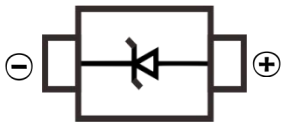
TVS DIODE

GENERAL :**SMCJ20A**

FEATURES

- Built-in strain relief
- Glass passivated junction
- Low inductance
- Excellent clamping capability
- Repetition Rate (duty cycle):0.01%
- Fast response time: typically less than 1.0ps from 0 Volts to V(BR) for unidirectional types
- Typical IR less than 1mA above 10V
- High temperature soldering guaranteed: 260°C/10 seconds,
- Surface Mount device

SMC



MECHANICAL DATA

- Case: SMC(DO-214AB)
- Case Material: Molded Plastic. UL flammability
- Classification Rating: 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Weight: 0.21 grams (approximate)

MAXIMUM RATINGS AND CHARACTERISTICS(T_A = 25°C unless otherwise noted)

	Symbol	Value	Unit
Peak power dissipation with a 10/1000μs waveform (NOTE 1,2, FIG.1)	P_{PPM}	Minimum 1500	W
Peak pulse current with a 10/1000μs waveform (NOTE 1)	I_{PPM}	See next table	A
Typical thermal resistance, junction to ambient (NOTE 3)	$R_{\theta JA}$	100.0	°C/W
Peak Forward Surge Current, 8.3ms Single Half Sine-Wave uni-directional only (NOTE 2)	I_{FSM}	200	A
Typical thermal resistance, junction to ambient (NOTE 3)	$R_{\theta JL}$	20	°C/W
Operating junction and storage temperature range	T_J, T_{STG}	-55 ~+150	°C

NOTES:

(1) Non-repetitive current pules, per Fig. 3 and derated above TA=25 per Fig. 2. Rating is 300W above 78V.

(2) Mounted on 0.2 x 0.2" (5.0 x 5.0mm) copper pads to each terminal.

(3) Mounted on minimum recommended pad layout.

ELECTRICAL CHARACTERISTICS

Ratings at 25 ambient temperature unless otherwise specified.VF=3.5V at IF=25A (uni-directional only)

Device type	HKT Type	Device marking code		Breakdown voltage V (BR) at I_T(1)		Test current I_T(m A)	Stand-off voltage V_{WM} (V)	Maximum reverse leakage at V_{WM} I_D(uA)(3)	Maximum peak pulse surge current I_{PPM}(A)(2)	Maximum clamping voltage at I_{PPM} Vc (V)
		UNI	BI	MIN	MAX					
SMCJ5.0	HDT5.0MC	CAD	CWD	6.4	7.8	10	5.0	1000	156.3	9.6
SMCJ5.0A	HDT5.0AMC	CAE	CWE	6.4	7.1	10	5.0	1000	163.0	9.2
SMCJ6.0	HDT6.0MC	CAF	CWF	6.7	8.2	10	6.0	1000	131.6	11.4
SMCJ6.0A	HDT6.0AMC	CAG	CWG	6.7	7.4	10	6.0	1000	145.6	10.3
SMCJ6.5	HDT6.5MC	CAH	CWH	7.2	8.8	10	6.5	500	122.0	12.3
SMCJ6.5A	HDT6.5AMC	CAK	CWK	7.2	8.0	10	6.5	500	133.9	11.2
SMCJ7.0	HDT7.0MC	CAL	CWL	7.8	9.5	10	7.0	200	112.3	13.3
SMCJ7.0A	HDT7.0AMC	CAM	CWM	7.8	8.6	10	7.0	200	125.0	12.0
SMCJ7.5	HDT7.5MC	CAN	CWN	8.3	10.2	1	7.5	100	104.9	14.3
SMCJ7.5A	HDT7.5AMC	CAP	CWP	8.3	9.2	1	7.5	100	116.3	12.9
SMCJ8.0	HDT8.0MC	CAQ	CWQ	8.9	10.9	1	8.0	50	100.0	15.0
SMCJ8.0A	HDT8.0AMC	CAR	CWR	8.9	9.8	1	8.0	50	110.3	13.6
SMCJ8.5	HDT8.5MC	CAS	CWS	9.4	11.5	1	8.5	20	94.3	15.9
SMCJ8.5A	HDT8.5AMC	CAT	CWT	9.4	10.4	1	8.5	20	104.2	14.4
SMCJ9.0	HDT9.0MC	CAU	CWU	10.0	12.2	1	9.0	10	88.8	16.9
SMCJ9.0A	HDT9.0AMC	CAV	CWV	10.0	11.1	1	9.0	10	97.4	15.4
SMCJ10	HDT10MC	CAW	CWW	11.1	12.3	1	10	5.0	79.8	18.8
SMCJ10A	HDT10AMC	CAX	CWX	11.1	14.9	1	10	5.0	88.2	17.0
SMCJ11	HDT11MC	CAY	CWY	12.2	13.5	1	11	5.0	74.6	20.1
SMCJ11A	HDT11AMC	CAZ	CWZ	12.2	16.3	1	11	5.0	82.4	18.2
SMCJ12	HDT12MC	CBD	CXD	13.3	14.7	1	12	5.0	68.2	22.0
SMCJ12A	HDT12AMC	CBE	CXE	13.3	17.6	1	12	5.0	75.4	19.9
SMCJ13	HDT13MC	CBF	CXF	14.4	15.9	1	13	5.0	63.0	23.8
SMCJ13A	HDT13AMC	CBG	CXG	14.4	19.1	1	13	5.0	69.8	21.5
SMCJ14	HDT14MC	CBH	CXH	15.6	17.2	1	14	5.0	58.1	25.8
SMCJ14A	HDT14AMC	CBK	CXK	15.6	20.4	1	14	5.0	64.7	23.2
SMCJ15	HDT15MC	CBL	CXL	16.7	18.5	1	15	5.0	55.8	26.9
SMCJ15A	HDT15AMC	CBM	CXM	16.7	21.8	1	15	5.0	61.5	24.4
SMCJ16	HDT16MC	CBN	CXN	17.8	19.7	1	16	5.0	52.1	28.8
SMCJ16A	HDT16AMC	CBP	CXP	17.8	23.1	1	16	5.0	57.7	26.0
SMCJ17	HDT17MC	CBQ	CXQ	18.9	20.9	1	17	5.0	49.2	30.5

GENERAL :**SMCJ20A**

Device type	HKT Type	Device marking code		Breakdown voltage V (BR) at I_T(1)		Test current I_T(m A)	Stand-off voltage V_{WM} (V)	Maximum reverse leakage at V_{WM} I_D(uA)(3)	Maximum peak pulse surge current I_{PPM}(A)(2)	Maximum clamping voltage at I_{PPM} Vc (V)
		UNI	BI	MIN	MAX					
SMCJ17A	HDT17AMC	CBR	CXR	18.9	20.9	1	17.0	5.0	54.3	27.6
SMCJ18	HDT18MC	CBS	CXS	20.0	24.4	1	18.0	5.0	46.6	32.2
SMCJ18A	HDT18AMC	CBT	CXT	20.0	22.1	1	18.0	5.0	51.4	29.2
SMCJ20	HDT20MC	CBU	CXU	22.2	27.1	1	20.0	5.0	41.9	35.8
SMCJ20A	HDT20AMC	CBV	CXV	22.2	24.5	1	20.0	5.0	46.3	32.4
SMCJ22	HDT22MC	CBW	CXW	24.4	29.8	1	22.0	5.0	38.1	39.4
SMCJ22A	HDT22AMC	CBX	CXX	24.4	26.9	1	22.0	5.0	42.3	35.5
SMCJ24	HDT24MC	CBY	CXY	26.7	32.6	1	24.0	5.0	34.9	43.0
SMCJ24A	HDT24AMC	CBZ	CXZ	26.7	29.5	1	24	5.0	38.6	38.9
SMCJ26	HDT26MC	CCD	CYD	28.9	35.3	1	26.0	5.0	32.2	46.6
SMCJ26A	HDT26AMC	CCE	CYE	28.9	31.9	1	26.0	5.0	35.6	42.1
SMCJ28	HDT28MC	CCF	CYF	31.1	38.0	1	28	5.0	30.0	50.0
SMCJ28A	HDT28AMC	CCG	CYG	31.1	34.4	1	28	5.0	33.0	45.4
SMCJ30	HDT30MC	CCH	CYH	33.3	40.7	1	30	5.0	28.0	53.5
SMCJ30A	HDT30AMC	CCK	CYK	33.3	36.8	1	30	5.0	31.0	48.4
SMCJ33	HDT33MC	CCL	CYL	36.7	44.9	1	33	5.0	25.4	59.0
SMCJ33A	HDT33AMC	CCM	CYM	36.7	40.6	1	33	5.0	28.1	53.3
SMCJ36	HDT36MC	CCN	CYN	40.0	48.9	1	36	5.0	23.3	64.3
SMCJ36A	HDT36AMC	CCP	CYP	40.0	44.2	1	36	5.0	25.8	58.1
SMCJ40	HDT40MC	CCQ	CYQ	44.4	54.3	1	40	5.0	21.0	71.4
SMCJ40A	HDT40AMC	CCR	CYR	44.4	49.1	1	40	5.0	23.3	64.5
SMCJ43	HDT43MC	CCS	CYS	47.8	58.4	1	43	5.0	19.6	76.7
SMCJ43A	HDT43AMC	CCT	CYT	47.8	52.8	1	43	5.0	21.6	69.4
SMCJ45	HDT45MC	CCU	CYU	50.0	61.1	1	45	5.0	18.7	80.3
SMCJ45A	HDT45AMC	CCV	CYV	50.0	55.3	1	45	5.0	20.6	72.7
SMCJ48	HDT48MC	CCW	CYW	53.3	65.1	1	48	5.0	17.5	85.5
SMCJ48A	HDT48AMC	CCX	CYX	53.3	58.9	1	48	5.0	19.4	77.4
SMCJ51	HDT51MC	CCY	CYY	56.7	69.3	1	51	5.0	16.5	91.1
SMCJ51A	HDT51AMC	CCZ	CYZ	56.7	62.7	1	51	5.0	18.2	82.4
SMCJ54	HDT54MC	CRD	CZD	60.0	73.3	1	54	5.0	15.6	96.3
SMCJ54A	HDT54AMC	CRE	CZE	60.0	66.3	1	54	5.0	17.2	87.1
SMCJ58	HDT58MC	CRF	CZF	64.4	78.7	1	58	5.0	14.6	103
SMCJ58A	HDT58AMC	CRG	CZG	64.4	71.2	1	58	5.0	16.0	93.6

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Device type	HKT Type	Device marking code		Breakdown voltage V (BR) at I_T(1)		Test current I_T(m A)	Stand-off voltage V_{WM} (V)	Maximum reverse leakage at V_{WM} I_D(uA)(3)	Maximum peak pulse surge current I_{PPM}(A)(2)	Maximum clamping voltage at I_{PPM} Vc (V)
		UNI	BI	MIN	MAX					
SMCJ60	HDT60MC	CRH	CZH	66.7	81.5	1	60	5.0	14.0	107
SMCJ60A	HDT60AMC	CRK	CZK	66.7	73.7	1	60	5.0	15.5	96.8
SMCJ64	HDT64MC	CRL	CZL	77.1	86.9	1	64	5.0	13.2	114
SMCJ64A	HDT64AMC	CRM	CZM	77.1	78.6	1	64	5.0	14.6	103
SMCJ70	HDT70MC	CRN	CZN	77.8	95.1	1	70	5.0	12.0	125
SMCJ70A	HDT70AMC	CRP	CZP	77.8	86.0	1	70	5.0	13.3	113
SMCJ75	HDT75MC	CRQ	CZQ	83.3	102	1	75	5.0	11.2	134
SMCJ75A	HDT75AMC	CRR	CZR	83.3	92.1	1	75	5.0	12.4	121
SMCJ78	HDT78MC	CRS	CZS	86.7	106	1	78	5.0	10.8	139
SMCJ78A	HDT78AMC	CRT	CZT	86.7	95.8	1	78	5.0	11.9	126
SMCJ85	HDT85MC	CRU	CZU	94.4	115	1	85	5.0	9.9	151
SMCJ85A	HDT85AMC	CRV	CZV	94.4	104	1	85	5.0	10.9	137
SMCJ90	HDT90MC	CRW	CZW	100	122	1	90	5.0	9.4	160
SMCJ90A	HDT90AMC	CRX	CZX	100	111	1	90	5.0	10.3	146
SMCJ100	HDT100MC	CRY	CZY	111	136	1	100	5.0	8.4	179
SMCJ100A	HDT100AMC	CRZ	CZZ	111	123	1	100	5.0	9.3	162
SMCJ110	HDT110MC	CSD	CVD	122	149	1	110	5.0	7.7	196
SMCJ110A	HDT110AMC	CSE	CVE	122	135	1	110	5.0	8.5	177
SMCJ120	HDT120MC	CSF	CVF	133	163	1	120	5.0	7.0	214
SMCJ120A	HDT120AMC	CSG	CVG	133	147	1	120	5.0	7.8	193
SMCJ130	HDT130MC	CSH	CVH	144	176	1	130	5.0	6.5	231
SMCJ130A	HDT130AMC	CSK	CVK	144	159	1	130	5.0	7.2	209
SMCJ150	HDT150MC	CSL	CVL	167	204	1	150	5.0	5.6	268
SMCJ150A	HDT150AMC	CSM	CVM	167	185	1	150	5.0	6.2	243
SMCJ160	HDT160MC	CSN	CVN	178	218	1	160	5.0	5.2	287
SMCJ160A	HDT160AMC	CSP	CVP	178	197	1	160	5.0	5.8	259
SMCJ170	HDT170MC	CSQ	CVQ	189	231	1	170	5.0	4.9	304
SMCJ170A	HDT170AMC	CSR	CVR	189	209	1	170	5.0	5.5	275
SMCJ188	HDT188MC	CSS	CVS	209	255	1	188	5.0	4.4	344
SMCJ188A	HDT188AMC	CST	CVT	209	231	1	188	5.0	4.6	328

Notes: (1) Pulse test : T_P 50ms

(2) Surge current waveform per Fig.3 and derate per Fig.2

(3) For bi-directional types having VWM of 10 Volts and less,the ID Limit is doubled

(4) All terms and symbols are consistent with A NSI/IEEE C62.35

Typical Characteristics

FIG. 1 - PEAK PULSE POWER RATING CURVE

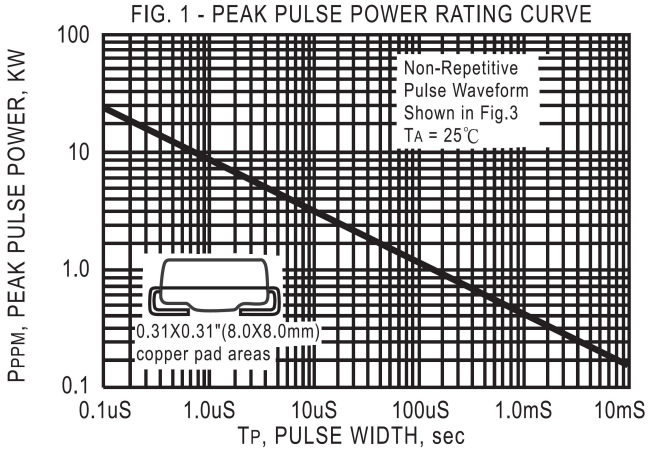


FIG. 2 - PULSE DERATING CURVE

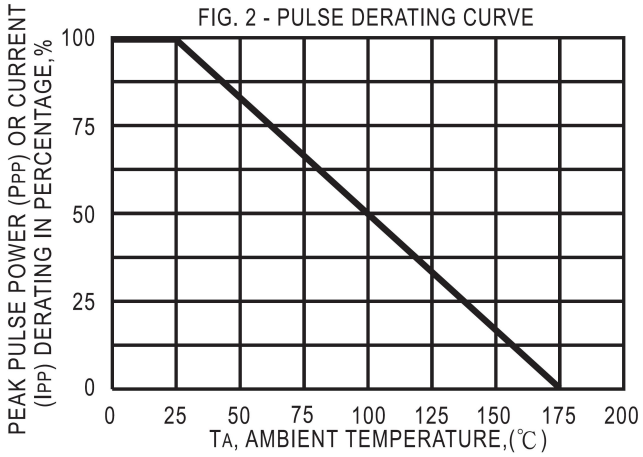


FIG. 3 - PULSE WAVEFORM

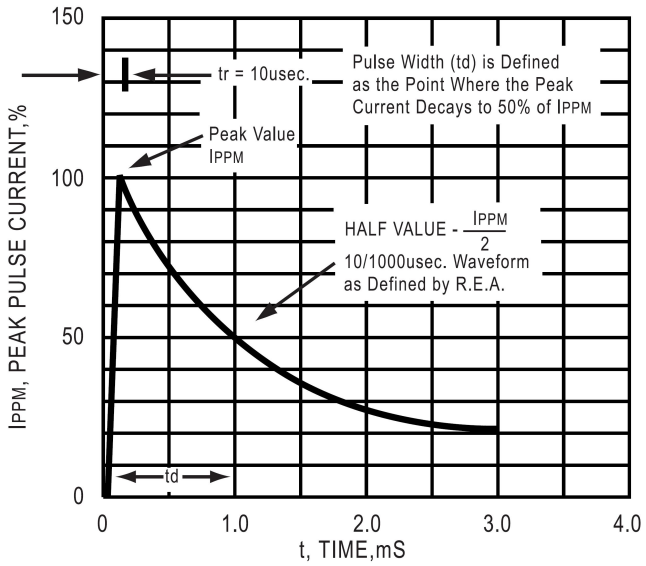


FIG. 4 - TYPICAL JUNCTION CAPACITANCE UNIDIRECTIONAL

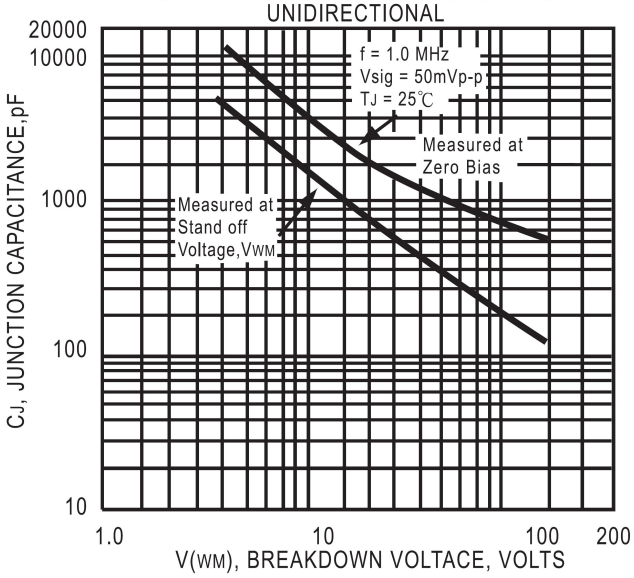


FIG. 5 - TYPICAL JUNCTION CAPACITANCE BIDIRECTIONAL

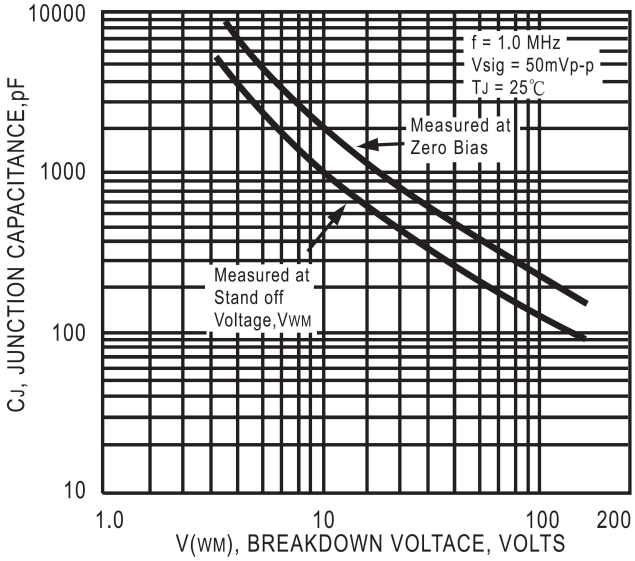
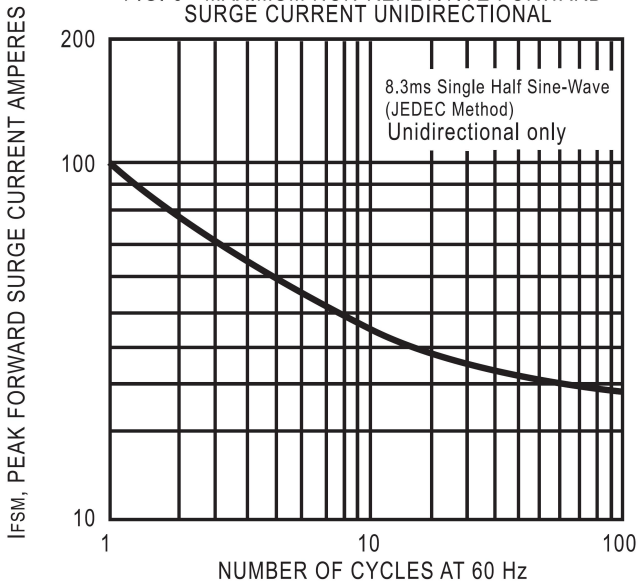
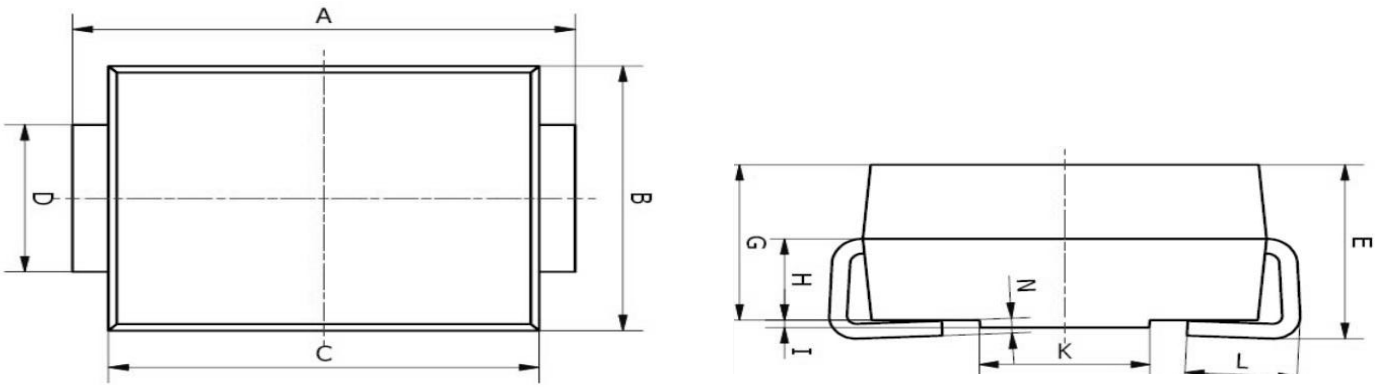


FIG. 6 - MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT UNIDIRECTIONAL

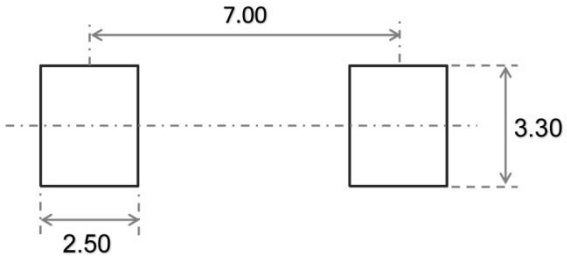


SMB Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	7.75	8.13	0.305	0.320
B	5.59	6.22	0.220	0.245
C	6.60	7.11	0.260	0.280
D	2.75	3.25	0.108	0.128
E	2.25	2.82	0.089	0.111
G	2.00	2.62	0.079	0.103
H	1.26	1.56	0.050	0.061
I	0.05	0.15	0.002	0.006
K	4.30	6.00	0.169	0.236
L	1.25	1.75	0.049	0.069
N	0.10	0.30	0.004	0.012

SMB Suggested Pad Layout



Note:

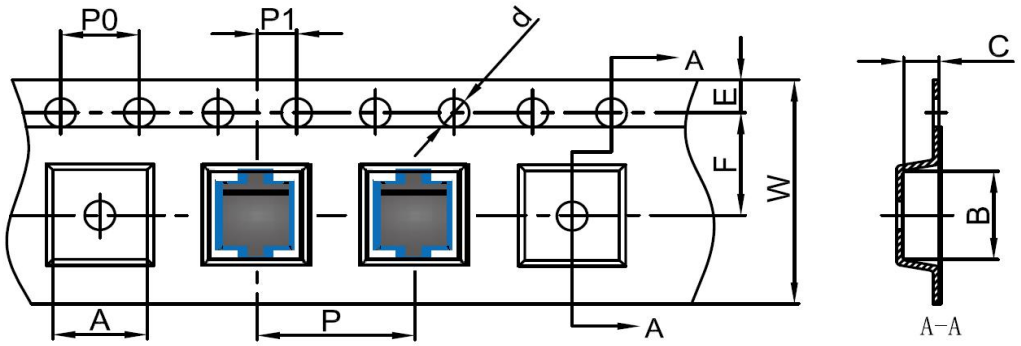
1.Controlling dimension: in millimeters

2.General tolerance: ±0.05mm

3.The pad layout is for reference purposes only

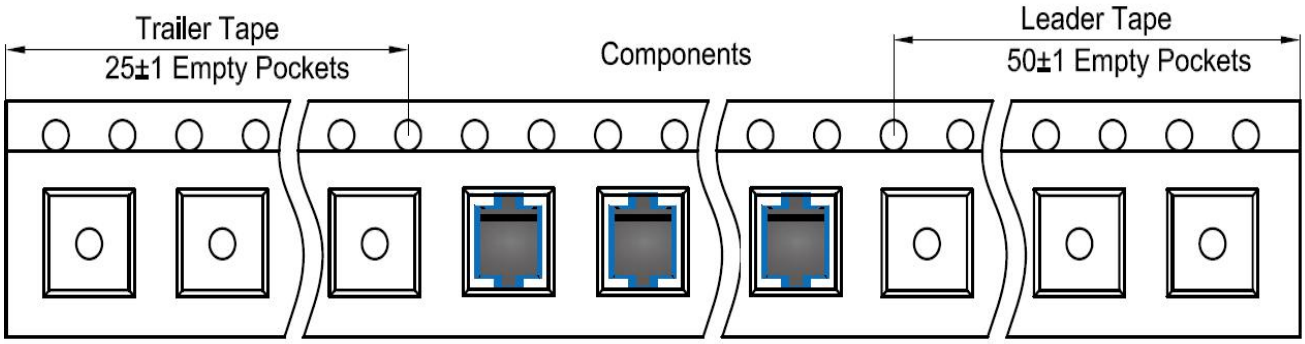
SMC Tape and Reel

SMC Embossed Carrier Tape

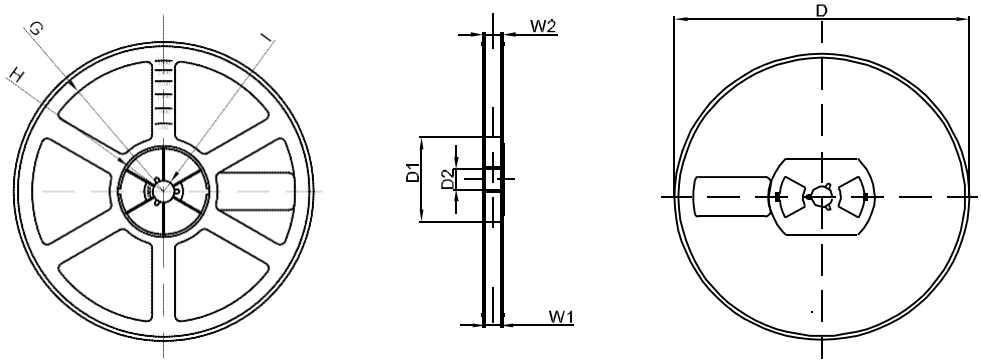


	DIMENSIONS ARE IN MILLIMETER									
TYPE	A	B	C	d	E	F	P0	P	P1	W
SMC	6.3	8.25	2.90	Ø1.55	1.75	7.50	4.00	8.00	2.00	16.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

SMC Tape Leader and Trailer



SMC Reel



	DIMENSIONS ARE IN MILLIMETER							
REEL OPTION	D	D1	D2	G	H	I	W1	W2
13” DIA	Ø330	100	21	R165	R50	R6.50	16.4	21.00
TOLERANCE	±2	±1	±1	±1	±1	±1	±1	±1