

SMD Transient Voltage Suppressor



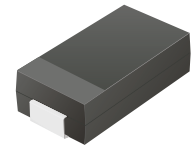
SMD Diodes Specialist

TV04A5V0-HF Thru. TV04A441-HF

Working Peak Reverse Voltage: 5.0 to 440 Volts

Power Dissipation: 400 Watts

RoHS Device

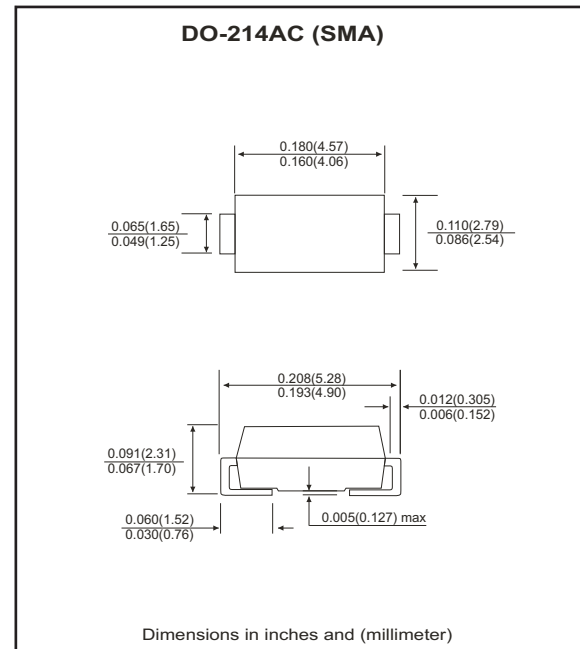


Features

- Halogen free.
- Ideal for surface mount applications.
- Easy pick and place.
- Plastic package has Underwriters Lab. flammability classification 94V-0.
- Typical IR less than 1 μ A above 10V.
- Fast response time: typically less than 1nS for uni-direction, less than 5nS for bi-direction, from 0V to BV min.

Mechanical data

- Case: JEDEC DO-214AC, molded plastic.
- Terminals: solderable per MIL-STD-750, method 2026.
- Polarity: Color band denotes cathode end.
- Approx. weight: 0.064 grams



Maximum Ratings and Electrical Characteristics

Ratings at 25 °C ambient temperature unless otherwise specified.
Single phase, half wave, 60Hz, resistive or inductive load.
For capacitive load, derate current by 20%.

Characteristics	Symbol	Value	Units
Peak power dissipation on 10/1000 μ S waveform (Note 1, Fig. 1)	P _{PPM}	400	Watts
Peak pulse current on 10/1000 μ S waveform (Note 1, Fig. 3)	I _{PPM}	See Table 1	A
Steady state power dissipation at T _L =75°C (Note 2)	P _{M(AV)}	1.0	Watts
Peak forward surge current, 8.3mS single half sine-wave superimposed on rated load, uni-directional only (Note 3)	I _{FSM}	40	A
Maximum instantaneous forward voltage at 25.0A for uni-directional only (Note 3&4)	V _F	3.5	V
Maximum operating junction temperature	T _J	150	°C
Storage temperature range	T _{STG}	-55 to +150	°C

Notes:

1. Non-repetitive current pulse, per Fig. 3 and derated above T_A=25°C, per Fig. 2.
2. Mounted on 5.0x5.0mm copper pads to each terminal.
3. Lead temperature at T_L=75 °C per Fig.5.
4. Measured on 8.3mS single half sine-wave for uni-directional devices only.
5. Peak pulse power waveform is 10/1000 μ S.

RATING AND CHARACTERISTIC CURVES (TV04A5V0-HF thru TV04A441-HF)

Fig.1 Reverse Characteristics

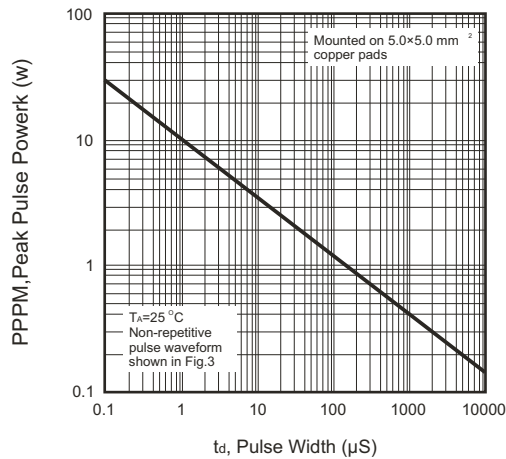


Fig.2 Pulse Derating Curve

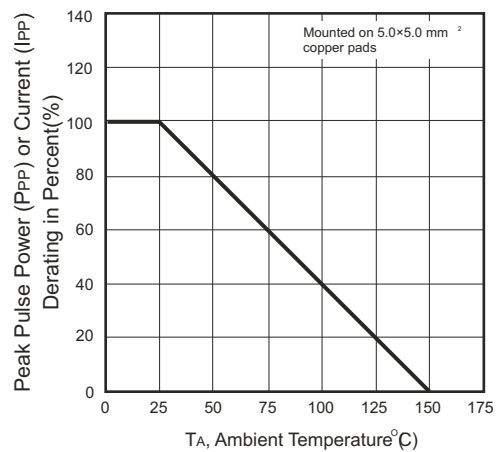


Fig.3 Pulse Waveform

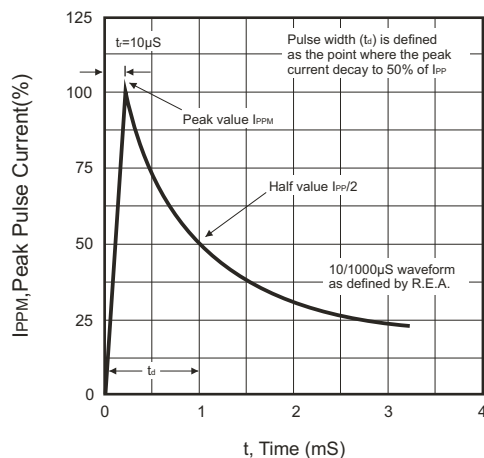


Fig.4 Typical Junction Capacitance

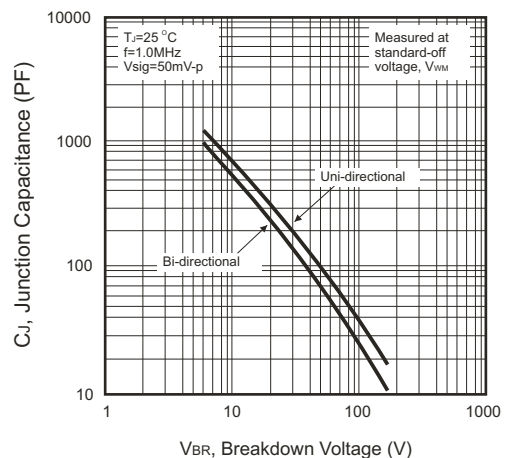


Fig.5 Steady State Power Derating Curve

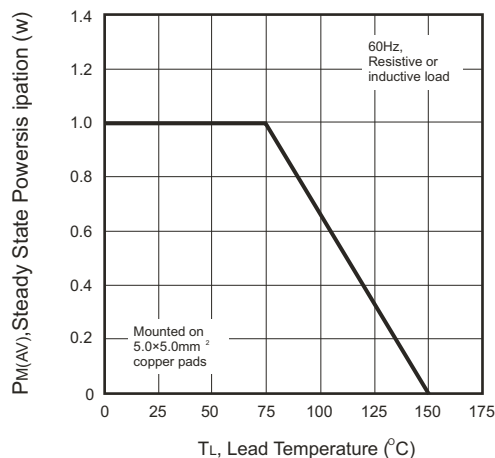
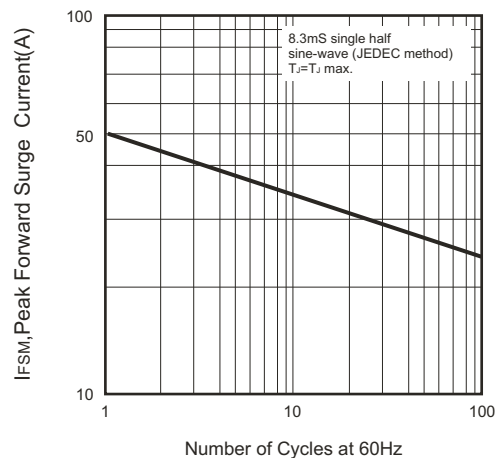


Fig.6 Max. Non-repetitive Forward Surge Current (Uni-directional only)



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Table 1. Specification

Part No	Absolute Maximum Rating (Ta=25°C)					Electrical Characteristic (Ta=25°C)				
	V _{RWM}	V _{BR} Min.	V _{BR} Max.	I _T	I _{FSM}	Max. V _C		I _R @ V _{RWM}	Marking Code	
	(V)	(V)	(V)	(mA)	(A)@8.3mS	(V)	I _{PP} (A)	(uA)	Uni	Bi
TV04A5V0K(B)-HF	5.00	6.40	7.82	10	40	9.60	41.6	800	AD	WD
TV04A5V0J(B)-HF	5.00	6.46	7.07	10	40	9.20	43.5	800	AE	WE
TV04A6V0K(B)-HF	6.00	6.67	8.15	10	40	11.4	35.1	800	AF	WF
TV04A6V0J(B)-HF	6.00	6.67	7.37	10	40	10.3	38.0	800	AG	WG
TV04A6V5K(B)-HF	6.50	7.22	8.82	10	40	12.3	32.5	500	AH	WH
TV04A6V5J(B)-HF	6.50	7.22	7.98	10	40	11.2	35.7	500	AK	WK
TV04A7V0K(B)-HF	7.00	7.78	9.51	1	40	13.3	30.1	200	AL	WL
TV04A7V0J(B)-HF	7.00	7.78	8.60	1	40	12.0	33.3	200	AM	WM
TV04A7V5K(B)-HF	7.50	8.33	10.2	1	40	14.3	28.0	100	AN	WN
TV04A7V5J(B)-HF	7.50	8.33	9.21	1	40	12.9	31.0	100	AP	WP
TV04A8V0K(B)-HF	8.00	8.89	10.9	1	40	15.0	26.5	50	AQ	WQ
TV04A8V0J(B)-HF	8.00	8.89	9.83	1	40	13.6	29.4	50	AR	WR
TV04A8V5K(B)-HF	8.55	9.44	11.5	1	40	15.9	25.1	10	AS	WS
TV04A8V5J(B)-HF	8.55	9.44	10.4	1	40	14.4	27.7	10	AT	ST
TV04A9V0K(B)-HF	9.00	10.0	12.2	1	40	16.9	23.6	5	AU	WU
TV04A9V0J(B)-HF	9.00	10.0	11.1	1	40	15.4	26.0	5	AV	WV
TV04A100K(B)-HF	10.0	11.1	13.6	1	40	18.8	21.1	5	AW	WW
TV04A100J(B)-HF	10.0	11.1	12.3	1	40	17.0	23.5	5	AX	WX
TV04A110K(B)-HF	11.0	12.2	14.9	1	40	20.1	20.0	5	AY	WY
TV04A110J(B)-HF	11.0	12.2	13.5	1	40	18.2	22.0	5	AZ	WZ
TV04A120K(B)-HF	12.0	13.3	16.3	1	40	22.0	18.1	5	BD	XD
TV04A120J(B)-HF	12.0	13.3	14.7	1	40	19.9	20.1	5	BE	XE
TV04A130K(B)-HF	13.0	14.4	17.6	1	40	23.8	16.8	5	BF	XF
TV04A130J(B)-HF	13.0	14.4	15.9	1	40	21.5	18.6	5	BG	XG
TV04A140K(B)-HF	14.0	15.6	19.1	1	40	25.8	15.5	5	BH	XH
TV04A140J(B)-HF	14.0	15.6	17.2	1	40	23.2	17.2	5	BK	XK
TV04A150K(B)-HF	15.0	16.7	20.4	1	40	26.9	14.8	5	BL	XL
TV04A150J(B)-HF	15.0	16.7	18.5	1	40	24.4	16.4	5	BM	XM
TV04A160K(B)-HF	16.0	17.8	21.8	1	40	28.8	13.8	5	BN	XN
TV04A160J(B)-HF	16.0	17.8	19.7	1	40	26.0	15.3	5	BP	XP
TV04A170K(B)-HF	17.0	18.9	23.1	1	40	30.5	13.1	5	BQ	XQ
TV04A170J(B)-HF	17.0	18.9	20.9	1	40	27.6	14.5	5	BR	XR
TV04A180K(B)-HF	18.0	20.0	24.4	1	40	32.2	12.4	5	BS	XS
TV04A180J(B)-HF	18.0	20.0	22.1	1	40	29.2	13.7	5	BT	XT
TV04A200K(B)-HF	20.0	22.2	27.1	1	40	35.8	11.1	5	BU	XU
TV04A200J(B)-HF	20.0	22.2	24.5	1	40	32.4	12.3	5	BV	XV
TV04A220K(B)-HF	22.0	24.4	29.8	1	40	39.4	10.0	5	BW	XW
TV04A220J(B)-HF	22.0	24.4	26.9	1	40	35.5	11.2	5	BX	XX
TV04A240K(B)-HF	24.0	26.7	32.6	1	40	43.0	9.3	5	BY	XY
TV04A240J(B)-HF	24.0	26.7	29.5	1	40	38.9	10.3	5	BZ	XZ
TV04A260K(B)-HF	26.0	28.9	35.3	1	40	46.6	8.6	5	CD	YD
TV04A260J(B)-HF	26.0	28.9	31.9	1	40	42.1	9.5	5	CE	YE
TV04A280K(B)-HF	28.0	31.1	38.0	1	40	50.0	8.0	5	CF	YF
TV04A280J(B)-HF	28.0	31.1	34.4	1	40	45.4	8.8	5	CG	YG
TV04A300K(B)-HF	30.0	33.3	40.7	1	40	53.5	7.5	5	CH	YH
TV04A300J(B)-HF	30.0	33.3	36.8	1	40	48.4	8.3	5	CK	YK
TV04A330K(B)-HF	33.0	36.7	44.9	1	40	59.0	6.8	5	CL	YL
TV04A330J(B)-HF	33.0	36.7	40.6	1	40	53.3	7.5	5	CM	YM
TV04A360K(B)-HF	36.0	40.0	48.9	1	40	64.3	6.2	5	CN	YN
TV04A360J(B)-HF	36.0	40.0	44.2	1	40	58.1	6.9	5	CP	YP
TV04A400K(B)-HF	40.0	44.4	54.3	1	40	71.4	5.6	5	CQ	YQ
TV04A400J(B)-HF	40.0	44.4	49.1	1	40	64.5	6.2	5	CR	YR

REV:B

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	V _{RWM}	V _{BR} Min.	V _{BR} Max.	I _T	I _{FSM}	Max. V _C		I _R @ V _{RWM}	Marking Code	
	(V)	(V)	(V)	(mA)	(A)@8.3mS	(V)	I _{PP} (A)	(uA)	Uni	Bi
TV04A430K(B)-HF	43.0	47.8	58.4	1	40	76.7	5.2	5	CS	YS
TV04A430J(B)-HF	43.0	47.8	52.8	1	40	69.4	5.7	5	CT	YT
TV04A450K(B)-HF	45.0	50.0	61.1	1	40	80.3	5.0	5	CU	YU
TV04A450J(B)-HF	45.0	50.0	55.3	1	40	72.7	5.5	5	CV	YV
TV04A480K(B)-HF	48.0	53.3	65.1	1	40	85.5	4.7	5	CW	YW
TV04A480J(B)-HF	48.0	53.3	58.9	1	40	77.4	5.2	5	CX	YX
TV04A510K(B)-HF	51.0	56.7	69.3	1	40	91.1	4.4	5	CY	YY
TV04A510J(B)-HF	51.0	56.7	62.7	1	40	82.4	4.9	5	CZ	YZ
TV04A540K(B)-HF	54.0	60.0	73.3	1	40	96.3	4.2	5	RD	ZD
TV04A540J(B)-HF	54.0	60.0	66.3	1	40	87.1	4.6	5	RE	ZE
TV04A580K(B)-HF	58.0	64.4	78.7	1	40	103	3.9	5	RF	ZF
TV04A580J(B)-HF	58.0	64.4	71.2	1	40	93.6	4.3	5	RG	ZG
TV04A600K(B)-HF	60.0	66.7	81.5	1	40	107	3.7	5	RH	ZH
TV04A600J(B)-HF	60.0	66.7	73.7	1	40	96.8	4.1	5	RK	ZK
TV04A640K(B)-HF	64.0	71.1	86.9	1	40	114	4.5	5	RL	ZL
TV04A640J(B)-HF	64.0	71.1	78.6	1	40	103	3.9	5	RM	ZM
TV04A700K(B)-HF	70.0	77.8	95.1	1	40	125	3.2	5	RN	ZN
TV04A700J(B)-HF	70.0	77.8	86.0	1	40	113	3.5	5	RP	ZP
TV04A750K(B)-HF	75.0	83.3	102	1	40	134	3.0	5	RQ	ZQ
TV04A750J(B)-HF	75.0	83.3	92.1	1	40	121	3.3	5	RR	ZR
TV04A780K(B)-HF	78.0	86.7	106	1	40	139	2.9	5	RS	ZS
TV04A780J(B)-HF	78.0	86.7	95.8	1	40	126	3.2	5	RT	ZT
TV04A850K(B)-HF	85.0	94.4	115	1	40	151	2.6	5	RU	ZU
TV04A850J(B)-HF	85.0	94.4	104	1	40	137	2.9	5	RV	ZV
TV04A900K(B)-HF	90.0	100	122	1	40	160	2.5	5	RW	ZW
TV04A900J(B)-HF	90.0	100	111	1	40	146	2.7	5	RX	ZX
TV04A101K(B)-HF	100	111	136	1	40	179	2.2	5	RY	ZY
TV04A101J(B)-HF	100	111	123	1	40	162	2.5	5	RZ	ZZ
TV04A111K(B)-HF	110	122	149	1	40	196	2.0	5	SD	VD
TV04A111J(B)-HF	110	122	135	1	40	177	2.3	5	SE	VE
TV04A121K(B)-HF	120	133	163	1	40	214	1.9	5	SF	VF
TV04A121J(B)-HF	120	133	147	1	40	193	2.0	5	SG	VG
TV04A131K(B)-HF	130	144	176	1	40	231	1.7	5	SH	VH
TV04A131J(B)-HF	130	144	159	1	40	209	1.9	5	SK	VK
TV04A151K(B)-HF	150	167	204	1	40	268	1.5	5	SL	VL
TV04A151J(B)-HF	150	167	185	1	40	243	1.6	5	SM	VM
TV04A161K(B)-HF	160	178	218	1	40	287	1.4	5	SN	VN
TV04A161J(B)-HF	160	178	197	1	40	259	1.5	5	SP	VP
TV04A171K(B)-HF	170	189	231	1	40	304	1.3	5	SQ	VQ
TV04A171J(B)-HF	170	189	209	1	40	275	1.4	5	SR	VR
TV04A181K(B)-HF	180	200	245	1	40	322	1.2	5	SS	VS
TV04A181J(B)-HF	180	200	220	1	40	292	1.3	5	ST	VT
TV04A191K(B)-HF	190	211	258	1	40	340	1.1	5	SU	VU
TV04A191J(B)-HF	190	211	232	1	40	308	1.3	5	SV	VV

Notes:

1. Suffix K denotes 10% tolerance devices, suffix J denotes 5% tolerance devices.
2. Suffix B after part number to specify bi-directional devices.
3. For bi-directional devices having VR of 10 volts and under, the IR limit is double.

REV:B

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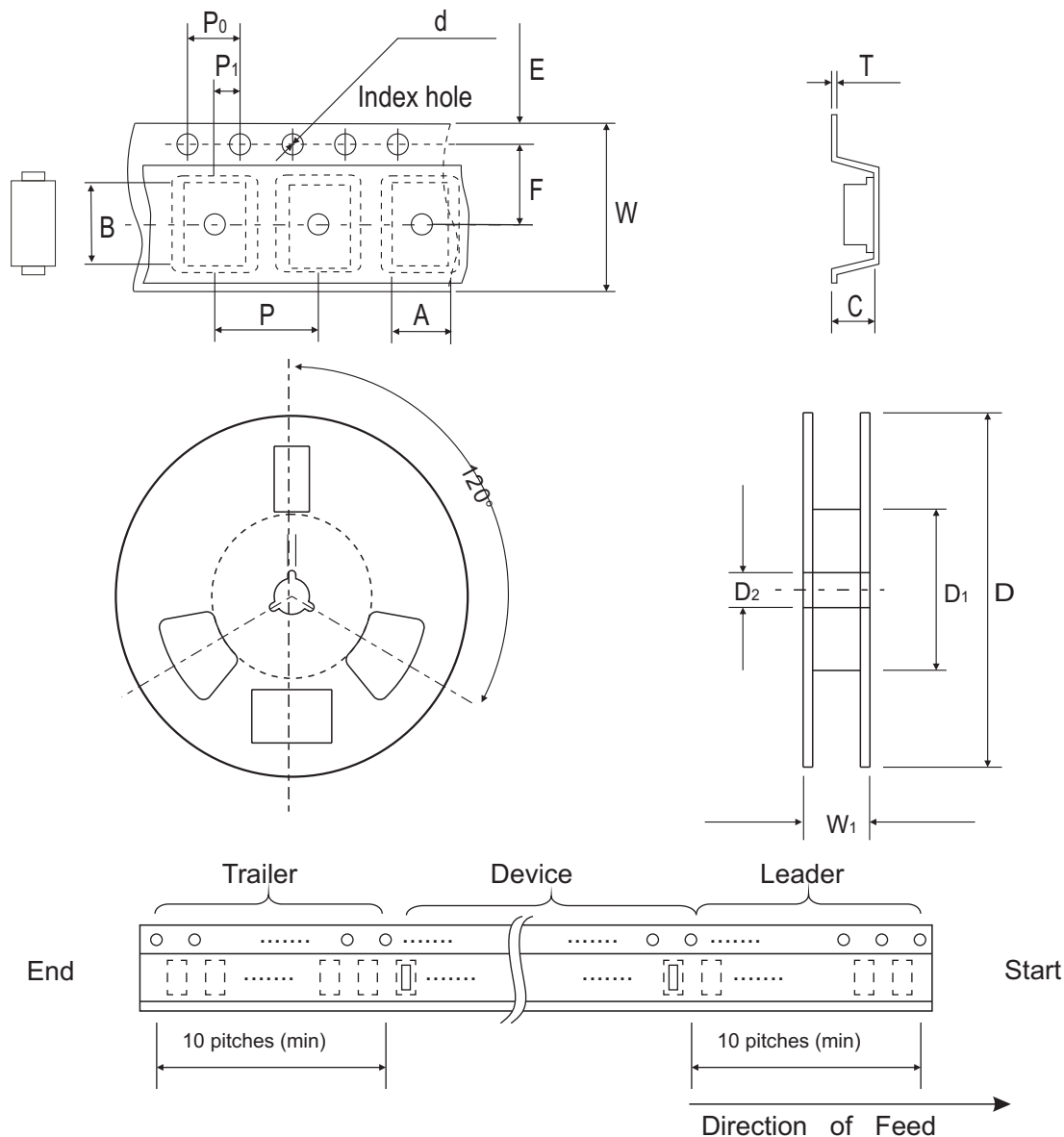
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	(V)	(V)	(V)	(mA)	(A)@8.3mS	(V)	I _{PP} (A)	(uA)	Uni	Bi
TV04A201J(B)-HF	200	224	247	1	40	324	1.2	5	SW	VW
TV04A221J(B)-HF	220	246	272	1	40	356	1.1	5	SX	VX
TV04A251J(B)-HF	250	279	309	1	40	405	0.9	5	SZ	VZ
TV04A301J(B)-HF	300	335	371	1	40	486	0.8	5	DE	HE
TV04A351J(B)-HF	350	391	432	1	40	567	0.7	5	DG	HG
TV04A401J(B)-HF	400	447	494	1	40	648	0.6	5	DK	HK
TV04A441J(B)-HF	440	492	543	1	40	713	0.5	5	DM	HM

Notes:

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2. Suffix B after part number to specify bi-directional devices.
3. For bi-directional devices having V_R of 10 volts and under, the I_R limit is double.

Reel Taping Specification

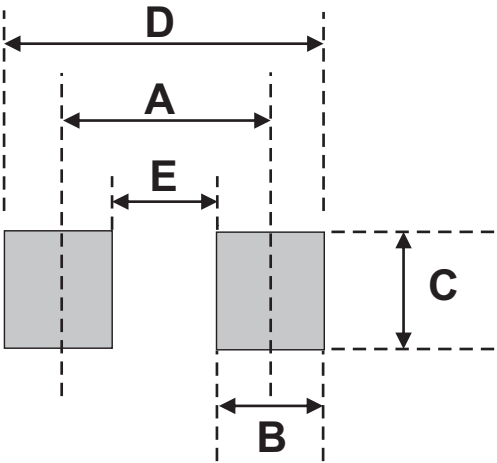


DO-214AC (SMA)	SYMBOL	A	B	C	d	D	D ₁	D ₂
	(mm)	2.7 (max)	5.3 (max)	2.66 (max)	1.50 ± 0.10	330 ± 1.00	50.0 MIN.	13.5 ± 1.00
	(inch)	0.106(max)	0.208 (max)	0.105 (max)	0.059 ± 0.004	13.00 ± 0.039	1.969 MIN.	0.531 ± 0.039

DO-214AC (SMA)	SYMBOL	E	F	P	P ₀	P ₁	W	W ₁
	(mm)	1.75 ± 0.10	5.50 ± 0.05	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	12.0 ± 0.20	18.4 MAX.
	(inch)	0.689 ± 0.004	0.216 ± 0.002	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.002	0.472 ± 0.008	0.724 MAX

Suggested PAD Layout

SIZE	DO-214AC (SMA)	
	(mm)	(inch)
A	3.30	0.130
B	1.60	0.063
C	2.80	0.110
D	4.40	0.174
E	2.20	0.087



Standard Package

Case Type	Qty per Reel	Reel Size
	(Pcs)	(inch)
DO-214AC (SMA)	5000	13