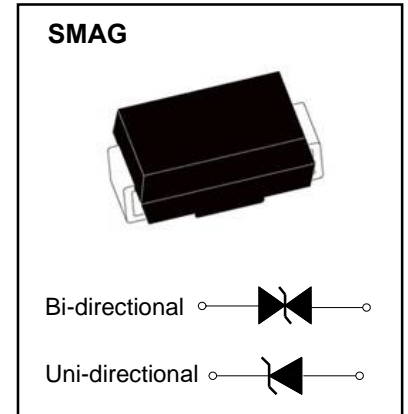




SMAG Plastic-Encapsulate Diodes

P4SMA SERIES Transient Voltage Suppressor Diodes

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
V_{RWM}	5.8-376.2	V
I_R	200-1	uA
I_{PP}	38.1-0.66	A
V_C	10.5-607.2	V
P_{PPM}	400	W



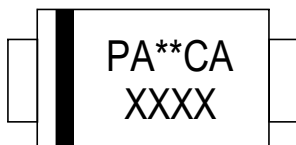
Features

- For surface mounted applications in order to optimize board space
- Glass passivated chip junction
- Excellent clamping capability
- Low reverse leakage
- Very fast response time
- 400W peak pulse power capability with a 10/1000 us waveform by 0.01% duty cycle
- RoHS Compliant
- ESD protection of data lines in accordance with IEC 61000-4-2,
- 30kV(Air), 30kV (Contact)

Mechanical Data

- Case: SMA(DO-214)
- Molding compound meets UL 94V-0 flammability rating
- Moisture sensitivity level: level 1, per J-STD-020
- Polarity: Color band denotes cathode end

Marking



Cathode Band: for uni-directional products only

PA**CA = Device code, **=Voltage

C: Bi-directional or not

XXXX=Data Code

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

Limiting Values (Absolute Maximum Rating)

Item	Symbol	Unit	Conditions	Max
Peak pulse power dissipation	P_{PPM}	W	with a 10/1000us waveform	400
Peak pulse current(note 1)	I_{PPM}	A	with a 10/1000us waveform	See Next Table
Power dissipation	P_D	W	On infinite heat sink at $T_L=50^{\circ}\text{C}$	3.3
Peak forward surge current	I_{FSM}	A	8.3 ms single half sine-wave uni-directional only (note 2)	70
Operating junction and storage temperature range	T_J, T_{STG}	$^{\circ}\text{C}$		-55 to +150

Electrical Characteristics($T_a=25^{\circ}\text{C}$ Unless otherwise specified)

Item	Symbol	Unit	Conditions	Max
Maximum instantaneous forward Voltage	V_F	V	at 25A for uni-directional only	3.5/5.0
Thermal resistance	$R_{\theta JL}$	$^{\circ}\text{C}/\text{W}$	junction to lead $T_L=50^{\circ}\text{C}$	30
	$R_{\theta JLA}$	$^{\circ}\text{C}/\text{W}$	junction to ambient $T_A=25^{\circ}\text{C}$	120

Notes:

(1) Non-repetitive current pulse at $T_A=25^{\circ}\text{C}$, per waveform of Figure 2.

(2) 8.3ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minutes maximum

(3) Thermal resistance from junction to ambient and from junction to lead mounted on 1" x 1"(25.4mm x 25.4mm)FR4 PCB, double sided copper, with minimum pad layout

Typical Characteristics

Part Number		Device Marking Code		Breakdown Voltage VBR@IT		Test Current	Max Reverse Leakage @V _{RWM}	Reverse Standoff Voltage	Max Peak Pulse Current ⁽¹⁾	Max Clamping Voltage @I _{PP}
UNI	BI	UNI	BI	Min.(V)	Max.(V)	IT(mA)	I _R (uA)	V _{RWM} (V)	I _{PP} (A)	V _C (V)
P4SMA6.8A	P4SMA6.8CA	PA6.8A XXXX	PA6.8CA XXXX	6.45	7.14	10	200	5.8	38.10	10.5
P4SMA7.5A	P4SMA7.5CA	PA7.5A XXXX	PA7.5CA XXXX	7.13	7.88	10	100	6.4	35.40	11.3
P4SMA8.2A	P4SMA8.2CA	PA8.2A XXXX	PA8.2CA XXXX	7.79	8.61	10	50	7.0	33.06	12.1
P4SMA9.1A	P4SMA9.1CA	PA9.1A XXXX	PA9.1CA XXXX	8.65	9.55	1	20	7.8	29.85	13.4
P4SMA10A	P4SMA10CA	PA10A XXXX	PA10CA XXXX	9.50	10.50	1	10	8.6	27.59	14.5
P4SMA11A	P4SMA11CA	PA11A XXXX	PA11CA XXXX	10.50	11.60	1	5	9.4	25.64	15.6
P4SMA12A	P4SMA12CA	PA12A XXXX	PA12CA XXXX	11.40	12.60	1	1	10.2	23.95	16.7
P4SMA13A	P4SMA13CA	PA13A XXXX	PA13CA XXXX	12.40	13.70	1	1	11.1	21.98	18.2
P4SMA15A	P4SMA15CA	PA15A XXXX	PA15CA XXXX	14.30	15.80	1	1	12.8	18.87	21.2
P4SMA16A	P4SMA16CA	PA16A XXXX	PA16CA XXXX	15.20	16.80	1	1	13.6	17.78	22.5
P4SMA18A	P4SMA18CA	PA18A XXXX	PA18CA XXXX	17.10	18.90	1	1	15.3	15.87	25.2
P4SMA20A	P4SMA20CA	PA20A XXXX	PA20CA XXXX	19.00	21.00	1	1	17.1	14.44	27.7
P4SMA22A	P4SMA22CA	PA22A XXXX	PA22CA XXXX	20.90	23.10	1	1	18.8	13.07	30.6
P4SMA24A	P4SMA24CA	PA24A XXXX	PA24CA XXXX	22.80	25.20	1	1	20.5	12.05	33.2
P4SMA27A	P4SMA27CA	PA27A XXXX	PA27CA XXXX	25.70	28.40	1	1	23.1	10.67	37.5
P4SMA30A	P4SMA30CA	PA30A XXXX	PA30CA XXXX	28.50	31.50	1	1	25.6	9.73	41.1
P4SMA33A	P4SMA33CA	PA33A XXXX	PA33CA XXXX	31.40	34.70	1	1	28.2	8.75	45.7
P4SMA36A	P4SMA36CA	PA36A XXXX	PA36CA XXXX	34.20	37.80	1	1	30.8	8.02	49.9
P4SMA39A	P4SMA39CA	PA39A XXXX	PA39CA XXXX	37.10	41.00	1	1	33.3	7.42	53.9
P4SMA43A	P4SMA43CA	PA43A XXXX	PA43CA XXXX	40.90	45.20	1	1	36.8	6.75	59.3

Typical Characteristics

Part Number		Device Marking Code		Breakdown Voltage VBR@IT		Test Current	Max Reverse Leakage @V _{RWM}	Reverse Standoff Voltage	Max Peak Pulse Current ⁽¹⁾	Max Clamping Voltage @I _{PP}
UNI	BI	UNI	BI	Min.(V)	Max.(V)	IT(mA)	I _R (uA)	V _{RWM} (V)	I _{PP} (A)	V _C (V)
P4SMA47A	P4SMA47CA	PA47A XXXX	PA47CA XXXX	44.70	49.40	1	1	40.2	6.17	64.8
P4SMA51A	P4SMA51CA	PA51A XXXX	PA51CA XXXX	48.50	53.60	1	1	43.6	5.71	70.1
P4SMA56A	P4SMA56CA	PA56A XXXX	PA56CA XXXX	53.20	58.80	1	1	47.8	5.19	77.0
P4SMA62A	P4SMA62CA	PA62A XXXX	PA62CA XXXX	58.90	65.10	1	1	53.0	4.71	85.0
P4SMA68A	P4SMA68CA	PA68A XXXX	PA68CA XXXX	64.40	71.40	1	1	58.1	4.35	92.0
P4SMA75A	P4SMA75CA	PA75A XXXX	PA75CA XXXX	71.30	78.80	1	1	64.1	3.88	103.0
P4SMA82A	P4SMA82CA	PA82A XXXX	PA82CA XXXX	77.90	86.10	1	1	70.1	3.54	113.0
P4SMA91A	P4SMA91CA	PA91A XXXX	PA91CA XXXX	86.50	95.50	1	1	77.8	3.20	125.0
P4SMA100A	P4SMA100CA	PA100A XXXX	PA100CA XXXX	95.00	105.00	1	1	85.5	2.92	137.0
P4SMA110A	P4SMA110CA	PA110A XXXX	PA110CA XXXX	105.00	116.00	1	1	94.0	2.63	152.0
P4SMA120A	P4SMA120CA	PA120A XXXX	PA120CA XXXX	114.00	126.00	1	1	102.0	2.42	165.0
P4SMA130A	P4SMA130CA	PA130A XXXX	PA130CA XXXX	124.00	137.00	1	1	111.0	2.23	179.0
P4SMA150A	P4SMA150CA	PA150A XXXX	PA150CA XXXX	143.00	158.00	1	1	128.0	1.93	207.0
P4SMA160A	P4SMA160CA	PA160A XXXX	PA160CA XXXX	152.00	168.00	1	1	136.0	1.83	219.0
P4SMA170A	P4SMA170CA	PA170A XXXX	PA170CA XXXX	162.00	179.00	1	1	145.0	1.71	234.0
P4SMA180A	P4SMA180CA	PA180A XXXX	PA180CA XXXX	171.00	189.00	1	1	154.0	1.63	246.0
P4SMA200A	P4SMA200CA	PA200A XXXX	PA200CA XXXX	190.00	210.00	1	1	171.0	1.46	274.0
P4SMA220A	P4SMA220CA	PA220A XXXX	PA220CA XXXX	209.00	231.00	1	1	185.0	1.22	328.0
P4SMA250A	P4SMA250CA	PA250A XXXX	PA250CA XXXX	237.00	263.00	1	1	214.0	1.16	344.0
P4SMA300A	P4SMA300CA	PA300A XXXX	PA300CA XXXX	285.00	315.00	1	1	256.0	0.97	414.0

Typical Characteristics

Part Number		Device Marking Code		Breakdown Voltage VBR@IT		Test Current	Max Reverse Leakage @V _{RWM}	Reverse Standoff Voltage	Max Peak Pulse Current ⁽¹⁾	Max Clamping Voltage @I _{PP}
UNI	BI	UNI	BI	Min.(V)	Max.(V)	IT(mA)	I _R (uA)	V _{RWM} (V)	I _{PP} (A)	V _C (V)
P4SMA350A	P4SMA350CA	PA350A XXXX	PA350CA XXXX	332.50	367.50	1	1	299.3	0.83	482.0
P4SMA380A	P4SMA380CA	PA380A XXXX	PA380CA XXXX	361.00	399.00	1	1	324.9	0.76	524.4
P4SMA400A	P4SMA400CA	PA400A XXXX	PA400CA XXXX	380.00	420.00	1	1	342.0	0.72	552.0
P4SMA440A	P4SMA440CA	PA440A XXXX	PA440CA XXXX	418.00	462.00	1	1	376.2	0.66	607.2

Notes:

(1) Waveform of P4SMA6.8A -P4SMA440CA are defined as per fig.3

Typical Characteristics

Figure 1. Peak Pulse Power Rating Curve

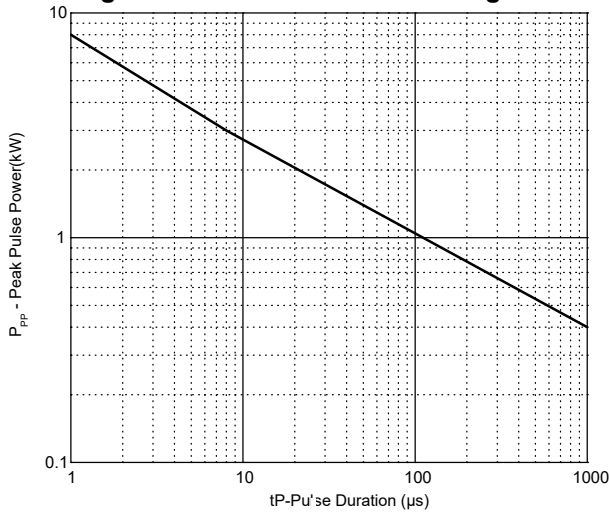


Figure 2. Pulse Derating Curve

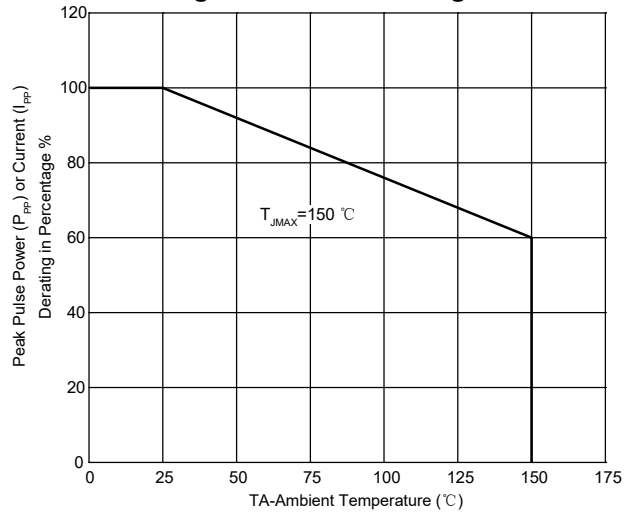


Figure 3. Pulse Waveform

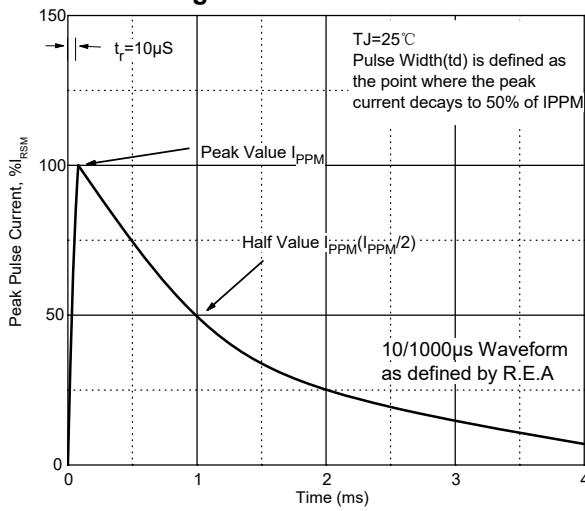


Figure 4. Typical Junction Capacitance

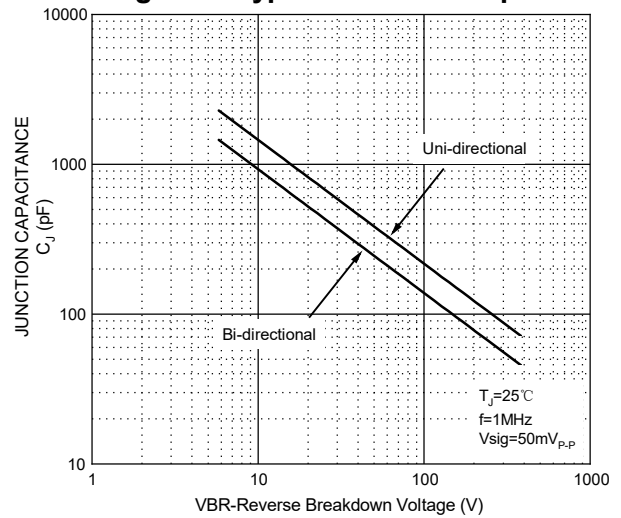


Figure 5. Steady State Power Dissipation Derating Curve

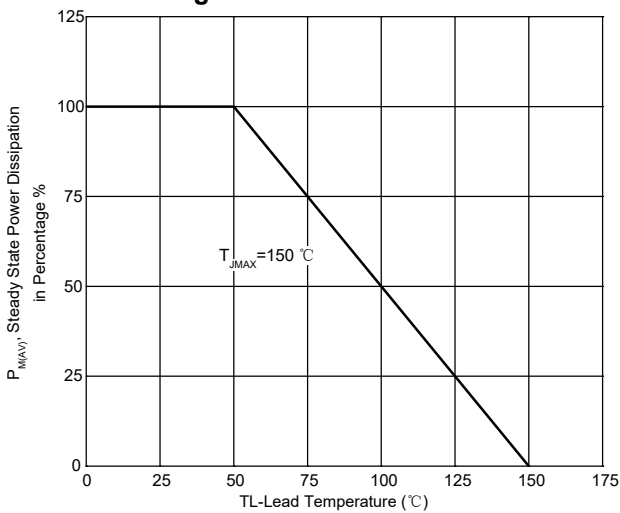
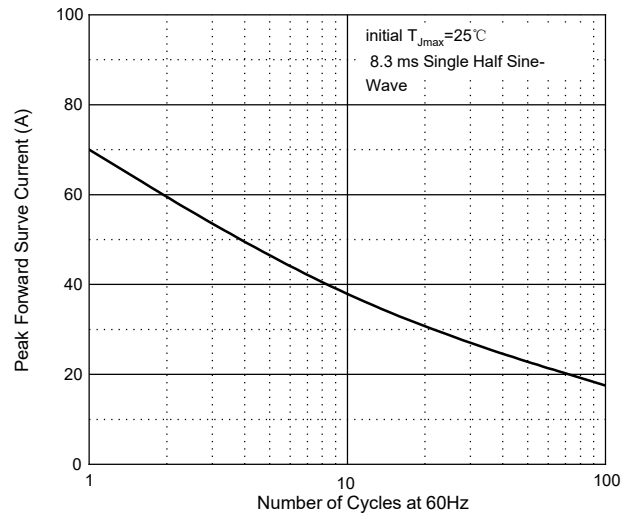
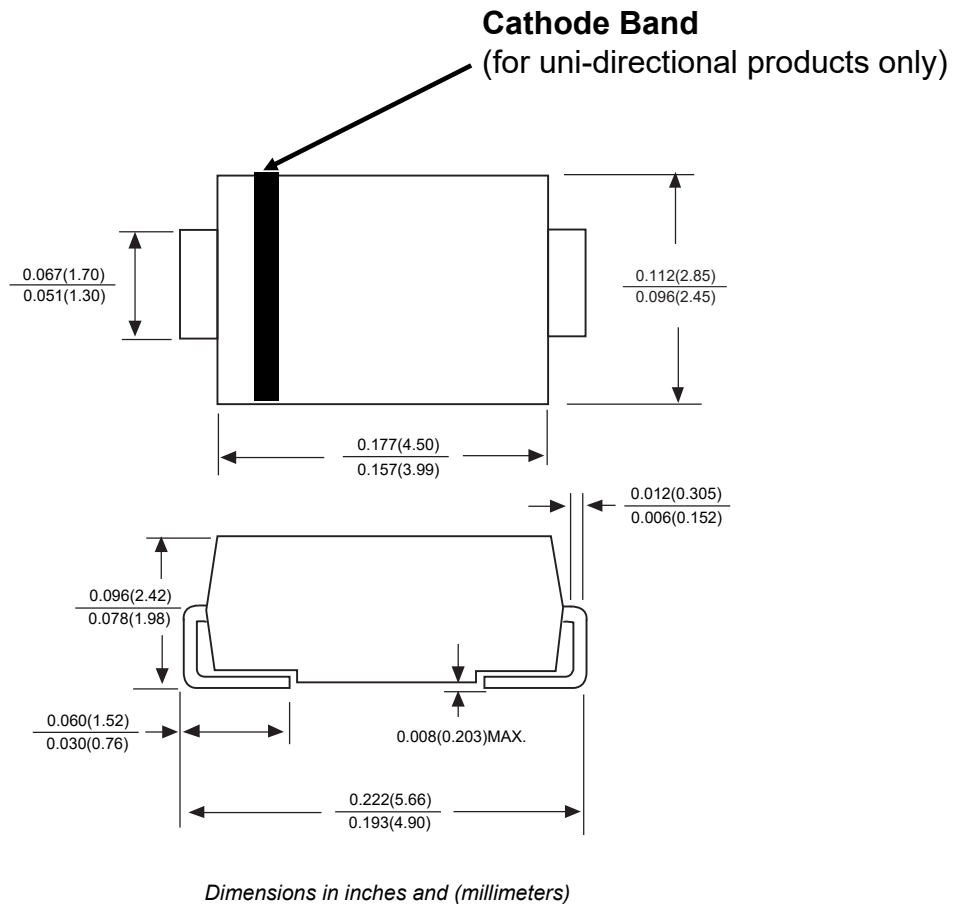


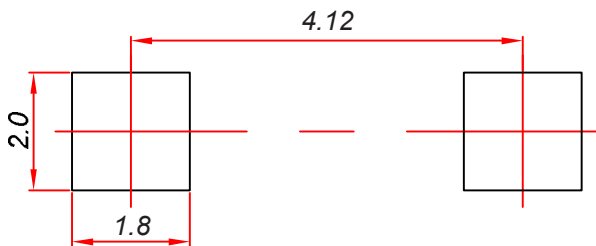
Figure 6. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



SMAG Package Outline Dimensions



SMAG Suggested Pad Layout



Note:

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

NOTICE

JSCJ reserves the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. JSCJ does not assume any liability arising out of the application or use of any product described herein.

Reel Taping Specifications For Surface Mount Devices- SMAG

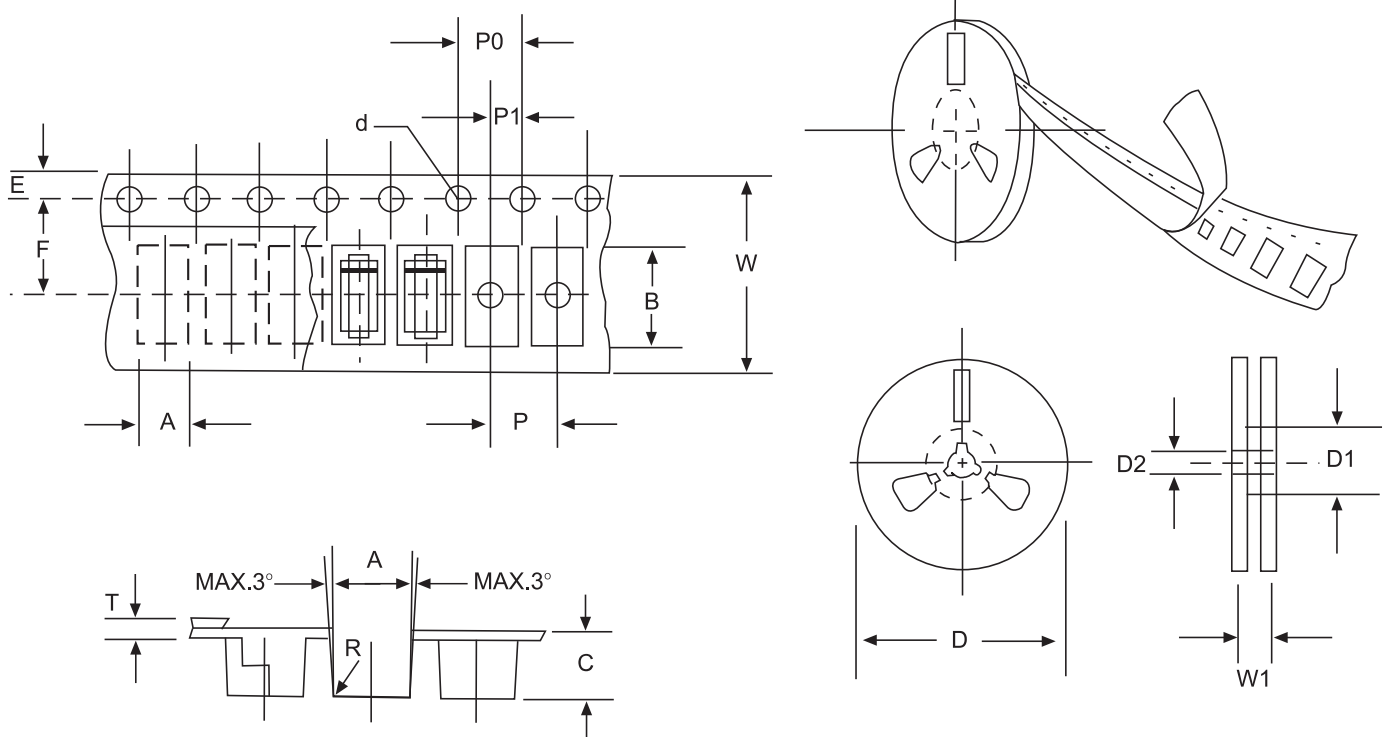


FIG: CONFIGURATION OF SURFACE MOUNTED DEVICES TAPING

ITEM	SYMBOL	SMAG mm (inch)
Carrier width	A	2.79±0.1 (0.110±0.004)
Carrier length	B	5.33±0.1 (0.210±0.004)
Carrier depth	C	2.36±0.1 (0.093±0.004)
Sprocket hole	d	1.55±0.05 (0.061±0.002)
Reel outside diameter	D	279±2.0 (11±0.079)
Reel inside diameter	D1	75±1.0 (2.95±0.039)
Feed hole position	D2	13±0.5 (0.512±0.020)
Stroket hole position	E	1.75±0.1 (0.069±0.004)
Punch hole position	F	5.5±0.05 (0.217±0.002)
Punch hole pitch	P	4.0±0.1 (0.157±0.004)
Stroket 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	0.28±0.02 (0.011±0.0008)
Tape width	W	12.0±0.2 (0.472±0.008)
Reel width	W1	16.8±2.0 (0.661±0.069)

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