

Applications

- ◆ Computer system
- ◆ Domestic appliance
- ◆ Video input

Mechanical Data

- ◆ Package : SMA/DO-214AC
- ◆ Case Material : Molded Plastic. UL Flammability Classification Rating 94V-0. RoHS compliant
- ◆ Moisture Sensitivity : Meet MSL 1
- ◆ Terminal : Solder plated, solderable per MIL-STD-750, Method 2026
- ◆ Polarity : Color band denotes cathode except bi-directional models
- ◆ Weight : 0.07g(approximate)

Product and Packing Information

Part Number	QTY/Reel	Reel Size
P4SMAxx(C)A-AT	5,000	13 inch

Description

- ◆ Transient voltage suppression diodes, also known as TVS diodes, are protective electronic parts that protect electrical equipment from voltage spikes introduced by wires.

Features

- ◆ For surface mounted applications
- ◆ Excellent clamping capability
- ◆ 400 W peak pulse power capability with a 10/1000μs Waveform.
- ◆ VRWM 6.8 ~ 550V
- ◆ Low profile package and low inductance
- ◆ Typical IR less than 1uA above 12V
- ◆ Fast response time: typically less than 1.0ps from 0V to VBR min.
- ◆ AEC-Q101 Qualified

DO-214AC(SMA)



DO-214AC



Bi-directional



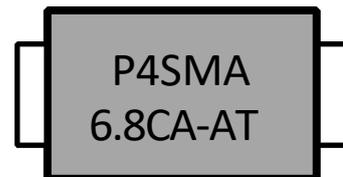
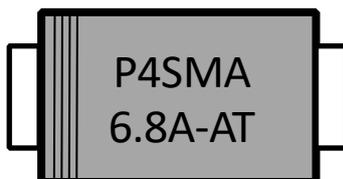
Un-directional

Marking Information

EX :

P4SMA6.8A-AT : P4SMA6.8A-AT Marking cod

P4SMA6.8CA-AT : P4SMA6.8CA-AT



Electrical Characteristics (T=25°C)

Part Number		Marking		V _R	I _R @V _R	V _{BR} @I _T		I _T	V _C @I _{PP}	I _{PP} ①
Uni-Polar	Bi-Polar	Uni	Bi	V	μA	min(V)	max(V)	mA	max(V)	A
P4SMA6.8A-AT	P4SMA6.8CA-AT	P4SMA6.8A-AT	P4SMA6.8CA-AT	5.8	1000	6.45	7.14	10	10.5	38.10
P4SMA7.5A-AT	P4SMA7.5CA-AT	P4SMA7.5A-AT	P4SMA7.5CA-AT	6.4	500	7.13	7.88	10	11.3	35.40
P4SMA8.2A-AT	P4SMA8.2CA-AT	P4SMA8.2A-AT	P4SMA8.2CA-AT	7.02	200	7.79	8.61	10	12.1	33.06
P4SMA9.1A-AT	P4SMA9.1CA-AT	P4SMA9.1A-AT	P4SMA9.1CA-AT	7.78	50	8.65	9.50	1	13.4	29.86
P4SMA10A-AT	P4SMA10CA-AT	P4SMA10A-AT	P4SMA10CA-AT	8.55	10	9.50	10.5	1	14.5	27.59
P4SMA11A-AT	P4SMA11CA-AT	P4SMA11A-AT	P4SMA11CA-AT	9.4	5	10.5	11.6	1	15.6	25.65
P4SMA12A-AT	P4SMA12CA-AT	P4SMA12A-AT	P4SMA12CA-AT	10.2	5	11.4	12.6	1	16.7	23.96
P4SMA13A-AT	P4SMA13CA-AT	P4SMA13A-AT	P4SMA13CA-AT	11.1	1	12.4	13.7	1	18.2	21.98
P4SMA15A-AT	P4SMA15CA-AT	P4SMA15A-AT	P4SMA15CA-AT	12.8	1	14.3	15.8	1	21.2	18.87
P4SMA16A-AT	P4SMA16CA-AT	P4SMA16A-AT	P4SMA16CA-AT	13.6	1	15.2	16.8	1	22.5	17.78
P4SMA18A-AT	P4SMA18CA-AT	P4SMA18A-AT	P4SMA18CA-AT	15.3	1	17.1	18.9	1	25.2	15.88
P4SMA20A-AT	P4SMA20CA-AT	P4SMA20A-AT	P4SMA20CA-AT	17.1	1	19	21	1	27.7	14.45
P4SMA22A-AT	P4SMA22CA-AT	P4SMA22A-AT	P4SMA22CA-AT	18.8	1	20.9	23.1	1	30.6	13.08
P4SMA24A-AT	P4SMA24CA-AT	P4SMA24A-AT	P4SMA24CA-AT	20.5	1	22.8	25.2	1	33.2	12.05
P4SMA27A-AT	P4SMA27CA-AT	P4SMA27A-AT	P4SMA27CA-AT	23.1	1	25.7	28.4	1	37.5	10.67
P4SMA30A-AT	P4SMA30CA-AT	P4SMA30A-AT	P4SMA30CA-AT	25.6	1	28.5	31.5	1	41.4	9.67
P4SMA33A-AT	P4SMA33CA-AT	P4SMA33A-AT	P4SMA33CA-AT	28.2	1	31.4	34.7	1	45.7	8.76
P4SMA36A-AT	P4SMA36CA-AT	P4SMA36A-AT	P4SMA36CA-AT	30.8	1	34.2	37.8	1	49.9	8.02
P4SMA39A-AT	P4SMA39CA-AT	P4SMA39A-AT	P4SMA39CA-AT	33.3	1	37.1	41	1	53.9	7.43
P4SMA43A-AT	P4SMA43CA-AT	P4SMA43A-AT	P4SMA43CA-AT	36.8	1	40.9	45.2	1	59.3	6.75
P4SMA47A-AT	P4SMA47CA-AT	P4SMA47A-AT	P4SMA47CA-AT	40.2	1	44.7	49.4	1	64.8	6.18
P4SMA51A-AT	P4SMA51CA-AT	P4SMA51A-AT	P4SMA51CA-AT	43.6	1	48.5	53.6	1	70.1	5.71
P4SMA56A-AT	P4SMA56CA-AT	P4SMA56A-AT	P4SMA56CA-AT	47.8	1	53.2	58.8	1	77	5.20
P4SMA62A-AT	P4SMA62CA-AT	P4SMA62A-AT	P4SMA62CA-AT	53	1	58.9	65.1	1	85	4.71
P4SMA68A-AT	P4SMA68CA-AT	P4SMA68A-AT	P4SMA68CA-AT	58.1	1	64.6	71.4	1	92	4.35
P4SMA75A-AT	P4SMA75CA-AT	P4SMA75A-AT	P4SMA75CA-AT	64.1	1	71.3	78.8	1	103	3.89
P4SMA82A-AT	P4SMA82CA-AT	P4SMA82A-AT	P4SMA82CA-AT	70.1	1	77.9	86.1	1	113	3.54
P4SMA91A-AT	P4SMA91CA-AT	P4SMA91A-AT	P4SMA91CA-AT	77.8	1	86.5	95.5	1	125	3.20
P4SMA100A-AT	P4SMA100CA-AT	P4SMA100A-AT	P4SMA100CA-AT	84	1	95	105	1	137	2.92
P4SMA110A-AT	P4SMA110CA-AT	P4SMA110A-AT	P4SMA110CA-AT	94	1	105	116	1	152	2.64
P4SMA120A-AT	P4SMA120CA-AT	P4SMA120A-AT	P4SMA120CA-AT	102	1	114	126	1	165	2.43
P4SMA130A-AT	P4SMA130CA-AT	P4SMA130A-AT	P4SMA130CA-AT	111	1	124	137	1	179	2.23
P4SMA150A-AT	P4SMA150CA-AT	P4SMA150A-AT	P4SMA150CA-AT	128	1	143	158	1	207	1.94
P4SMA160A-AT	P4SMA160CA-AT	P4SMA160A-AT	P4SMA160CA-AT	136	1	152	168	1	219	1.83
P4SMA170A-AT	P4SMA170CA-AT	P4SMA170A-AT	P4SMA170CA-AT	145	1	162	179	1	234	1.71

Electrical Characteristics (T=25°C)

Part Number		Marking		V _R	I _{R@V_R}	V _{BR@I_T}		I _T	V _{C@I_{PP}}	I _{PP} ①
Uni-Polar	Bi-Polar	Uni	Bi	V	μA	min(V)	max(V)	mA	max(V)	A
P4SMA180A-AT	P4SMA180CA-AT	P4SMA180A-AT	P4SMA180CA-AT	154	1	171	189	1	246	1.63
P4SMA200A-AT	P4SMA200CA-AT	P4SMA200A-AT	P4SMA200CA-AT	171	1	190	210	1	274	1.46
P4SMA220A-AT	P4SMA220CA-AT	P4SMA220A-AT	P4SMA220CA-AT	185	1	209	231	1	328	1.22
P4SMA250A-AT	P4SMA250CA-AT	P4SMA250A-AT	P4SMA250CA-AT	214	1	237	263	1	344	1.12
P4SMA300A-AT	P4SMA300CA-AT	P4SMA300A-AT	P4SMA300CA-AT	256	1	285	315	1	414	0.97
P4SMA350A-AT	P4SMA350CA-AT	P4SMA350A-AT	P4SMA350CA-AT	300	1	332	368	1	482	0.83
P4SMA400A-AT	P4SMA400CA-AT	P4SMA400A-AT	P4SMA400CA-AT	342	1	380	420	1	548	0.73
P4SMA440A-AT	P4SMA440CA-AT	P4SMA440A-AT	P4SMA440CA-AT	376	1	418	462	1	602	0.67
P4SMA480A-AT	P4SMA480CA-AT	P4SMA480A-AT	P4SMA480CA-AT	408	1	456	504	1	658	0.61
P4SMA510A-AT	P4SMA510CA-AT	P4SMA510A-AT	P4SMA510CA-AT	434	1	485	535	1	698	0.58
P4SMA520A-AT	P4SMA520CA-AT	P4SMA520A-AT	P4SMA520CA-AT	444	1	494	546	1	711	0.57
P4SMA530A-AT	P4SMA530CA-AT	P4SMA530A-AT	P4SMA530CA-AT	450	1	504	557	1	725	0.56
P4SMA540A-AT	P4SMA540CA-AT	P4SMA540A-AT	P4SMA540CA-AT	459	1	513	567	1	740	0.55
P4SMA550A-AT	P4SMA550CA-AT	P4SMA550A-AT	P4SMA550CA-AT	467	1	523	578	1	760	0.53

Note: ①. Surge waveform: 10/1000μs

V_R: Stand-off voltage -- Maximum voltage that can be applied

V_{BR}: Breakdown voltage

V_C: Clamping voltage -- Peak voltage measured across the suppressor at a specified I_{PP}

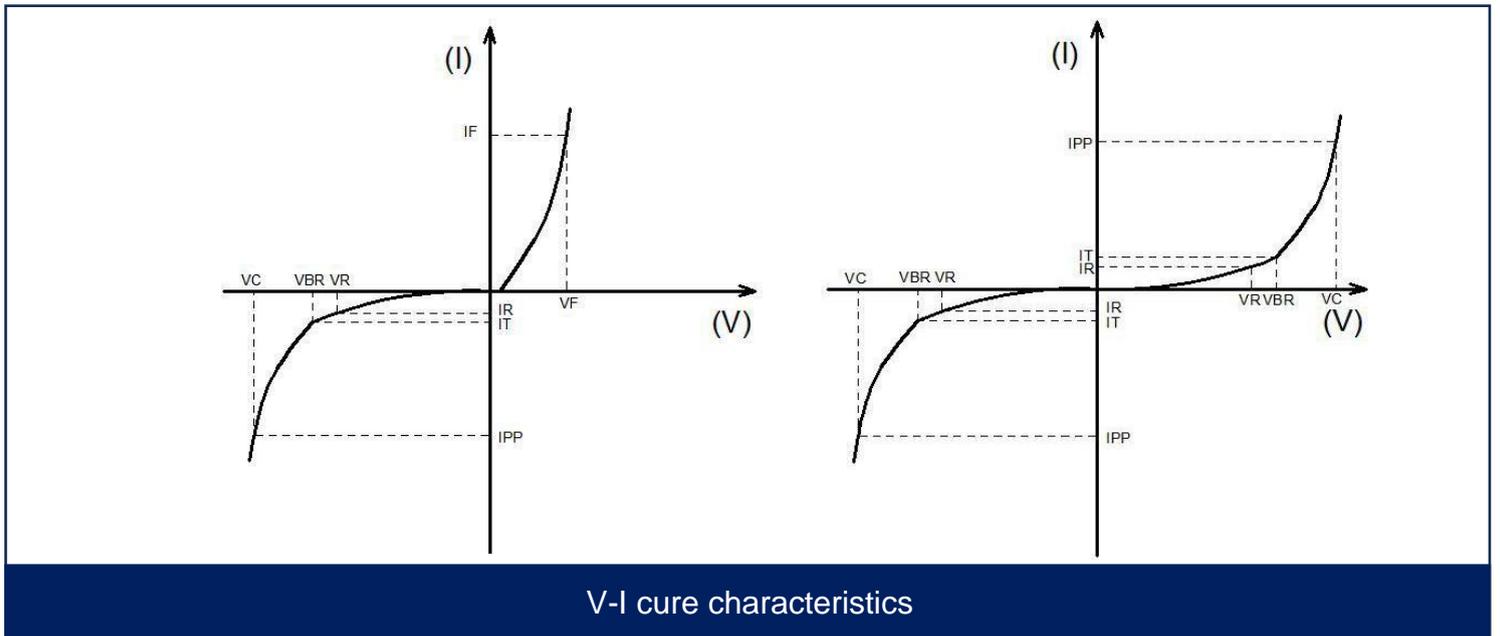
I_R: Reverse leakage current

I_T: Test current

Maximum Ratings (T=25°C, RH=45% ~ 75%, unless otherwise noted)

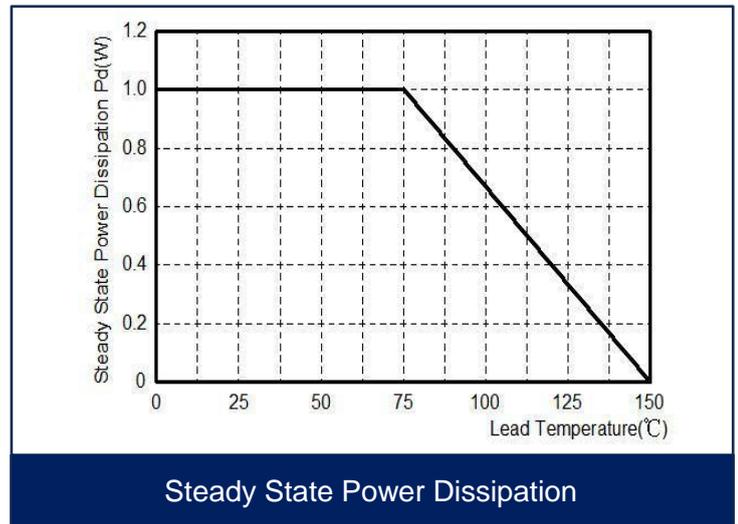
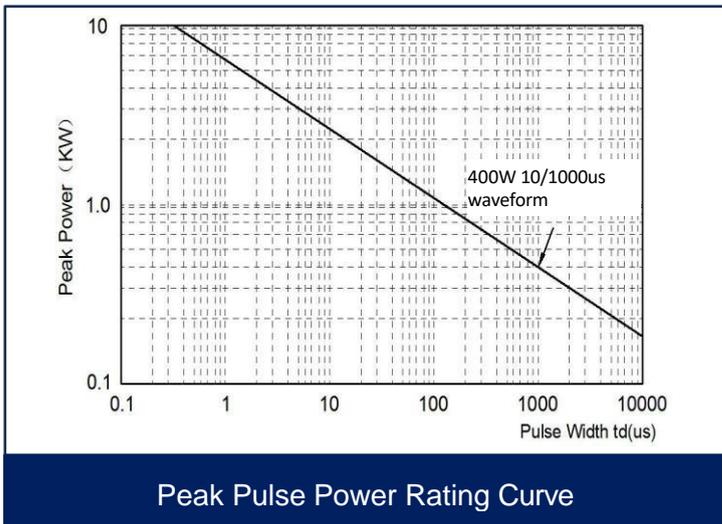
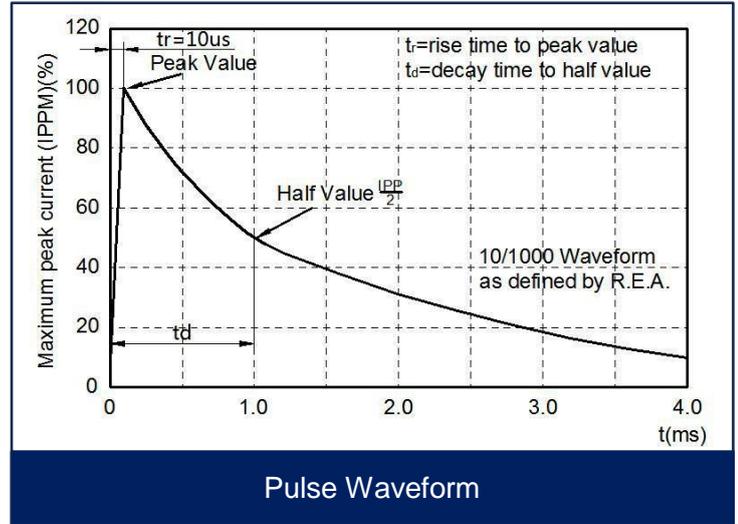
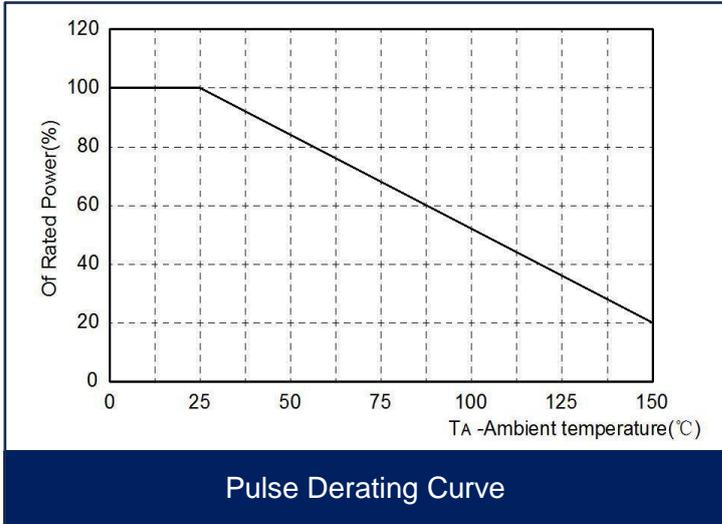
Parameter	Symbol	Value	Unit
Peak pulse power dissipation on 10/1000µs waveform	P _{PP}	400	W
Steady state power dissipation at T _L =75°C	P _{M(AV)}	1.0	W
Operating junction temperature range	T _j	-55 to +175	°C
Storage temperature range	T _{stg}	-55 to +175	°C

Ratings And V-I Characteristics Curves (T=25°C, unless otherwise noted)



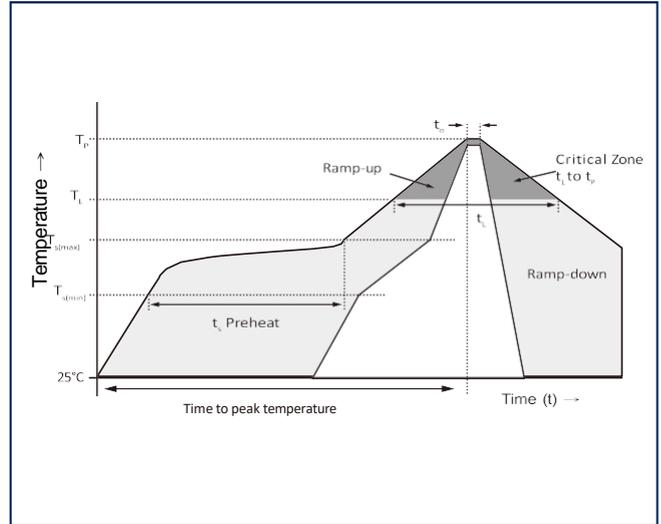
Symbol	Parameter
I _F	Mean Forward Current
V _F	Maximum Forward Voltage @ I _F
V _R	Peak Reverse Working Voltage
I _R	Reverse Leakage Current @ V _R
V _{BR}	Breakdown Voltage @ I _T
I _T	Test Current
I _{PP}	Maximum Reverse Peak Pulse Current
V _C	Clamping Voltage @ I _{PP}

Typical Characteristics

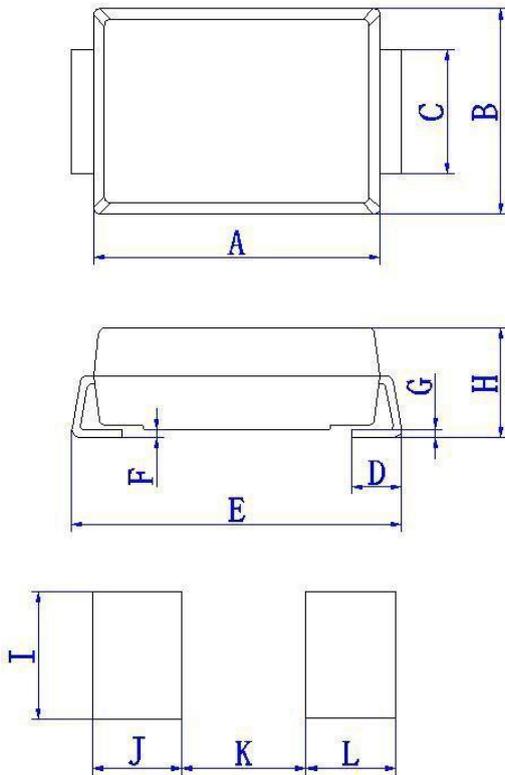


Soldering Parameters

Reflow Condition		Lead-free assembly
Pre Heat	Temperature Max ($T_{s(min)}$)	150°C
	Temperature Max ($T_{s(max)}$)	200°C
	Time (min to max) (t_p)	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 (min to max) (t_r)	60 – 150 seconds
Peak Temperature (T_p)		260°C (+0/-5)
Time within 5°C of actual peak Temperature (t_p)		30 seconds Max
Ramp-down Rate		6°C/second Max
Time 25°C to peak Temperature (T_p)		8 minutes Max.
Do not exceed		260°C

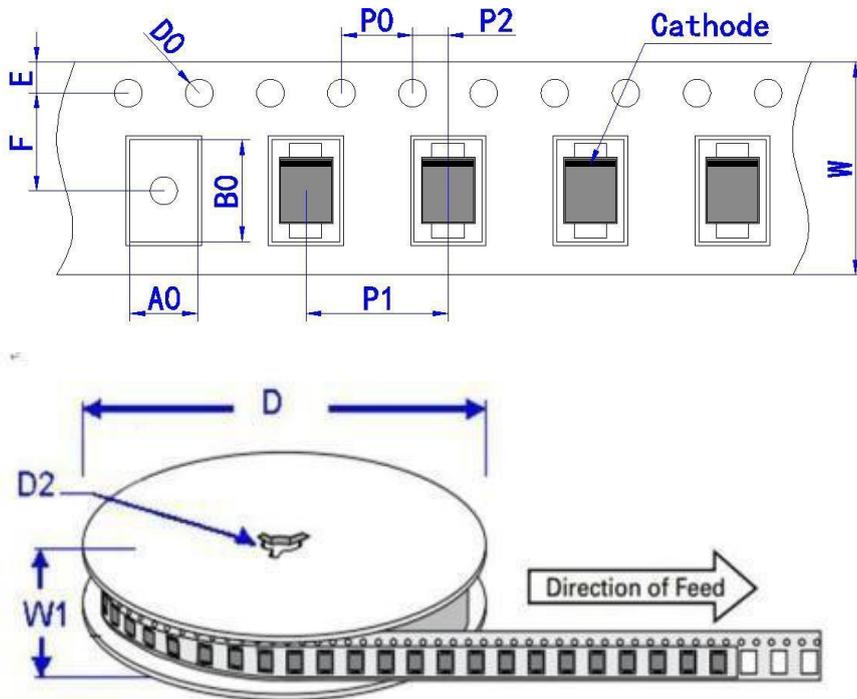


Package mechanical data & Suggested Land Pattern



Ref. (mm)	Millimeters	
	Min.	Max.
A	3.99	4.5
B	2.5	2.9
C	1.2	1.7
D	0.76	1.52
E	4.93	5.28
F	0	0.203
G	0.15	0.25
H	1.98	2.41
I	1.50	1.70
J	1.40	1.60
K	2.30	2.50
L	1.40	1.60

Tape And Reel Specification - SMA



Ref.	Millimeters
A0	2.79±0.20
B0	5.33±0.20
C	330.00
D0	1.55±0.10
E	1.75±0.20
E1	13.50±1.00
F	5.50±0.10
P0	4.00±0.20
P1	4.00±0.20
P2	2.00±0.20
W	12.00±0.30
W1	16.00±4.00
D	333±4.00
D2	13.5±0.2