BORN SEMICONDUCTOR

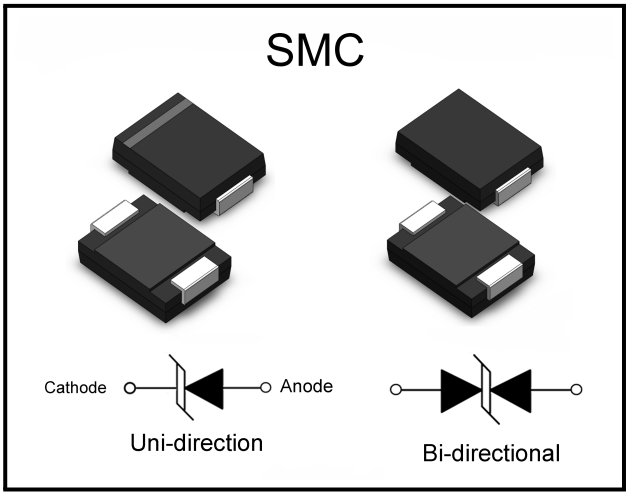
5.0SMDJ Series

Transient Voltage Suppressor

Features

- Excellent clamping capability
- Low leakage current
- High surge capability
- Glass passivated chip
- Epoxy resin package
- Built-in strain relief
- Will not fatigue
- RoHS Compliant
- IEC 61000-4-2 ±30kV contact ; ±30kV air
- Fast response time:
  typically less than 1.0ps from 0 Volts to V_{BR} min

Package



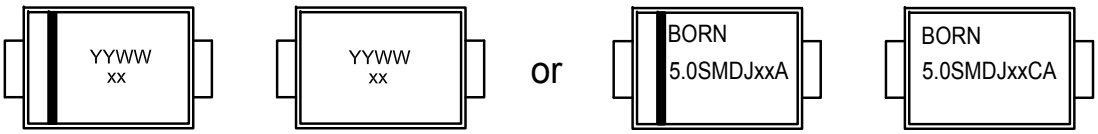
Mechanical Characteristics

- Package: SMC plastic package
- Lead Finish: Matte Tin
- Case Material: Epoxy Molding Compound
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020

Applications

- Telecom
- Computer
- Industrial electronic
- Consumer electronic

Making Code



YYWW = Date Code
xx = Type Code

Unidirection

Bidirection

Summary of Packing Options

Package	Packing Description	Packing Quantity	Industry Standard
SMC	Tape/Reel,13” reel	3000	EIA-481-1

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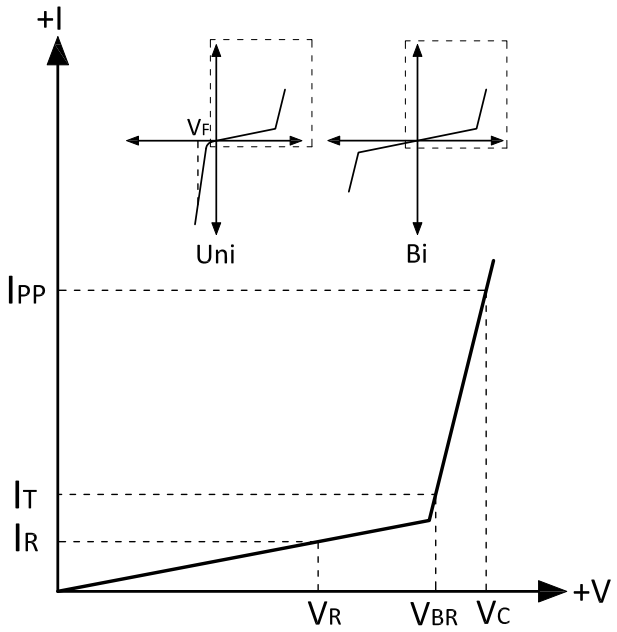
Revision: 2022-Jan-1-B

5.0SMDJ Series

Transient Voltage Suppressor

Electrical Parameters

Parameter	Definition
C_J	Junction Capacitance - typical capacitance measured with 0V or V_R bias
I_{PP}	Peak Pulse Current - maximum rated peak impulse current
V_C	Clamping Voltage - Peak voltage measured across the suppressor at a specified Ippm
V_{BR}	Breakdown Voltage - Maximum voltage that flows though the TVS at a specified test current (I_T)
I_R	Leakage Current - maximum peak off-state current measured at V_R
V_R	Peak Off-state Voltage - maximum voltage that can be applied while maintaining off state



Absolute Maximum Ratings (T_A=+25°C, unless otherwise noted)

Parameter	Symbol	Value	Units
Peak Pulse Power Dissipation(Note1,2)	P_{PPM}	5000	W
Steady State Power Dissipation (Note3)	P_D	6.5	W
Peak Forward Surge Current (Note4)	I_{FSM}	300	A
Maximum Instantaneous Forward Voltage at 100A (Note5)	V_{FM}	5	V
Typical Thermal Resistance Junction to Lead	$R_{\theta JL}$	15	°C/W
Typical Thermal Resistance Junction to Ambient	$R_{\theta JA}$	75	°C/W
Operating Junction Temperature Range	T_J	-55 to 150	°C
Storage Temperature Range	T_{STG}	-55 to 150	°C

Notes:

(1) Non-repetitive current pulse , 10/1000us Waveform.

(2) Mounted on copper pad area of 8×8mm to each terminal.

(3) Infinite Heat Sink at T_L =50°C

(4) Measured on 8.3ms single half sine wave or equivalent square wave, duty cycle=4 perminute maximum.

(5) For Unidirectional Only.

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5.0SMDJ Series

Transient Voltage Suppressor

Electrical Characteristics (T_A=+25°C, unless otherwise noted)

Part Number	Part Number	Marking Code		Reverse Stand-Off Votage	Breakdown Voltage V_{BR}@I_T		Test Current I_T	Maximum Clamping Voltage V_C @ I_{pp}	Maximum Peak Pulse Current I_{pp}	Maximun Reverse Leakage I_R @V_R
(Uni)	(Bi)	(Uni)	(Bi)	(V)	Min.(V)	Max.(V)	(mA)	(V)	(A)	(uA)
–	5.0SMDJ5.0CA	–	–	5	6.4	7	10	9.2	543	800
5.0SMDJ12A	5.0SMDJ12CA	5PEP	5BEP	12	13.3	14.7	10	19.9	252	800
5.0SMDJ13A	5.0SMDJ13CA	5PEQ	5BEQ	13	14.4	15.9	10	21.5	233	500
5.0SMDJ14A	5.0SMDJ14CA	5PER	5BER	14	15.6	17.2	10	23.2	216	200
5.0SMDJ15A	5.0SMDJ15CA	5PES	5BES	15	16.7	18.5	1	24.4	205	100
5.0SMDJ16A	5.0SMDJ16CA	5PET	5BET	16	17.8	19.7	1	26	193	50
5.0SMDJ17A	5.0SMDJ17CA	5PEU	5BEU	17	18.9	20.9	1	27.6	181	20
5.0SMDJ18A	5.0SMDJ18CA	5PEV	5BEV	18	20	22.1	1	29.2	172	10
5.0SMDJ20A	5.0SMDJ20CA	5PEW	5BEW	20	22.2	24.5	1	32.4	155	5
5.0SMDJ22A	5.0SMDJ22CA	5PEX	5BEX	22	24.4	26.9	1	35.5	141	5
5.0SMDJ24A	5.0SMDJ24CA	5PEZ	5BEZ	24	26.7	29.5	1	38.9	129	5
5.0SMDJ26A	5.0SMDJ26CA	5PFE	5BFE	26	28.9	31.9	1	42.1	119	5
5.0SMDJ28A	5.0SMDJ28CA	5PFG	5BFG	28	31.1	34.4	1	45.4	110	5
5.0SMDJ30A	5.0SMDJ30CA	5PFK	5BFK	30	33.3	36.8	1	48.4	103	5
5.0SMDJ33A	5.0SMDJ33CA	5PFM	5BFM	33	36.7	40.6	1	53.3	93.9	5
5.0SMDJ36A	5.0SMDJ36CA	5PFP	5BFP	36	40	44.2	1	58.1	86.1	5
5.0SMDJ40A	5.0SMDJ40CA	5PFR	5BFR	40	44.4	49.1	1	64.5	77.6	5
5.0SMDJ43A	5.0SMDJ43CA	5PFT	5BFT	43	47.8	52.8	1	69.4	72.1	5
5.0SMDJ45A	5.0SMDJ45CA	5PFV	5BFV	45	50	55.3	1	72.7	68.8	5
5.0SMDJ48A	5.0SMDJ48CA	5PFX	5BFX	48	53.3	58.9	1	77.4	64.7	5
5.0SMDJ51A	5.0SMDJ51CA	5PFZ	5BFZ	51	56.7	62.7	1	82.4	60.7	5
5.0SMDJ54A	5.0SMDJ54CA	5PGE	5BGE	54	60	66.3	1	87.1	57.5	5
5.0SMDJ58A	5.0SMDJ58CA	5PGG	5BGG	58	64.4	71.2	1	93.6	53.5	5
5.0SMDJ60A	5.0SMDJ60CA	5PGK	5BGK	60	66.7	73.7	1	96.8	51.7	5
5.0SMDJ64A	5.0SMDJ64CA	5PGM	5BGM	64	71.1	78.6	1	103	48.6	5
5.0SMDJ70A	5.0SMDJ70CA	5PGP	5BGP	70	77.8	86	1	113	44.3	5
5.0SMDJ75A	5.0SMDJ75CA	5PGR	5BGR	75	83.3	92.1	1	121	41.4	5
5.0SMDJ78A	5.0SMDJ78CA	5PGT	5BGT	78	86.7	95.8	1	126	39.7	5
5.0SMDJ85A	5.0SMDJ85CA	5PGV	5PGV	85	94.4	104	1	137	36.5	5

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5.0SMDJ Series

Transient Voltage Suppressor

Electrical Characteristics (T_A=+25°C, unless otherwise noted)

Part Number	Part Number	Marking Code		Reverse Stand-Off Votage	Breakdown Voltage V_{BR}@I_T		Test Current I_T	Maximum Clamping Voltage V_C @ I_{pp}	Maximum Peak Pulse Current I_{pp}	Maximun Reverse Leakage I_R @V_R
(Uni)	(Bi)	(Uni)	(Bi)	(V)	Min.(V)	Max.(V)	(mA)	(V)	(A)	(uA)
5.0SMDJ90A	5.0SMDJ90CA	5PGX	5BGX	90	100	111	1	146	34.4	5
5.0SMDJ100A	5.0SMDJ100CA	5PGZ	5BGZ	100	111	123	1	162	30.9	5
5.0SMDJ110A	5.0SMDJ110CA	5PHE	5BHE	110	122	135	1	177	28.3	5
5.0SMDJ120A	5.0SMDJ120CA	5PHG	5BHG	120	133	147	1	193	26	5
5.0SMDJ130A	5.0SMDJ130CA	5PHK	5BHK	130	144	159	1	209	24	5
5.0SMDJ150A	5.0SMDJ150CA	5PHM	5BHM	150	167	185	1	243	20.6	5
5.0SMDJ160A	5.0SMDJ160CA	5PHP	5BHP	160	178	197	1	259	19.3	5
5.0SMDJ170A	5.0SMDJ170CA	5PHR	5BHR	170	189	209	1	275	18.2	5

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5.0SMDJ Series

Transient Voltage Suppressor

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

Figure 1: Peak Pulse Power Rating

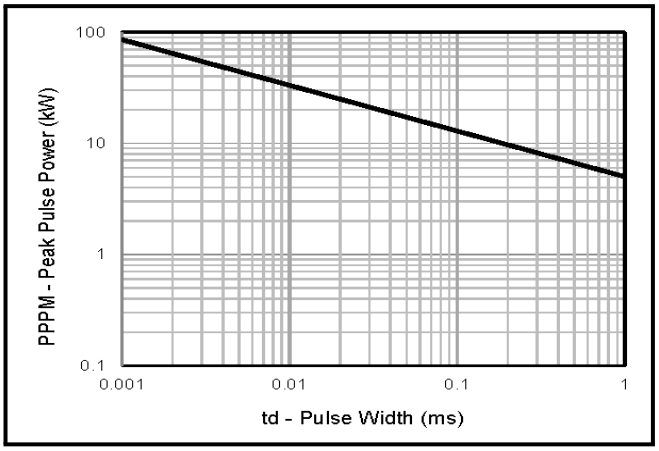


Figure 2: Pulse Derating Curve

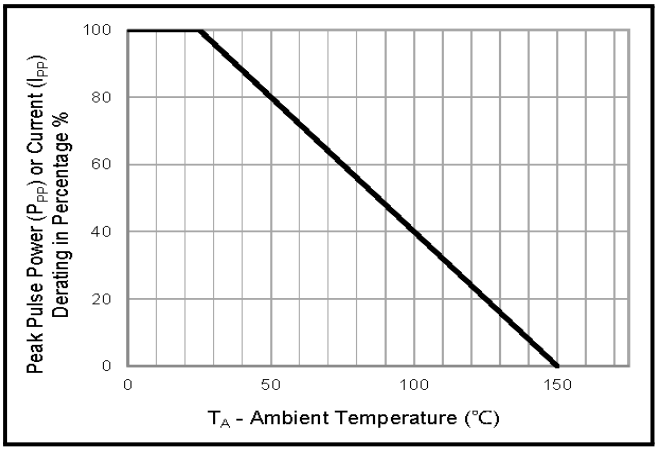


Figure 3: Pulse Waveform

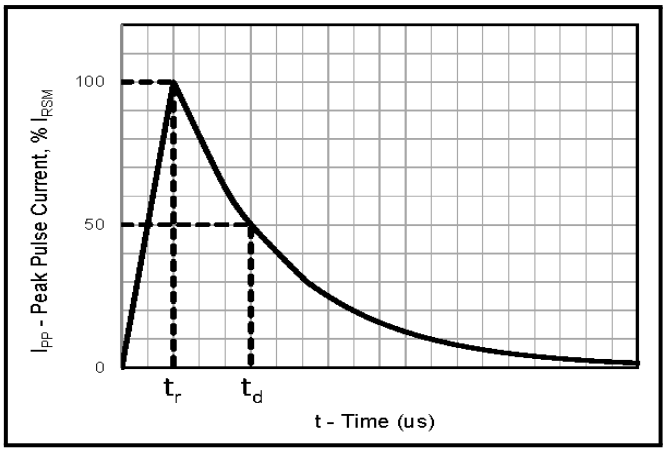


Figure 4 : Typical Junction Capacitance

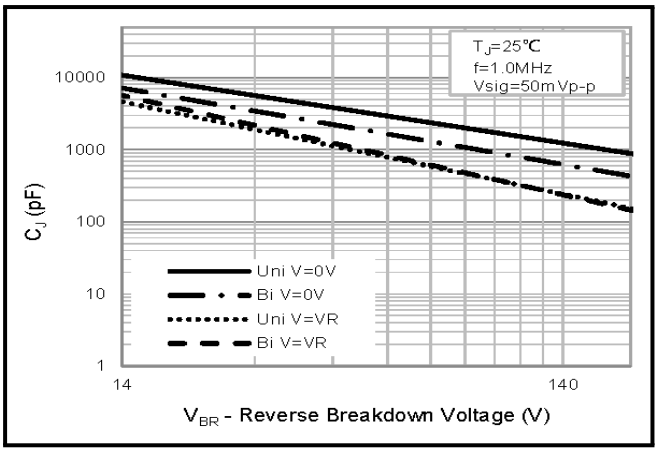


Figure 5: Steady State Power Dissipation Derating Curve

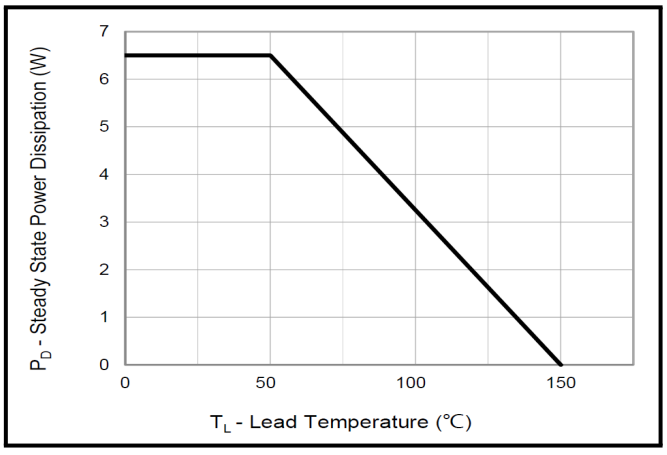
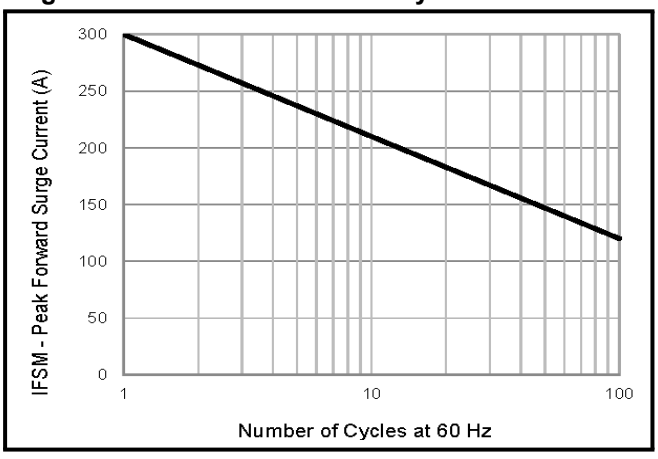


Figure 6 : Maximum Non-Repetitive Peak Forward Surge Current Uni-Directional Only



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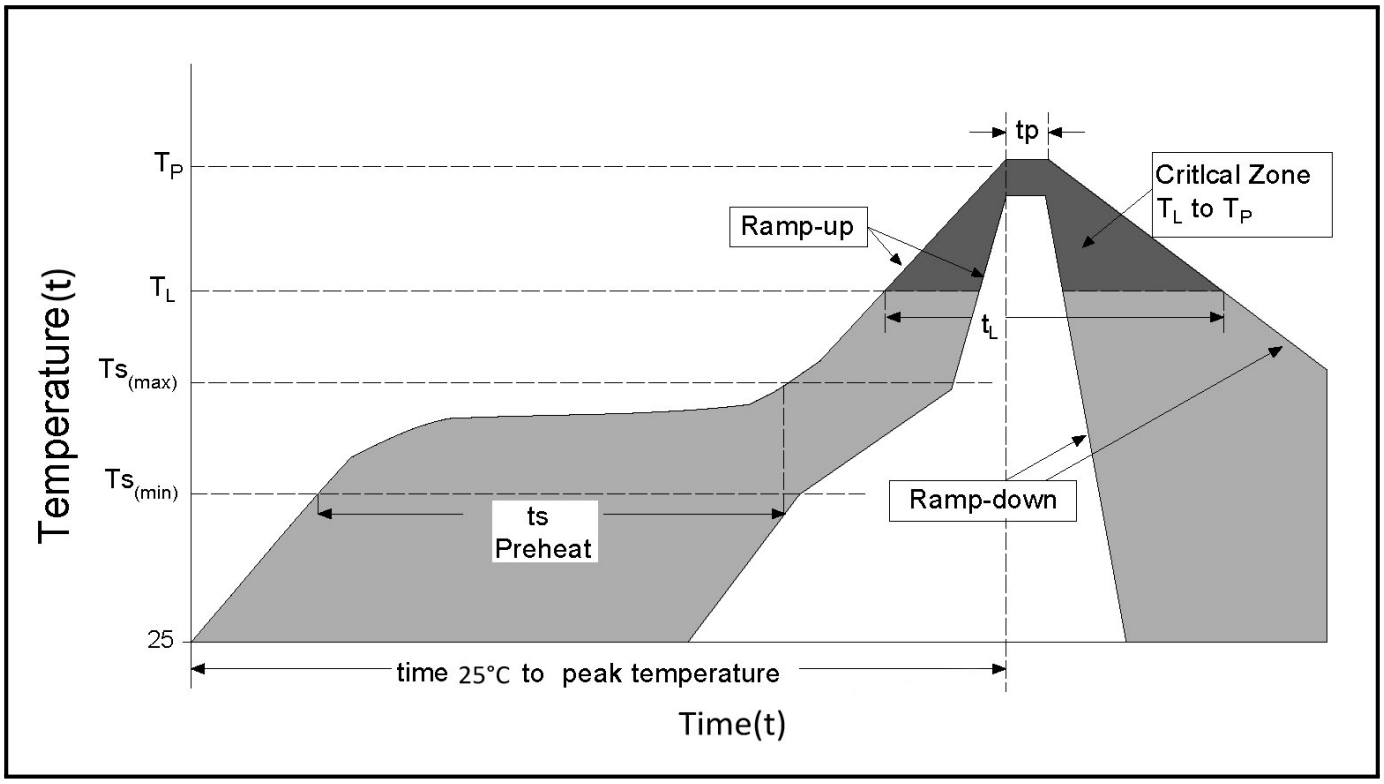
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5.0SMDJ Series

Transient Voltage Suppressor

Soldering Parameters



Reflow Condition		Lead-free assembly
Pre Heat	- Temperature Min (T_S(min))	150°C
	- Temperature Max (T_S(max))	200°C
	- Time (min to max) (t_S)	60 - 180 secs
Average ramp up rate (Liquidus Temp (T_L) to peak)		3°C/second max
T_S(max) to T_L - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Time (t_L)	60 -150 secs
Peak Temperature (T_P)		$260^{+0/-5°C}$
Time within 5°C of actual peak Temperature (t_p)		20 - 40 secs
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (t)		8 minutes Max.
Do not exceed		260°C

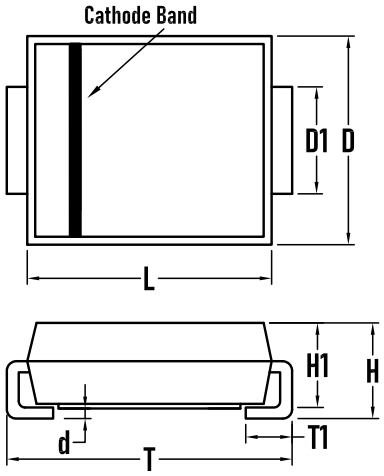
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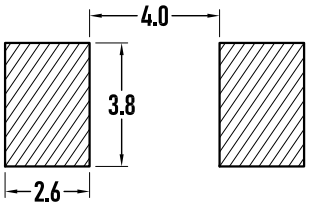
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5.0SMDJ Series

Transient Voltage Suppressor

Package Mechanical Data - SMC

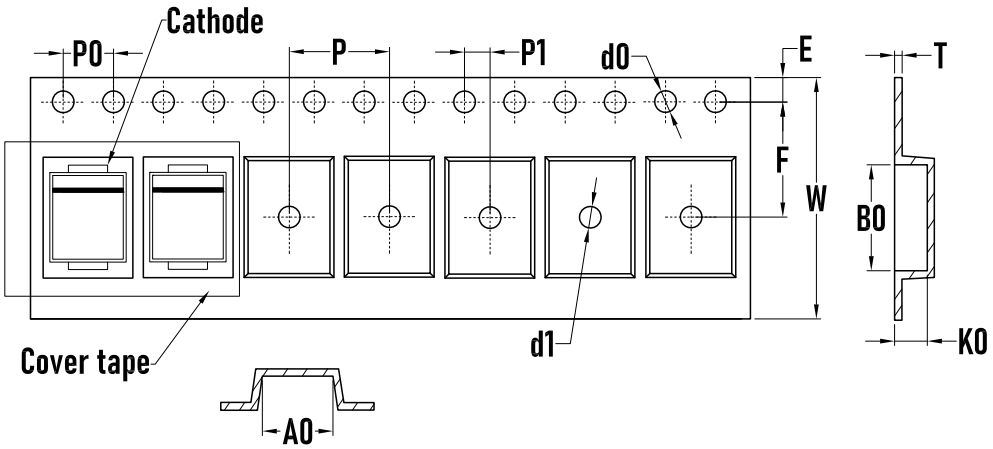




Note:
dimension:In millimeters

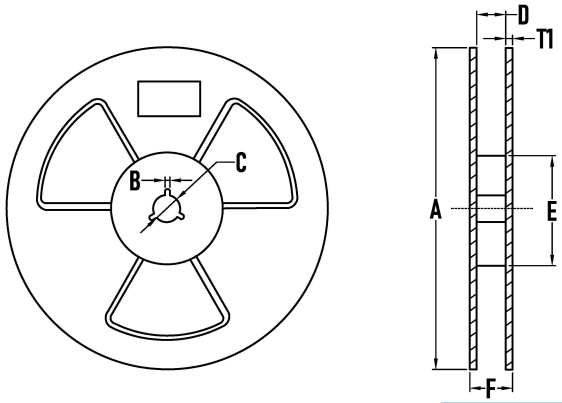
SYMBOL	MILLIMETER		Inches	
	MIN	MAX	MIN	MAX
D	5.5	6.1	0.217	0.240
D1	2.7	3.3	0.106	0.130
T	7.4	8.4	0.291	0.331
T1	0.8	1.6	0.031	0.063
d	–	0.3	–	0.012
H1	2.0	2.6	0.079	0.102
H	2.1	2.7	0.083	0.106
L	6.5	7.1	0.256	0.280

Packaging Tape - SMC



SYMBOL	MILLIMETER
A0	6.00±0.1
B0	8.25±0.02
d0	1.50±0.1
d1	1.50±0.1
E	1.75±0.1
F	7.50±0.1
K0	2.70±0.1
P	8.00±0.1
P0	4.00±0.1
P1	2.00±0.05
W	16.00±0.1
T	0.22±0.02

Packaging Reel



SYMBOL	MILLIMETER
A	323±2
B	3.0±0.2
C	15.0±0.5
D	16±2
E	73±2
T1	2.2±0.2
Quantity	3000PCS

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