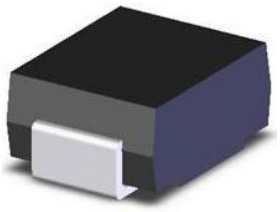
Description

The SMCJ-Q series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events. For surface mounted applications in order to optimize board space.

Features



- Halogen free and RoHS compliant
- Low profile package
- Built-in strain relief design
- Low inductance
- Excellent clamping capability
- 1500W peak pulse power capability at 10/1000μs waveform, repetition rate (duty cycle): 0.01%
- Fast response time
- Typical I_R less than 1μA above 10V devices
- Peak 260℃ high temperature Reflow Soldering withstanding
- Meet MSL level1, per J-STD-020
- IEC-61000-4-2 ESD 30kV(Air), 30kV (Contact)
- Unit Weight: 0.259g
- AEC-Q101 Qualified

Applications

TVS components are ideal for the protection of I/O Interfaces, VCC bus and other vulnerable circuits used in telecom, computer, Industrial and consumer electronic applications.

Maximum Ratings and Characteristics (T_A=25℃)

Rating	Symbol	Value
Peak pulse power dissipation at 10/1000μs waveform (Note1, Note2, Fig.1)	P_{PPM}	1500W
Peak pulse current of at 10/1000μs waveform (Note 1, Fig.3)	I_{PPM}	See Table(A)
Steady state power dissipation at T_A=50℃ (Fig.5)	$P_{M(AV)}$	6.5W
Maximum Instantaneous Forward Voltage at 100A for Unidirectional Only	V_F	3.5V/5.0V
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load, (JEDEC Method) (Note3, Fig.6)	I_{FSM}	200A
Operating junction and Storage Temperature Ranges	T_J,T_{STG}	-55℃ to +150℃
Typical thermal resistance junction to lead	$R_{\theta JL}$	15℃/W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	75℃/W

Notes:1. Non-repetitive current pulse, per Fig.3 and derating above T_A=25℃ per Fig.2.
2. Each terminal is surface Mounted on the 8.0mm×8.0mm copper pads.
3. 8.3ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minutes maximum.
4. VF < 3.5V for single die parts and VF< 5.0V for stacked-die parts.

Electrical Characteristics (T_A=25℃)

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_R
Uni.	Bi.	Uni.	Bi.	V_R(V)	$V_{B\ Min.}$(V)	$V_{B\ Max.}$(V)	I_T(mA)	V_C(V)	I_{PP}(A)	I_R(μA)
SMCJ5.0A-Q	SMCJ5.0CA-Q	GDE	BDE	5.0	6.40	7.00	10	9.2	163.0	800
SMCJ6.0A-Q	SMCJ6.0CA-Q	GDG	BDG	6.0	6.67	7.37	10	10.3	145.7	800
SMCJ6.5A-Q	SMCJ6.5CA-Q	GDK	BDK	6.5	7.22	7.98	10	11.2	134.0	500
SMCJ7.0A-Q	SMCJ7.0CA-Q	GDM	BDM	7.0	7.78	8.60	10	12.0	125.0	200
SMCJ7.5A-Q	SMCJ7.5CA-Q	GDP	BDP	7.5	8.33	9.21	1	12.9	116.3	100
SMCJ8.0A-Q	SMCJ8.0CA-Q	GDR	BDR	8.0	8.89	9.83	1	13.6	110.3	50
SMCJ8.5A-Q	SMCJ8.5CA-Q	GDT	BDT	8.5	9.44	10.40	1	14.4	104.2	20
SMCJ9.0A-Q	SMCJ9.0CA-Q	GDV	BDV	9.0	10.00	11.10	1	15.4	97.4	10
SMCJ10A-Q	SMCJ10CA-Q	GDX	BDX	10.0	11.10	12.30	1	17.0	88.3	5
SMCJ11A-Q	SMCJ11CA-Q	GDZ	BDZ	11.0	12.20	13.50	1	18.2	82.5	1
SMCJ12A-Q	SMCJ12CA-Q	GEE	BEE	12.0	13.30	14.70	1	19.9	75.4	1
SMCJ13A-Q	SMCJ13CA-Q	GEG	BEG	13.0	14.40	15.90	1	21.5	69.8	1
SMCJ14A-Q	SMCJ14CA-Q	GEK	BEK	14.0	15.60	17.20	1	23.2	64.7	1
SMCJ15A-Q	SMCJ15CA-Q	GEM	BEM	15.0	16.70	18.50	1	24.4	61.5	1
SMCJ16A-Q	SMCJ16CA-Q	GEP	BEP	16.0	17.80	19.70	1	26.0	57.7	1
SMCJ17A-Q	SMCJ17CA-Q	GER	BER	17.0	18.90	20.90	1	27.6	54.4	1
SMCJ18A-Q	SMCJ18CA-Q	GET	BET	18.0	20.00	22.10	1	29.2	51.4	1
SMCJ20A-Q	SMCJ20CA-Q	GEV	BEV	20.0	22.20	24.50	1	32.4	46.3	1
SMCJ22A-Q	SMCJ22CA-Q	GEX	BEX	22.0	24.40	26.90	1	35.5	42.3	1
SMCJ24A-Q	SMCJ24CA-Q	GEZ	BEZ	24.0	26.70	29.50	1	38.9	38.6	1
SMCJ26A-Q	SMCJ26CA-Q	GFE	BFE	26.0	28.90	31.90	1	42.1	35.7	1
SMCJ28A-Q	SMCJ28CA-Q	GFG	BFG	28.0	31.10	34.40	1	45.4	33.1	1
SMCJ30A-Q	SMCJ30CA-Q	GFK	BFK	30.0	33.30	36.80	1	48.4	31.0	1
SMCJ33A-Q	SMCJ33CA-Q	GFM	BFM	33.0	36.70	40.60	1	53.3	28.2	1
SMCJ36A-Q	SMCJ36CA-Q	GFP	BFP	36.0	40.00	44.20	1	58.1	25.9	1
SMCJ40A-Q	SMCJ40CA-Q	GFR	BFR	40.0	44.40	49.10	1	64.5	23.3	1
SMCJ43A-Q	SMCJ43CA-Q	GFT	BFT	43.0	47.80	52.80	1	69.4	21.7	1
SMCJ45A-Q	SMCJ45CA-Q	GFV	BFV	45.0	50.00	55.30	1	72.7	20.6	1
SMCJ48A-Q	SMCJ48CA-Q	GFX	BFX	48.0	53.30	58.90	1	77.4	19.4	1

Electrical Characteristics (T_A=25℃)

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_R
Uni.	Bi.	Uni.	Bi.	V_R(V)	$V_{B\ Min.}$(V)	$V_{B\ Max.}$(V)	I_T(mA)	V_C(V)	I_{PP}(A)	I_R(μA)
SMCJ51A-Q	SMCJ51CA-Q	GFZ	BFZ	51.0	56.70	62.70	1	82.4	18.2	1
SMCJ54A-Q	SMCJ54CA-Q	GGE	BGE	54.0	60.00	66.30	1	87.1	17.3	1
SMCJ58A-Q	SMCJ58CA-Q	GGG	BGG	58.0	64.40	71.20	1	93.6	16.1	1
SMCJ60A-Q	SMCJ60CA-Q	GGK	BGK	60.0	66.70	73.70	1	96.8	15.5	1
SMCJ64A-Q	SMCJ64CA-Q	GGM	BGM	64.0	71.10	78.60	1	103.0	14.6	1
SMCJ70A-Q	SMCJ70CA-Q	GGP	BGP	70.0	77.80	86.00	1	113.0	13.3	1
SMCJ75A-Q	SMCJ75CA-Q	GGR	BGR	75.0	83.30	92.10	1	121.0	12.4	1
SMCJ78A-Q	SMCJ78CA-Q	GGT	BGT	78.0	86.70	95.80	1	126.0	11.9	1
SMCJ85A-Q	SMCJ85CA-Q	GGV	BGV	85.0	94.40	104.00	1	137.0	11.0	1
SMCJ90A-Q	SMCJ90CA-Q	GGX	BGX	90.0	100.0	111.0	1	146.0	10.3	1
SMCJ100A-Q	SMCJ100CA-Q	GGZ	BGZ	100.0	111.0	123.0	1	162.0	9.3	1
SMCJ110A-Q	SMCJ110CA-Q	GHE	BHE	110.0	122.0	135.0	1	177.0	8.5	1
SMCJ120A-Q	SMCJ120CA-Q	GHG	BHG	120.0	133.0	147.0	1	193.0	7.8	1
SMCJ130A-Q	SMCJ130CA-Q	GHK	BHK	130.0	144.0	159.0	1	209.0	7.2	1
SMCJ150A-Q	SMCJ150CA-Q	GHM	BHM	150.0	167.0	185.0	1	243.0	6.2	1
SMCJ160A-Q	SMCJ160CA-Q	GHP	BHP	160.0	178.0	197.0	1	259.0	5.8	1
SMCJ170A-Q	SMCJ170CA-Q	GHR	BHR	170.0	189.0	209.0	1	275.0	5.5	1
SMCJ180A-Q	SMCJ180CA-Q	GHT	BHT	180.0	201.0	222.0	1	292.0	5.1	1
SMCJ190A-Q	SMCJ190CA-Q	GHU	BHU	190.0	211.0	233.0	1	308.0	4.8	1
SMCJ200A-Q	SMCJ200CA-Q	GHV	BHV	200.0	224.0	247.0	1	324.0	4.6	1
SMCJ210A-Q	SMCJ210CA-Q	GHW	BHW	210.0	237.0	263.0	1	340.0	4.4	1
SMCJ220A-Q	SMCJ220CA-Q	GHX	BHX	220.0	246.0	272.0	1	356.0	4.2	1
SMCJ250A-Q	SMCJ250CA-Q	GHZ	BHZ	250.0	279.0	309.0	1	405.0	3.7	1
SMCJ300A-Q	SMCJ300CA-Q	GJE	BJE	300.0	335.0	371.0	1	486.0	3.1	1
SMCJ350A-Q	SMCJ350CA-Q	GJG	BJG	350.0	391.0	432.0	1	567.0	2.6	1
SMCJ400A-Q	SMCJ400CA-Q	GJK	BJK	400.0	447.0	494.0	1	648.0	2.3	1
SMCJ440A-Q	SMCJ440CA-Q	GJM	BJM	440.0	492.0	543.0	1	713.0	2.1	1

Ratings and Characteristic Curves (T_A=25℃)

Figure 1. Peak Pulse Power Rating Curve

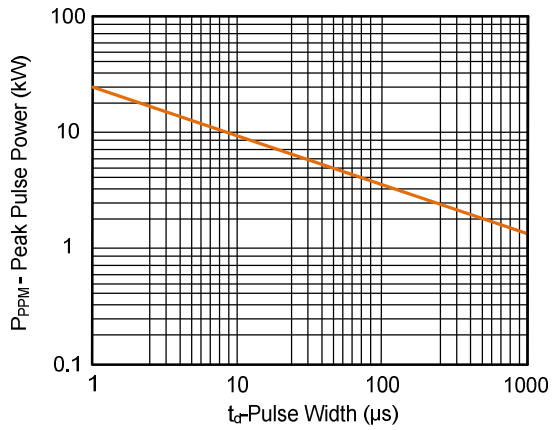


Figure 2. Pulse Derating Curve

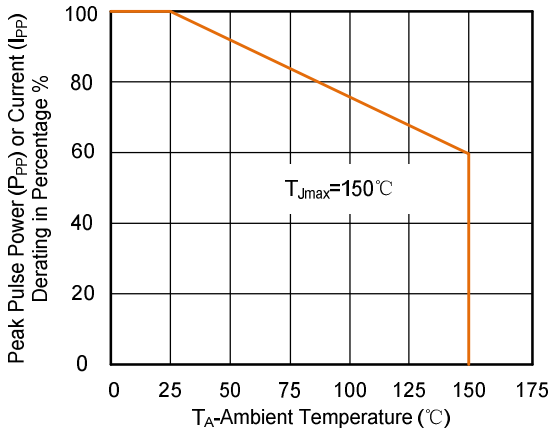


Figure 3. Pulse Waveform

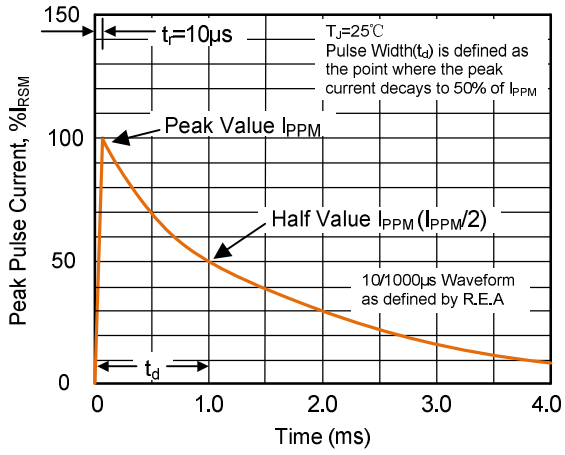


Figure 4. Typical Junction Capacitance

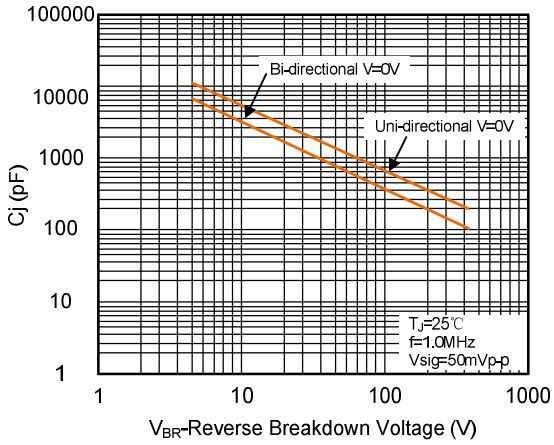


Figure 5. Steady State Power Dissipation Derating Curve

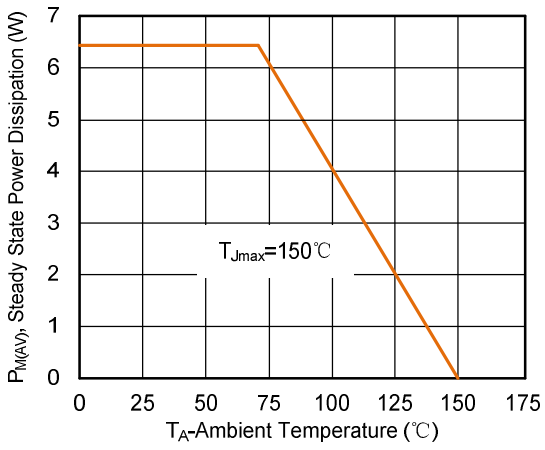
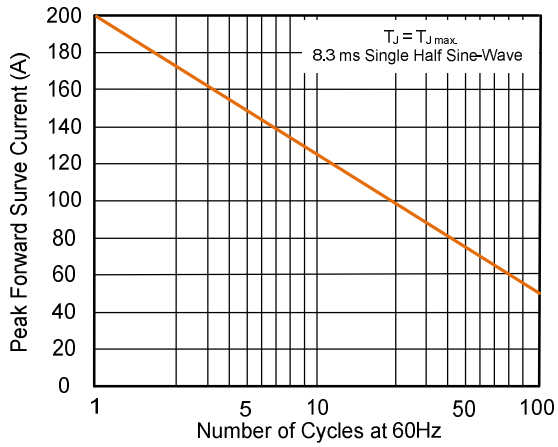
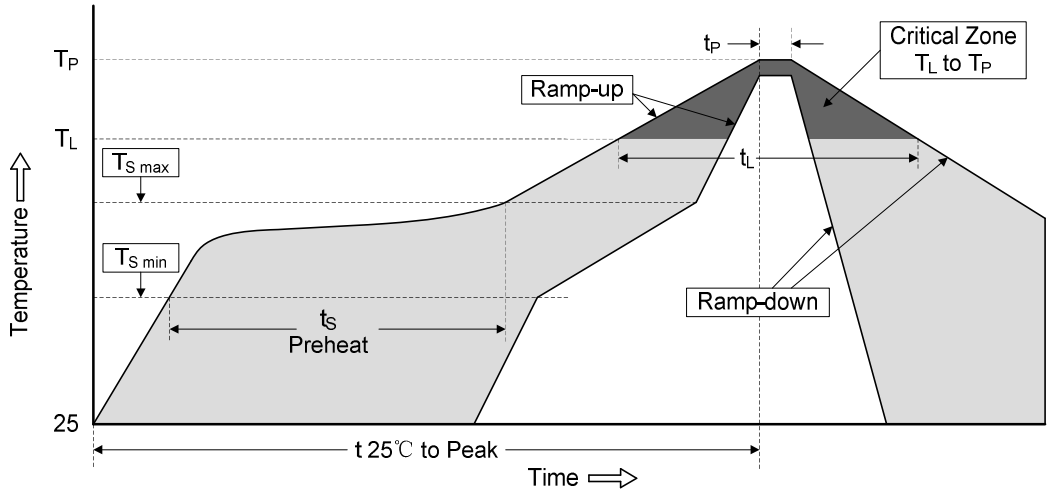


Figure 6. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



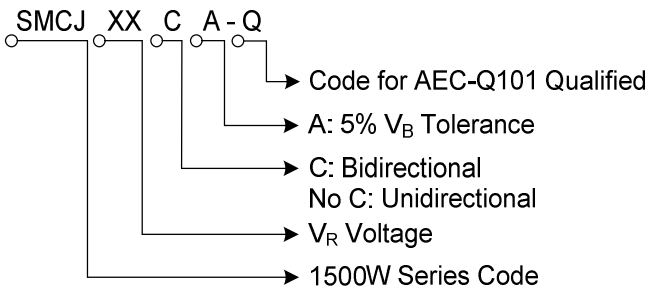
Soldering Parameters

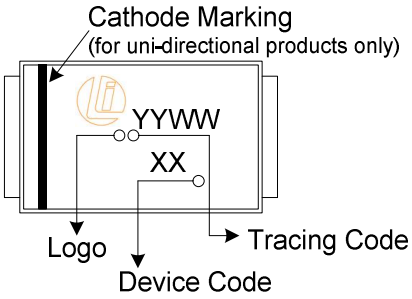
Reflow Soldering



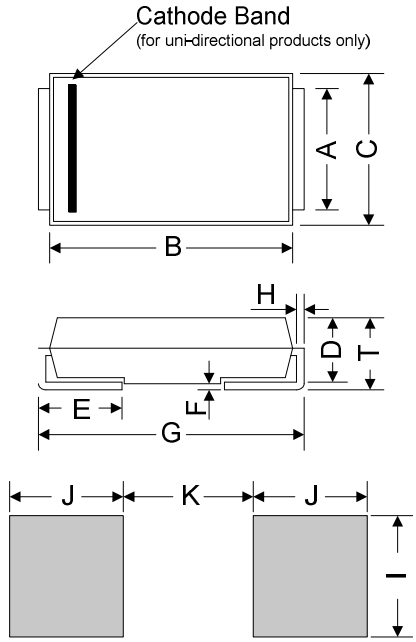
Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3℃/second max.
Preheat -Temperature Min ($T_{S\ min}$) -Temperature Max ($T_{S\ max}$) -Time (min to max) (t_S)	 150℃ 200℃ 60-180 seconds
$T_{S\ max}$ to T_L -Ramp-up Rate	 3℃/second max.
Time maintained above: -Temperature (T_L) -Time (t_L)	 217℃ 60-150 seconds
Peak Temperature (T_P)	260℃
Time within 5℃ of actual Peak Temperature (t_P)	20-40 seconds
Ramp-down Rate	6℃/second max.
Time 25℃ to Peak Temperature	8 minutes max.

Part Number Code and Marking Code





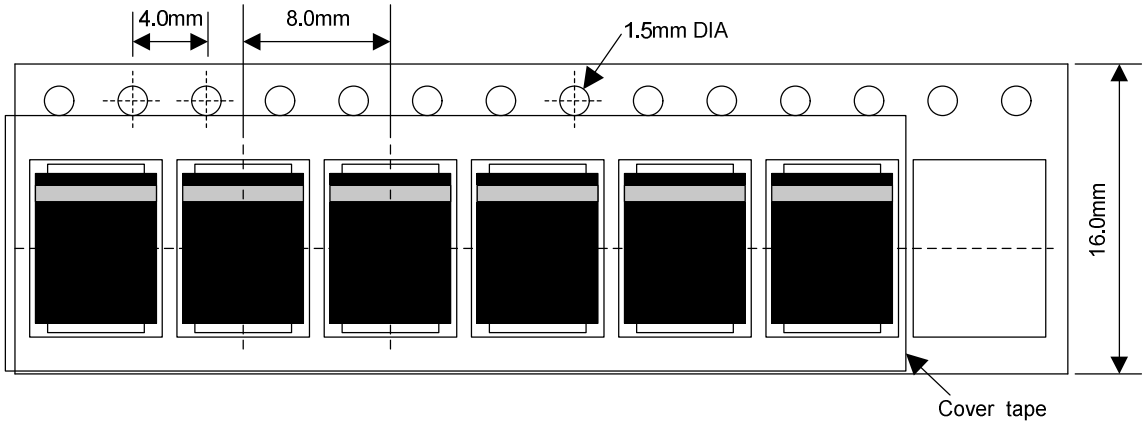
Dimensions (SMC/DO-214AB)



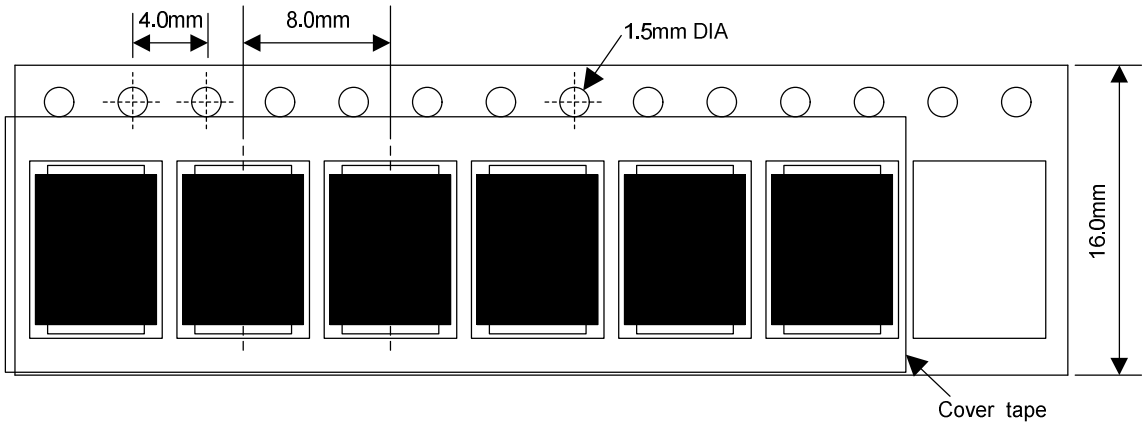
Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.900	3.200	0.114	0.126
B	6.600	7.110	0.260	0.280
C	5.590	6.220	0.220	0.245
D	2.060	2.620	0.079	0.103
E	0.760	1.520	0.030	0.060
F	-	0.203	-	0.008
G	7.750	8.130	0.305	0.320
H	0.152	0.305	0.006	0.012
T	2.200	2.750	0.087	0.108
I	3.300	-	0.129	-
J	2.400	-	0.094	-
K	-	4.200	-	0.165

Packaging Specification

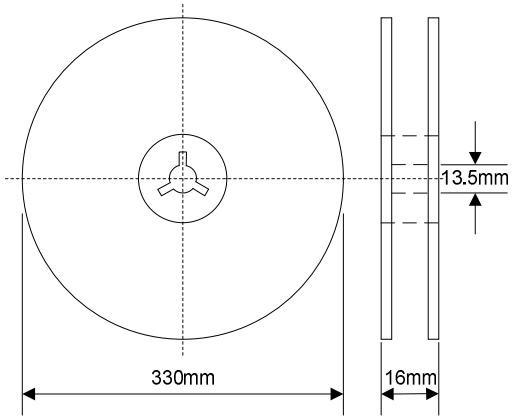
Tape



For Uni-Devices



13 Inches Reel



Quantity：3000pcs/reel