

## SMCG Plastic-Encapsulate Diodes

### 5.0SMDJ SERIES Transient Voltage Suppressor Diodes

#### Features

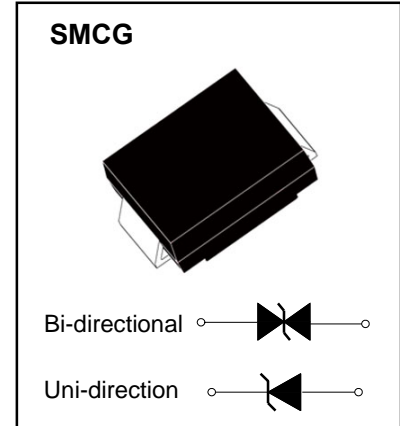
- $P_{PP}$  5000W
- $V_{RWM}$  11V- 440V
- Glass passivated chip

#### Applications

- Clamping Voltage

#### Marking

- 5.0SMDJ XX(A/C/CA)
- XX : From 11 To 440



#### Limiting Values (Absolute Maximum Rating)

Item	Symbol	Unit	Conditions	Max
Peak pulse power dissipation	$P_{PPM}$	W	with a 10/1000us waveform	5000
Peak pulse current (1)	$I_{PPM}$	A	with a 10/1000us waveform	See Next Table
Peak forward surge current(2)	$I_{FSM}$	A	8.3 ms single half sine-wave unidirectional only	300
Power dissipation	$P_D$	W	On infinite heat sink at $T_L=50^{\circ}C$	6.5
Peak Forward Voltage	$V_F$	V	Maximum instantaneous forward voltage at 100 A for unidirectional only	3.0/5.0
Thermal resistance	$R_{\theta JL}$	$^{\circ}C/W$	junction to lead	15
	$R_{\theta JA}$	$^{\circ}C/W$	junction to ambient	75
Operating junction and storage temperature range	$T_J, T_{STG}$	$^{\circ}C$		-55 to +150

#### Note:

(1) Non-repetitive current pulse per Fig.5 and derated above  $T_A=25^{\circ}C$  per Fig.1

(2) Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum (3)  $V_F < 3.5V$  for devices of  $V_{BR} < 200V$  and  $V_F < 5.0V$  for devices of  $V_{BR} > 201V$

## Electrical Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise noted)

Part Number (Uni)	Part Number (Bi)	Breakdown Voltage $V_{BR}$ @ $I_T$			Maximum Reverse Leakage $I_R$ @ $V_{RWM}$ ( $\mu\text{A}$ )	Working Peak Reverse Voltage $V_{RWM}$ (V)	Maximum Reverse Surge Current $I_{PP}$ (A)	Maximum Clamping Voltage $V_C$ @ $I_{PP}$ (V)
		Min (V)	Max (V)	$I_T$ (mA)				
5.0SMDJ11	5.0SMDJ11C	12.20	14.90	10	800	11.0	248.8	20.1
5.0SMDJ11A	5.0SMDJ11CA	12.20	13.50	10	800	11.0	274.7	18.2
5.0SMDJ12	5.0SMDJ12C	13.30	16.30	10	800	12.0	227.3	22.0
5.0SMDJ12A	5.0SMDJ12CA	13.30	14.70	10	800	12.0	251.3	19.9
5.0SMDJ13	5.0SMDJ13C	14.40	17.60	10	500	13.0	210.1	23.8
5.0SMDJ13A	5.0SMDJ13CA	14.40	15.90	10	500	13.0	232.6	21.5
5.0SMDJ14	5.0SMDJ14C	15.60	19.10	10	200	14.0	193.8	25.8
5.0SMDJ14A	5.0SMDJ14CA	15.60	17.20	10	200	14.0	215.5	23.2
5.0SMDJ15	5.0SMDJ15C	16.70	20.40	1	100	15.0	185.9	26.9
5.0SMDJ15A	5.0SMDJ15CA	16.70	18.50	1	100	15.0	204.9	24.4
5.0SMDJ16	5.0SMDJ16C	17.80	21.80	1	50	16.0	173.6	28.8
5.0SMDJ16A	5.0SMDJ16CA	17.80	19.70	1	50	16.0	192.3	26.0
5.0SMDJ17	5.0SMDJ17C	18.90	23.10	1	20	17.0	163.9	30.5
5.0SMDJ17A	5.0SMDJ17CA	18.90	20.90	1	20	17.0	181.2	27.6
5.0SMDJ18	5.0SMDJ18C	20.00	24.40	1	10	18.0	155.3	32.2
5.0SMDJ18A	5.0SMDJ18CA	20.00	22.10	1	10	18.0	171.2	29.2
5.0SMDJ19	5.0SMDJ19C	21.13	25.76	1	10	19.0	147.0	34.0
5.0SMDJ19A	5.0SMDJ19CA	21.10	23.30	1	10	19.0	162.4	30.8
5.0SMDJ20	5.0SMDJ20C	22.20	27.10	1	5	20.0	139.7	35.8
5.0SMDJ20A	5.0SMDJ20CA	22.20	24.50	1	5	20.0	154.3	32.4
5.0SMDJ22	5.0SMDJ22C	24.40	29.80	1	5	22.0	126.9	39.4
5.0SMDJ22A	5.0SMDJ22CA	24.40	26.90	1	5	22.0	140.8	35.5
5.0SMDJ24	5.0SMDJ24C	26.70	32.60	1	5	24.0	116.3	43.0
5.0SMDJ24A	5.0SMDJ24CA	26.70	29.50	1	5	24.0	128.5	38.9
5.0SMDJ26	5.0SMDJ26C	28.90	35.30	1	5	26.0	107.3	46.6
5.0SMDJ26A	5.0SMDJ26CA	28.90	31.90	1	5	26.0	118.8	42.1
5.0SMDJ28	5.0SMDJ28C	31.10	38.00	1	5	28.0	100.0	50.0
5.0SMDJ28A	5.0SMDJ28CA	31.10	34.40	1	5	28.0	110.1	45.4
5.0SMDJ30	5.0SMDJ30C	33.30	40.70	1	5	30.0	93.5	53.5
5.0SMDJ30A	5.0SMDJ30CA	33.30	36.80	1	5	30.0	103.3	48.4
5.0SMDJ33	5.0SMDJ33C	36.70	44.90	1	5	33.0	84.7	59.0
5.0SMDJ33A	5.0SMDJ33CA	36.70	40.60	1	5	33.0	93.8	53.3
5.0SMDJ36	5.0SMDJ36C	40.00	48.90	1	5	36.0	77.8	64.3
5.0SMDJ36A	5.0SMDJ36CA	40.00	44.20	1	5	36.0	86.1	58.1
5.0SMDJ40	5.0SMDJ40C	44.40	54.30	1	5	40.0	70.0	71.4
5.0SMDJ40A	5.0SMDJ40CA	44.40	49.10	1	5	40.0	77.5	64.5
5.0SMDJ43	5.0SMDJ43C	47.80	58.40	1	5	43.0	65.2	76.7
5.0SMDJ43A	5.0SMDJ43CA	47.80	52.80	1	5	43.0	72.0	69.4
5.0SMDJ45	5.0SMDJ45C	50.00	61.10	1	5	45.0	62.3	80.3
5.0SMDJ45A	5.0SMDJ45CA	50.00	55.30	1	5	45.0	68.8	72.7
5.0SMDJ48	5.0SMDJ48C	53.30	65.10	1	5	48.0	58.5	85.5
5.0SMDJ48A	5.0SMDJ48CA	53.30	58.90	1	5	48.0	64.6	77.4
5.0SMDJ51	5.0SMDJ51C	56.70	69.30	1	5	51.0	54.9	91.1
5.0SMDJ51A	5.0SMDJ51CA	56.70	62.70	1	5	51.0	60.7	82.4
5.0SMDJ54	5.0SMDJ54C	60.00	73.30	1	5	54.0	51.9	96.3
5.0SMDJ54A	5.0SMDJ54CA	60.00	66.30	1	5	54.0	57.4	87.1
5.0SMDJ58	5.0SMDJ58C	64.40	78.70	1	5	58.0	48.5	103.0
5.0SMDJ58A	5.0SMDJ58CA	64.40	71.20	1	5	58.0	53.4	93.6
5.0SMDJ60	5.0SMDJ60C	66.70	81.50	1	5	60.0	46.7	107.0
5.0SMDJ60A	5.0SMDJ60CA	66.70	73.70	1	5	60.0	51.7	96.8
5.0SMDJ64	5.0SMDJ64C	71.10	86.90	1	5	64.0	43.9	114.0
5.0SMDJ64A	5.0SMDJ64CA	71.10	78.60	1	5	64.0	48.5	103.0

## Electrical Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise noted)

Part Number (Uni)	Part Number (Bi)	Breakdown Voltage $V_{BR}$ @ $I_T$			Maximum Reverse Leakage $I_R$ @ $V_{RWM}$ ( $\mu\text{A}$ )	Working Peak Reverse Voltage $V_{RWM}$ (V)	Maximum Reverse Surge Current $I_{PP}$ (A)	Maximum Clamping Voltage $V_C$ @ $I_{PP}$ (V)
		Min (V)	Max (V)	$I_T$ (mA)				
5.0SMDJ70	5.0SMDJ70C	77.80	95.10	1	5	70.0	40.0	125.0
5.0SMDJ70A	5.0SMDJ70CA	77.80	86.00	1	5	70.0	44.2	113.0
5.0SMDJ75	5.0SMDJ75C	83.30	102.0	1	5	75.0	37.3	134.0
5.0SMDJ75A	5.0SMDJ75CA	83.30	92.10	1	5	75.0	41.3	121.0
5.0SMDJ78	5.0SMDJ78C	86.70	106.0	1	5	78.0	36.0	139.0
5.0SMDJ78A	5.0SMDJ78CA	86.70	95.80	1	5	78.0	39.7	126.0
5.0SMDJ80	5.0SMDJ80C	88.96	108.8	1	5	80.0	34.9	143.2
5.0SMDJ80A	5.0SMDJ80CA	88.80	97.60	1	5	80.0	38.6	129.6
5.0SMDJ85	5.0SMDJ85C	94.40	115.0	1	5	85.0	33.1	151.0
5.0SMDJ85A	5.0SMDJ85CA	94.40	104.0	1	5	85.0	36.5	137.0
5.0SMDJ90	5.0SMDJ90C	100.0	122.0	1	5	90.0	31.3	160.0
5.0SMDJ90A	5.0SMDJ90CA	100.0	111.0	1	5	90.0	34.2	146.0
5.0SMDJ100	5.0SMDJ100C	111.0	136.0	1	5	100.0	27.9	179.0
5.0SMDJ100A	5.0SMDJ100CA	111.0	123.0	1	5	100.0	30.9	162.0
5.0SMDJ110	5.0SMDJ110C	122.0	149.0	1	5	110.0	25.5	196.0
5.0SMDJ110A	5.0SMDJ110CA	122.0	135.0	1	5	110.0	28.2	177.0
5.0SMDJ120	5.0SMDJ120C	133.0	163.0	1	5	120.0	23.4	214.0
5.0SMDJ120A	5.0SMDJ120CA	133.0	147.0	1	5	120.0	25.9	193.0
5.0SMDJ130	5.0SMDJ130C	144.0	176.0	1	5	130.0	21.6	231.0
5.0SMDJ130A	5.0SMDJ130CA	144.0	159.0	1	5	130.0	23.9	209.0
5.0SMDJ140	5.0SMDJ140C	155.7	190.4	1	5	140.0	20.0	250.6
5.0SMDJ140A	5.0SMDJ140CA	155.0	171.0	1	5	140.0	22.0	226.8
5.0SMDJ150	5.0SMDJ150C	167.0	204.0	1	5	150.0	18.7	268.0
5.0SMDJ150A	5.0SMDJ150CA	167.0	185.0	1	5	150.0	20.6	243.0
5.0SMDJ160	5.0SMDJ160C	178.0	218.0	1	5	160.0	17.4	287.0
5.0SMDJ160A	5.0SMDJ160CA	178.0	197.0	1	5	160.0	19.3	259.0
5.0SMDJ170	5.0SMDJ170C	189.0	231.0	1	5	170.0	16.4	304.0
5.0SMDJ170A	5.0SMDJ170CA	189.0	209.0	1	5	170.0	18.2	275.0
5.0SMDJ180	5.0SMDJ180C	200.2	244.8	1	5	180.0	15.5	322.2
5.0SMDJ180A	5.0SMDJ180CA	200.0	220.0	1	5	180.0	17.1	291.6
5.0SMDJ190	5.0SMDJ190C	211.3	258.4	1	5	190.0	14.7	340.1
5.0SMDJ190A	5.0SMDJ190CA	211.0	232.0	1	5	190.0	16.2	307.8
5.0SMDJ200A	5.0SMDJ200CA	224.0	247.0	1	5	200.0	15.4	324.0
5.0SMDJ220A	5.0SMDJ220CA	246.0	272.0	1	5	220.0	14.0	356.0
5.0SMDJ250A	5.0SMDJ250CA	279.0	309.0	1	5	250.0	12.3	405.0
5.0SMDJ300A	5.0SMDJ300CA	335.0	371.0	1	5	300.0	10.3	486.0
5.0SMDJ350A	5.0SMDJ350CA	391.0	432.0	1	5	350.0	8.8	567.0
5.0SMDJ400A	5.0SMDJ400CA	447.0	494.0	1	5	400.0	7.7	648.0
5.0SMDJ440A	5.0SMDJ440CA	492.0	543.0	1	5	440.0	7.0	713.0

**Note:**

1. Suffix 'A' denotes 5% tolerance device. Without 'A' denotes 10% tolerance device
2. Add suffix 'C' or 'CA' after part number to specify Bi-directional devices
3. For Bi-Directional devices having  $V_R$  of 20 volts and under, the  $I_R$  limit is double

# Typical Characteristics

Fig. 1 - Pulse Derating Curve

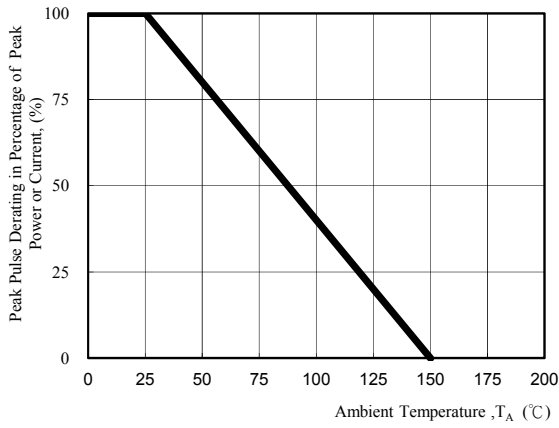


Fig. 2 - Maximum Non-Repetitive Surge Current

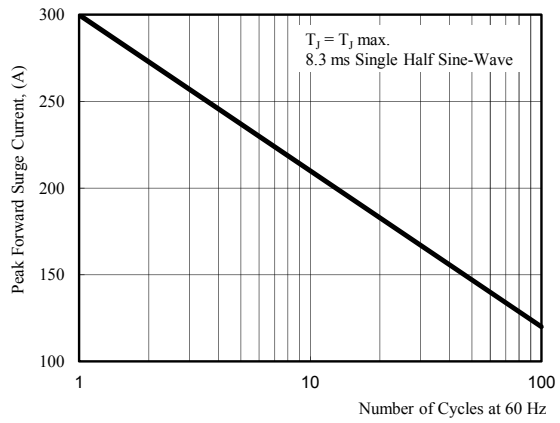


Fig. 3 - Steady State Power Derating Curve

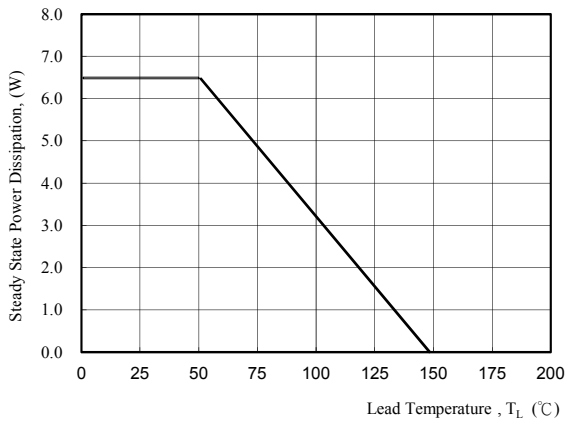


Fig. 4 - Peak Pulse Power Rating Curve

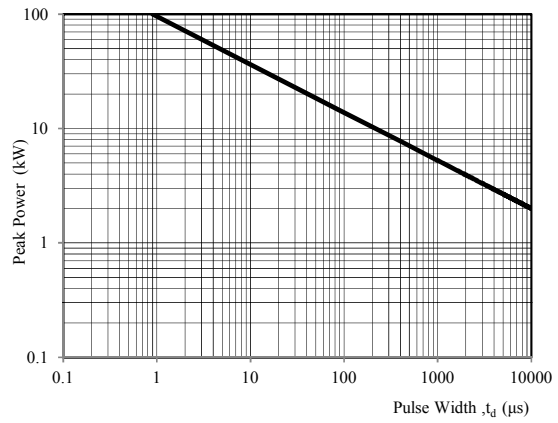


Fig. 5 - Pulse Waveform

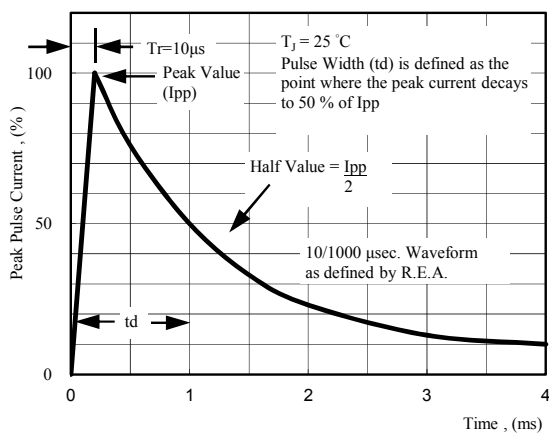
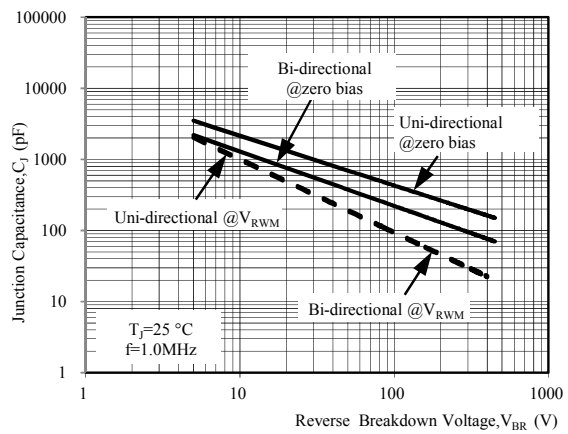
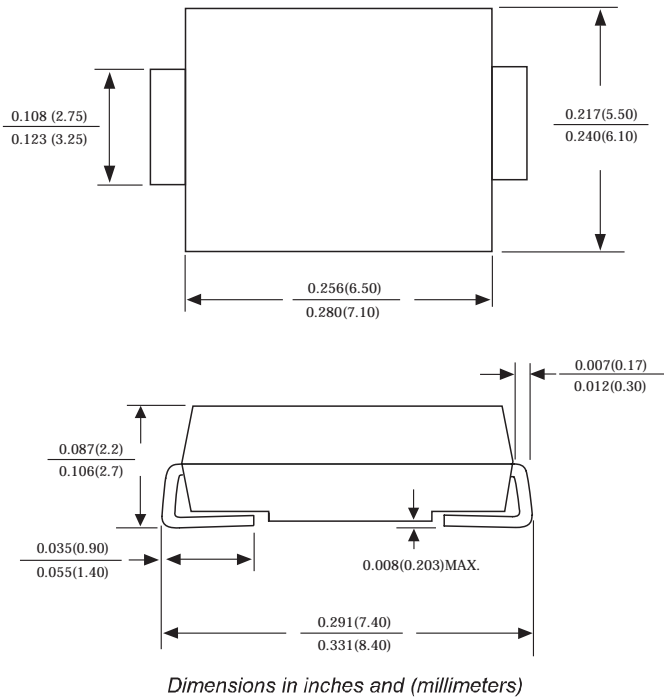


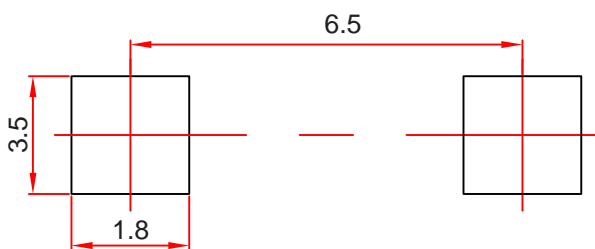
Fig. 6 - Typical Junction Capacitance



## SMCG Package Outline Dimensions



## SMCG Suggested Pad Layout



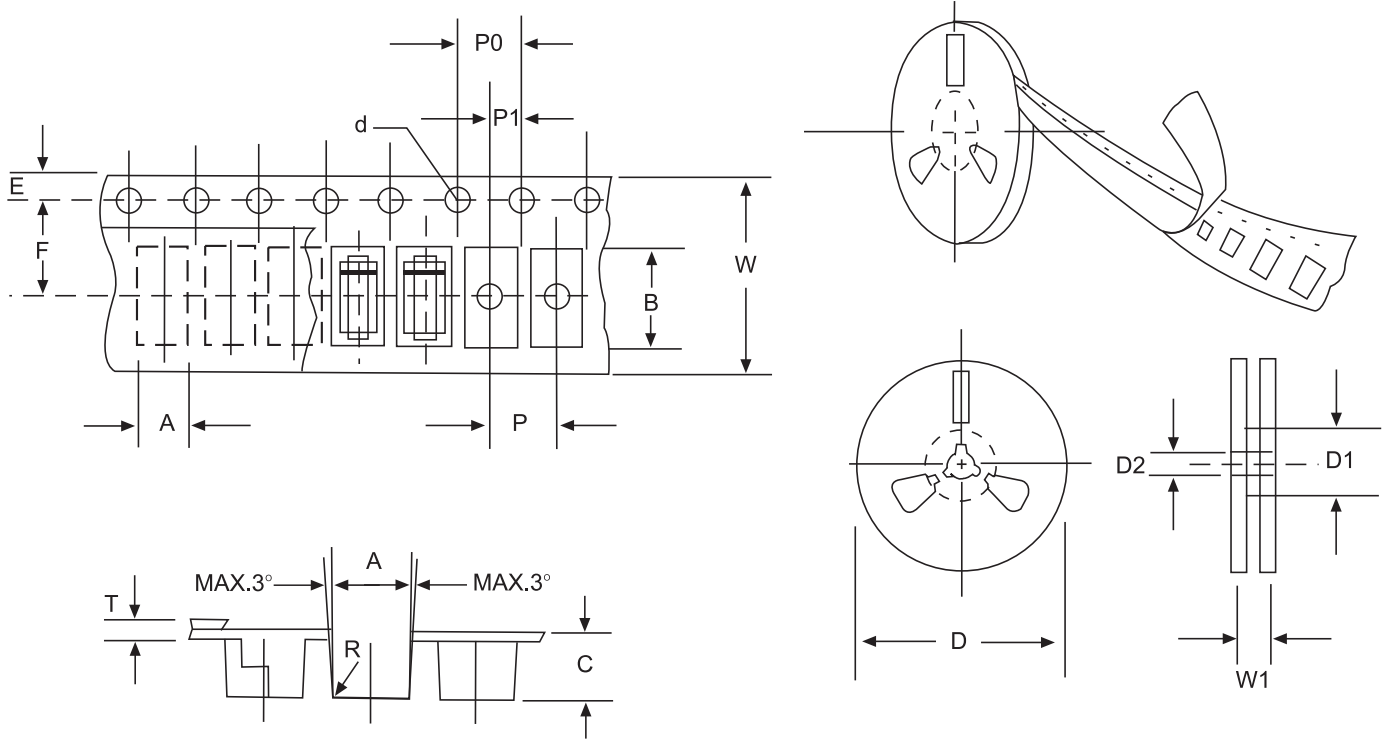
### Note:

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05$  mm.
3. The pad layout is for reference purposes only.

### NOTICE

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## Reel Taping Specifications For Surface Mount Devices- SMCG



**FIG: CONFIGURATION OF SURFACE MOUNTED DEVICES TAPING**

ITEM	SYMBOL	SMCG mm(inch)
Carrier width	A	6.05±0.1(0.238±0.004)
Carrier length	B	8.31±0.1(0.327±0.004)
Carrier depth	C	2.70±0.1(0.106±0.004)
Sprocket hole	d	1.55±0.05(0.061±0.002)
Reel outside diameter	D	330±2.0(13±0.079)
Reel inner diameter	D1	75 ±1.0 ( 2.95 ±0.039)
Feed hole diameter	D2	13±0.5(0.512±0.020)
Strocket hole position	E	1.75±0.1(0.069±0.004)
Punch hole position	F	7.65±0.05(0.301±0.002)
Punch hole pitch	P	8.0±0.1(0.315±0.004)
Sprocket hole pitch	P0	4.0±0.1(0.157±0.004)
Embossment center	P1	2.0±0.1(0.079±0.004)
Totall tape thickness	T	0.3±0.1(0.012±0.004)
Tape width	W	16.0±0.2(0.630±0.008)
Reel width	W1	24.0±2.0(0.945±0.079)

NOTE: Devices are packed in accordance with EIA standard RS-481-A and specification given above.

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