

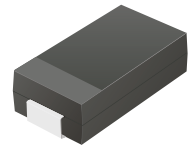
SMD Transient Voltage Suppressor

TV04A5V0-HF Thru. TV04A441-HF

Working Peak Reverse Voltage: 5.0 to 440 Volts

Power Dissipation: 400 Watts

RoHS Device

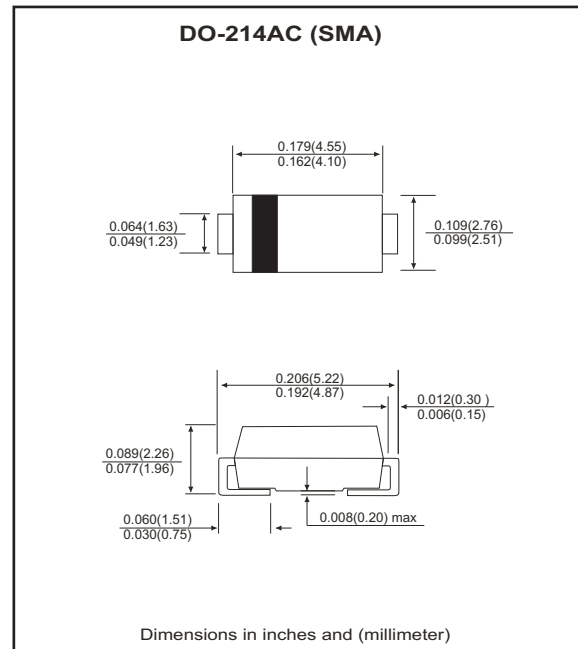


Features

- 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)	P _{PP}	400	W
Peak pulse current on 10/1000 μ S waveform (Note 1)	I _{PP}	See Next Table	A
Steady state power dissipation at T _L =75°C	P _D	1.0	W
Peak forward surge current, 8.3mS single half sine-wave superimposed on rated load, uni-directional only (Note 2)	I _{FSM}	40	A
Maximum instantaneous forward voltage at 25.0A for uni-directional only (Note 3)	V _F	3.5/5.0	V
Maximum operating junction temperature	T _J	-55 to +150	°C
Storage temperature range	T _{STG}	-55 to +150	°C

Notes:

1. Non-repetitive current pulse, per Fig. 5 and derated above T_A=25°C, per Fig. 1.
2. Measured on 8.3mS single half sine-wave or equare wave,duty cycle=4 pulses per minute maximum.
3. V_F<3.5V for devices of V_{BR}<200V and V_F<5.0V for devices of V_{BR}>201V

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

Fig.1 Pulse Derating Curve

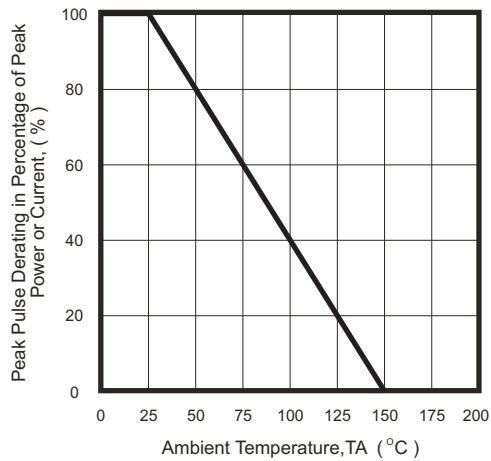


Fig.2 Maximum Non-Repetitive Surge Current

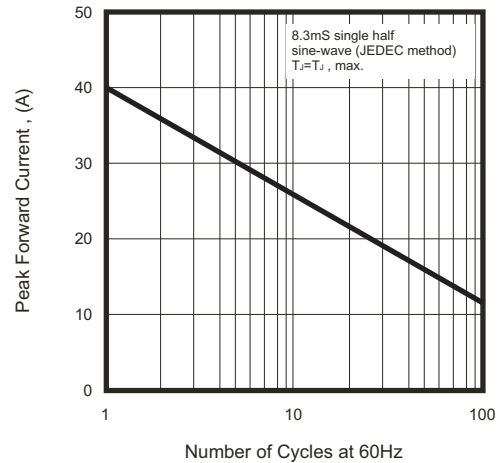


Fig.3 Steady State Power Derating Curve

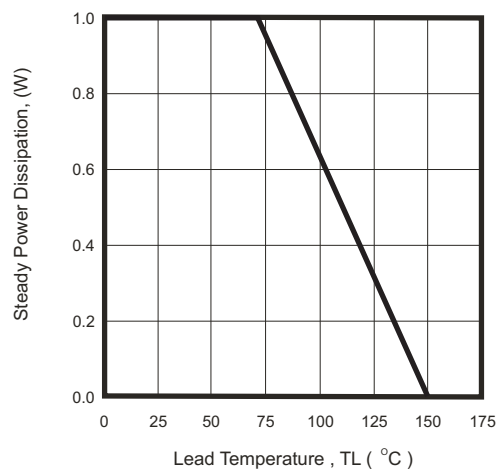


Fig.4 Peak Pulse Power Rating Curve

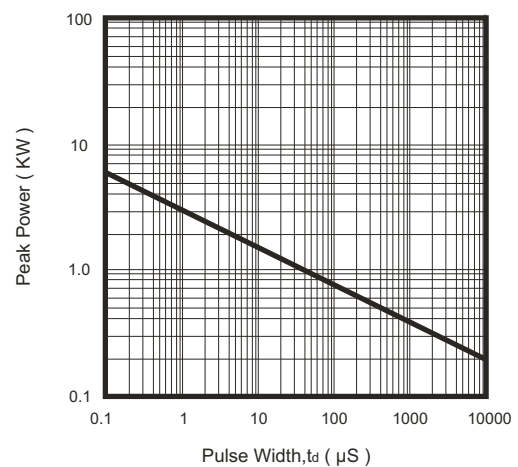


Fig.5 Pulse Waveform

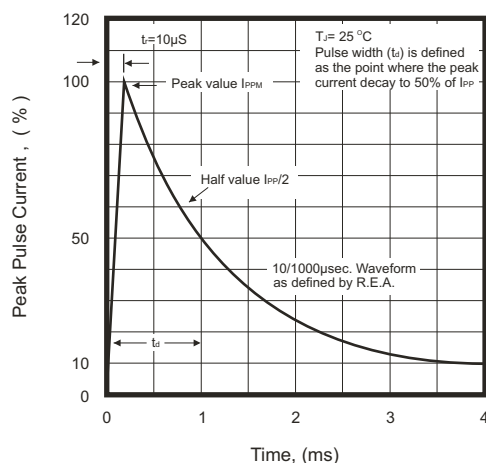
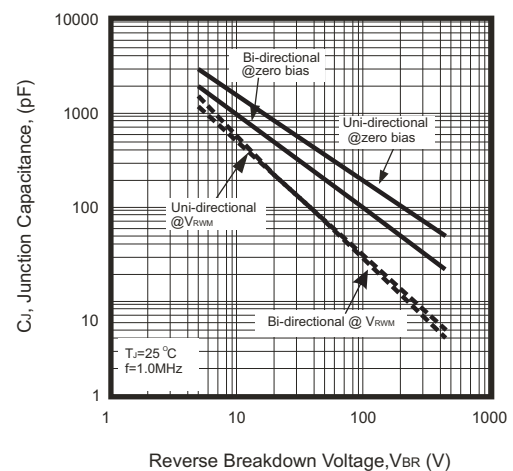


Fig.6 Typical Junction Capacitance



SMD Transient Voltage Suppressor



SMD Diodes Specialist

Electrical Characteristics (T_A=25°C TV04A5V0-HF Thru. TV04A441-HF)

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)	IPP (A)	(uA)	Uni	Bi
TV04A5V0K(B)-HF	5.00	6.40	7.30	10	40	9.60	41.67	800	AD	WD
TV04A5V0J(B)-HF	5.00	6.46	7.00	10	40	9.20	43.48	800	AE	WE
TV04A6V0K(B)-HF	6.00	6.67	8.15	10	40	11.4	35.09	800	AF	WF
TV04A6V0J(B)-HF	6.00	6.67	7.37	10	40	10.3	38.83	800	AG	WG
TV04A6V5K(B)-HF	6.50	7.22	8.82	10	40	12.3	32.52	500	AH	WH
TV04A6V5J(B)-HF	6.50	7.22	7.98	10	40	11.2	35.71	500	AK	WK
TV04A7V0K(B)-HF	7.00	7.78	9.51	10	40	13.3	30.08	200	AL	WL
TV04A7V0J(B)-HF	7.00	7.78	8.60	10	40	12.0	33.33	200	AM	WM
TV04A7V5K(B)-HF	7.50	8.33	10.20	1	40	14.3	27.97	100	AN	WN
TV04A7V5J(B)-HF	7.50	8.33	9.21	1	40	12.9	31.01	100	AP	WP
TV04A8V0K(B)-HF	8.00	8.89	10.90	1	40	15.0	26.67	50	AQ	WQ
TV04A8V0J(B)-HF	8.00	8.89	9.83	1	40	13.6	29.41	50	AR	WR
TV04A8V5K(B)-HF	8.55	9.44	11.50	1	40	15.9	25.16	10	AS	WS
TV04A8V5J(B)-HF	8.55	9.44	10.40	1	40	14.4	27.78	10	AT	WT
TV04A9V0K(B)-HF	9.00	10.00	12.20	1	40	16.9	23.67	5	AU	WU
TV04A9V0J(B)-HF	9.00	10.00	11.10	1	40	15.4	25.97	5	AV	WV
TV04A100K(B)-HF	10.0	11.10	13.60	1	40	18.8	21.28	5	AW	WW
TV04A100J(B)-HF	10.0	11.10	12.30	1	40	17.0	23.53	5	AX	WX
TV04A110K(B)-HF	11.0	12.20	14.90	1	40	20.1	19.90	5	AY	WY
TV04A110J(B)-HF	11.0	12.20	13.50	1	40	18.2	21.98	5	AZ	WZ
TV04A120K(B)-HF	12.0	13.30	16.30	1	40	22.0	18.18	5	BD	XD
TV04A120J(B)-HF	12.0	13.30	14.70	1	40	19.9	20.10	5	BE	XE
TV04A130K(B)-HF	13.0	14.40	17.60	1	40	23.8	16.81	5	BF	XF
TV04A130J(B)-HF	13.0	14.40	15.90	1	40	21.5	18.60	5	BG	XG
TV04A140K(B)-HF	14.0	15.60	19.10	1	40	25.8	15.50	5	BH	XH
TV04A140J(B)-HF	14.0	15.60	17.20	1	40	23.2	17.24	5	BK	XK
TV04A150K(B)-HF	15.0	16.70	20.40	1	40	26.9	14.87	5	BL	XL
TV04A150J(B)-HF	15.0	16.70	18.50	1	40	24.4	16.39	5	BM	XM
TV04A160K(B)-HF	16.0	17.80	21.80	1	40	28.8	13.89	5	BN	XN
TV04A160J(B)-HF	16.0	17.80	19.70	1	40	26.0	15.38	5	BP	XP
TV04A170K(B)-HF	17.0	18.90	23.10	1	40	30.5	13.11	5	BQ	XQ
TV04A170J(B)-HF	17.0	18.90	20.90	1	40	27.6	14.49	5	BR	XR
TV04A180K(B)-HF	18.0	20.00	24.40	1	40	32.2	12.42	5	BS	XS
TV04A180J(B)-HF	18.0	20.00	22.10	1	40	29.2	13.70	5	BT	XT
TV04A190K(B)-HF	19.0	21.13	25.76	1	40	34.0	11.76	5	BA	XA
TV04A190J(B)-HF	19.0	20.10	23.30	1	40	30.8	13.00	5	BB	XB
TV04A200K(B)-HF	20.0	22.20	27.10	1	40	35.8	11.17	5	BU	XU
TV04A200J(B)-HF	20.0	22.20	24.50	1	40	32.4	12.35	5	BV	XV
TV04A220K(B)-HF	22.0	24.40	29.80	1	40	39.4	10.15	5	BW	XW
TV04A220J(B)-HF	22.0	24.40	26.90	1	40	35.5	11.27	5	BX	XX
TV04A240K(B)-HF	24.0	26.70	32.60	1	40	43.0	9.30	5	BY	XY
TV04A240J(B)-HF	24.0	26.70	29.50	1	40	38.9	10.28	5	BZ	XZ
TV04A260K(B)-HF	26.0	28.90	35.30	1	40	46.6	8.58	5	CD	YD
TV04A260J(B)-HF	26.0	28.90	31.90	1	40	42.1	9.50	5	CE	YE
TV04A280K(B)-HF	28.0	31.10	38.00	1	40	50.0	8.00	5	CF	YF
TV04A280J(B)-HF	28.0	31.10	34.40	1	40	45.4	8.81	5	CG	YG
TV04A300K(B)-HF	30.0	33.30	40.70	1	40	53.5	7.48	5	CH	YH
TV04A300J(B)-HF	30.0	33.30	36.80	1	40	48.4	8.26	5	CK	YK
TV04A330K(B)-HF	33.0	36.70	44.90	1	40	59.0	6.78	5	CL	YL
TV04A330J(B)-HF	33.0	36.70	40.60	1	40	53.3	7.50	5	CM	YM
TV04A360K(B)-HF	36.0	40.00	48.90	1	40	64.3	6.22	5	CN	YN
TV04A360J(B)-HF	36.0	40.00	44.20	1	40	58.1	6.88	5	CP	YP

REV:C

SMD Transient Voltage Suppressor



SMD Diodes Specialist

Electrical Characteristics (TV04A5V0-HF Thru. TV04A441-HF)

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
TV04A400K(B)-HF	40.0	44.40	54.30	1	40	71.4	5.60	5	CQ	YQ
TV04A400J(B)-HF	40.0	44.40	49.10	1	40	64.5	6.20	5	CR	YR
TV04A430K(B)-HF	43.0	47.80	58.40	1	40	76.7	5.22	5	CS	YS
TV04A430J(B)-HF	43.0	47.80	52.80	1	40	69.4	5.76	5	CT	YT
TV04A450K(B)-HF	45.0	50.00	61.10	1	40	80.3	4.98	5	CU	YU
TV04A450J(B)-HF	45.0	50.00	55.30	1	40	72.7	5.50	5	CV	YV
TV04A480K(B)-HF	48.0	53.30	65.10	1	40	85.5	4.68	5	CW	YW
TV04A480J(B)-HF	48.0	53.30	58.90	1	40	77.4	5.17	5	CX	YX
TV04A510K(B)-HF	51.0	56.70	69.30	1	40	91.1	4.39	5	CY	YY
TV04A510J(B)-HF	51.0	56.70	62.70	1	40	82.4	4.85	5	CZ	YZ
TV04A540K(B)-HF	54.0	60.00	73.30	1	40	96.3	4.15	5	RD	ZD
TV04A540J(B)-HF	54.0	60.00	66.30	1	40	87.1	4.59	5	RE	ZE
TV04A580K(B)-HF	58.0	64.40	78.70	1	40	103.0	3.88	5	RF	ZF
TV04A580J(B)-HF	58.0	64.40	71.20	1	40	93.6	4.27	5	RG	ZG
TV04A600K(B)-HF	60.0	66.70	81.50	1	40	107.0	3.74	5	RH	ZH
TV04A600J(B)-HF	60.0	66.70	73.70	1	40	96.8	4.13	5	RK	ZK
TV04A640K(B)-HF	64.0	71.10	86.90	1	40	114.0	3.51	5	RL	ZL
TV04A640J(B)-HF	64.0	71.10	78.60	1	40	103.0	3.88	5	RM	ZM
TV04A700K(B)-HF	70.0	77.80	95.10	1	40	125.0	3.20	5	RN	ZN
TV04A700J(B)-HF	70.0	77.80	86.00	1	40	113.0	3.54	5	RP	ZP
TV04A750K(B)-HF	75.0	83.30	102.00	1	40	134.0	2.99	5	RQ	ZQ
TV04A750J(B)-HF	75.0	83.30	92.10	1	40	121.0	3.31	5	RR	ZR
TV04A780K(B)-HF	78.0	86.70	106.00	1	40	139.0	2.88	5	RS	ZS
TV04A780J(B)-HF	78.0	86.70	95.80	1	40	126.0	3.17	5	RT	ZT
TV04A800K(B)-HF	80.0	88.96	108.80	1	40	143.2	2.79	5	RS	ZS
TV04A800J(B)-HF	80.0	88.80	97.60	1	40	129.6	3.09	5	RT	ZT
TV04A850K(B)-HF	85.0	94.40	115.00	1	40	151.0	2.65	5	RU	ZU
TV04A850J(B)-HF	85.0	94.40	104.00	1	40	137.0	2.92	5	RV	ZV
TV04A900K(B)-HF	90.0	100.00	122.00	1	40	160.0	2.50	5	RW	ZW
TV04A900J(B)-HF	90.0	100.00	111.00	1	40	146.0	2.74	5	RX	ZX
TV04A101K(B)-HF	100.0	111.00	136.00	1	40	179.0	2.23	5	RY	ZY
TV04A101J(B)-HF	100.0	111.00	123.00	1	40	162.0	2.47	5	RZ	ZZ
TV04A111K(B)-HF	110.0	122.00	149.00	1	40	196.0	2.04	5	SD	VD
TV04A111J(B)-HF	110.0	122.00	135.00	1	40	177.0	2.26	5	SE	VE
TV04A121K(B)-HF	120.0	133.00	163.00	1	40	214.0	1.87	5	SF	VF
TV04A121J(B)-HF	120.0	133.00	147.00	1	40	193.0	2.07	5	SG	VG
TV04A131K(B)-HF	130.0	144.00	176.00	1	40	231.0	1.73	5	SH	VH
TV04A131J(B)-HF	130.0	144.00	159.00	1	40	209.0	1.91	5	SK	VK
TV04A141K(B)-HF	140.0	155.68	190.40	1	40	250.6	1.60	5	SA	VA
TV04A141J(B)-HF	140.0	155.00	171.00	1	40	226.8	1.76	5	SB	VB
TV04A151K(B)-HF	150.0	167.00	204.00	1	40	268.0	1.49	5	SL	VL
TV04A151J(B)-HF	150.0	167.00	185.00	1	40	243.0	1.65	5	SM	VM
TV04A161K(B)-HF	160.0	178.00	218.00	1	40	287.0	1.39	5	SN	VN
TV04A161J(B)-HF	160.0	178.00	197.00	1	40	259.0	1.54	5	SP	VP
TV04A171K(B)-HF	170.0	189.00	231.00	1	40	304.0	1.32	5	SQ	VQ
TV04A171J(B)-HF	170.0	189.00	209.00	1	40	275.0	1.45	5	SR	VR
TV04A181K(B)-HF	180.0	200.16	244.80	1	40	322.2	1.24	5	SS	VS
TV04A181J(B)-HF	180.0	200.00	220.00	1	40	291.6	1.37	5	ST	VT

REV:C

SMD Transient Voltage Suppressor



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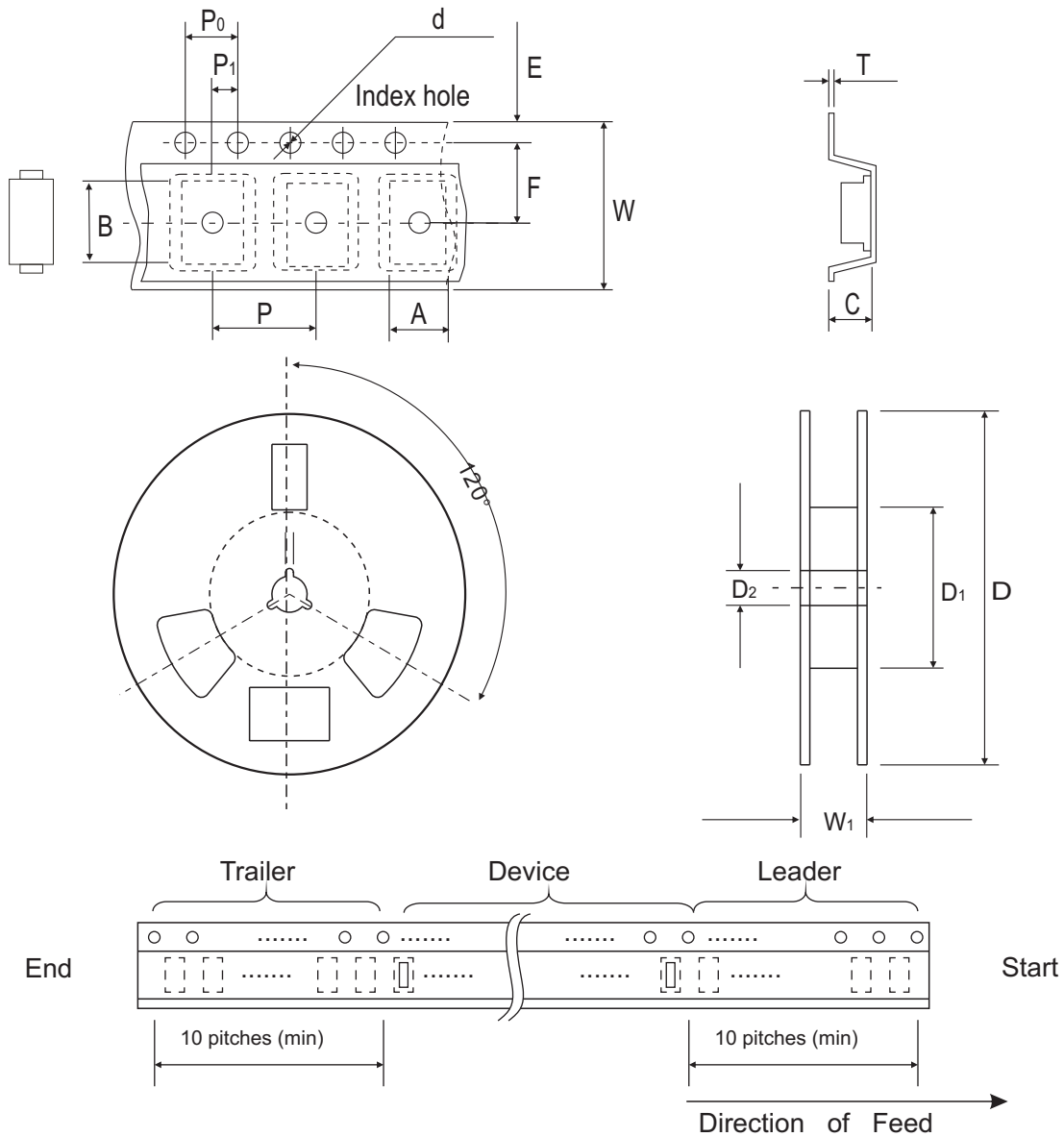
Electrical Characteristics (TV04A5V0-HF Thru. TV04A441-HF)

Part No.	Absolute Maximum Rating (T _A =25 °C)					Electrical Characteristic (T _A =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
TV04A191K(B)-HF	190.0	211.28	258.40	1	40	340.1	1.18	5	SU	VU
TV04A191J(B)-HF	190.0	211.00	232.00	1	40	307.8	1.30	5	SV	VV
TV04A201J(B)-HF	200.0	224.00	247.00	1	40	324.0	1.23	5	SW	VW
TV04A221J(B)-HF	220.0	246.00	272.00	1	40	356.0	1.12	5	SX	VX
TV04A251J(B)-HF	250.0	279.00	309.00	1	40	405.0	0.99	5	SZ	VZ
TV04A301J(B)-HF	300.0	335.00	371.00	1	40	486.0	0.82	5	DE	HE
TV04A351J(B)-HF	350.0	391.00	432.00	1	40	567.0	0.71	5	DG	HG
TV04A401J(B)-HF	400.0	447.00	494.00	1	40	648.0	0.62	5	DK	HK
TV04A441J(B)-HF	440.0	492.00	543.00	1	40	713.0	0.56	5	DM	HM

Note:

- 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 V_R of 10 volts and under, the I_R limit is double.

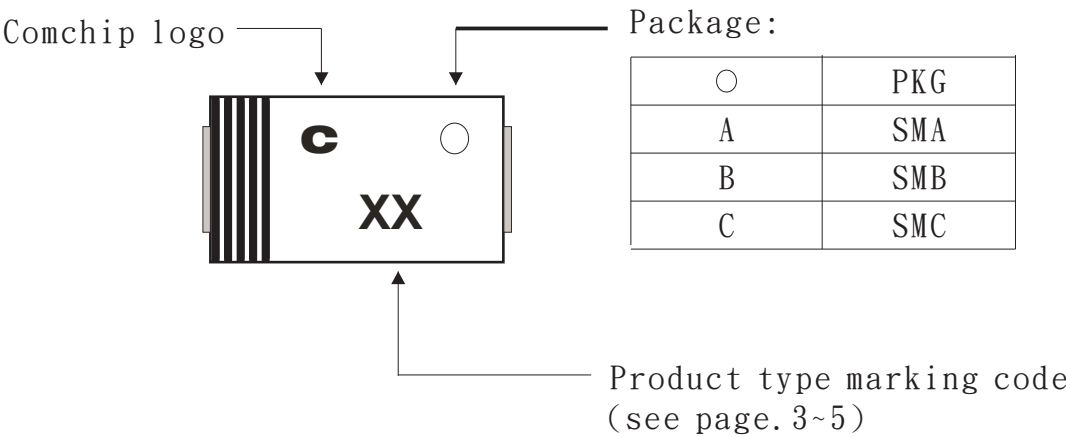
Reel Taping Specification



DO-214AC (SMA)	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	2.79 ± 0.10	5.33 ± 0.10	4.50 (max)	1.75 ± 0.10	330MAX	50.0 MIN.	13.0 ± 0.2
	(inch)	0.110(max)	0.210 ± 0.004	0.177 (max)	0.069 ± 0.004	13.00MAX	1.969 MIN.	0.512 ± 0.008

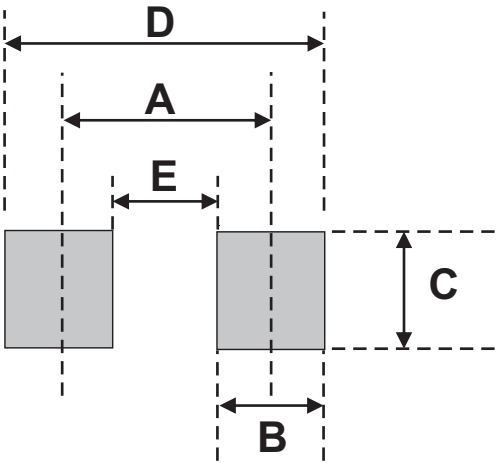
DO-214AC (SMA)	SYMBOL	E	F	P	P0	P1	W	W1
	(mm)	1.75 ± 0.10	5.50 ± 0.05	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	12.0 ± 0.30	18.4 MAX.
	(inch)	0.689 ± 0.004	0.216 ± 0.002	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.002	0.472 ± 0.012	0.724 MAX

Marking Code



Suggested PAD Layout

SIZE	DO-214AC (SMA)	
	(mm)	(inch)
A	3.80	0.150
B	1.60	0.063
C	2.80	0.110
D	5.40	0.213
E	2.20	0.087



Standard Package

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