

DATA SHEET

**ELECTROSTATIC DISCHARGE
PROTECTION DEVICES**

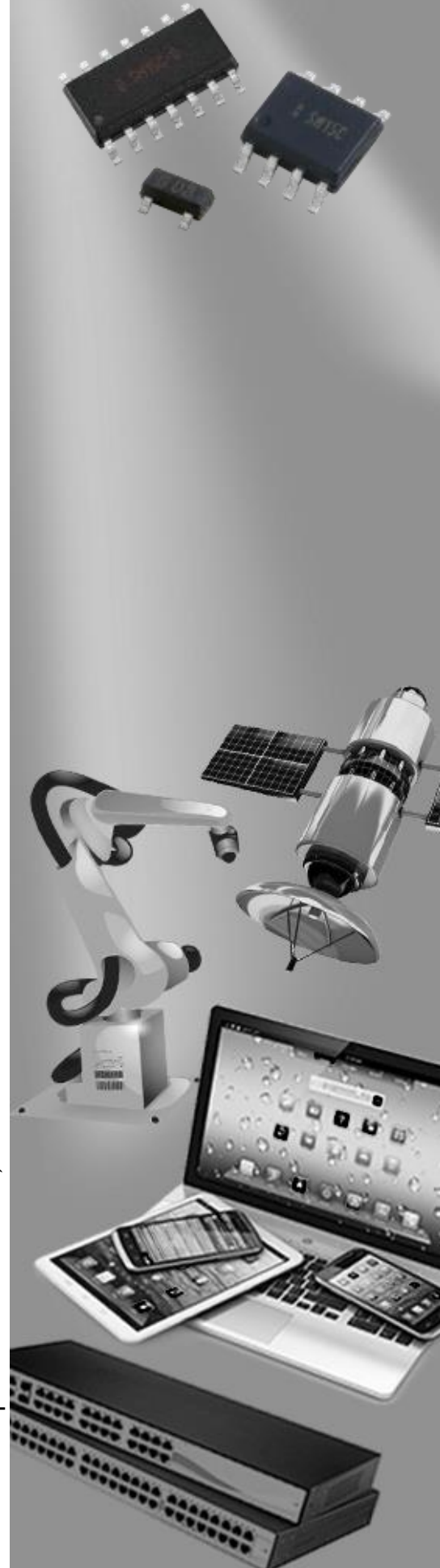
INDUSTRIAL / CONSUMER

SJD12A(C)XXXL01-AT series

RoHS compliant & Halogen free



Product specification— March 12, 2021 V.0



Electrostatic Discharged Protection Devices (ESD) Data Sheet

Description

The SJD12A(C)XXL01-AT series are designed to protect voltage sensitive components from high voltage, high energy transients. Excellent clamping capability, high surge capability, low zener impedance and fast response time. Because of its small size, it is ideal for use in cellular phones, portable device, business machines, power supplies and many other industrial/consumer applications.



Contact : $\pm 30\text{kV}$
Air : $\pm 30\text{kV}$

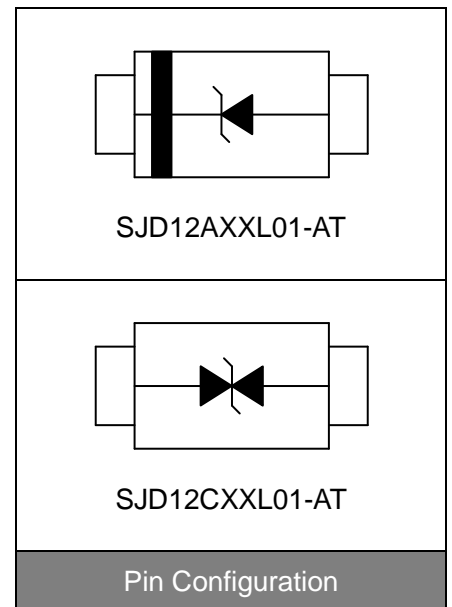


Features

- IEC61000-4-2 ESD 30KV Air,30KV contact compliance
- SOD-123S surface mount package
- Protects one I/O line
- Peak power dissipation of 1000W under 8/20 μs waveform
- Working voltage: 5V~170V
- 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
- AEC-Q101 qualified

Applications

- Personal digital assistants (PDA)
- Cellular handsets & Accessories
- Portable devices
- Portable instrumentation
- Handhelds and notebooks
- Digital cameras



Maximum Ratings

Rating	Symbol	Value	Unit
Peak pulse power (tp=10/1000 μs waveform)	P_{PP}	200	W
Peak pulse power (tp=8/20 μs waveform)	P_{PP}	1000	W
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 ($T_J=25^{\circ}\text{C}$)

Part Number	Device Marking Code		Reverse Stand-Off Voltage $V_{RWM}(V)$	Breakdown Voltage @ I_T		Test Current $I_T(mA)$	Maximum Clamping Voltage @ I_{PP} $V_C(V)$	Peak Pulse Current $I_{PP}(A)$	Reverse Leakage @ V_{RWM} $I_R(\mu A)$
	UNI	BI		V_{BR} MIN.(V)	V_{BR} MAX.(V)				
SJD12A(C)05L01-AT	KE	AE	5.0	6.40	7.00	10	9.2	21.8	800
SJD12A(C)06L01-AT	KG	AG	6.0	6.67	7.37	10	10.3	19.4	800
SJD12A(C)6.5L01-AT	KK	AK	6.5	7.22	7.98	10	11.2	17.9	500
SJD12A(C)07L01-AT	KM	AM	7.0	7.78	8.60	10	12.0	16.7	200
SJD12A(C)7.5L01-AT	KP	AP	7.5	8.33	9.21	1	12.9	15.5	100
SJD12A(C)08L01-AT	KR	AR	8.0	8.89	9.83	1	13.6	14.7	50
SJD12A(C)8.5L01-AT	KT	AT	8.5	9.44	10.40	1	14.4	13.9	20
SJD12A(C)09L01-AT	KV	AV	9.0	10.00	11.10	1	15.4	13.0	10
SJD12A(C)10L01-AT	KX	AX	10.0	11.10	12.30	1	17.0	11.8	5
SJD12A(C)11L01-AT	KZ	AZ	11.0	12.20	13.50	1	18.2	11.0	3
SJD12A(C)12L01-AT	LE	BE	12.0	13.30	14.70	1	19.9	10.1	1
SJD12A(C)13L01-AT	LG	BG	13.0	14.40	15.90	1	21.5	9.3	1
SJD12A(C)14L01-AT	LK	BK	14.0	15.60	17.20	1	23.2	8.6	1
SJD12A(C)15L01-AT	LM	BM	15.0	16.70	18.50	1	24.4	8.2	1
SJD12A(C)16L01-AT	LP	BP	16.0	17.80	19.70	1	26.0	7.7	1
SJD12A(C)17L01-AT	LR	BR	17.0	18.90	20.90	1	27.6	7.3	1
SJD12A(C)18L01-AT	LT	BT	18.0	20.00	22.10	1	29.2	6.9	1
SJD12A(C)20L01-AT	LV	BV	20.0	22.20	24.50	1	32.4	6.2	1
SJD12A(C)22L01-AT	LX	BX	22.0	24.40	26.90	1	35.5	5.7	1
SJD12A(C)24L01-AT	LZ	BZ	24.0	26.70	29.50	1	38.9	5.2	1
SJD12A(C)26L01-AT	ME	CE	26.0	28.90	31.90	1	42.1	4.8	1
SJD12A(C)28L01-AT	MG	CG	28.0	31.10	34.40	1	45.4	4.4	1
SJD12A(C)30L01-AT	MK	CK	30.0	33.30	36.80	1	48.4	4.2	1
SJD12A(C)33L01-AT	MM	CM	33.0	36.70	40.60	1	53.3	3.8	1
SJD12A(C)36L01-AT	MP	CP	36.0	40.00	44.20	1	58.1	3.5	1
SJD12A(C)40L01-AT	MR	CR	40.0	44.40	49.10	1	64.5	3.1	1
SJD12A(C)43L01-AT	MT	CT	43.0	47.80	52.80	1	69.4	2.9	1
SJD12A(C)45L01-AT	MV	CV	45.0	50.00	55.30	1	72.7	2.8	1
SJD12A(C)48L01-AT	MX	CX	48.0	53.30	58.90	1	77.4	2.6	1
SJD12A(C)51L01-AT	MZ	CZ	51.0	56.70	62.70	1	82.4	2.5	1

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

Part Number	Device Marking Code		Reverse Stand-Off Voltage	Breakdown Voltage @ I_T		Test Current	Maximum Clamping Voltage @ I_{PP}	Peak Pulse Current	Reverse Leakage @ V_{RWM}
	UNI	BI	$V_{RWM}(V)$	$V_{BR\text{ MIN.}}(V)$	$V_{BR\text{ MAX.}}(V)$	$I_T(\text{mA})$	$V_C(V)$	$I_{PP}(A)$	$I_R(\mu A)$
SJD12A(C)54L01-AT	NE	DE	54.0	60.00	66.30	1	87.1	2.3	1
SJD12A(C)58L01-AT	NG	DG	58.0	64.40	71.20	1	93.6	2.3	1
SJD12A(C)60L01-AT	NK	DK	60.0	66.70	73.70	1	96.8	2.1	1
SJD12A(C)64L01-AT	NM	DM	64.0	71.10	78.60	1	103.0	2.0	1
SJD12A(C)70L01-AT	NP	DP	70.0	77.80	86.00	1	113.0	1.8	1
SJD12A(C)75L01-AT	NR	DR	75.0	83.30	92.10	1	121.0	1.7	1
SJD12A(C)78L01-AT	NT	DT	78.0	86.70	95.80	1	126.0	1.6	1
SJD12A(C)85L01-AT	NV	DV	85.0	94.40	104.00	1	137.0	1.5	1
SJD12A(C)90L01-AT	NX	DX	90.0	100.00	111.00	1	146.0	1.4	1
SJD12A(C)100L01-AT	NZ	DZ	100.0	111.00	123.00	1	162.0	1.3	1
SJD12A(C)110L01-AT	PE	EE	110.0	122.00	135.00	1	177.0	1.2	1
SJD12A(C)120L01-AT	PG	EG	120.0	133.00	147.00	1	193.0	1.1	1
SJD12A(C)130L01-AT	PK	EK	130.0	144.00	159.00	1	209.0	1.0	1
SJD12A(C)150L01-AT	PM	EM	150.0	167.00	185.00	1	243.0	0.8	1
SJD12A(C)160L01-AT	PP	EP	160.0	178.00	197.00	1	259.0	0.8	1
SJD12A(C)170L01-AT	PR	ER	170.0	189.00	209.00	1	275.0	0.8	1

Typical Characteristics Curves

Figure 1. Peak Pulse Power Rating Curve

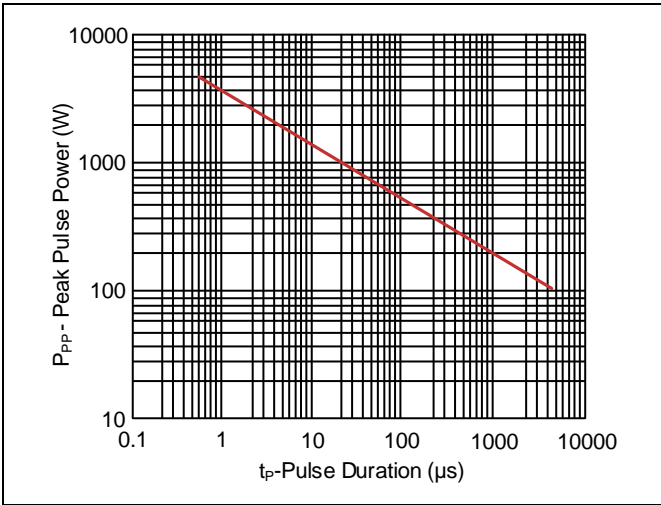


Figure 2. 10/1000µs Pulse Waveforms

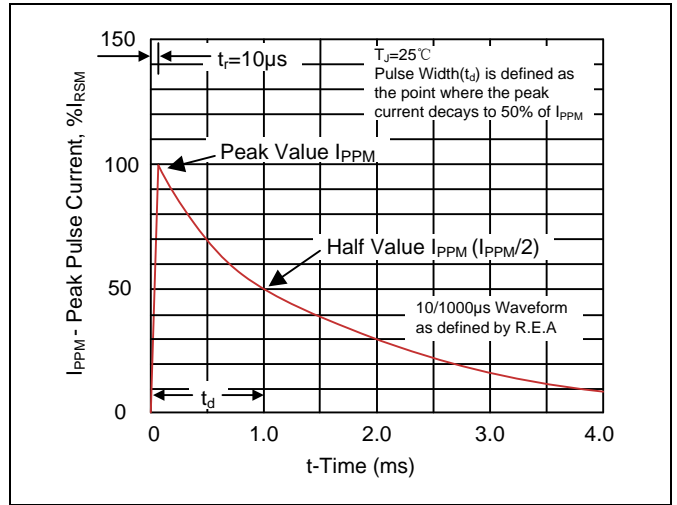


Figure 3. 8/20µs Pulse Waveforms

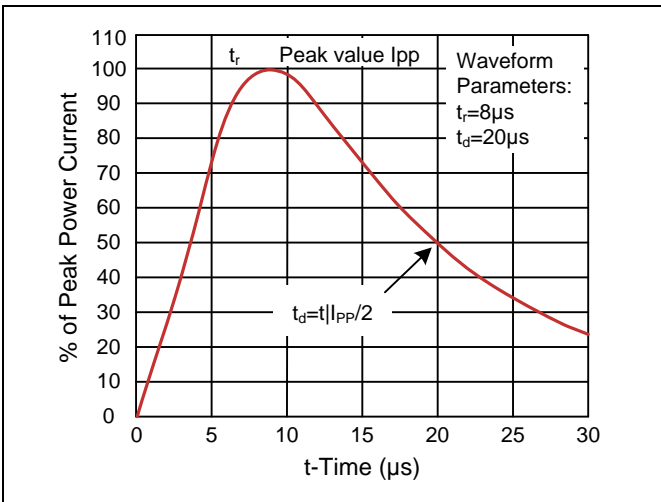


Figure 4. Power Derating Curve

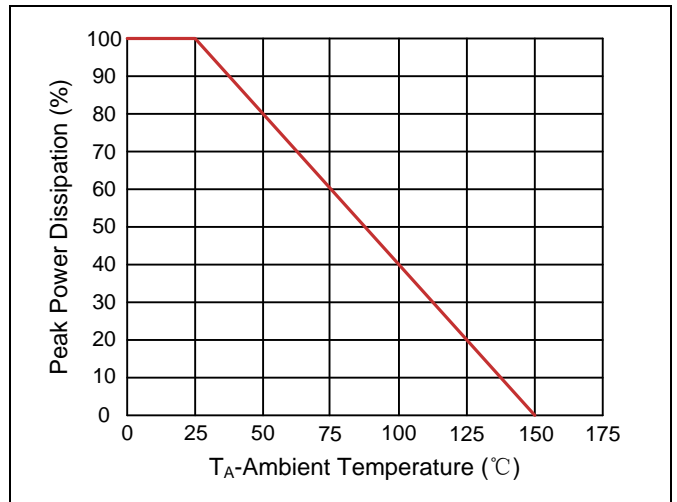
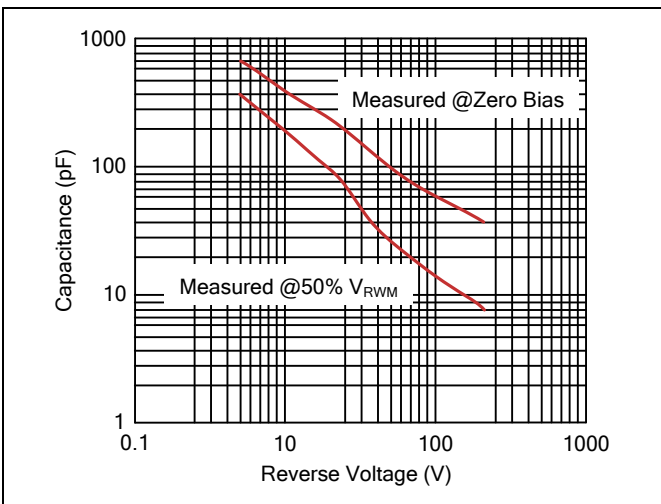
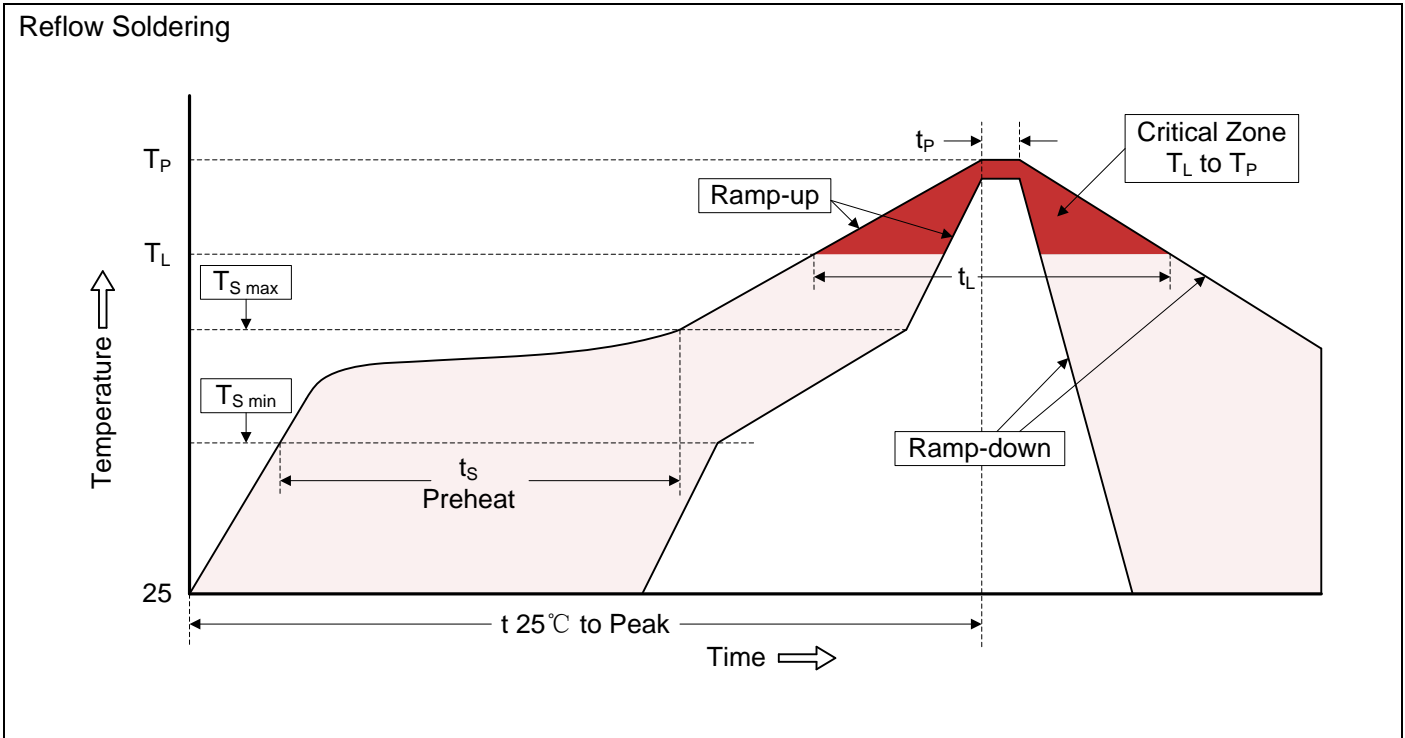


Figure 5. Capacitance vs. Reverse Voltage



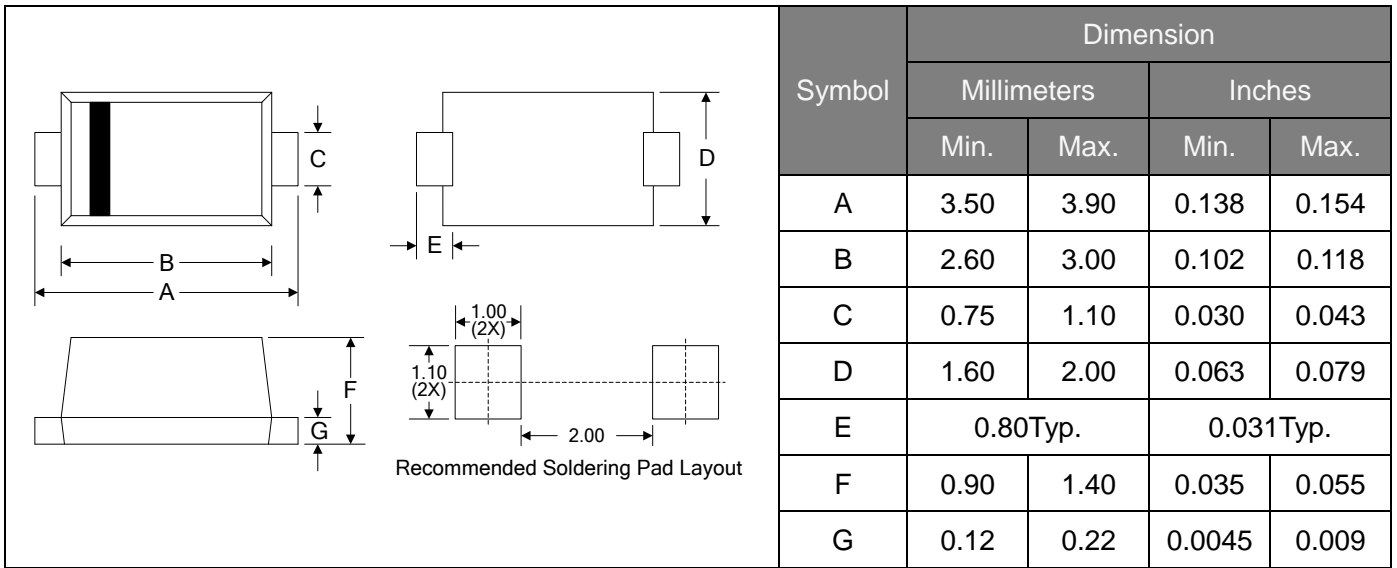
Recommended Soldering Conditions



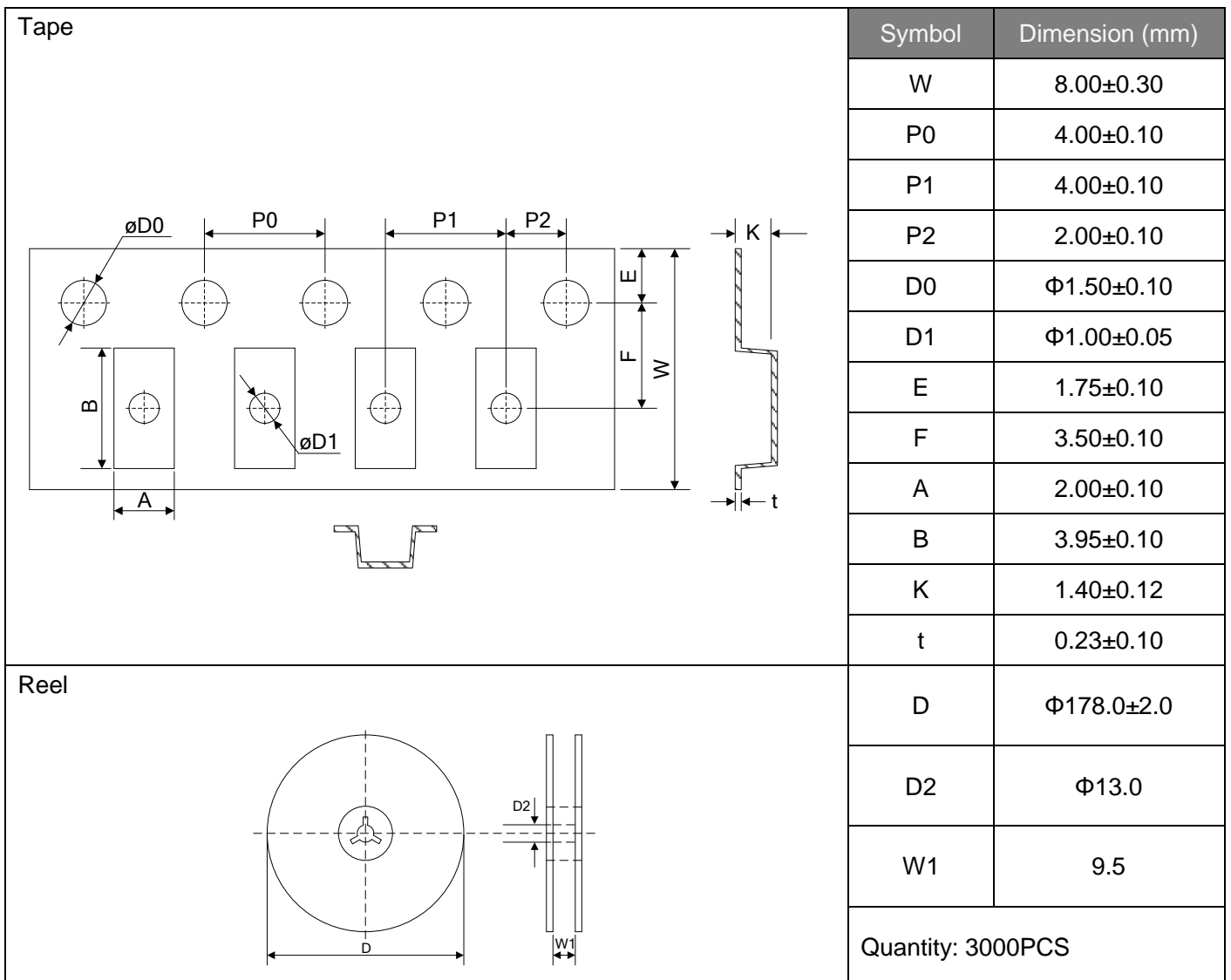
Recommended Conditions

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 (SOD-123S)



Packaging



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