

Electrostatic Discharged Protection Devices (ESD) Data Sheet

Description

UCT26A05L05-HP1 is surge rated diode arrays designed to protect highspeed data interfaces. It has been specifically designed to protect sensitive components which is connected to data and transmission lines from overvoltage caused by electrostatic discharge (ESD), electrical fast transients (EFT), and lightning.

The unique design of the device incorporates one surge rated, and four data lines. Low capacitance steering diodes and a TVS diode in a single package. The low capacitance array configuration allows the user to protect four high speed data or transmission lines.

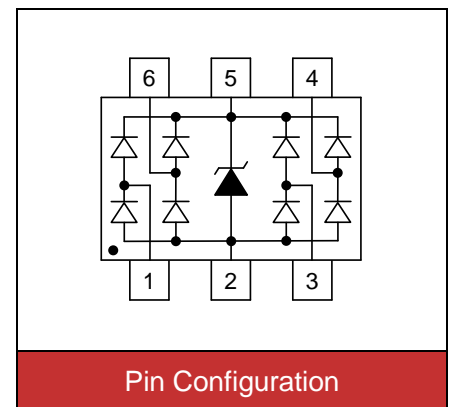


Contact : ±30kV
Air : ±30kV



Features

- IEC61000-4-2 ESD 30KV Air, 30KV contact compliance
- SOT23-6L surface mount package
- Protects four high-speed data lines and one power line
- Array of surge rated, low capacitance diodes
- Working voltage: 5V
- Low leakage current
- Low clamping voltage
- Solid-state silicon avalanche technology
- RoHS compliant
- Solder reflow temperature: Pure Tin-Sn, 260~270°C
- Flammability rating UL 94V-0
- Meets MSL level 1, per J-STD-020
- Marking: 45B



Applications

- | | |
|--|---|
| <ul style="list-style-type: none"> ● USB power and data line protection ● 10/100/1000 Ethernet ● Video line protection ● I²C bus protection | <ul style="list-style-type: none"> ● WAN/LAN equipment ● ISDN S/T interface ● Microcontroller input protection ● Portable electronics |
|--|---|

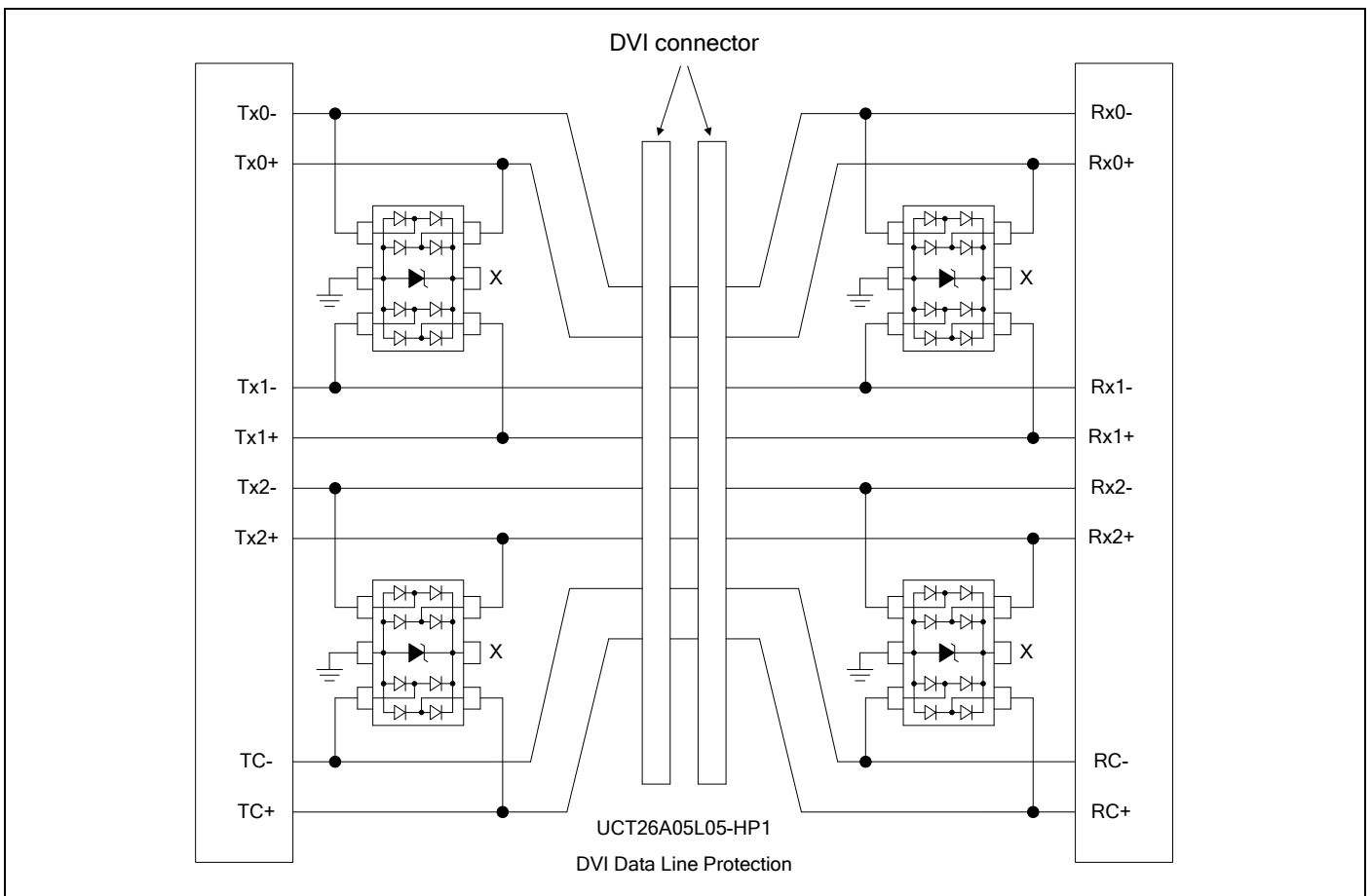
Maximum Ratings

Rating	Symbol	Value	Unit
Peak pulse current (tp=8/20µs)	I _{PP}	12	A
ESD voltage (Contact discharge)	V _{ESD}	±30	kV
ESD voltage (Air discharge)		±30	
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			1	μA
Clamping voltage (tp=8/20μs)	V _C	I _{PP} =5A Line to Ground			15	V
Clamping voltage (tp=8/20μs)	V _C	I _{PP} =12A Line to Ground			25	V
Off state junction capacitance (0Vdc,f=1MHz)	C _J	Between I/O pins and GND		1.5	2	pF
		Between I/O pins		0.7	1	pF

Applications Information



Typical Characteristics Curves

Figure 1. Power Derating Curve

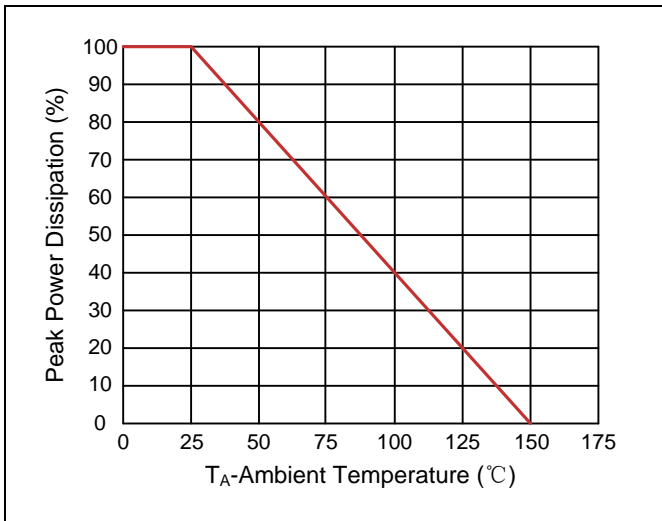


Figure 2. Pulse Waveforms

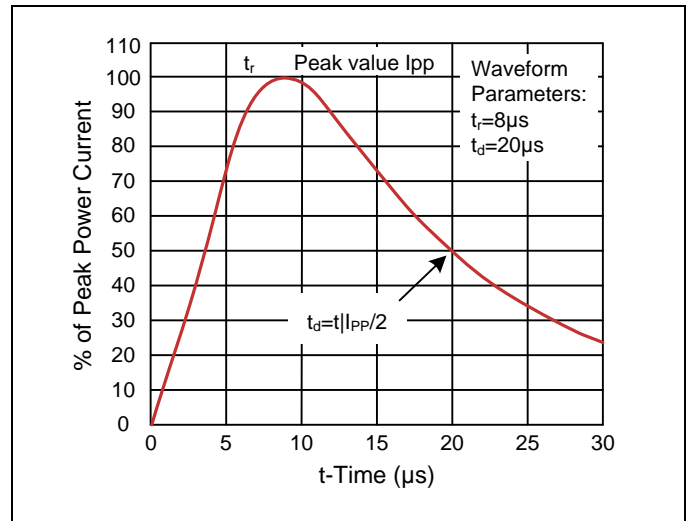


Figure 3. Non-Repetitive Peak Pulse vs. Pulse Time

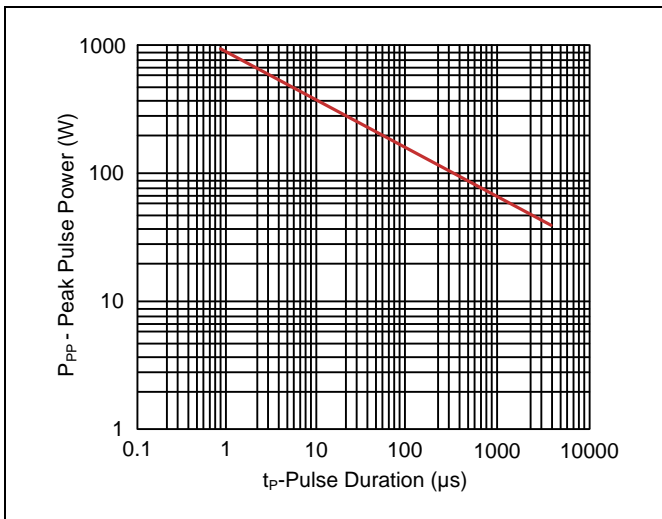


Figure 4. Capacitance vs. Reverse Voltage

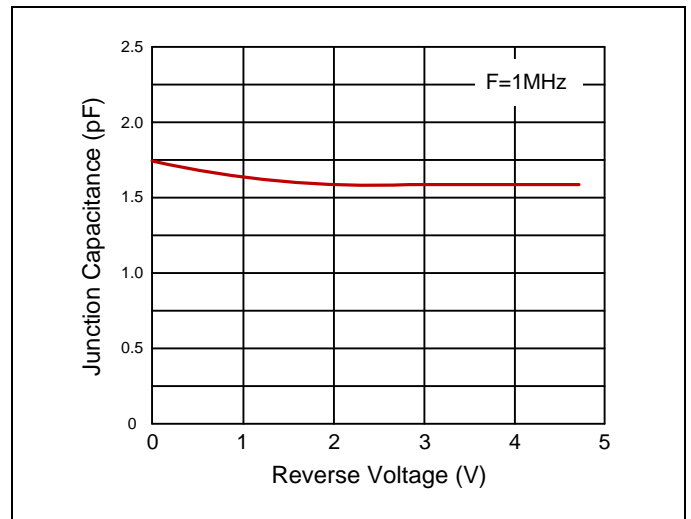


Figure 5. Clamping Voltage vs. Peak Pulse Current

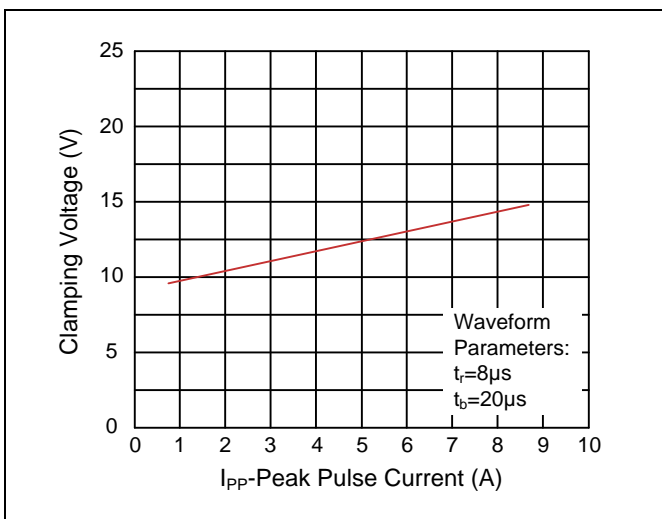


Figure 6. Forward Voltage vs. Forward Current

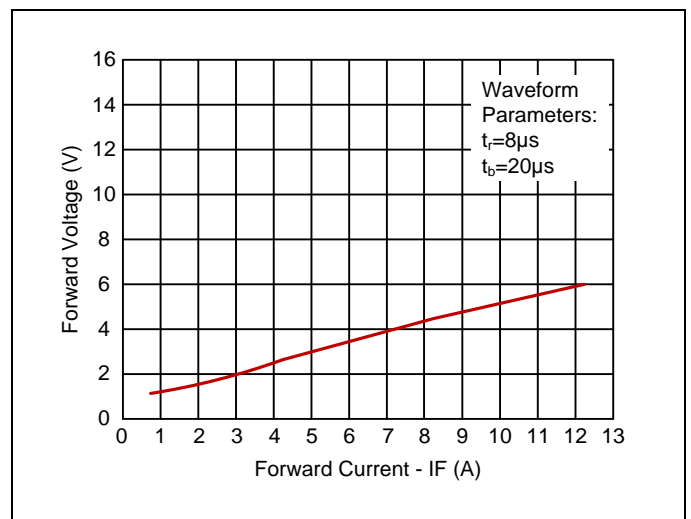


Figure 7. Positive TLP I-V Curve

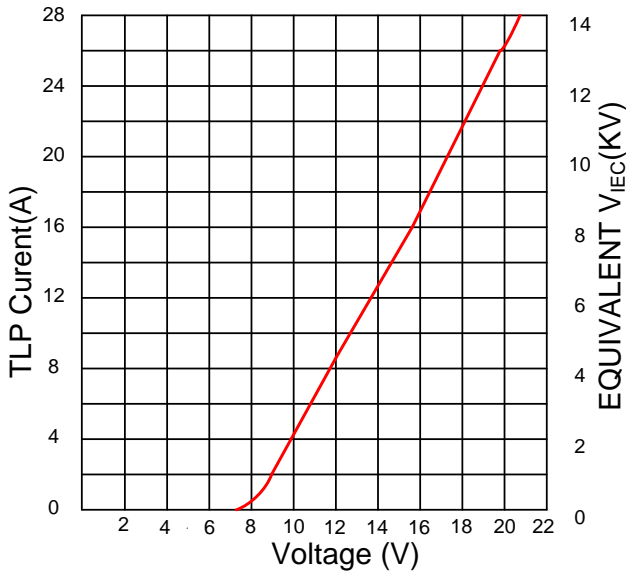
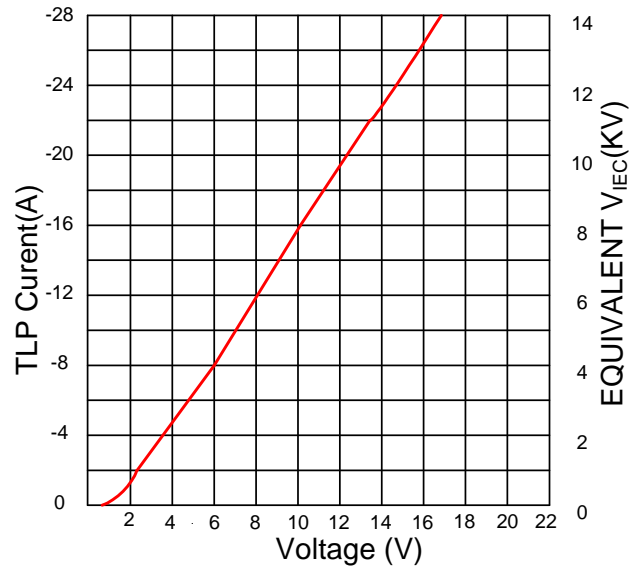


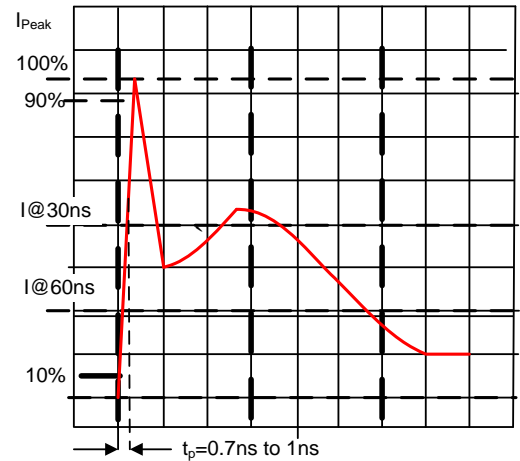
Figure 8. Negative TLP I-V Curve



IEC61000-4-2 Specification

IEC 61000-4-2 Spec.

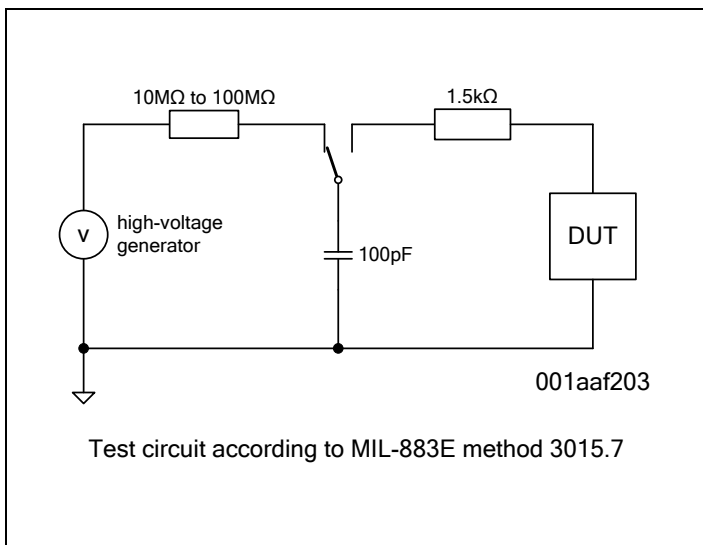
Level	Test Voltage(KV)	First Peak Current(A)	Current at 30ns(A)	Current at 60ns(A)
1	2	7.5	4	2
2	4	15	8	4
3	6	22.5	12	6
4	8	30	16	8



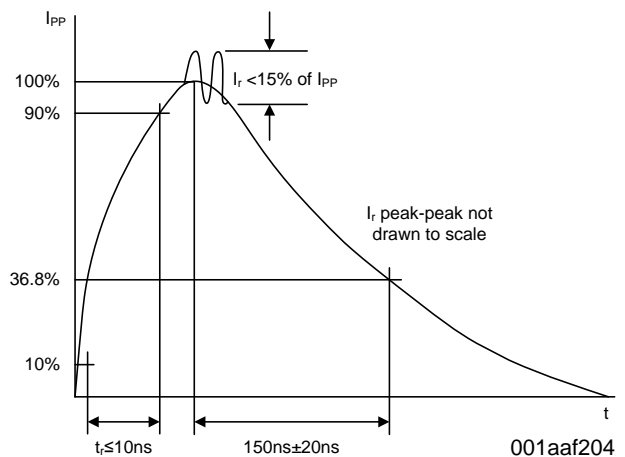
IEC61000-4-2 Waveform

Human Body Model (HBM, MIL-883E method 3015.7)

The HBM standard simulates an ESD surge generated by human contact to electronic components.

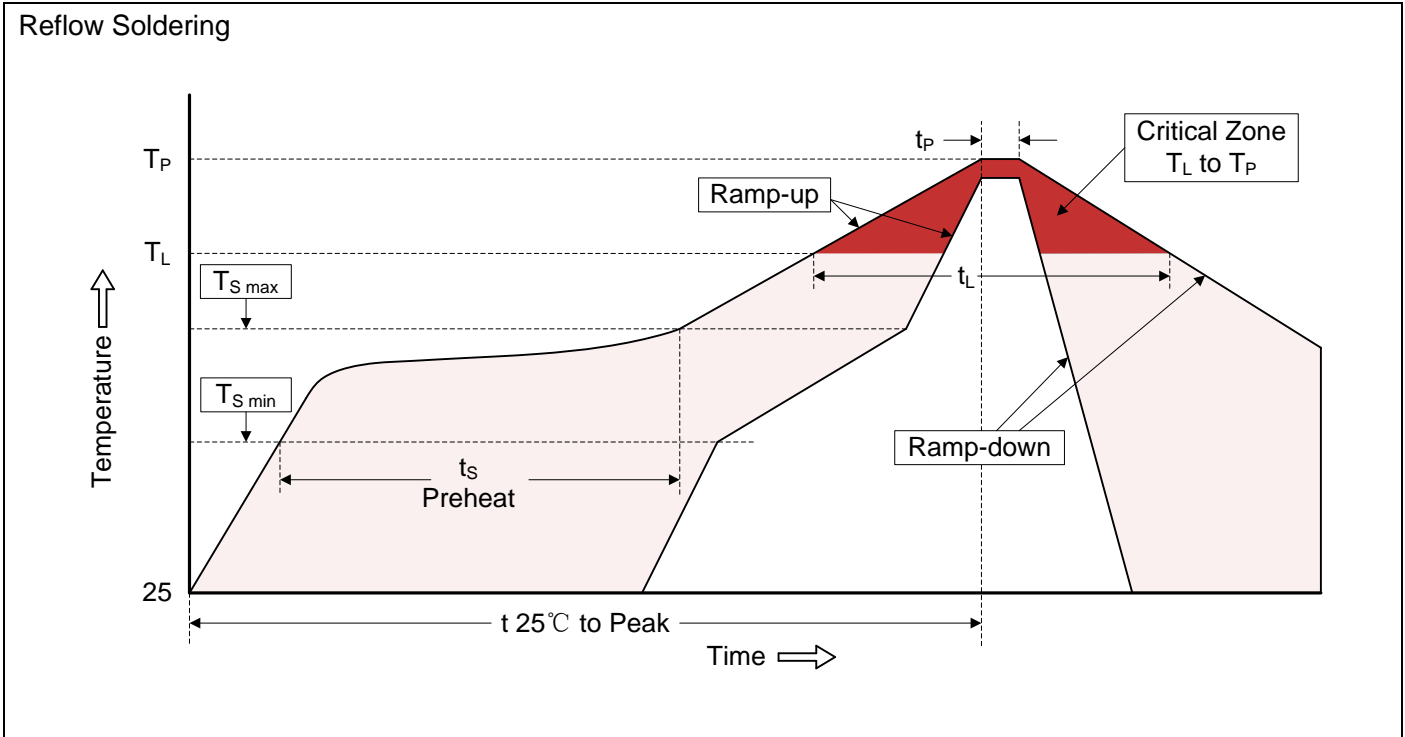


Test circuit according to MIL-883E method 3015.7



ESD surge according to MIL-883E method 3015.7

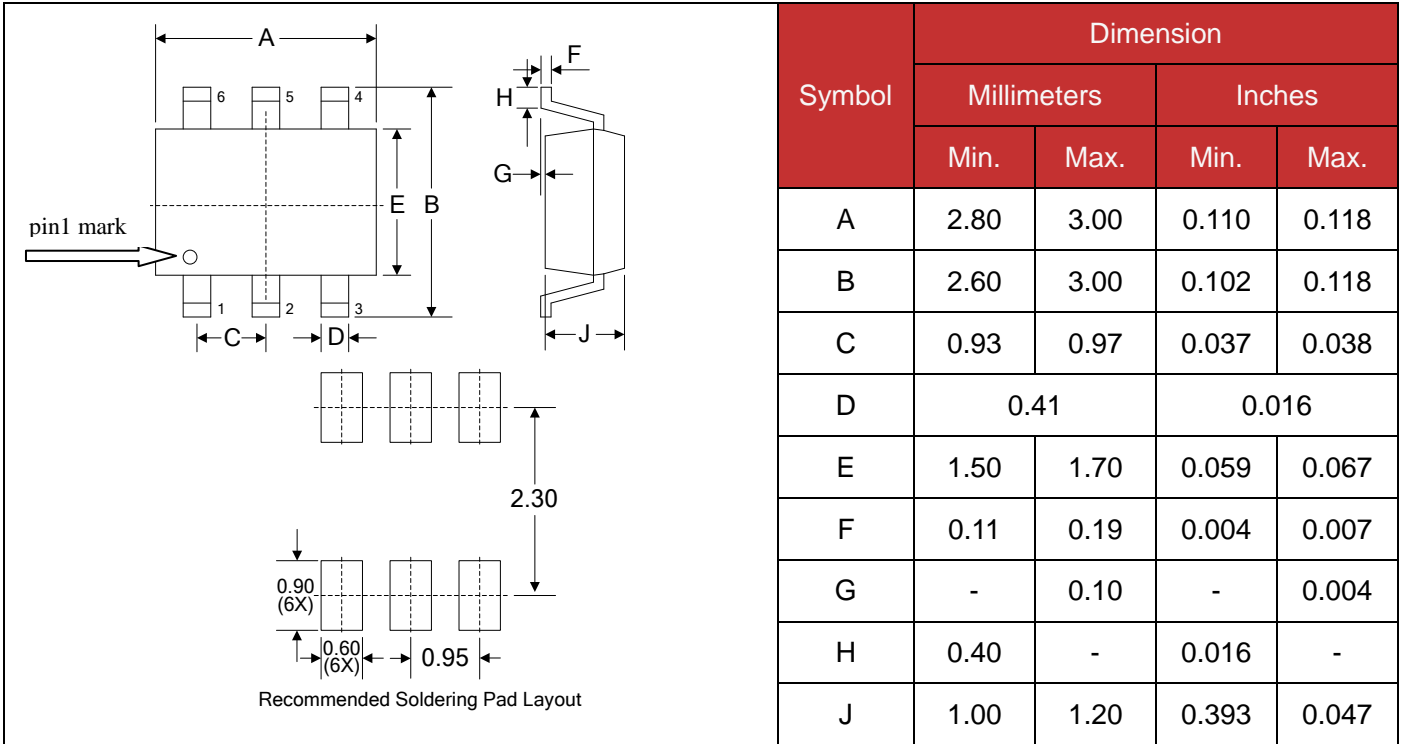
Recommended Soldering Conditions



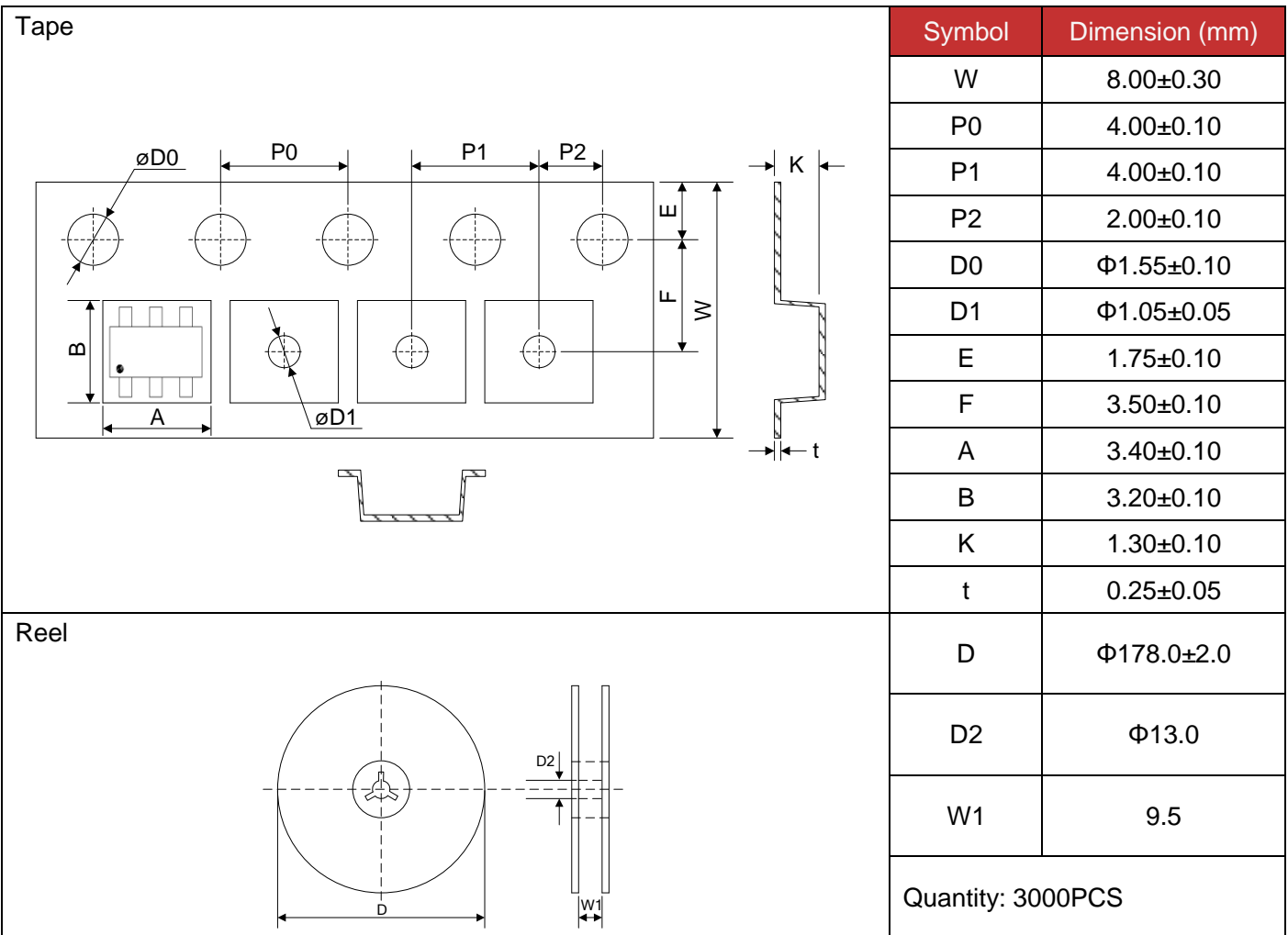
Recommended Conditions

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 (SOT23-6L)



Packaging



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