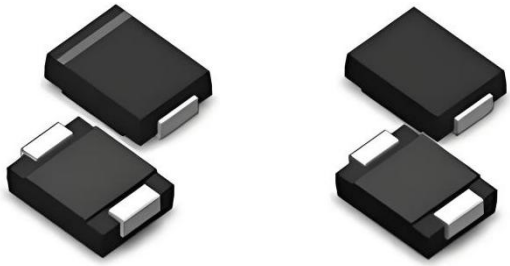
Description

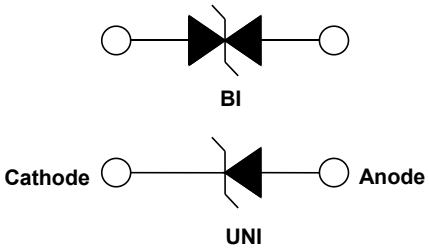
The SMCJ series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.



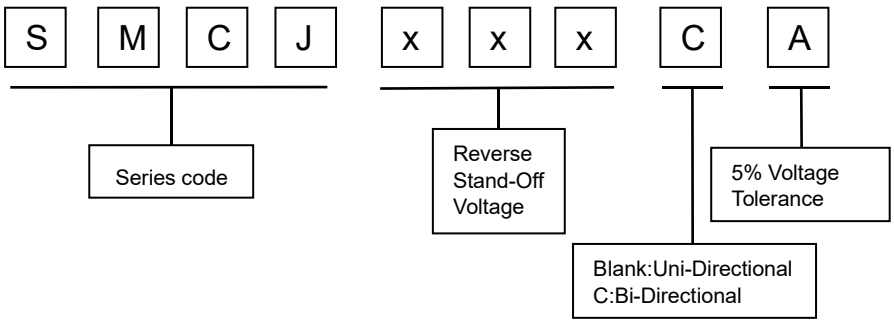
Features

- Low profile package
- Very fast response time
- Halogen free and RoHS compliant
- Low incremental surge resistance
- Meet MSL level1, per J-STD-020
- Storage Period: 2 years
- Typical IR less than 1μA above 10V
- For surface mounted applications to optimize board space
- Compatible with industrial standard package DO-214AB
- 1500W peak pulse power capability with at 10/1000μs waveform, repetition rate (duty cycle): 0.01%
- High temperature soldering:260°C/ 10 seconds at terminals

Electrical symbol



Part Number Code



Absolute Maximum Ratings (TA=25℃ unless otherwise noted)

Rating	Symbol	Value	Units
Peak Pulse Power Dissipation at T_A=25ºC by 10/1000μs Waveform (Fig.2)(Note 1), (Note 2)	P_{PP}	1500	W
Power Dissipation on Infinite Heat Sink at T_L=75°C(Fig.6)	P_D	5.0	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 3)	I_{FSM}	200	A
Operating Temperature Range	T_J	-55 to 150	°C
Storage Temperature Range	T_{STG}	-55 to 150	°C

Notes:

1. Non-repetitive current pulse , per Fig. 4 and derated above T_A = 25°C per Fig. 3.
2. Mounted on copper pad area of 0.31x0.31” (8.0 x 8.0mm) to each terminal.
3. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.

Electrical Characteristics (TA=25°C unless otherwise specified)

Type Number		Marking		Reverse Stand-Off Voltage	Breakdown Voltage		Test Current	Max. Clamping Voltage 10/1000μs	Max. Peak Pulse Current 10/1000μs	Reverse Leakage
				V_{RWM}	V_{BR} @I_T		I_T	V_C@I_{PP}	I_{PP}	I_R@V_{RWM}
					Min	Max				
UNI	BI	UNI	BI	V	V	V	mA	V	A	μA
SMCJ5.0A	SMCJ5.0CA	GDE	BDE	5.0	6.40	7.07	10	9.2	163.0	500
SMCJ6.0A	SMCJ6.0CA	GDG	BDG	6.0	6.67	7.37	10	10.3	145.6	500
SMCJ6.5A	SMCJ6.5CA	GDK	BDK	6.5	7.22	7.98	10	11.2	133.9	300
SMCJ7.0A	SMCJ7.0CA	GDM	BDM	7.0	7.78	8.60	10	12.0	125.0	200
SMCJ7.5A	SMCJ7.5CA	GDP	BDP	7.5	8.33	9.21	1	12.9	116.3	100
SMCJ8.0A	SMCJ8.0CA	GDR	BDR	8.0	8.89	9.83	1	13.6	110.3	50
SMCJ8.5A	SMCJ8.5CA	GDT	BDT	8.5	9.44	10.4	1	14.4	104.2	30
SMCJ9.0A	SMCJ9.0CA	GDV	BDV	9.0	10.0	11.1	1	15.4	97.4	30
SMCJ10A	SMCJ10CA	GDX	BDX	10.0	11.1	12.3	1	17.0	88.2	5
SMCJ11A	SMCJ11CA	GDZ	BDZ	11.0	12.2	13.5	1	18.2	82.4	1
SMCJ12A	SMCJ12CA	GEE	BEE	12.0	13.3	14.7	1	19.9	75.4	1
SMCJ13A	SMCJ13CA	GEG	BEG	13.0	14.4	15.9	1	21.5	69.8	1
SMCJ14A	SMCJ14CA	GEK	BEK	14.0	15.6	17.2	1	23.2	64.7	1
SMCJ15A	SMCJ15CA	GEM	BEM	15.0	16.7	18.5	1	24.4	61.5	1
SMCJ16A	SMCJ16CA	GEP	BEP	16.0	17.8	19.7	1	26.0	57.7	1
SMCJ17A	SMCJ17CA	GER	BER	17.0	18.9	20.9	1	27.6	54.3	1
SMCJ18A	SMCJ18CA	GET	BET	18.0	20.0	22.1	1	29.2	51.4	1
SMCJ20A	SMCJ20CA	GEV	BEV	20.0	22.2	24.5	1	32.4	46.3	1
SMCJ22A	SMCJ22CA	GEX	BEX	22.0	24.4	26.9	1	35.5	42.3	1
SMCJ24A	SMCJ24CA	GEZ	BEZ	24.0	26.7	29.5	1	38.9	38.6	1
SMCJ26A	SMCJ26CA	GFE	BFE	26.0	28.9	31.9	1	42.1	35.6	1
SMCJ28A	SMCJ28CA	GFG	BFG	28.0	31.1	34.4	1	45.4	33.0	1
SMCJ30A	SMCJ30CA	GFK	BFK	30.0	33.3	36.8	1	48.4	31.0	1
SMCJ33A	SMCJ33CA	GFM	BFM	33.0	36.7	40.6	1	53.3	28.1	1
SMCJ36A	SMCJ36CA	GFP	BFP	36.0	40.0	44.2	1	58.1	25.8	1
SMCJ40A	SMCJ40CA	GFR	BFR	40.0	44.4	49.1	1	64.5	23.3	1
SMCJ43A	SMCJ43CA	GFT	BFT	43.0	47.8	52.8	1	69.4	21.6	1
SMCJ45A	SMCJ45CA	GFV	BFV	45.0	50.0	55.3	1	72.7	20.6	1
SMCJ48A	SMCJ48CA	GJT	BJT	48.0	53.3	58.9	1	77.4	19.4	1
SMCJ51A	SMCJ51CA	GJV	BJV	51.0	56.7	62.7	1	82.4	18.2	1

Electrical Characteristics (TA=25°C unless otherwise specified)

Type Number		Marking		Reverse Stand-Off Voltage	Breakdown Voltage		Test Current	Max. Clamping Voltage 10/1000μs	Max. Peak Pulse Current 10/1000μs	Reverse Leakage
				V_{RWM}	V_{BR} @I_T		I_T	V_C@I_{PP}	I_{PP}	I_R@V_{RWM}
					Min	Max				
UNI	BI	UNI	BI	V	V	V	mA	V	A	μA
SMCJ54A	SMCJ54CA	GFX	BFX	54.0	60.0	66.3	1	87.1	17.2	1
SMCJ58A	SMCJ58CA	GFZ	BFZ	58.0	64.4	71.2	1	93.6	16.0	1
SMCJ60A	SMCJ60CA	GGE	BGE	60.0	66.7	73.7	1	96.8	15.5	1
SMCJ64A	SMCJ64CA	GGG	BGG	64.0	71.1	78.6	1	103.0	14.6	1
SMCJ70A	SMCJ70CA	GGK	BGK	70.0	77.8	86.0	1	113.0	13.3	1
SMCJ75A	SMCJ75CA	GGM	BGM	75.0	83.3	92.1	1	121.0	12.4	1
SMCJ78A	SMCJ78CA	GGP	BGP	78.0	86.7	95.8	1	126.0	11.9	1
SMCJ85A	SMCJ85CA	GGR	BGR	85.0	94.4	104.0	1	137.0	10.9	1
SMCJ90A	SMCJ90CA	GGT	BGT	90.0	100.0	111.0	1	146.0	10.3	1
SMCJ100A	SMCJ100CA	GGV	BGV	100.0	111.0	123.0	1	162.0	9.3	1
SMCJ110A	SMCJ110CA	GGX	BGX	110.0	122.0	135.0	1	177.0	8.5	1
SMCJ120A	SMCJ120CA	GGZ	BGZ	120.0	133.0	147.0	1	193.0	7.8	1
SMCJ130A	SMCJ130CA	GHE	BHE	130.0	144.0	159.0	1	209.0	7.2	1
SMCJ150A	SMCJ150CA	GHG	BHG	150.0	167.0	185.0	1	243.0	6.2	1
SMCJ160A	SMCJ160CA	GHK	BHK	160.0	178.0	197.0	1	259.0	5.8	1
SMCJ170A	SMCJ170CA	GHM	BHM	170.0	189.0	209.0	1	275.0	5.5	1
SMCJ180A	SMCJ180CA	GHP	BHP	180.0	201.0	222.0	1	292.0	5.2	1
SMCJ190A	SMCJ190CA	GHR	BHR	190.0	209.0	243.0	1	308.0	4.8	1
SMCJ200A	SMCJ200CA	GHX	BHX	200.0	224.0	247.0	1	324.0	4.6	1
SMCJ210A	SMCJ210CA	GHZ	BHZ	210.0	231.0	268.0	1	340.0	4.4	1
SMCJ220A	SMCJ220CA	GJE	BJE	220.0	246.0	272.0	1	356.0	4.2	1
SMCJ250A	SMCJ250CA	GJG	BJG	250.0	279.0	309.0	1	405.0	3.7	1
SMCJ300A	SMCJ300CA	GJK	BJK	300.0	335.0	371.0	1	486.0	3.1	1
SMCJ350A	SMCJ350CA	GJM	BJM	350.0	391.0	432.0	1	567.0	2.6	1
SMCJ400A	SMCJ400CA	GJP	BJP	400.0	447.0	494.0	1	648.0	2.3	1
SMCJ440A	SMCJ440CA	GJR	BJR	440.0	492.0	543.0	1	713.0	2.1	1

Notes: For bidirectional type having V_R of 10V and less, the I_R limit is double.

Certifications table

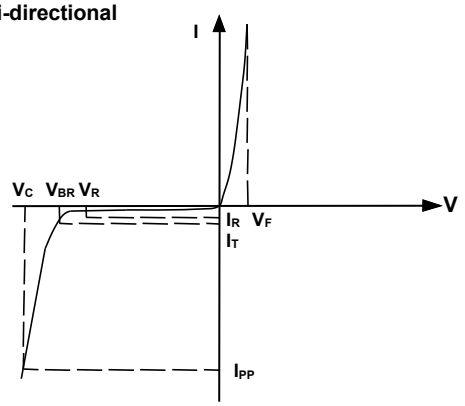
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SMCJ6.0A	SMCJ6.0CA	◎	SMCJ51A	SMCJ51CA	◎
SMCJ6.5A	SMCJ6.5CA	◎	SMCJ54A	SMCJ54CA	◎
SMCJ7.0A	SMCJ7.0CA	◎	SMCJ58A	SMCJ58CA	◎
SMCJ7.5A	SMCJ7.5CA	◎	SMCJ60A	SMCJ60CA	◎
SMCJ8.0A	SMCJ8.0CA	◎	SMCJ64A	SMCJ64CA	◎
SMCJ8.5A	SMCJ8.5CA	◎	SMCJ70A	SMCJ70CA	◎
SMCJ9.0A	SMCJ9.0CA	◎	SMCJ75A	SMCJ75CA	◎
SMCJ10A	SMCJ10CA	◎	SMCJ78A	SMCJ78CA	◎
SMCJ11A	SMCJ11CA	◎	SMCJ85A	SMCJ85CA	◎
SMCJ12A	SMCJ12CA	◎	SMCJ90A	SMCJ90CA	◎
SMCJ13A	SMCJ13CA	◎	SMCJ100A	SMCJ100CA	◎
SMCJ14A	SMCJ14CA	◎	SMCJ110A	SMCJ110CA	◎
SMCJ15A	SMCJ15CA	◎	SMCJ120A	SMCJ120CA	◎
SMCJ16A	SMCJ16CA	◎	SMCJ130A	SMCJ130CA	◎
SMCJ17A	SMCJ17CA	◎	SMCJ150A	SMCJ150CA	◎
SMCJ18A	SMCJ18CA	◎	SMCJ160A	SMCJ160CA	◎
SMCJ20A	SMCJ20CA	◎	SMCJ170A	SMCJ170CA	◎
SMCJ22A	SMCJ22CA	◎	SMCJ180A	SMCJ180CA	◎
SMCJ24A	SMCJ24CA	◎	SMCJ190A	SMCJ190CA	◎
SMCJ26A	SMCJ26CA	◎	SMCJ200A	SMCJ200CA	◎
SMCJ28A	SMCJ28CA	◎	SMCJ210A	SMCJ210CA	◎
SMCJ30A	SMCJ30CA	◎	SMCJ220A	SMCJ220CA	◎
SMCJ33A	SMCJ33CA	◎	SMCJ250A	SMCJ250CA	◎
SMCJ36A	SMCJ36CA	◎	SMCJ300A	SMCJ300CA	--
SMCJ40A	SMCJ40CA	◎	SMCJ350A	SMCJ350CA	--
SMCJ43A	SMCJ43CA	◎	SMCJ400A	SMCJ400CA	--
SMCJ45A	SMCJ45CA	◎	SMCJ440A	SMCJ440CA	--

Notes:

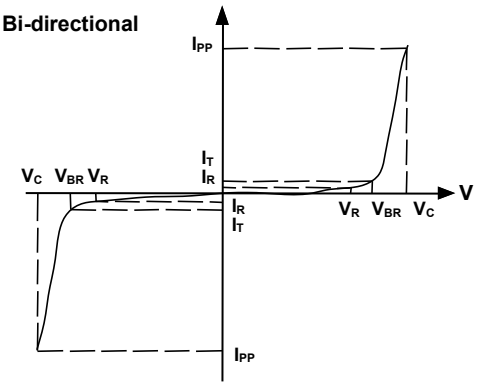
1. ◎ indicates that the product has passed the certification.
2. -- indicates that the product is not certified.

I-V Curve Characteristics

Uni-directional



Bi-directional



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

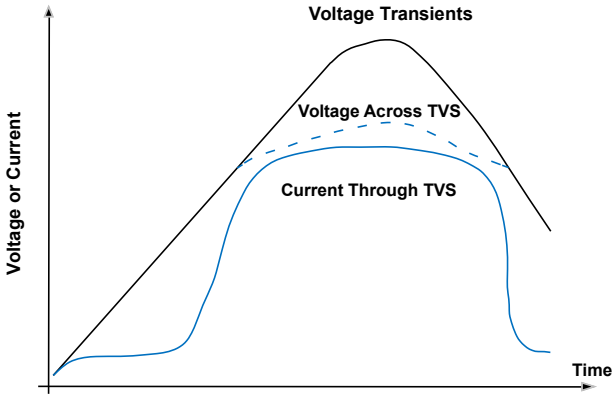
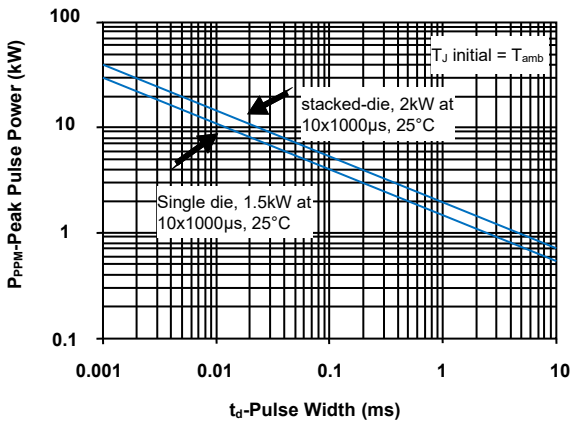


Figure 2 - Peak Pulse Power Rating Curve



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

Figure 3 - Pulse Derating Curve

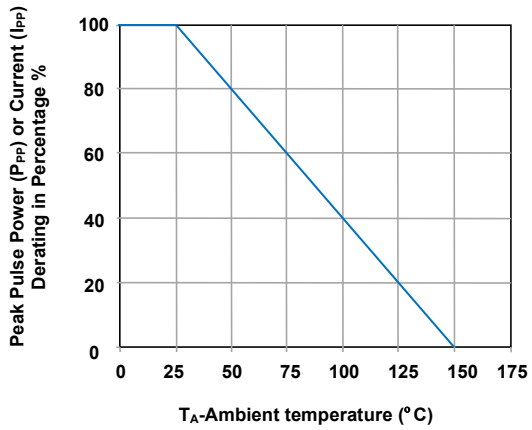


Figure 4 - Pulse Waveform

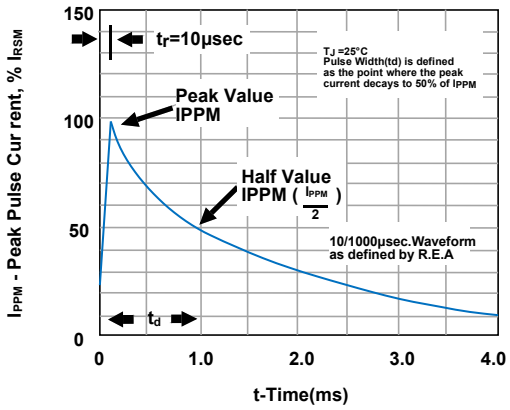


Figure 5 - Typical Junction Capacitance

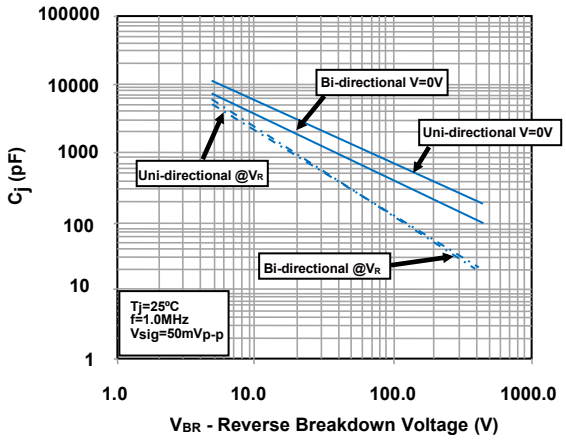


Figure 6 - Steady State Power Derating Curve

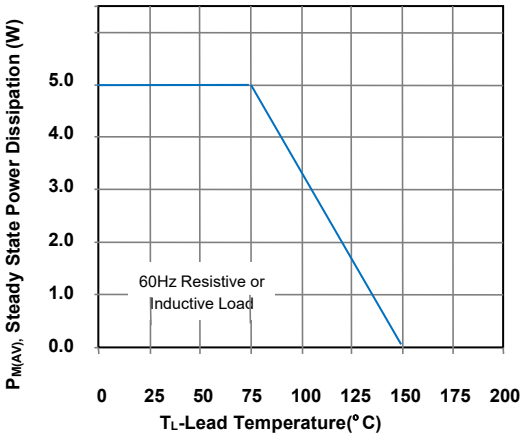
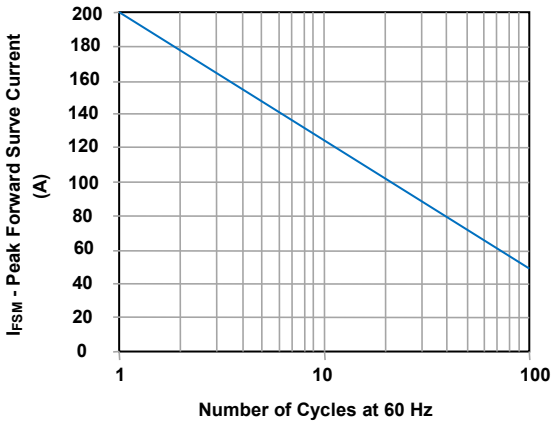
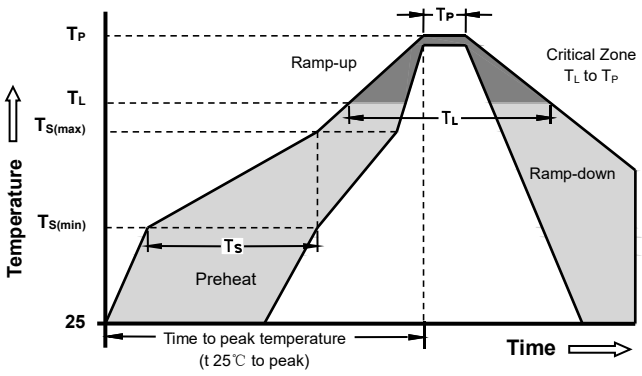


Figure 7 - Maximum Non-Repetitive Surge Current

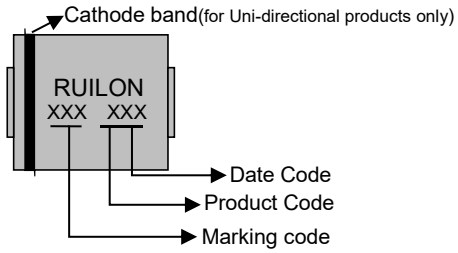


Soldering Parameters - Reflow Soldering (Surface Mount Devices)

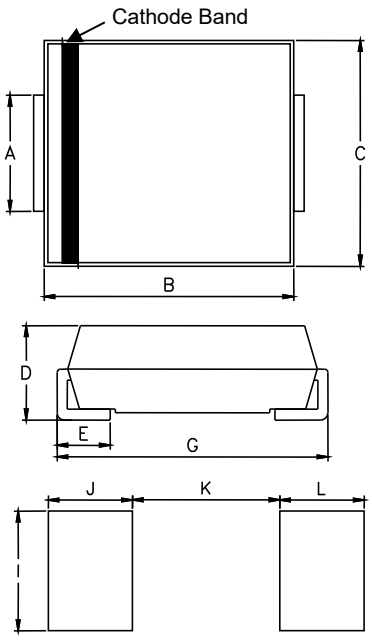


Reflow Condition		Pb - Free assembly
Pre Heat	-Temperature Min ($T_{s(min)}$)	150°C
	-Temperature Max ($T_{s(max)}$)	200°C
	- Time (min to max) (t_s)	60 -180 Seconds
Average ramp up rate (Liquids Temp T_L) to peak		3°C/second max
$T_{S(max)}$ to TL - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_L) (Liquids)	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		260°C

Part Marking System

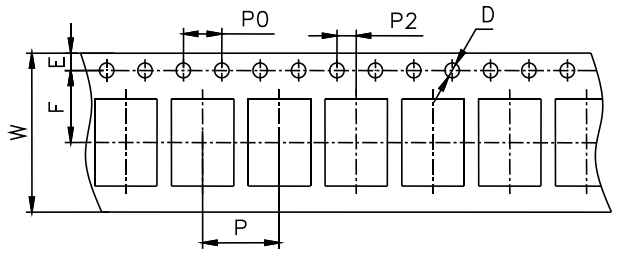


Dimensions

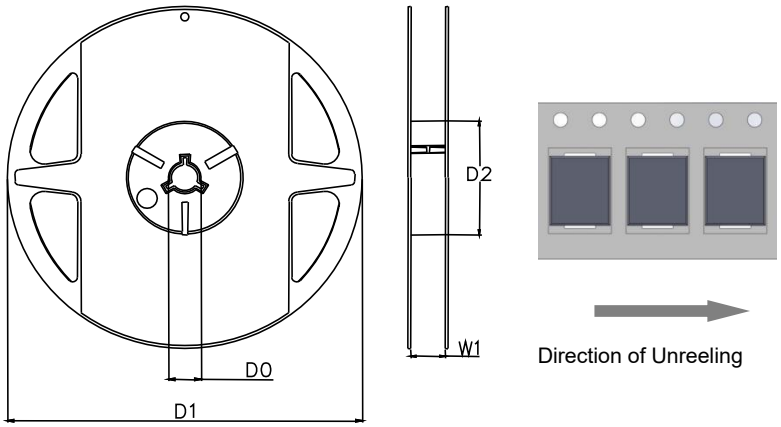


DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	2.75	3.25	0.108	0.128
B	6.50	7.11	0.260	0.280
C	5.50	6.22	0.217	0.246
D	2.06	2.70	0.079	0.106
E	0.76	1.52	0.030	0.060
G	7.40	8.40	0.291	0.331
I	3.300	-	0.129	-
J	2.400	-	0.094	-
K	-	4.200	-	0.165
L	2.400	-	0.094	-

Taping and Reel Specifications



Symbol	Millimeters	Inches
W	16±0.3	0.630±0.012
P	8±0.1	0.315±0.004
F	7.25±0.1	0.285±0.004
E	1.75±0.1	0.069±0.004
D	1.5+0.1/-0.0	0.059+0.004/-0.0
P0	4±0.1	0.157±0.004
P2	2±0.1	0.079±0.004
D0	16.7±0.15	0.657±0.006
D1	330.2±2	13.0±0.079
D2	59.6+1/-2	2.346+0.039/-0.079
W1	17.2±0.4	0.677±0.016



Part Number	Component package	Quantity	Packaging option	Packaging specification
SMCJXXXA/CA	DO-214AB(SMC)	3000	Tape&Reel-16mm/13”tap	EIA STD RS-481