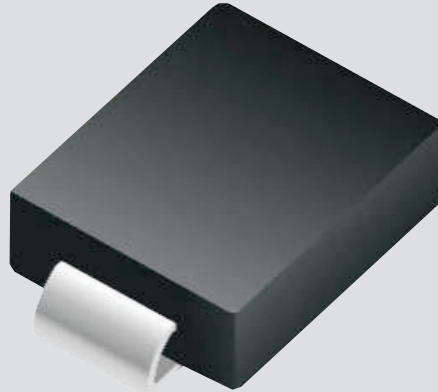




General Semiconductor



SMC (DO-214AB)

Cathode

Anode



(unidirectional)



(bidirectional)

Surface-Mount



- Package: SMC plastic package.
- Lead Finish: Matte Tin
- Case Material: Epoxy Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020



Description

SMDJ Series transient voltage suppressors are excellent overvoltage protective devices. The Series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.

Features

- Excellent clamping capability
- Low leakage current
- Low capacitance
- High surge capability
- Glass passivated chip
- Epoxy resin package
- Built-in strain relief
- Will not fatigue
- RoHS Compliant
- Fast response time: typically less than 1.0ps from 0 Volts to VBR min

Mechanical Characteristics

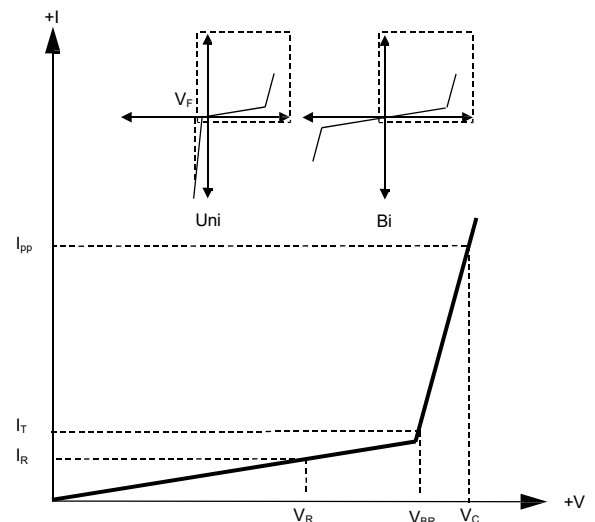
- Package: SMC plastic package.
- Lead Finish: Matte Tin
- Case Material: Epoxy Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020

Applications

- Telecom
- Computer
- Industrial electronic
- Consumer electronic

Electrical Parameters

Parameter	Definition
C_J	Junction Capacitance - typical capacitance measured with 0V or V_R bias
I_{PP}	Peak Pulse Current - maximum rated peak impulse current
V_C	Clamping Voltage - Peak voltage measured across the suppressor at a specified I_{ppm} (peak impulse current)
V_{BR}	Breakdown Voltage - Maximum voltage that flows through the TVS at a specified test current (I_T)
I_R	Leakage Current - maximum peak off-state current measured at V_R
V_R	Peak Off-state Voltage - maximum voltage that can be applied while maintaining off state



Summary of Packing Options

Package	Packing Description	Packing Quantity	Industry Standard
SMC	Tape/Reel, 13" reel	3000	EIA-481-1
	Tape/Reel, 7" reel	500	EIA-481-1



Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Parameter	Symbol	Value	Units	Remarks
Peak Pulse Power Dissipation	P _{PPM}	3000	W	(Note1)(Note2)
Steady State Power Dissipation	P _D	6.5	W	(Note3)
Peak Forward Surge Current	I _{FSM}	300	A	(Note4)
Maximum Instantaneous Forward Voltage at 100A	V _{FM}	3.5/5	V	(Note5)
Typical Thermal Resistance Junction to Lead	R _{θJL}	15	°C/W	
Typical Thermal Resistance Junction to Ambient	R _{θJA}	75	°C/W	
Operating Temperature Range	T _J	-55 to 150	°C	
Storage Temperature Range	T _{STG}	-55 to 150	°C	

Notes1: Non-repetitive current pulse , 10/1000us Waveform.

Notes2: Mounted on copper pad area of 8×8mm to each terminal.

Notes3: Infinite HeatS ink at TA=50°C

Notes4: Measured on 8.3ms single half sine wave or equivalent square wave, duty cycle=4 perm inute maximum.

Notes5: For UnidirectionalOnly, V_{FM}<3.5V for V_{BR} ≤200V and V_{FM}<5.0V for V_{BR} ≥201V.

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

Part Number (Uni)	Part Number (Bi)	Marking Code		Reverse Stand off Voltage V _R (V)	Breakdown Voltage V _{BR} @ I _T (V)		Test Current I _T (mA)	Maximum Clamping Voltage V _C @ I _{PP} (V)	Maximum Peak Pulse Current I _{PP} (A)	Maximun Reverse Leakage I _R @ V _R (μA)
		Uni	Bi		Min	Max				
SMDJ5.0A	SMDJ5.0CA	RDE	DDE	5	6.4	7	10	9.2	326.1	800
SMDJ6.0A	SMDJ6.0CA	RDG	DDG	6	6.67	7.37	10	10.3	291.3	800
SMDJ6.5A	SMDJ6.5CA	RDK	DDK	6.5	7.22	7.98	10	11.2	267.9	500
SMDJ7.0A	SMDJ7.0CA	PDM	DDM	7	7.78	8.6	10	12	250	200
SMDJ7.5A	SMDJ7.5CA	PDP	DDP	7.5	8.33	9.21	1	12.9	232.6	100
SMDJ8.0A	SMDJ8.0CA	PDR	DDR	8	8.89	9.83	1	13.6	220.6	50
SMDJ8.5A	SMDJ8.5CA	PDT	DDT	8.5	9.44	10.4	1	14.4	208.3	20
SMDJ9.0A	SMDJ9.0CA	PDV	DDV	9	10	11.1	1	15.4	194.8	10
SMDJ10A	SMDJ10CA	PDX	DDX	10	11.1	12.3	1	17	176.5	5
SMDJ11A	SMDJ11CA	PDZ	DDZ	11	12.2	13.5	1	18.2	164.8	2
SMDJ12A	SMDJ12CA	PEE	DEE	12	13.3	14.7	1	19.9	150.8	2
SMDJ13A	SMDJ13CA	PEG	DEG	13	14.4	15.9	1	21.5	139.5	2
SMDJ14A	SMDJ14CA	PEK	DEK	14	15.6	17.2	1	23.2	129.3	2
SMDJ15A	SMDJ15CA	PEM	DEM	15	16.7	18.5	1	24.4	123	2
SMDJ16A	SMDJ16CA	PEP	DEP	16	17.8	19.7	1	26	115.4	2
SMDJ17A	SMDJ17CA	PER	DER	17	18.9	20.9	1	27.6	108.7	2
SMDJ18A	SMDJ18CA	PET	DET	18	20	22.1	1	29.2	102.7	2
SMDJ20A	SMDJ20CA	PEV	DEV	20	22.2	24.5	1	32.4	92.6	2



Electrical Characteristics (T_A=25°C unless otherwise noted)

Part Number (Uni)	Part Number (Bi)	Marking Code		Reverse Stand off Voltage V _R (V)	Breakdown Voltage V _{BR} @ I _T (V)		Test Current I _T (mA)	Maximum Clamping Voltage V _C @ I _{PP} (V)	Maximum Peak Pulse Current I _{PP} (A)	Maximum Reverse Leakage I _R @ V _R (μA)
		Uni	Bi		Min	Max				
SMDJ22A	SMDJ22CA	PEX	DEX	22	24.4	26.9	1	35.5	84.5	2
SMDJ24A	SMDJ24CA	PEZ	DEZ	24	26.7	29.5	1	38.9	77.1	2
SMDJ26A	SMDJ26CA	PFE	DFE	26	28.9	31.9	1	42.1	71.3	2
SMDJ28A	SMDJ28CA	PFG	DFG	28	31.1	34.4	1	45.4	66.1	2
SMDJ30A	SMDJ30CA	PFK	DFK	30	33.3	36.8	1	48.4	62	2
SMDJ33A	SMDJ33CA	PFM	DFM	33	36.7	40.6	1	53.3	56.3	2
SMDJ36A	SMDJ36CA	PFP	DFP	36	40	44.2	1	58.1	51.6	2
SMDJ40A	SMDJ40CA	PFR	DFR	40	44.4	49.1	1	64.5	46.5	2
SMDJ43A	SMDJ43CA	PFT	DFT	43	47.8	52.8	1	69.4	43.2	2
SMDJ45A	SMDJ45CA	PFV	DFV	45	50	55.3	1	72.7	41.3	2
SMDJ48A	SMDJ48CA	PFX	DFX	48	53.3	58.9	1	77.4	38.8	2
SMDJ51A	SMDJ51CA	PFZ	DFZ	51	56.7	62.7	1	82.4	36.4	2
SMDJ54A	SMDJ54CA	RGE	DGE	54	60	66.3	1	87.1	34.4	2
SMDJ58A	SMDJ58CA	PGG	DGG	58	64.4	71.2	1	93.6	32.1	2
SMDJ60A	SMDJ60CA	PGK	DGK	60	66.7	73.7	1	96.8	31	2
SMDJ64A	SMDJ64CA	PGM	DGM	64	71.1	78.6	1	103	29.1	2
SMDJ70A	SMDJ70CA	PGP	DGP	70	77.8	86	1	113	26.5	2
SMDJ75A	SMDJ75CA	PGR	DGR	75	83.3	92.1	1	121	24.8	2
SMDJ78A	SMDJ78CA	PGT	DGT	78	86.7	95.8	1	126	23.8	2
SMDJ85A	SMDJ85CA	PGV	DGV	85	94.4	104	1	137	21.9	2
SMDJ90A	SMDJ90CA	PGX	DGX	90	100	111	1	146	20.5	2
SMDJ100A	SMDJ100CA	PGZ	DGZ	100	111	123	1	162	18.5	2
SMDJ110A	SMDJ110CA	PHE	DHE	110	122	135	1	177	16.9	2
SMDJ120A	SMDJ120CA	PHG	DHG	120	133	147	1	193	15.5	2
SMDJ130A	SMDJ130CA	PHK	DHK	130	144	159	1	209	14.4	2
SMDJ150A	SMDJ150CA	PHM	DHM	150	167	185	1	243	12.3	2
SMDJ160A	SMDJ160CA	PHP	DHP	160	178	197	1	259	11.6	2
SMDJ170A	SMDJ170CA	PHR	DHR	170	189	209	1	275	10.9	2
SMDJ180A	SMDJ180CA	PHT	DHT	180	198	230.4	1	292	10.3	2
SMDJ220A	SMDJ220CA	PKE	DKE	220	242	281.6	1	356	8.4	2



Rating And Characteristic Curves (TA=25°C unless otherwise noted)

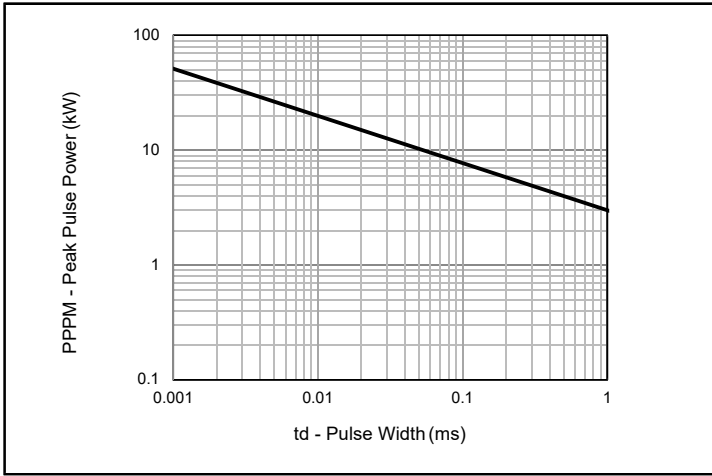


Fig.1 - Peak Pulse Power Rating

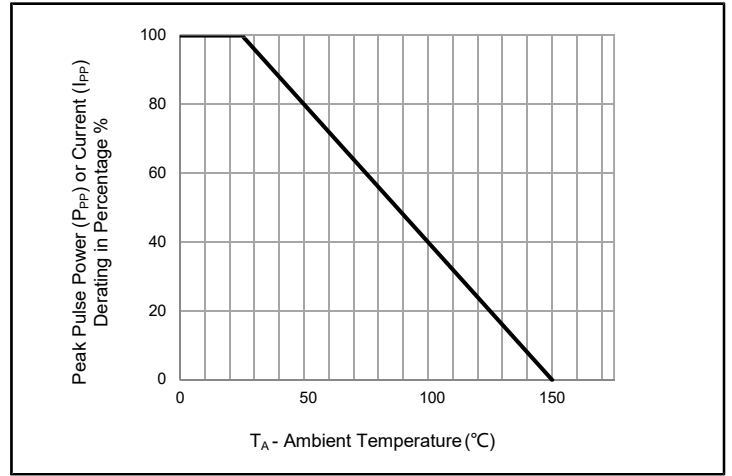


Fig.2 - Pulse Derating Curve

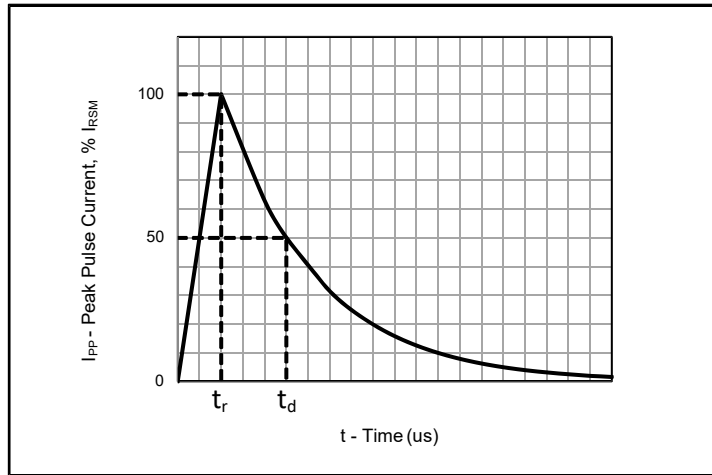


Fig.3 - Pulse Waveform

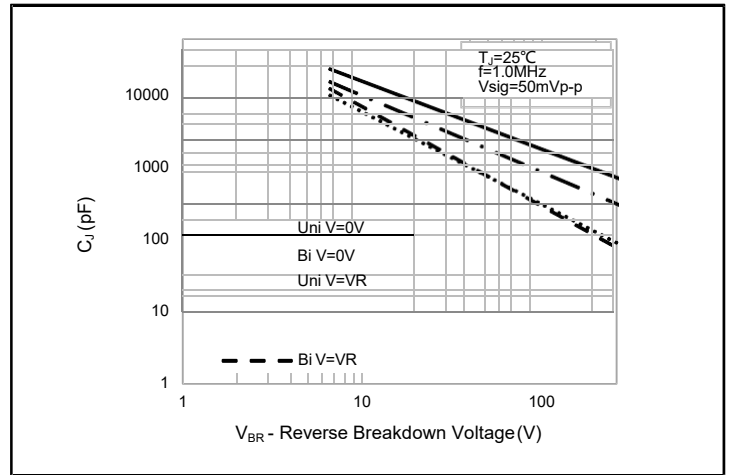


Fig.4 - Typical Junction Capacitance

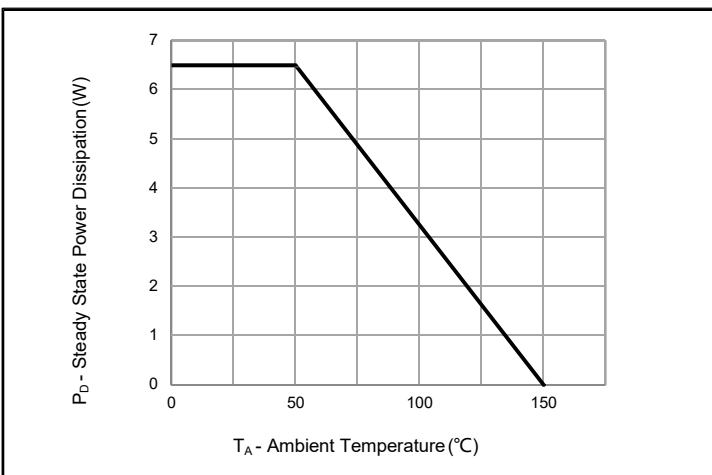


Fig.5 - Steady State Power Dissipation Derating Curve

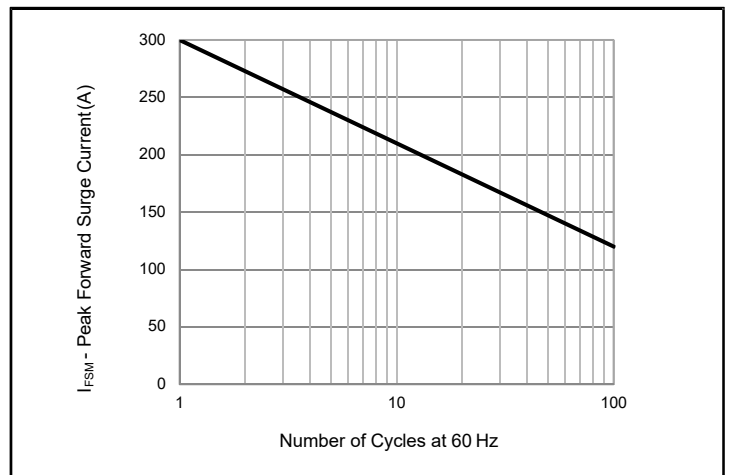
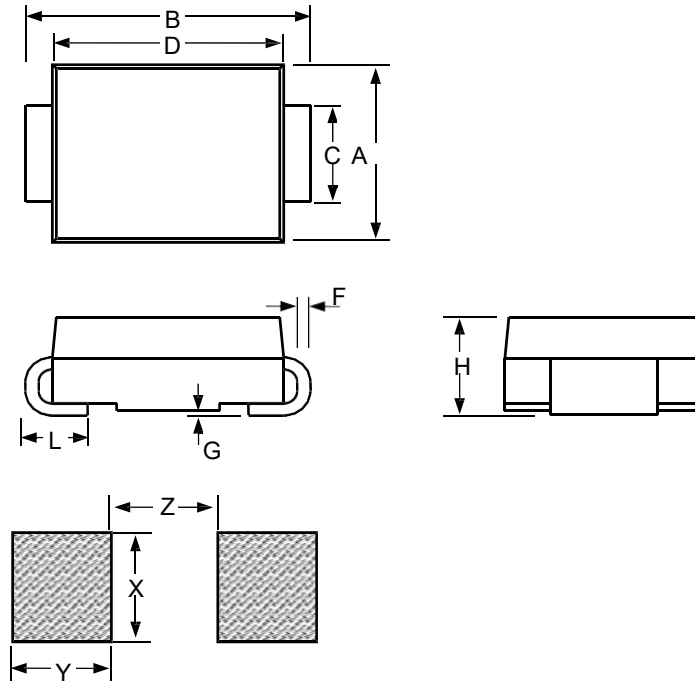


Fig.6 - Maximum Non-Repetitive Peak Forward Surge Current Uni-Directional Only



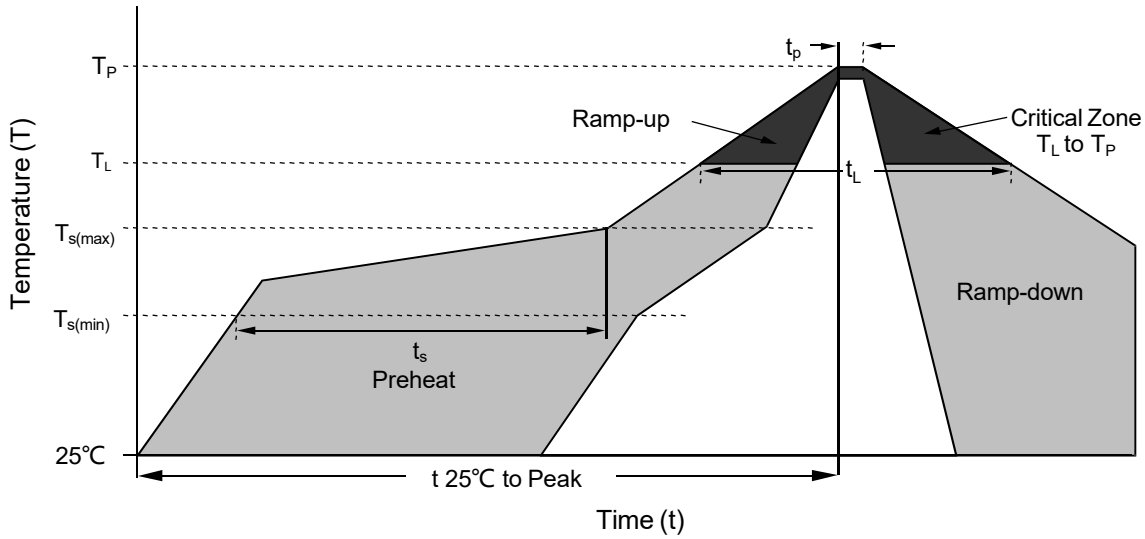
Package Dimensions



SMC						
Dimension	Inches			Millimeters		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.22		0.245	5.59		6.22
B	0.305		0.32	7.75		8.13
C	0.114		0.126	2.9		3.2
D	0.26		0.28	6.6		7.11
F	0.006		0.012	0.15		0.305
G	-		0.008	-		0.203
H	0.087		0.11	2.2		2.8
L	0.03		0.06	0.76		1.52
X		0.15			3.82	
Y		0.119			3.03	
Z		0.151			3.84	



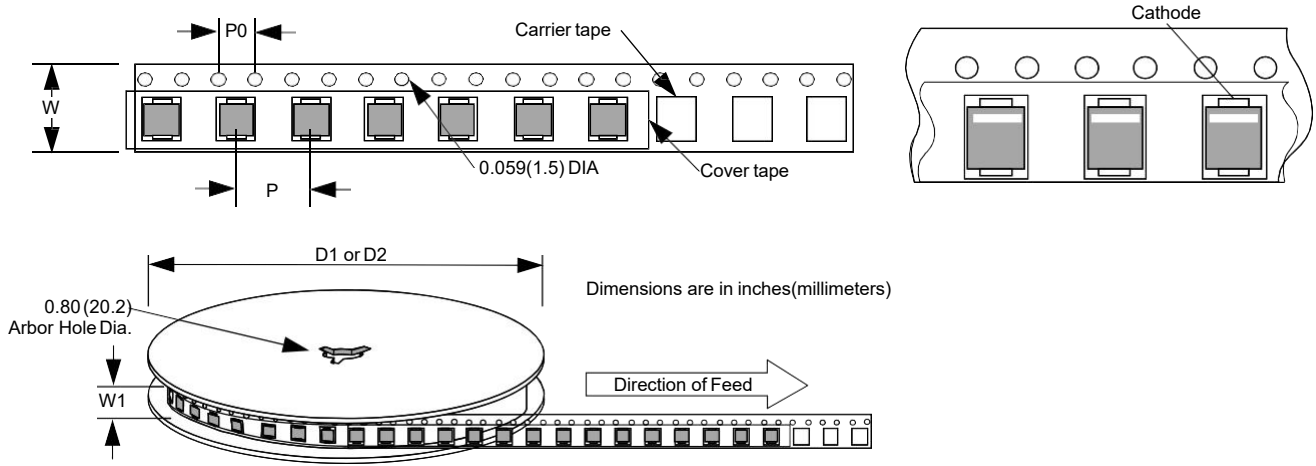
Soldering Parameters



Reflow Condition		Lead-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 secs
Average ramp up rate (Liquidus Temp (T _L) to peak)		3°C/second max
T _{s(max)} to T _L - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T _L) (Liquidus)	217°C
	- Time (t _L)	60 – 150 secs
Peak Temperature (T _P)		260 ^{+0/-5} °C
Time within 5°C of actual peak Temperature (t _p)		20 – 40 secs
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (t)		8 minutes Max.
Do not exceed		260°C



Tape and Reel Specification



Dimension	Inches			Millimeters		
	MIN	NOM	MAX	MIN	NOM	MAX
P		0.315			8	
P0		0.157			4	
W		0.63			16	
W1		0.646			16.4	
D1		7			177.8	
D2		13			330.2	