

## Transient Voltage Suppressors (TVS) Data Sheet

### Features

- Glass passivated junction
- Low incremental surge resistance.
- Excellent clamping capability
- 5000W peak pulse power capability at 10/1000µs waveform, repetition rate (duty cycle): 0.05%
- Fast response time
- Typical  $I_R$  less than 2µA above 10V.
- High Temperature soldering guaranteed: 265°C/10 seconds/.375", (9.5mm) lead length, 5lbs (2.3kg) tension
- Plastic package has underwriters laboratory flammability 94V-0
- Meets MSL level 1, per J-STD-020.
- Safety certification: UL: E244458
- AEC-Q101 qualified
- IEC61000-4-2 ESD 30KV Air, 30KV contact compliance



### Mechanical Data

- Case: Moulded plastic over glass passivated junction
- Terminal: Plated Axial leads, solderable per MIL-STD-750, Method 2026
- Polarity: Color band denotes cathode except bi-directional models
- Mounting Position: Any
- Weight: 2.10g

### Applications

- I/O interface
- AC/DC power supply
- Low frequency signal transmission line (RS232, RS485, etc.)

### Maximum Ratings and Characteristics

Ratings at 25°C ambient temperature unless otherwise specified.

Rating	Symbol	Value	Units
Peak pulse power dissipation at 10/1000µs waveform (Note1, Fig.1)	$P_{PPM}$	Minimum 5000	Watts
Peak pulse current of at 10/1000µs waveform (Note 1, Fig.3)	$I_{PPM}$	See Table	Amps
Steady state power dissipation at $T_L=75^\circ\text{C}$ (Fig.5)	$P_{M(AV)}$	8.0	Watts
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load, (JEDEC Method) (Note2, Fig.6)	$I_{FSM}$	400	Amps
Operating junction and Storage Temperature Range.	$T_J, T_{STG}$	-55 to +150	°C
Typical thermal resistance junction to lead	$R_{\theta JL}$	8	°C/W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	40	°C/W

Notes: 1. Non-repetitive current pulse, per Fig.3 and derated above  $T_A=25^\circ\text{C}$  per Fig.2.

2. 8.3ms single half sine-wave, or equivalent square wave, duty cycle=4 pulses per minutes maximum.

**Dimensions (P600)**

	Symbol	Millimeters		Inches	
		Min.	Max.	Min.	Max.
	L	25.40	-	1.000	-
	T	8.60	9.10	0.340	0.360
	d	8.60	9.10	0.340	0.360
s	1.19	1.32	0.047	0.052	

**Electrical Characteristics (T<sub>A</sub>=25°C)**

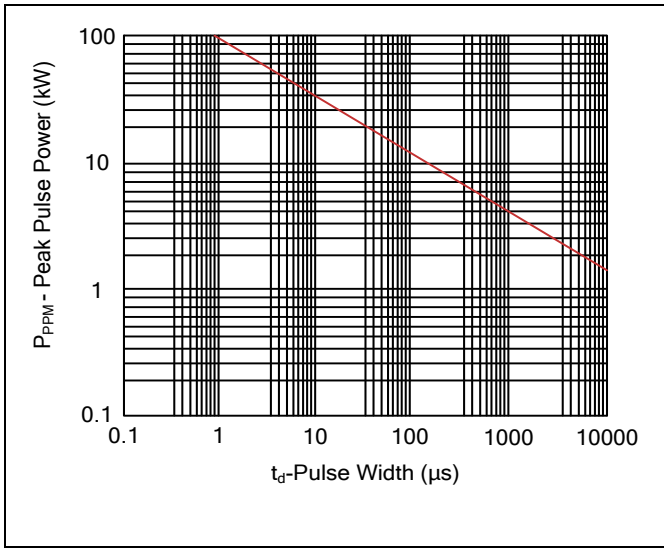
Part Number		Reverse Stand-Off Voltage	Breakdown Voltage @I <sub>T</sub>	Test Current	Maximum Clamping Voltage @I <sub>PP</sub>	Peak Pulse Current	Reverse Leakage @V <sub>RWM</sub>
Unidirectional	Bidirectional	V <sub>RWM</sub> (V)	V <sub>BR</sub> (V)	I <sub>T</sub> (mA)	V <sub>C</sub> (V)	I <sub>PP</sub> (A)	I <sub>R</sub> (μA)
5KP5.0A-AT	5KP5.0CA-AT	5.0	6.40~7.00	50	9.2	554.3	5000
5KP6.0A-AT	5KP6.0CA-AT	6.0	6.67~7.37	50	10.3	495.1	5000
5KP6.5A-AT	5KP6.5CA-AT	6.5	7.22~7.98	50	11.2	455.4	2000
5KP7.0A-AT	5KP7.0CA-AT	7.0	7.78~8.60	50	12.0	425.0	1000
5KP7.5A-AT	5KP7.5CA-AT	7.5	8.33~9.21	5	12.9	395.3	250
5KP8.0A-AT	5KP8.0CA-AT	8.0	8.89~9.83	5	13.6	375.0	150
5KP8.5A-AT	5KP8.5CA-AT	8.5	9.44~10.40	5	14.4	354.2	50
5KP9.0A-AT	5KP9.0CA-AT	9.0	10.00~11.10	5	15.4	331.2	20
5KP10A-AT	5KP10CA-AT	10.0	11.10~12.30	5	17.0	300.0	15
5KP11A-AT	5KP11CA-AT	11.0	12.20~13.50	5	18.2	280.2	2
5KP12A-AT	5KP12CA-AT	12.0	13.30~14.70	5	19.9	256.3	2
5KP13A-AT	5KP13CA-AT	13.0	14.40~15.90	5	21.5	237.2	2
5KP14A-AT	5KP14CA-AT	14.0	15.60~17.20	5	23.2	219.8	2
5KP15A-AT	5KP15CA-AT	15.0	16.70~18.50	5	24.4	209.0	2
5KP16A-AT	5KP16CA-AT	16.0	17.80~19.70	5	26.0	196.2	2
5KP17A-AT	5KP17CA-AT	17.0	18.90~20.90	5	27.6	184.8	2
5KP18A-AT	5KP18CA-AT	18.0	20.00~22.10	5	29.2	174.7	2
5KP20A-AT	5KP20CA-AT	20.0	22.20~24.50	5	32.4	157.4	2
5KP22A-AT	5KP22CA-AT	22.0	24.40~26.90	5	35.5	143.7	2
5KP24A-AT	5KP24CA-AT	24.0	26.70~29.50	5	38.9	131.1	2
5KP26A-AT	5KP26CA-AT	26.0	28.90~31.90	5	42.1	121.1	2

**Electrical Characteristics (T<sub>A</sub>=25°C)**

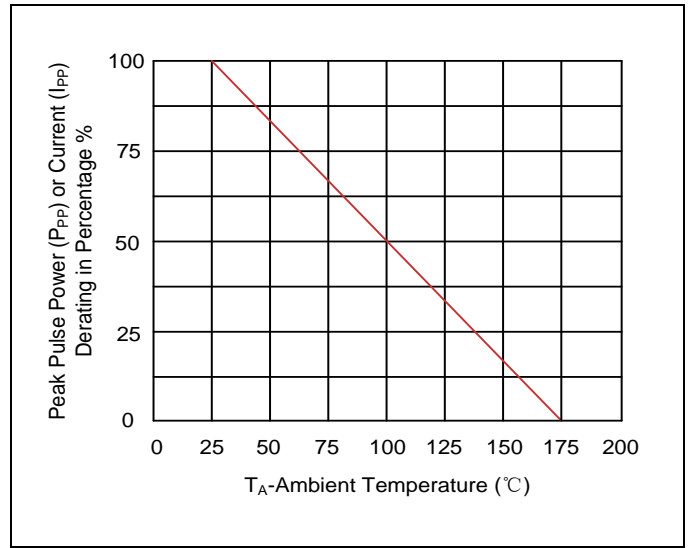
Part Number		Reverse Stand-Off Voltage	Breakdown Voltage @I <sub>T</sub>	Test Current	Maximum Clamping Voltage @I <sub>PP</sub>	Peak Pulse Current	Reverse Leakage @V <sub>RWM</sub>
Unidirectional	Bidirectional	V <sub>RWM</sub> (V)	V <sub>BR</sub> (V)	I <sub>T</sub> (mA)	V <sub>C</sub> (V)	I <sub>PP</sub> (A)	I <sub>R</sub> (μA)
5KP28A-AT	5KP28CA-AT	28.0	31.10~34.40	5	45.4	112.3	2
5KP30A-AT	5KP30CA-AT	30.0	33.30~36.80	5	48.4	105.4	2
5KP33A-AT	5KP33CA-AT	33.0	36.70~40.60	5	53.3	95.7	2
5KP36A-AT	5KP36CA-AT	36.0	40.00~44.20	5	58.1	87.8	2
5KP40A-AT	5KP40CA-AT	40.0	44.40~49.10	5	64.5	79.1	2
5KP43A-AT	5KP43CA-AT	43.0	47.80~52.80	5	69.4	73.5	2
5KP45A-AT	5KP45CA-AT	45.0	50.00~55.30	5	72.7	70.2	2
5KP48A-AT	5KP48CA-AT	48.0	53.30~58.90	5	77.4	65.9	2
5KP51A-AT	5KP51CA-AT	51.0	56.70~62.70	5	82.4	61.9	2
5KP54A-AT	5KP54CA-AT	54.0	60.00~66.30	5	87.1	58.6	2
5KP58A-AT	5KP58CA-AT	58.0	64.40~71.20	5	93.6	54.5	2
5KP60A-AT	5KP60CA-AT	60.0	66.70~73.70	5	96.8	52.7	2
5KP64A-AT	5KP64CA-AT	64.0	71.10~78.60	5	103.0	49.5	2
5KP70A-AT	5KP70CA-AT	70.0	77.80~86.00	5	113.0	45.1	2
5KP75A-AT	5KP75CA-AT	75.0	83.30~92.10	5	121.0	42.1	2
5KP78A-AT	5KP78CA-AT	78.0	86.70~95.80	5	126.0	40.5	2
5KP85A-AT	5KP85CA-AT	85.0	94.40~104.00	5	137.0	37.2	2
5KP90A-AT	5KP90CA-AT	90.0	100.00~111.00	5	146.0	34.9	2
5KP100A-AT	5KP100CA-AT	100.0	110.00~123.00	5	162.0	31.5	2
5KP110A-AT	5KP110CA-AT	110.0	122.00~135.00	5	177.0	28.8	2
5KP120A-AT	5KP120CA-AT	120.0	133.00~147.00	5	193.0	26.4	2
5KP130A-AT	5KP130CA-AT	130.0	144.00~159.00	5	209.0	24.4	2
5KP150A-AT	5KP150CA-AT	150.0	167.00~185.00	5	243.0	21.0	2
5KP160A-AT	5KP160CA-AT	160.0	178.00~197.00	5	259.0	19.7	2
5KP170A-AT	5KP170CA-AT	170.0	189.00~209.00	5	275.0	18.5	2
5KP180A-AT	5KP180CA-AT	180.0	201.00~222.00	5	292.0	17.5	2
5KP190A-AT	5KP190CA-AT	190.0	211.00~233.00	5	310.0	16.5	2
5KP200A-AT	5KP200CA-AT	200.0	224.00~247.00	5	329.2	15.5	2
5KP210A-AT	5KP210CA-AT	210.0	237.00~263.00	5	349.5	14.6	2
5KP220A-AT	5KP220CA-AT	220.0	246.00~272.00	5	371.1	13.7	2
5KP250A-AT	5KP250CA-AT	250.0	277.00~306.00	5	425.0	12.0	2

**Ratings and Characteristic Curves ( $T_A=25^\circ\text{C}$  unless otherwise noted)**

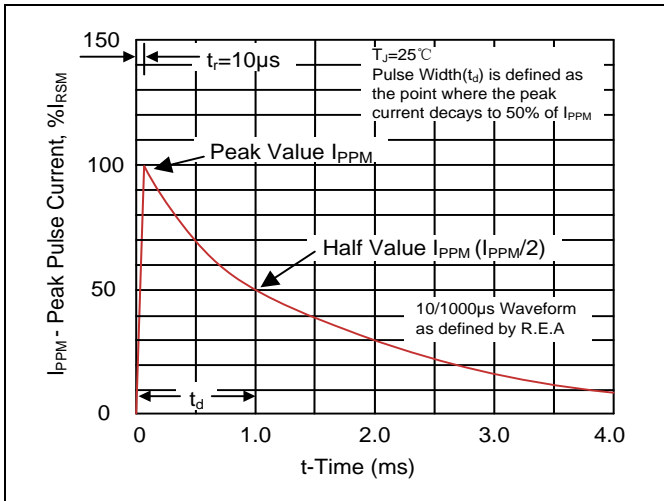
**Figure 1. Peak Pulse Power Rating Curve**



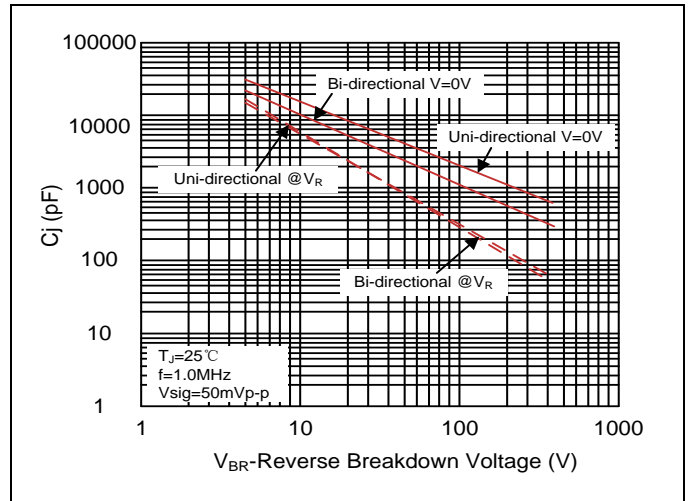
**Figure 2. Pulse Derating Curve**



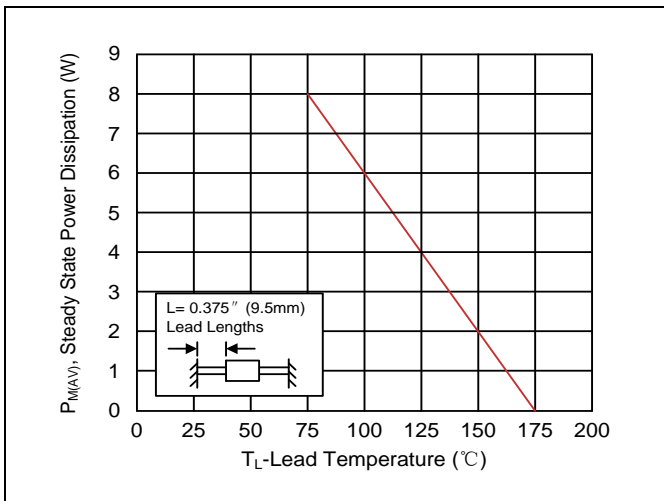
**Figure 3. Pulse Waveform**



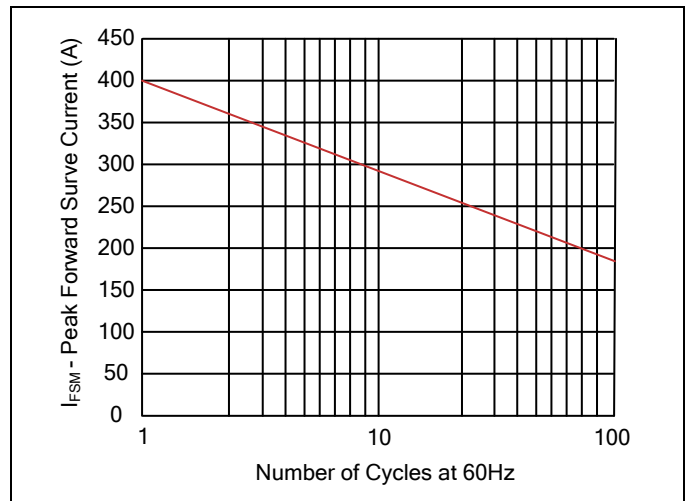
**Figure 4. Typical Junction Capacitance**



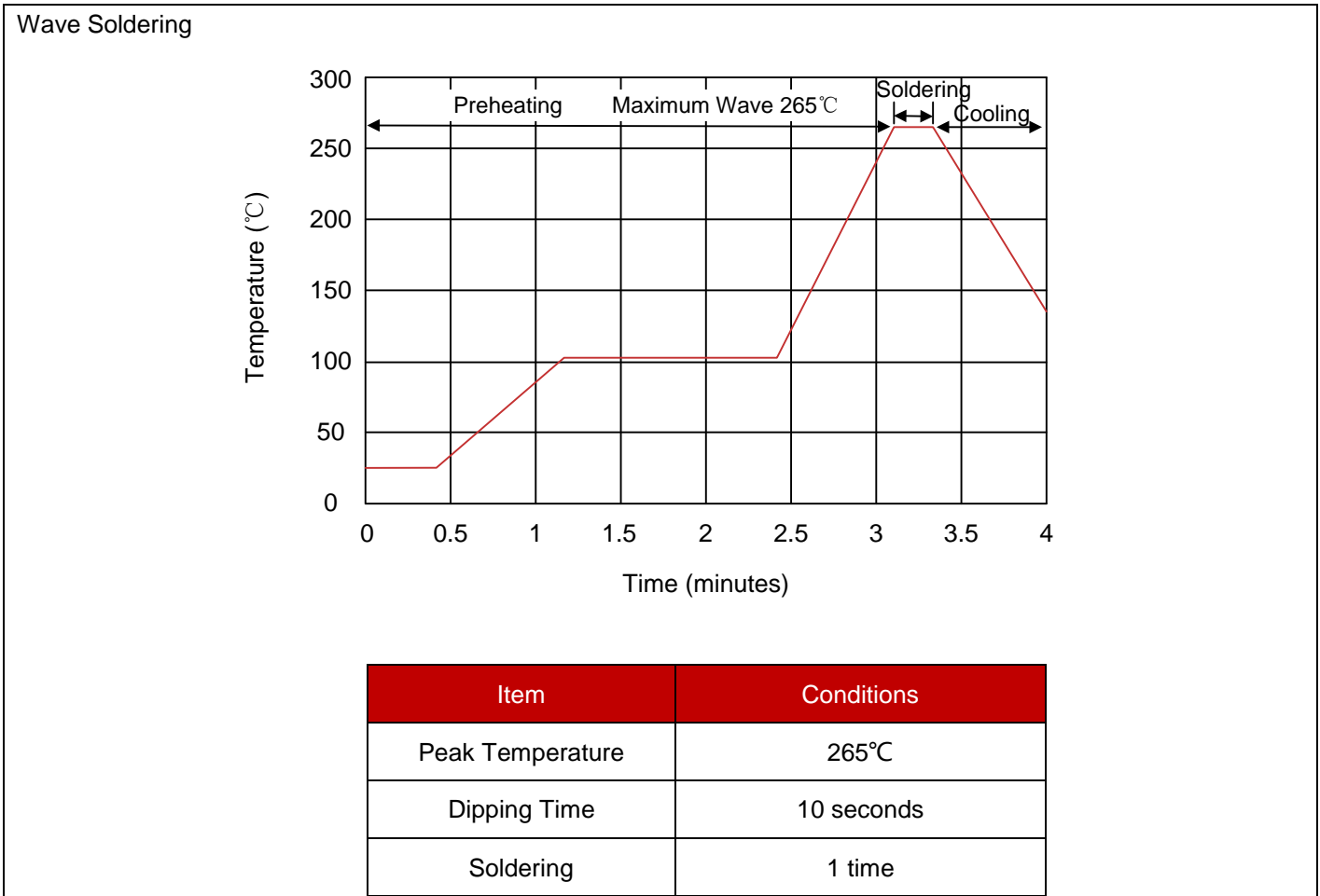
**Figure 5. Steady State Power Dissipation Derating Curve**



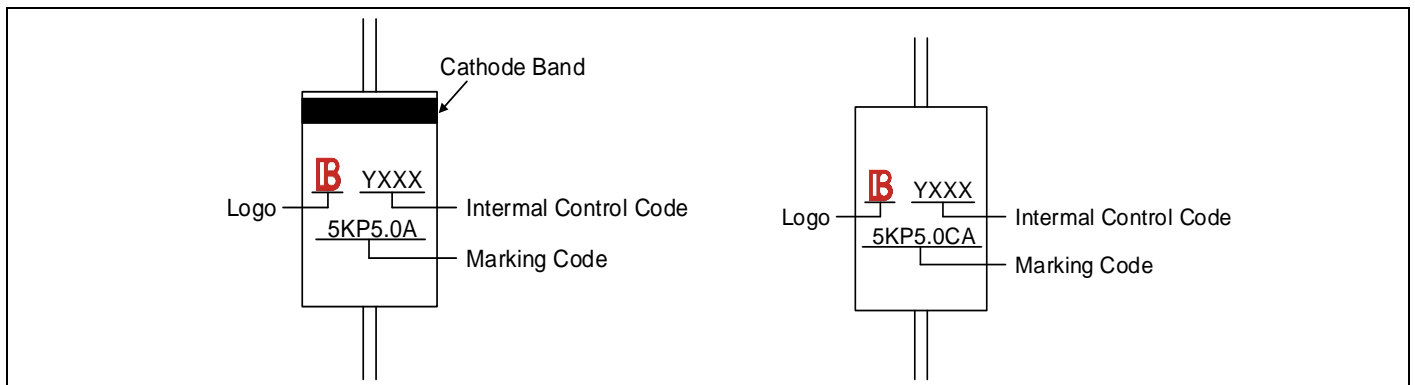
**Figure 6. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only**



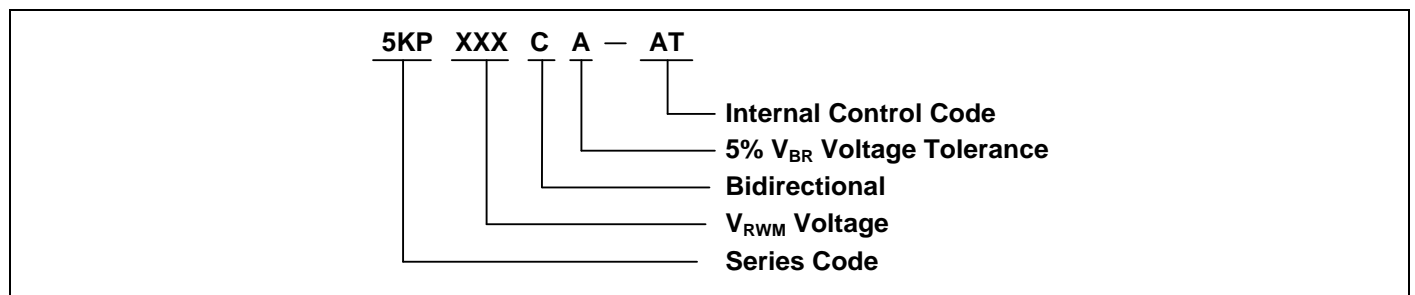
### Recommended Soldering Conditions



### Marking Code



### Part Number Code

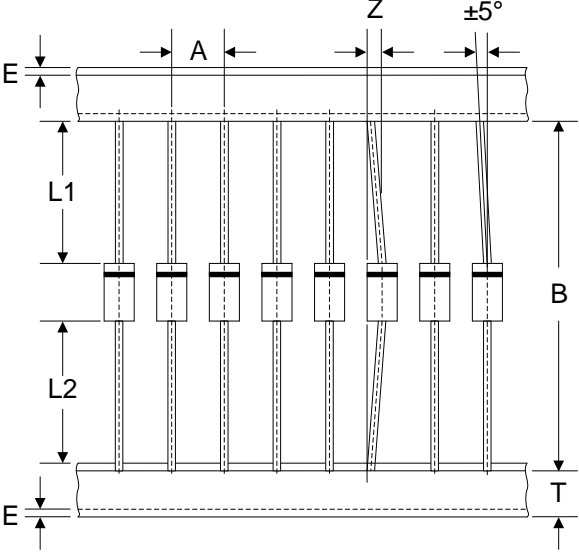
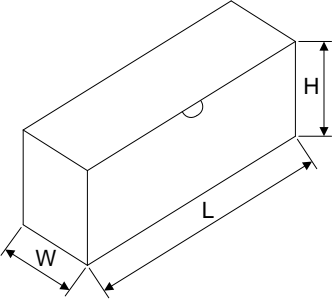
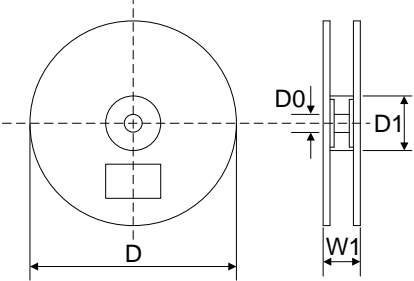


**Ordering Code for Different Package**

Box package: Add suffix "/B" at the end of the part number, such as 5KPXXXCA-AT/B

Reel package: Add suffix "/TR13" at the end of the part number, such as 5KPXXXCA-AT/TR13

**Packaging**

Tape	Symbol      Dimension (mm)	
	A	10.0±0.5
	B	53.0±1.0
	Z	1.2Max.
	T	6.0±0.4
	E	0.8Max.
	L1-L2	1.0Max.
	L	250.0±5.0
	W	75.0±5.0
	H	114.0±5.0
	Quantity: 300PCS	
	D	330.0±3.0
	D0	16.4±2.0
	D1	86.0±2.0
	W1	76.0±3.0
	Quantity: 800PCS	