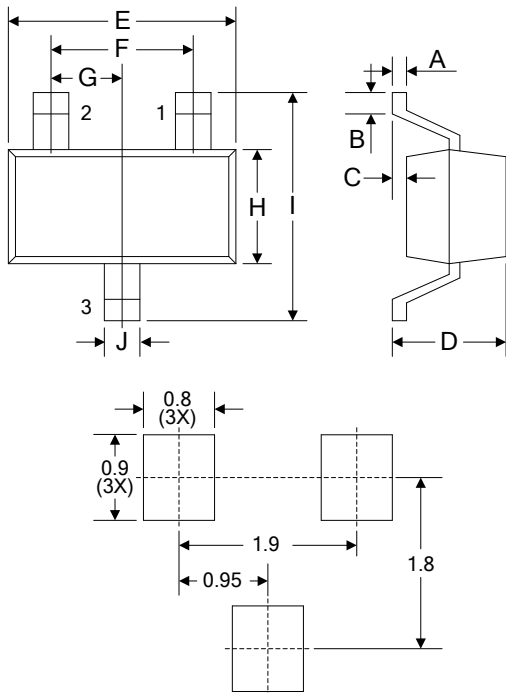
UAT52A05L02: SOT-523



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

UBT23A05L02: SOT-23



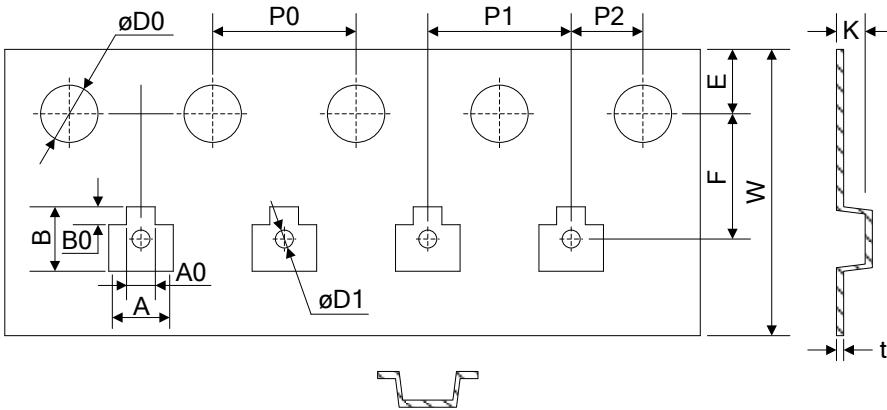
Recommended Soldering Pad Layout

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**

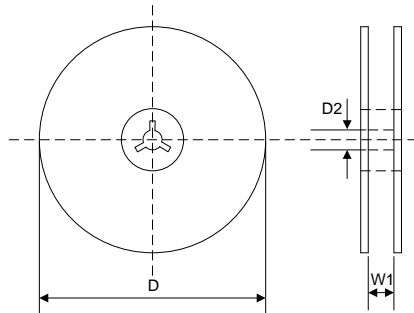
UAT52A05L02: SOT-523

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



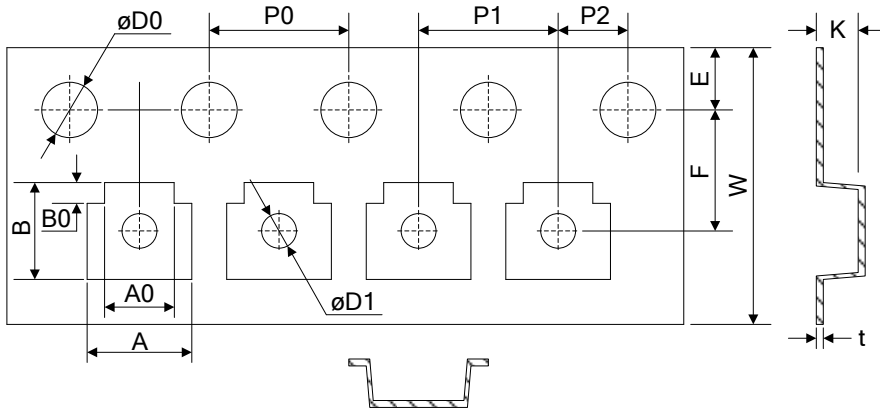
D	Φ178.0±2.0
D2	Φ13.0
W1	9.5

Quantity: 3000PCS

**Packaging**

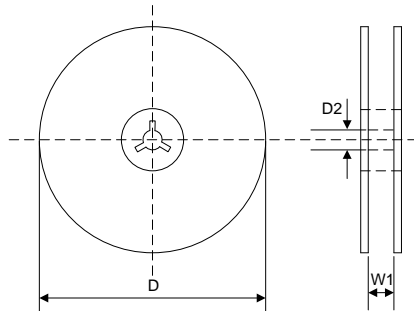
UBT23A05L02: SOT-23

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

## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [ESD Suppressors / TVS Diodes](#) category:*

*Click to view products by [Brightking](#) manufacturer:*

Other Similar products are found below :

[NTE4902](#) [P4SMAJ15A](#) [P4SMAJ26A](#) [SMAJ400CA-TP](#) [TGL34-47CA](#) [ESDAULC45-1BF4](#) [SM1605E3/TR13](#) [SMF20A-TP](#) [P4SMAJ12A](#)  
[CPDUR24V-HF](#) [CPDQC5V0USP-HF](#) [CPDQC5V0-HF](#) [MPLAD30KP45CAE3](#) [MMBZ27VCLQ-7-F](#) [MMAD1108/TR13](#) [MPLAD30KP24A](#)  
[ACPDQC5V0R-HF](#) [DFLT170A-7](#) [NTE4900](#) [NTE4926](#) [NTE4938](#) [SMF22A-TP](#) [SMF12A-TP](#) [SLVU2.8-TP](#) [SMLJ6.5CA-TP](#) [SMAJ6.5CA-](#)  
[TP](#) [MMAD1108E3/TR13](#) [D5V0M1U2LP3-7](#) [SMAJ400A-TP](#) [AOZ8811DT-03](#) [AOZ8831DI-05](#) [AOZ8831DT-03](#) [SMAJ188CA](#) [3SMC33CA](#)  
[BK](#) [CPDQC3V3C-HF](#) [CPDQC12VE-HF](#) [MPLAD30KP170CA](#) [82357120100](#) [5.0SMLJ15CA-TP](#) [5KP18A-TP](#) [P6KE8.2A-TP](#)  
[MPLAD30KP43CAE3](#) [SMAJ43A-TP](#) [D5V0F6U8LP33-7](#) [TVS5501V10MUT5G](#) [5.0SMLJ24CA-TP](#) [SMAJ110CA-TP](#) [MPLAD15KP75CAE3](#)  
[MMAD1103e3/TR13](#) [DFLT40AQ-7](#)