

Applications

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

Mechanical Data

- ◆ Package : SMB/DO-214AA
- ◆ 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 : 0.10g(approximate)

Product and Packing Information

Part Number	QTY/Reel	Reel Size
P6SMBxx(C)A-AT	3,000	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.

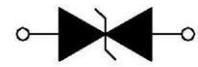
Features

- ◆ For surface mounted applications
- ◆ Excellent clamping capability
- ◆ 600 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 10V
- ◆ Fast response time: typically less than 1.0ps from 0V to VBR min.
- ◆ AEC-Q101 Qualified

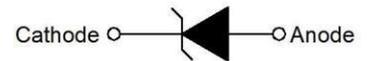
DO-214AA(SMB)



DO-214AC



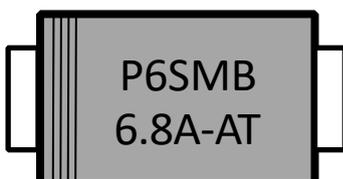
Bi-directional



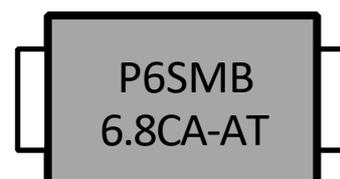
Un-directional

Marking Information

EX :
P6SMB6.8A-AT : P6SMB6.8A-AT Marking code



P6SMB6.8CA-AT : P6SMB6.8CA-AT Marking code



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
P6SMB6.8A-AT	P6SMB6.8CA-AT	P6SMB6.8A-AT	P6SMB6.8CA-AT	5.8	1000	6.45	7.14	10	10.5	57.15
P6SMB7.5A-AT	P6SMB7.5CA-AT	P6SMB7.5A-AT	P6SMB7.5CA-AT	6.4	500	7.13	7.88	10	11.3	53.10
P6SMB8.2A-AT	P6SMB8.2CA-AT	P6SMB8.2A-AT	P6SMB8.2CA-AT	7.02	200	7.79	8.61	10	12.1	49.59
P6SMB9.1A-AT	P6SMB9.1CA-AT	P6SMB9.1A-AT	P6SMB9.1CA-AT	7.78	50	8.65	9.50	1	13.4	44.76
P6SMB10A-AT	P6SMB10CA-AT	P6SMB10A-AT	P6SMB10CA-AT	8.55	10	9.50	10.5	1	14.5	41.36
P6SMB11A-AT	P6SMB11CA-AT	P6SMB11A-AT	P6SMB11CA-AT	9.4	5	10.5	11.6	1	15.6	38.47
P6SMB12A-AT	P6SMB12CA-AT	P6SMB12A-AT	P6SMB12CA-AT	10.2	5	11.4	12.6	1	16.7	35.93
P6SMB13A-AT	P6SMB13CA-AT	P6SMB13A-AT	P6SMB13CA-AT	11.1	1	12.4	13.7	1	18.2	32.97
P6SMB15A-AT	P6SMB15CA-AT	P6SMB15A-AT	P6SMB15CA-AT	12.8	1	14.3	15.8	1	21.2	28.31
P6SMB16A-AT	P6SMB16CA-AT	P6SMB16A-AT	P6SMB16CA-AT	13.6	1	15.2	16.8	1	22.5	26.67
P6SMB18A-AT	P6SMB18CA-AT	P6SMB18A-AT	P6SMB18CA-AT	15.3	1	17.1	18.9	1	25.2	23.81
P6SMB20A-AT	P6SMB20CA-AT	P6SMB20A-AT	P6SMB20CA-AT	17.1	1	19	21	1	27.7	21.67
P6SMB22A-AT	P6SMB22CA-AT	P6SMB22A-AT	P6SMB22CA-AT	18.8	1	20.9	23.1	1	30.6	19.61
P6SMB24A-AT	P6SMB24CA-AT	P6SMB24A-AT	P6SMB24CA-AT	20.5	1	22.8	25.2	1	33.2	18.08
P6SMB27A-AT	P6SMB27CA-AT	P6SMB27A-AT	P6SMB27CA-AT	23.1	1	25.7	28.4	1	37.5	16.00
P6SMB30A-AT	P6SMB30CA-AT	P6SMB30A-AT	P6SMB30CA-AT	25.6	1	28.5	31.5	1	41.4	14.50
P6SMB33A-AT	P6SMB33CA-AT	P6SMB33A-AT	P6SMB33CA-AT	28.2	1	31.4	34.7	1	45.7	13.13
P6SMB36A-AT	P6SMB36CA-AT	P6SMB36A-AT	P6SMB36CA-AT	30.8	1	34.2	37.8	1	49.9	12.03
P6SMB39A-AT	P6SMB39CA-AT	P6SMB39A-AT	P6SMB39CA-AT	33.3	1	37.1	41	1	53.9	11.14
P6SMB43A-AT	P6SMB43CA-AT	P6SMB43A-AT	P6SMB43CA-AT	36.8	1	40.9	45.2	1	59.3	10.12
P6SMB47A-AT	P6SMB47CA-AT	P6SMB47A-AT	P6SMB47CA-AT	40.2	1	44.7	49.4	1	64.8	9.26
P6SMB51A-AT	P6SMB51CA-AT	P6SMB51A-AT	P6SMB51CA-AT	43.6	1	48.5	53.6	1	70.1	8.56
P6SMB56A-AT	P6SMB56CA-AT	P6SMB56A-AT	P6SMB56CA-AT	47.8	1	53.2	58.8	1	77	7.80
P6SMB62A-AT	P6SMB62CA-AT	P6SMB62A-AT	P6SMB62CA-AT	53	1	58.9	65.1	1	85	7.06
P6SMB68A-AT	P6SMB68CA-AT	P6SMB68A-AT	P6SMB68CA-AT	58.1	1	64.6	71.4	1	92	6.53
P6SMB75A-AT	P6SMB75CA-AT	P6SMB75A-AT	P6SMB75CA-AT	64.1	1	71.3	78.8	1	103	5.83
P6SMB82A-AT	P6SMB82CA-AT	P6SMB82A-AT	P6SMB82CA-AT	70.1	1	77.9	86.1	1	113	5.31
P6SMB91A-AT	P6SMB91CA-AT	P6SMB91A-AT	P6SMB91CA-AT	77.8	1	86.5	95.5	1	125	4.80
P6SMB100A-AT	P6SMB100CA-AT	P6SMB100A-AT	P6SMB100CA-AT	84	1	95	105	1	137	4.38
P6SMB110A-AT	P6SMB110CA-AT	P6SMB110A-AT	P6SMB110CA-AT	94	1	105	116	1	152	3.95
P6SMB120A-AT	P6SMB120CA-AT	P6SMB120A-AT	P6SMB120CA-AT	102	1	114	126	1	165	3.64
P6SMB130A-AT	P6SMB130CA-AT	P6SMB130A-AT	P6SMB130CA-AT	111	1	124	137	1	179	3.36
P6SMB150A-AT	P6SMB150CA-AT	P6SMB150A-AT	P6SMB150CA-AT	128	1	143	158	1	207	2.90
P6SMB160A-AT	P6SMB160CA-AT	P6SMB160A-AT	P6SMB160CA-AT	136	1	152	168	1	219	2.74
P6SMB170A-AT	P6SMB170CA-AT	P6SMB170A-AT	P6SMB170CA-AT	145	1	162	179	1	234	2.57

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
P6SMB180A-AT	P6SMB180CA-AT	P6SMB180A-AT	P6SMB180CA-AT	154	1	171	189	1	246	2.44
P6SMB200A-AT	P6SMB200CA-AT	P6SMB200A-AT	P6SMB200CA-AT	171	1	190	210	1	274	2.19
P6SMB220A-AT	P6SMB220CA-AT	P6SMB220A-AT	P6SMB220CA-AT	185	1	209	231	1	328	1.83
P6SMB250A-AT	P6SMB250CA-AT	P6SMB250A-AT	P6SMB250CA-AT	214	1	237	263	1	344	1.75
P6SMB300A-AT	P6SMB300CA-AT	P6SMB300A-AT	P6SMB300CA-AT	256	1	285	315	1	414	1.45
P6SMB350A-AT	P6SMB350CA-AT	P6SMB350A-AT	P6SMB350CA-AT	300	1	332	368	1	482	1.25
P6SMB400A-AT	P6SMB400CA-AT	P6SMB400A-AT	P6SMB400CA-AT	342	1	380	420	1	548	1.10
P6SMB440A-AT	P6SMB440CA-AT	P6SMB440A-AT	P6SMB440CA-AT	376	1	418	462	1	602	1.00
P6SMB480A-AT	P6SMB480CA-AT	P6SMB480A-AT	P6SMB480CA-AT	408	1	456	504	1	658	0.92
P6SMB510A-AT	P6SMB510CA-AT	P6SMB510A-AT	P6SMB510CA-AT	434	1	485	535	1	698	0.86
P6SMB520A-AT	P6SMB520CA-AT	P6SMB520A-AT	P6SMB520CA-AT	444	1	494	546	1	711	0.85
P6SMB530A-AT	P6SMB530CA-AT	P6SMB530A-AT	P6SMB530CA-AT	450	1	504	557	1	725	0.83
P6SMB540A-AT	P6SMB540CA-AT	P6SMB540A-AT	P6SMB540CA-AT	459	1	513	567	1	740	0.82
P6SMB550A-AT	P6SMB550CA-AT	P6SMB550A-AT	P6SMB550CA-AT	467	1	523	578	1	760	0.79

Note: ①.Surge waveform: 10/1000μs

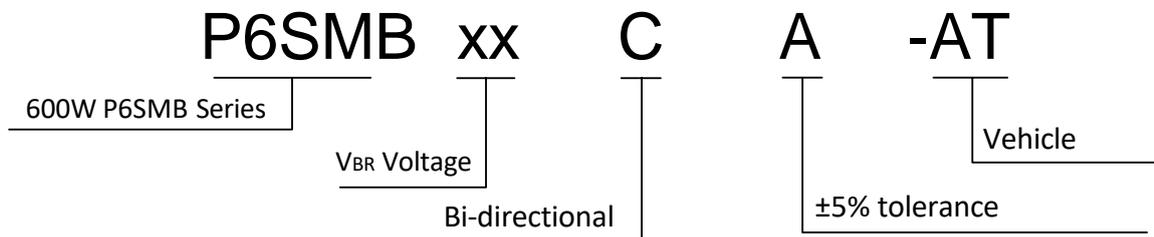
V_R: Stand-off voltage -- Maximum voltage that can be applied

V_{BR}: Breakdown voltage

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

I_R: Reverse leakage current

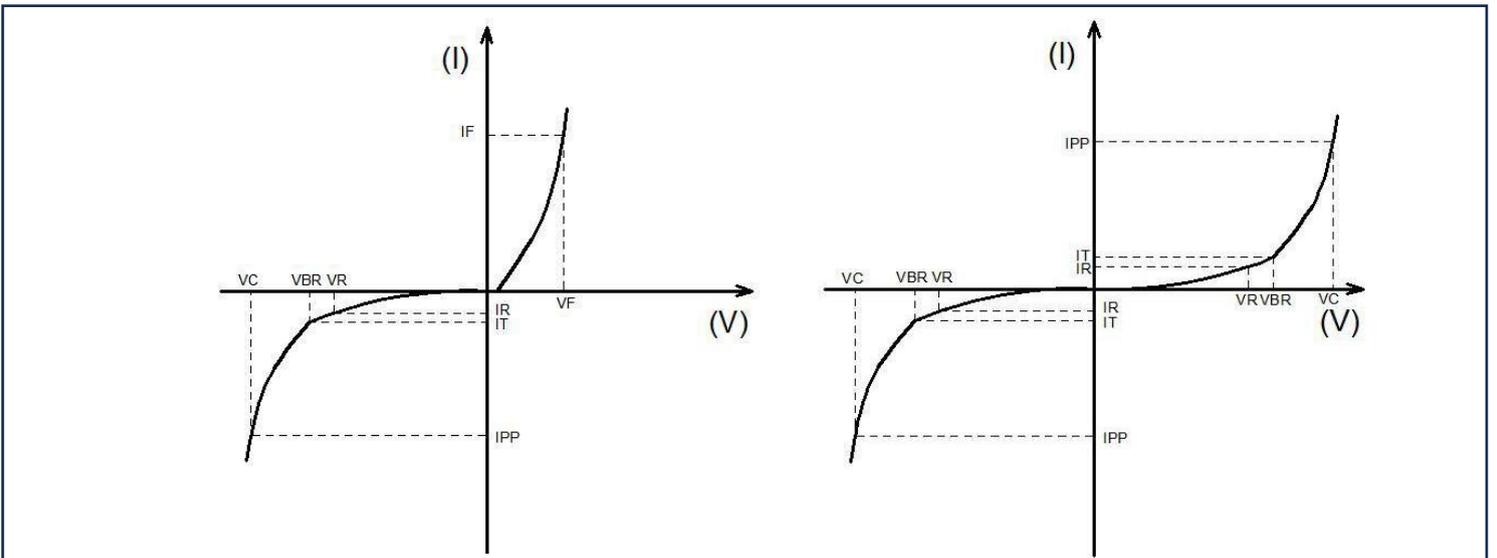
I_T: Test current

Electrical Characteristics (T=25°C)


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}	600	W
Steady state power dissipation at T _L =75°C	P _{M(AV)}	5.0	W
Operating junction temperature range	T _j	-55 to +175	°C
Storage temperature range	T _{stg}	-55 to +175	°C

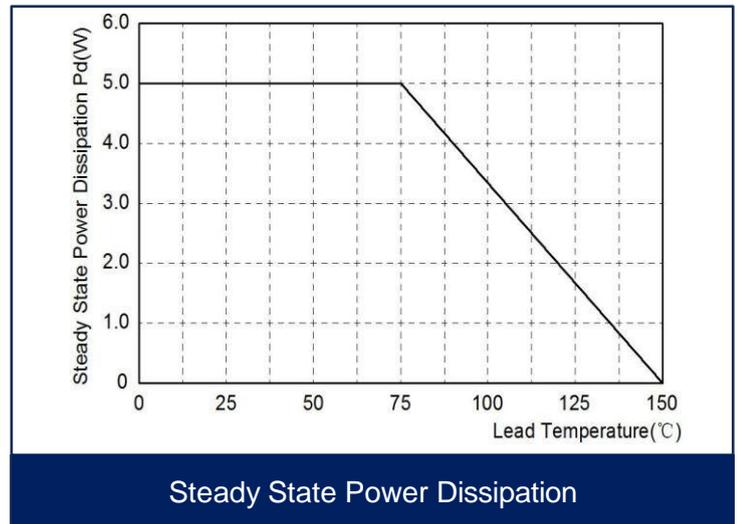
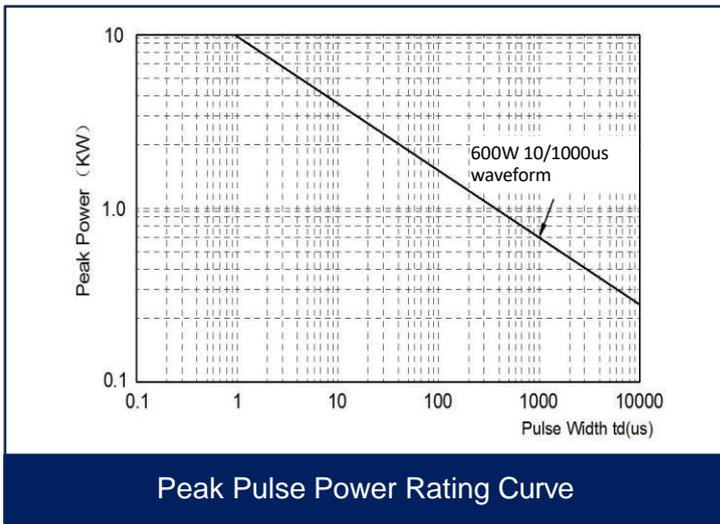
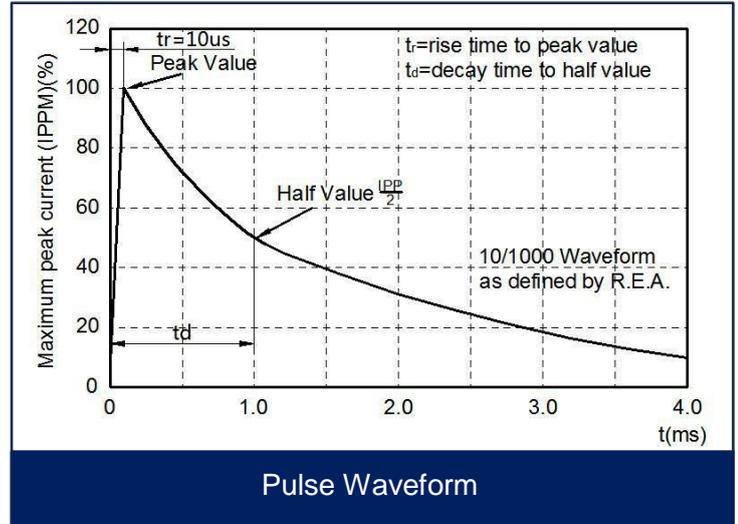
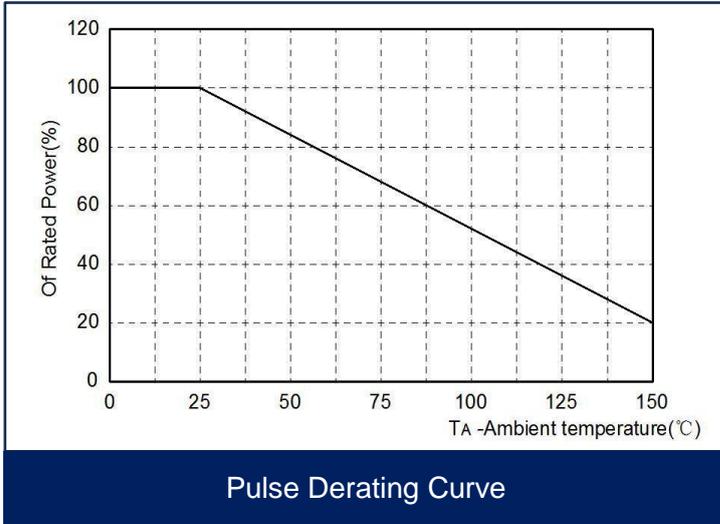
Ratings And V-I Characteristics Curves (T=25°C, unless otherwise noted)



V-I cure characteristics

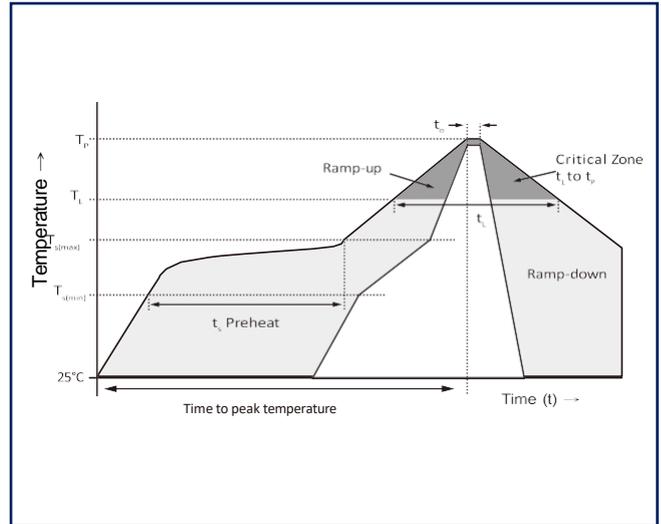
Symbol	Parameter
I _F	Mean Forward Current
V _F	Maximum Forward Voltage @ I _F
V _R	Peak Reverse Working Voltage
I _R	Reverse Leakage Current @ V _R
V _{BR}	Breakdown Voltage @ I _T
I _T	Test Current
I _{PP}	Maximum Reverse Peak Pulse Current
V _C	Clamping Voltage @ I _{PP}

Typical Characteristics

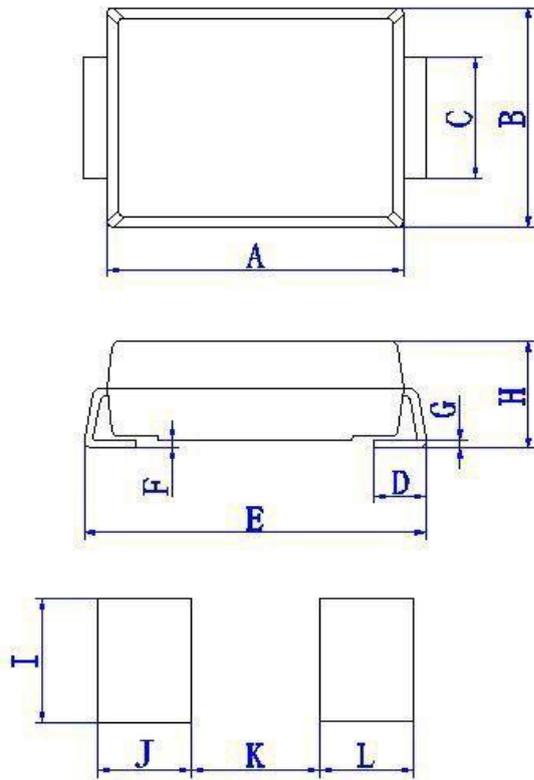


Soldering Parameters

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



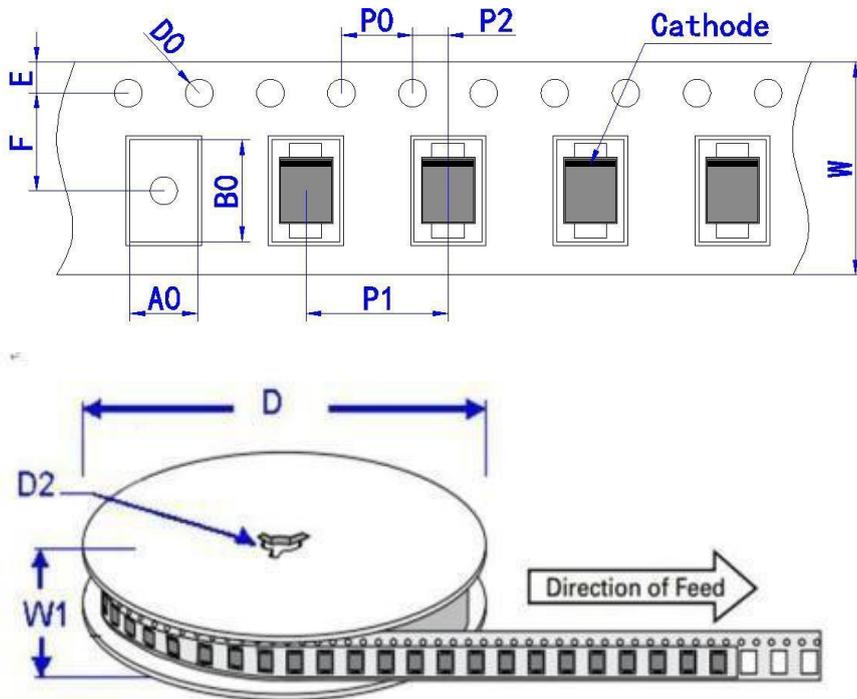
Package mechanical data & Suggested Land Pattern



Ref. (mm)	Millimeters	
	Min.	Max.
A	4.22	4.70
B	3.4	3.94
C	1.9	2.1
D	0.90	1.42
E	5.21	5.59
F	--	0.23
G	0.15	0.25
H	1.95	2.60
I	2.30	--
J	1.50	--
K	--	2.80
L	1.50	--

Package mechanical data & Suggested Land Pattern

Tape And Reel Specification - SMB



Ref.	Millimeters
A0	3.81±0.20
B0	5.74±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	8.00±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