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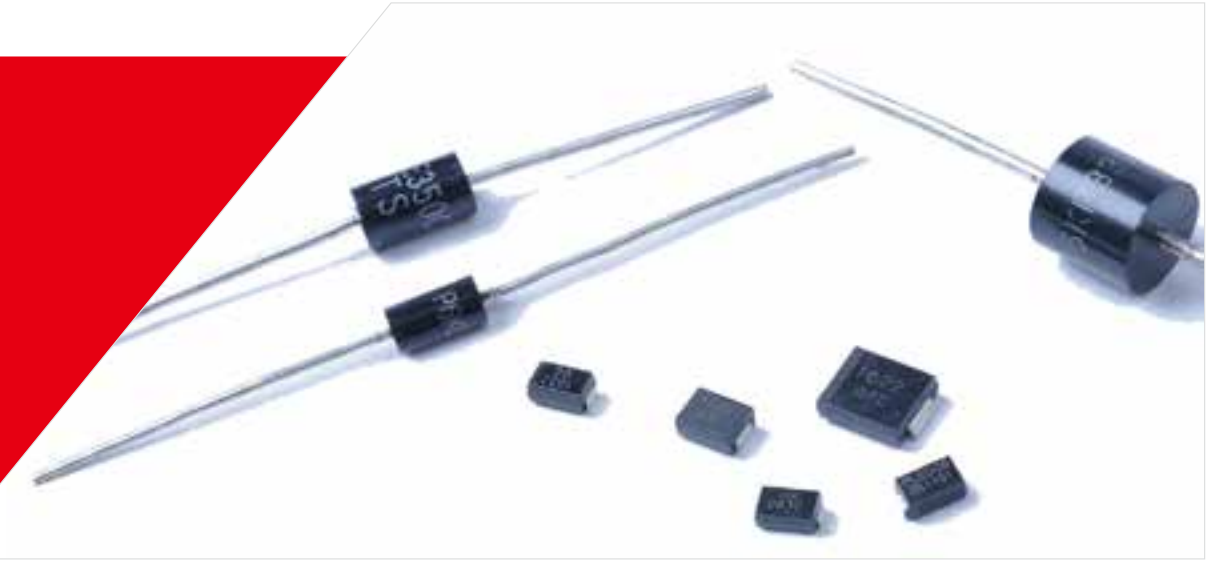

Transient Voltage Suppressors

1.5KE Series

361° Circuit Protection System

Revision:DEC-16

Please refer to http://www.ruilon.com.cn for current information.

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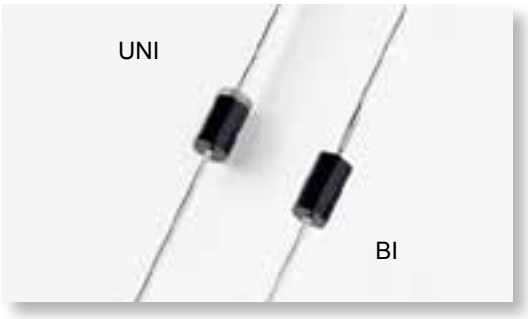
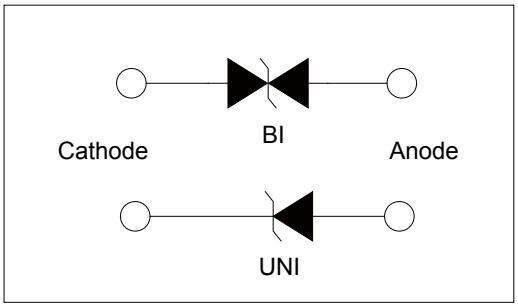
ELECTRONICS

Transient Voltage Suppressors - 1.5KE Series

Features

- Fast response time
- Low incremental surge resistance
- Matte tin lead–free Plated
- Halogen free and RoHS compliant
- Typical IR less than 1μA above 12V
- For surface mounted applications to optimize board space
- Compatible with industrial standard package DO-201
- ESD protection of data lines in accordance with IEC 61000-4-2 (IEC801-2)
- EFT protection of data lines in accordance with IEC 61000-4-4 (IEC801-4)
- 1500W peak pulse power capability with at 10/1000μs waveform,repetition rate (duty cycle): 0.01%
- High temperature soldering guaranteed: 260°C/40 seconds





Description

The 1.5KE series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.

Mechanical Characteristics

Rating	Symbol	Value	Units
Peak Pulse Power Dissipation by 10x1000μs test waveform （Note 1)(Fig. 2)	P_{PPM}	1500	Watts
Steady State Power Dissipation on inifinite heat sink at T_L=75°C （Note 2)(Fig. 6)	P_D	6.5	Watts
Peak Forward Surge Current, 8.3ms Single Half Sine Wave Unidirectional only （Note 3)	I_{FSM}	200	Amps
Operating junction and Storage Temperature Range	T_J, T_{STG}	-55°C to 175°C	°C
Typical Thermal Resistance Junction to Lead	R_{uJL}	15	°C/W
Typical Thermal Resistance Junction to Ambient	R_{uJA}	75	°C/W

Notes:
1. Non-repetitive current pulse , per Fig. 4 and derated above TA = 25°C per Fig. 3.
2. Measured on 8.3ms single half sine wave or equivalent square wave, duty cycle=4 per minute maximum.
3. V_F<3.5V for devices of V_{BR} ≤ 200V and V_F<5.0V for devices of V_{BR} ≥201V

Transient Voltage Suppressors - 1.5KE Series

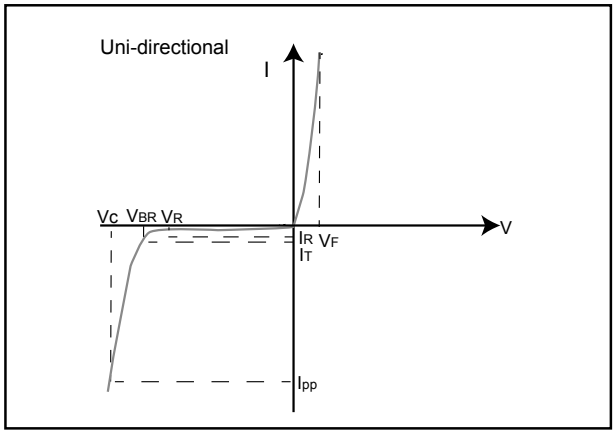
Electriacl Characteristics

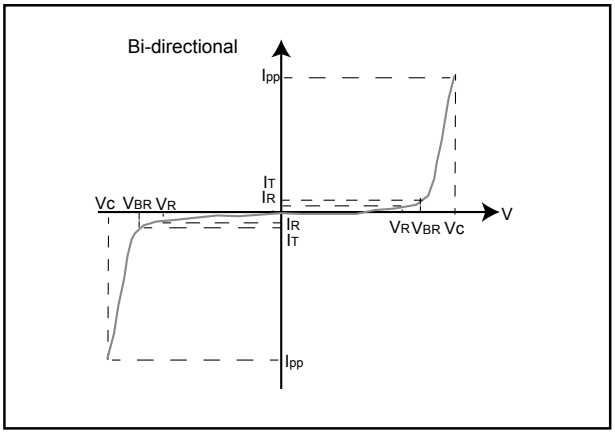
Type Number		Reverse Stand-Off Voltage	Breakdown Voltage		Test Current	Max Clamping Voltage 10/1000μs	Peak Pulse Current 10/1000μs	Reverse Leakage
		V_{RWM}	V_{BR} @I_T		I_T	VC@I_{PP}	I_{PP}	I_R@V_{RWM}
UNI	BI	V	Min(V)	Max(V)	mA	V	A	μA
1.5KE6.8A	1.5KE6.8CA	5.80	6.45	7.14	10	10.5	144.8	1000
1.5KE7.5A	1.5KE7.5CA	6.40	7.13	7.88	10	11.3	134.5	500
1.5KE8.2A	1.5KE8.2CA	7.02	7.79	8.61	10	12.1	125.6	200
1.5KE9.1A	1.5KE9.1CA	7.78	8.65	9.50	1	13.4	113.4	50
1.5KE10A	1.5KE10CA	8.55	9.50	10.50	1	14.5	104.8	10
1.5KE11A	1.5KE11CA	9.40	10.50	11.60	1	15.6	97.4	5
1.5KE12A	1.5KE12CA	10.20	11.40	12.60	1	16.7	91.0	5
1.5KE13A	1.5KE13CA	11.10	12.40	13.70	1	18.2	83.5	1
1.5KE15A	1.5KE15CA	12.80	14.30	15.80	1	21.2	71.7	1
1.5KE16A	1.5KE16CA	13.60	15.20	16.80	1	22.5	67.6	1
1.5KE18A	1.5KE18CA	15.30	17.10	18.90	1	25.2	60.3	1
1.5KE20A	1.5KE20CA	17.10	19.00	21.00	1	27.7	54.9	1
1.5KE22A	1.5KE22CA	18.80	20.90	23.10	1	30.6	49.7	1
1.5KE24A	1.5KE24CA	20.50	22.80	25.20	1	33.2	45.8	1
1.5KE27A	1.5KE27CA	23.10	25.70	28.40	1	37.5	40.5	1
1.5KE30A	1.5KE30CA	25.60	28.50	31.50	1	41.4	36.7	1
1.5KE33A	1.5KE33CA	28.20	31.40	34.70	1	45.7	33.3	1
1.5KE36A	1.5KE36CA	30.80	34.20	37.80	1	49.9	30.5	1
1.5KE39A	1.5KE39CA	33.30	37.10	41.00	1	53.9	28.2	1
1.5KE43A	1.5KE43CA	36.80	40.90	45.20	1	59.3	25.6	1
1.5KE47A	1.5KE47CA	40.20	44.70	49.40	1	64.8	23.5	1
1.5KE51A	1.5KE51CA	43.60	48.50	53.60	1	70.1	21.7	1
1.5KE56A	1.5KE56CA	47.80	53.20	58.80	1	77.0	19.7	1
1.5KE62A	1.5KE62CA	53.00	58.90	65.10	1	85.0	17.9	1
1.5KE68A	1.5KE68CA	58.10	64.60	71.40	1	92.0	16.5	1
1.5KE75A	1.5KE75CA	64.10	71.30	78.80	1	103.0	14.8	1
1.5KE82A	1.5KE82CA	70.10	77.90	86.10	1	113.0	13.5	1
1.5KE91A	1.5KE91CA	77.80	86.50	95.50	1	125.0	12.2	1
1.5KE100A	1.5KE100CA	85.50	95.00	105.00	1	137.0	11.1	1
1.5KE110A	1.5KE110CA	94.00	105.00	116.00	1	152.0	10.0	1
1.5KE120A	1.5KE120CA	102.00	114.00	126.00	1	165.0	9.20	1
1.5KE130A	1.5KE130CA	111.00	124.00	137.00	1	179.0	8.50	1
1.5KE150A	1.5KE150CA	128.00	143.00	158.00	1	207.0	7.30	1
1.5KE160A	1.5KE160CA	136.00	152.00	168.00	1	219.0	6.60	1
1.5KE170A	1.5KE170CA	145.00	162.00	179.00	1	234.0	6.50	1
1.5KE180A	1.5KE180CA	154.00	171.00	189.00	1	246.0	6.20	1
1.5KE200A	1.5KE200CA	171.00	190.00	210.00	1	274.0	5.50	1
1.5KE220A	1.5KE220CA	185.00	209.00	231.00	1	328.0	4.60	1
1.5KE250A	1.5KE250CA	214.00	237.00	263.00	1	344.0	4.40	1
1.5KE300A	1.5KE300CA	256.00	285.00	315.00	1	414.0	3.70	1
1.5KE350A	1.5KE350CA	300.00	332.00	368.00	1	482.0	3.20	1
1.5KE400A	1.5KE400CA	342.00	380.00	420.00	1	548.0	2.80	1
1.5KE440A	1.5KE440CA	376.00	418.00	462.00	1	602.0	2.50	1
1.5KE480A	1.5KE480CA	408.00	456.00	504.00	1	658.0	2.30	1

Notes: For bidirectional type having VR of 12V and less, the IR limit is double.

Transient Voltage Suppressors - 1.5KE Series

I-V Curve Characteristics





P_{PPM} Peak Pulse Power Dissipation -- Max power dissipation
V_R Stand-off Voltage -- Maximum voltage that can be applied to the TVS without operation
V_{BR} Breakdown Voltage -- Maximum voltage that flows though the TVS at a specified test current (I_T)
V_C Clamping Voltage -- Peak voltage measured across the TVS at a specified Ippm (peak impulse current)
I_R Reverse Leakage Current -- Current measured at V_R
V_F Forward Voltage Drop for Uni-directional

Ratings and Characteristic Curves (T_A=25° C unless otherwise noted)

Figure 1 - TVS Transients Clamping Waveform

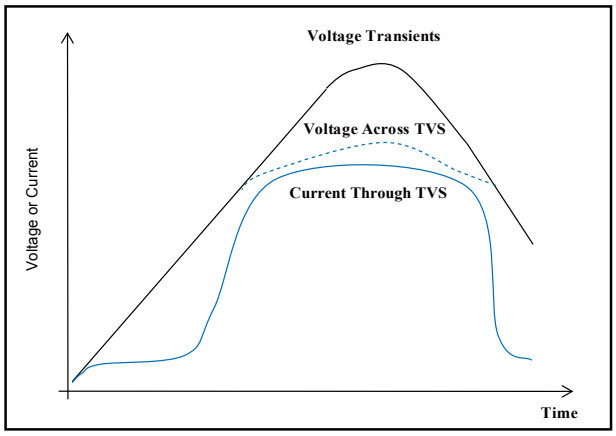
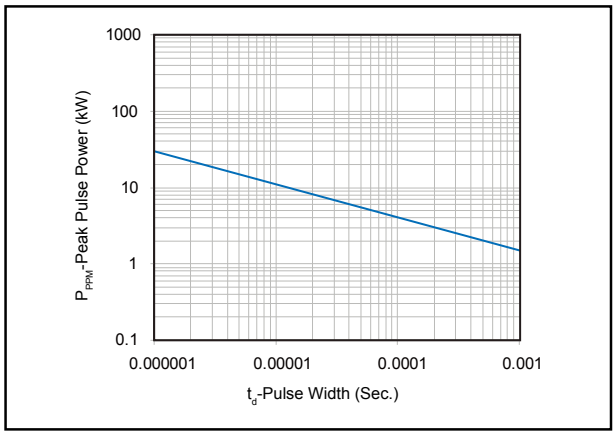


Figure 2 - Peak Pulse Power Rating



Transient Voltage Suppressors - 1.5KE Series

Ratings and Characteristic Curves (TA=25°C unless otherwise noted) (Continued)

Figure 3 - Pulse Derating Curve

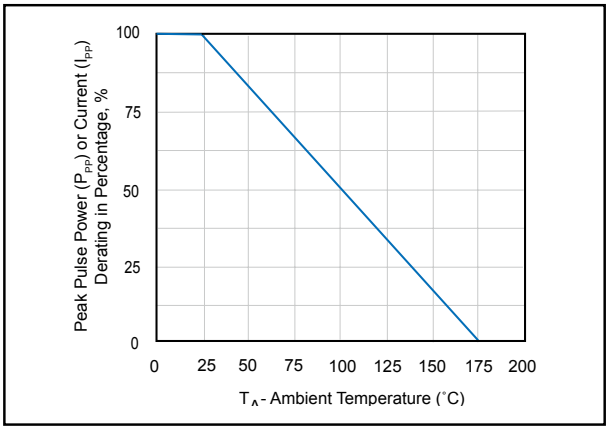


Figure 4 - Pulse Waveform

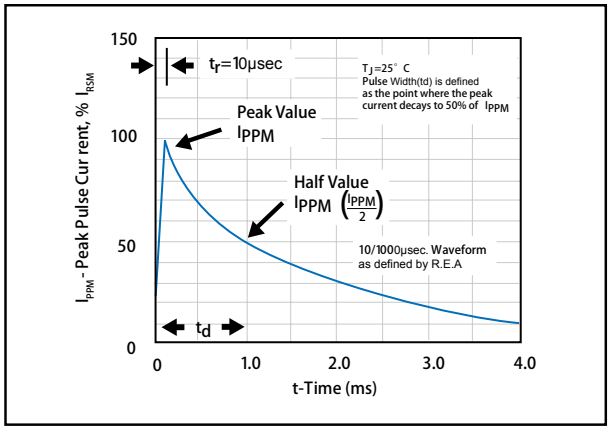


Figure 5 -Typical Junction Capacitance

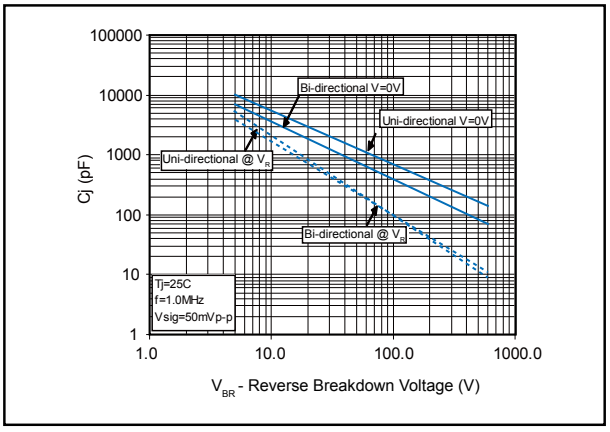


Figure 6 - Steady State Power Derating Curve

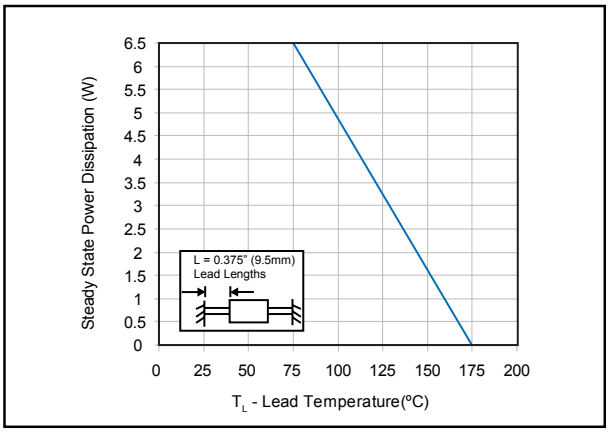
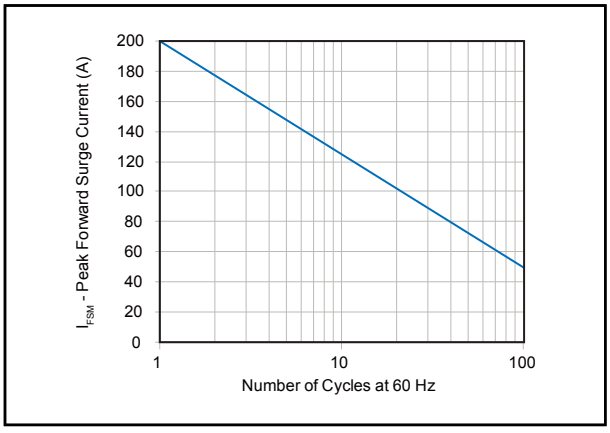


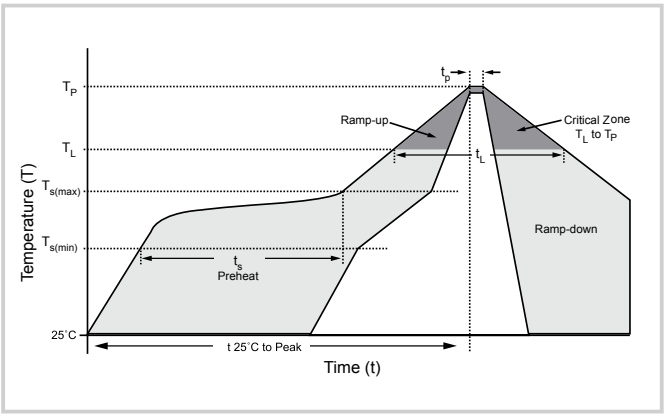
Figure 7 - Maximum Non-Repetitive Peak Forward Surge Current Uni-Directional Only



Transient Voltage Suppressors - 1.5KE Series

Soldering Parameters

Reflow Condition		Lead-free assembly
Pre Heat	- Temperature Min ($T_{s(min)}$)	150°C
	- Temperature Max ($T_{s(min)}$)	200°C
	- Time (min to max) (t_s)	60-180 secs
Average ramp up rate (Liquidus Temp (T_A) to peak		3°C/second max
$T_{S(max)}$ to T_A - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_A) (Liquidus)	217°C
	- Time (min to max) (t_s)	60-150 seconds
Peak Temperature (T_P)		$260^{+0/-5}$ °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 (T_P)		8 minutes Max.
Do not exceed		280°C



Physical Specifications

Weight	0.045oz., 1.2g
Case	JEDEC DO-201 molded plastic body
Polarity	Color band denotes the cathode except Bipolar
Termina	Matte Tin axial leads, solderable per JESD22-B102D.

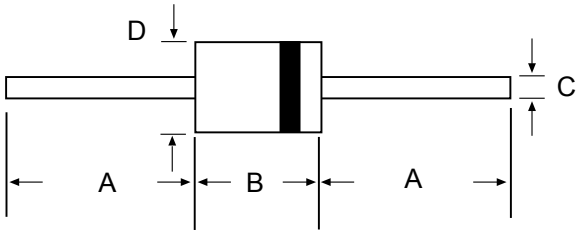
Environmental Specifications

Temperature Cycle	JESD22-A104
Pressure Cooker	JESD 22-A102
High Temp. Storage	JESD22-A103
HTRB	JESD22-A108
Thermal Shock	JESD22-A106

Flow/Wave Soldering

Peak Temperature :	265°C
Dipping Time :	10 seconds
Soldering :	1 time

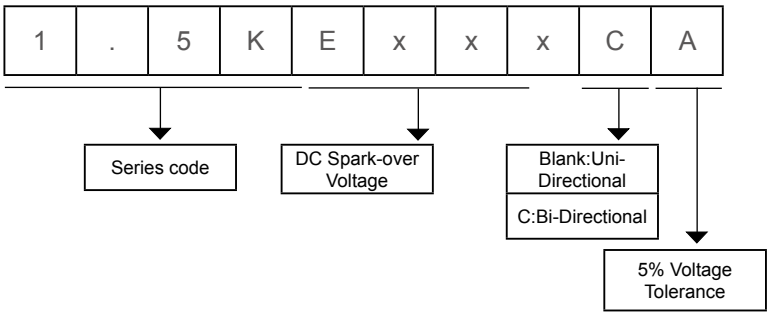
Dimensions



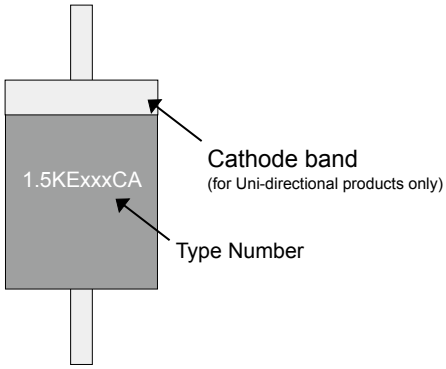
DIM	Inches		Millimeters	
	Min	Max	Min	Max
A	1.000	-	25.40	-
B	0.285	0.375	7.2	9.5
C	0.038	0.042	0.96	1.07
D	0.19	0.21	4.8	5.3

Transient Voltage Suppressors - 1.5KE Series

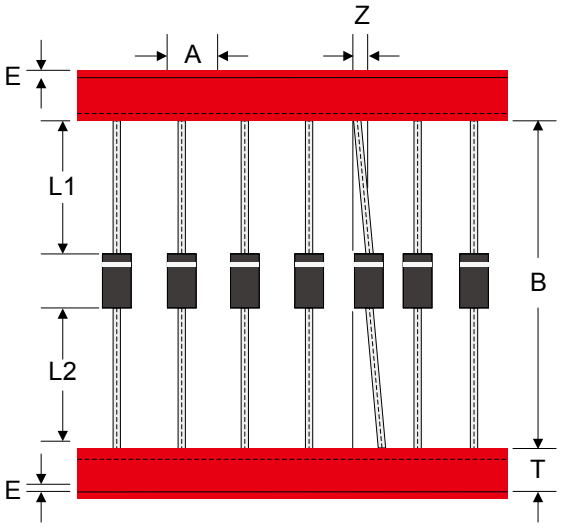
Product Name

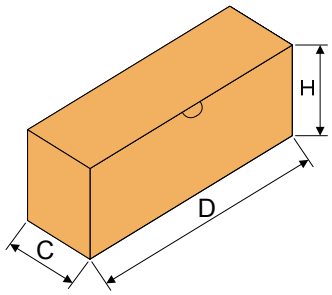


Part Marking System



Packaging





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
D	250.0±5.0
C	75.0±5.0
H	114.0±5.0
Quantity	1000PCS