

SMD Transient Voltage Suppressor



SMD Diodes Specialist

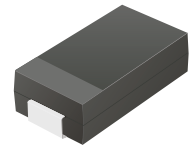
TV05A5V0-HF Thru. TV05A191-HF

Working Peak Reverse Voltage: 5.0 to 190 Volts

Peak Pulse Power: 500 Watts

RoHS Device

Halogen free

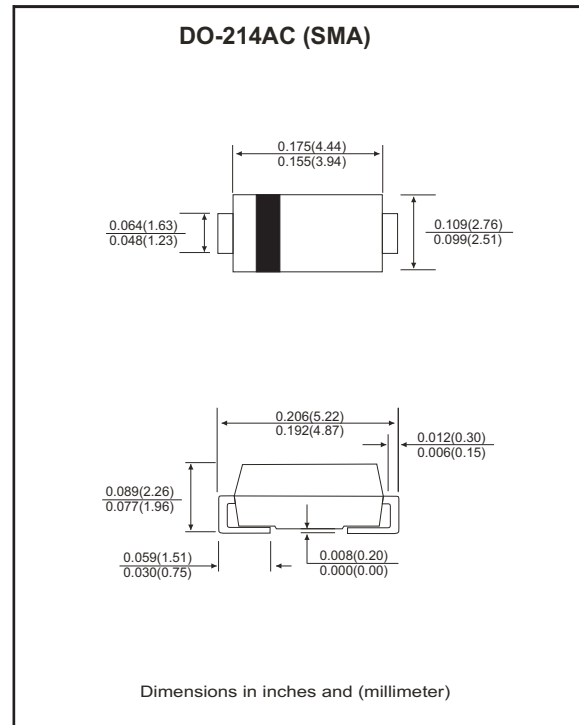


Features

- Glass passivated chip.
- Low leakage.
- 500W peak pulse power capability with a 10/1000 μ s waveform, repetitive rate (duty cycle): 0.01%.
- Uni and Bidirectional unit.
- Excellent clamping capability.
- Very fast response time.

Mechanical data

- Case: JEDEC DO-214AC, molded plastic.
- Epoxy: UL 94V-0 rate flame retardant.
- Terminals: Axial leads, solderable per MIL-STD-202, method 208.
- Polarity: Color band denotes cathode end.
- Mounting position: Any.
- Approx. weight: 0.069 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	P _{PP}	Minimum 500	Watts
Peak pulse current on 10/1000 μ s waveform	I _{PP}	See Next Table	A
Power dissipation on infinite heatsink at T _L =75°C	P _D	3.0	Watts
Peak forward surge current, 8.3ms single half sine-wave, uni-directional only (Note 1)	I _{FSM}	70	A
Maximum instantaneous forward voltage at 25.0A for uni-directional only	V _F	3.5	V
Operating junction temperature range	T _J	-55 to +150	°C
Storage temperature range	T _{STG}	-55 to +150	°C

Notes:

1. Measured on 8.3ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum.

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RATING AND CHARACTERISTIC CURVES (TV05A5V0-HF Thru. TV05A191-HF)

Fig.1- Pulse Derating Curve

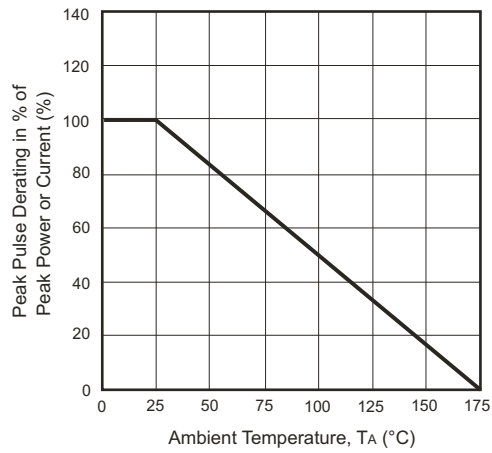


Fig.2- Steady State Power Derating Curve

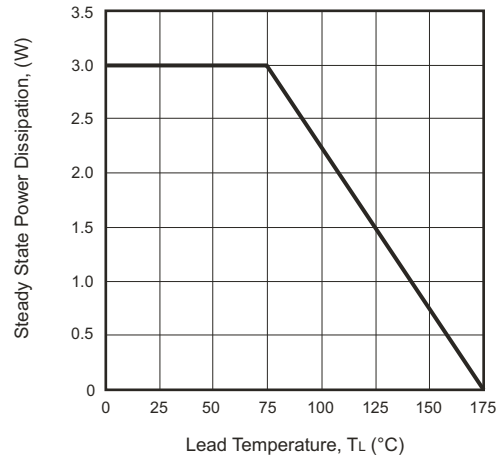


Fig.3- Max. Non-repetitive Surge Current

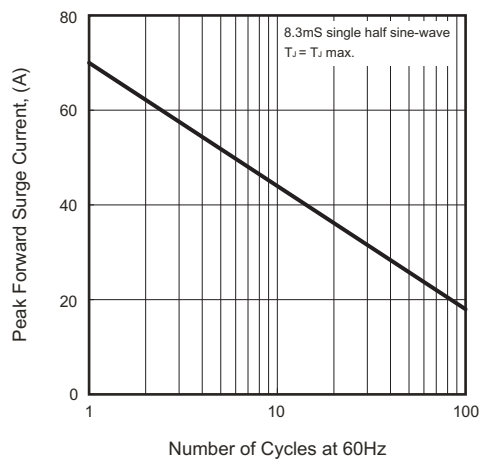


Fig.4 Peak Pulse Power Rating Curve

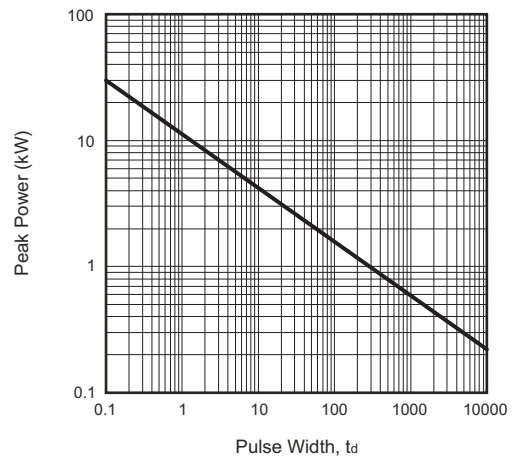
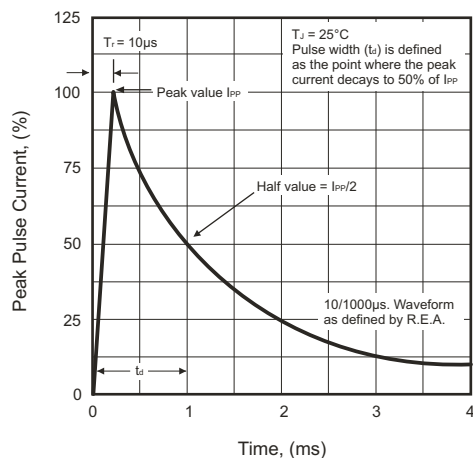


Fig.5- Pulse Waveform



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Electrical Characteristics (TV05A5V0-HF Thru. TV05A191-HF)

Part No	Breakdown voltage V_{BR} @ I_T			Maximum Reverse Leakage @ V_{RWM} I_R (uA)	Working Peak Reverse Voltage V_{RWM} (V)	Maximum Reverse Surge Current @ 10/1000us sinewave I_{PP} (A)	Maximum Clamping Voltage @ I_{PP} V_C (V)	Marking Code	
	V_{BR} Min. (V)	V_{BR} Max. (V)	I_T (mA)					UNI	BI
TV05A5V0K(B)-HF	6.40	7.30	10	600	5.00	52.1	9.60	5AD	5WD
TV05A5V0J(B)-HF	6.40	7.00	10	600	5.00	54.3	9.20	5AE	5WE
TV05A6V0K(B)-HF	6.67	8.15	10	600	6.00	43.9	11.4	5AF	5WF
TV05A6V0J(B)-HF	6.67	7.37	10	600	6.00	48.5	10.3	5AG	5WG
TV05A6V5K(B)-HF	7.22	8.82	10	400	6.50	40.7	12.3	5AH	5WH
TV05A6V5J(B)-HF	7.22	7.98	10	400	6.50	44.6	11.2	5AK	5WK
TV05A7V0K(B)-HF	7.78	9.51	10	150	7.00	37.6	13.3	5AL	5WL
TV05A7V0J(B)-HF	7.78	8.60	10	150	7.00	41.7	12.0	5AM	5WM
TV05A7V5K(B)-HF	8.33	10.2	1	50	7.50	35.0	14.3	5AN	5WN
TV05A7V5J(B)-HF	8.33	9.21	1	50	7.50	38.8	12.9	5AP	5WP
TV05A8V0K(B)-HF	8.89	10.9	1	25	8.00	33.3	15.0	5AQ	5WQ
TV05A8V0J(B)-HF	8.89	9.83	1	25	8.00	36.8	13.6	5AR	5WR
TV05A8V5K(B)-HF	9.44	11.5	1	5	8.50	31.4	15.9	5AS	5WS
TV05A8V5J(B)-HF	9.44	10.4	1	5	8.50	34.7	14.4	5AT	5WT
TV05A9V0K(B)-HF	10.0	12.2	1	5	9.00	29.6	16.9	5AU	5WU
TV05A9V0J(B)-HF	10.0	11.1	1	5	9.00	32.5	15.4	5AV	5WV
TV05A100K(B)-HF	11.1	13.6	1	5	10.0	26.6	18.8	5AW	5WW
TV05A100J(B)-HF	11.1	12.3	1	5	10.0	29.4	17.0	5AX	5WX
TV05A110K(B)-HF	12.2	14.9	1	5	11.0	24.9	20.1	5AY	5WY
TV05A110J(B)-HF	12.2	13.5	1	5	11.0	27.5	18.2	5AZ	5WZ
TV05A120K(B)-HF	13.3	16.3	1	5	12.0	22.7	22.0	5BD	5XD
TV05A120J(B)-HF	13.3	14.7	1	5	12.0	25.1	19.9	5BE	5XE
TV05A130K(B)-HF	14.4	17.6	1	5	13.0	21.0	23.8	5BF	5XF
TV05A130J(B)-HF	14.4	15.9	1	5	13.0	23.3	21.5	5BG	5XG
TV05A140K(B)-HF	15.6	19.1	1	5	14.0	19.4	25.8	5BH	5XH
TV05A140J(B)-HF	15.6	17.2	1	5	14.0	21.6	23.2	5BK	5XK
TV05A150K(B)-HF	16.7	20.4	1	5	15.0	18.6	26.9	5BL	5XL
TV05A150J(B)-HF	16.7	18.5	1	5	15.0	20.5	24.4	5BM	5XM
TV05A160K(B)-HF	17.8	21.8	1	5	16.0	17.4	28.8	5BN	5XN
TV05A160J(B)-HF	17.8	19.7	1	5	16.0	19.2	26.0	5BP	5XP
TV05A170K(B)-HF	18.9	23.1	1	5	17.0	16.4	30.5	5BQ	5XQ
TV05A170J(B)-HF	18.9	20.9	1	5	17.0	18.1	27.6	5BR	5XR
TV05A180K(B)-HF	20.0	24.4	1	5	18.0	15.5	32.2	5BS	5XS
TV05A180J(B)-HF	20.0	22.1	1	5	18.0	17.1	29.2	5BT	5XT
TV05A190K(B)-HF	21.1	25.8	1	5	19.0	14.7	34.0	5BU	5XU
TV05A190J(B)-HF	21.1	23.3	1	5	19.0	16.2	30.8	5BV	5XV
TV05A200K(B)-HF	22.2	27.1	1	5	20.0	14.0	35.8	5BW	5XW
TV05A200J(B)-HF	22.2	24.5	1	5	20.0	15.4	32.4	5BX	5XX
TV05A220K(B)-HF	24.4	29.8	1	5	22.0	12.7	39.4	5BY	5XY
TV05A220J(B)-HF	24.4	26.9	1	5	22.0	14.1	35.5	5BZ	5XZ
TV05A240K(B)-HF	26.7	32.6	1	5	24.0	11.6	43.0	5CD	5YD
TV05A240J(B)-HF	26.7	29.5	1	5	24.0	12.9	38.9	5CE	5YE
TV05A260K(B)-HF	28.9	35.3	1	5	26.0	10.7	46.6	5CF	5YF
TV05A260J(B)-HF	28.9	31.9	1	5	26.0	11.9	42.1	5CG	5YG
TV05A280K(B)-HF	31.1	38.0	1	5	28.0	10.0	50.0	5CH	5YH
TV05A280J(B)-HF	31.1	34.4	1	5	28.0	11.0	45.4	5CK	5YK
TV05A300K(B)-HF	33.3	40.7	1	5	30.0	9.35	53.5	5CL	5YL
TV05A300J(B)-HF	33.3	36.8	1	5	30.0	10.3	48.4	5CM	5YM
TV05A330K(B)-HF	36.7	44.9	1	5	33.0	8.47	59.0	5CN	5YN
TV05A330J(B)-HF	36.7	40.6	1	5	33.0	9.38	53.3	5CP	5YP
TV05A360K(B)-HF	40.0	48.9	1	5	36.0	7.78	64.3	5CQ	5YQ
TV05A360J(B)-HF	40.0	44.2	1	5	36.0	8.61	58.1	5CR	5YR

REV:A

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Electrical Characteristics (TV05A5V0-HF Thru. TV05A191-HF)

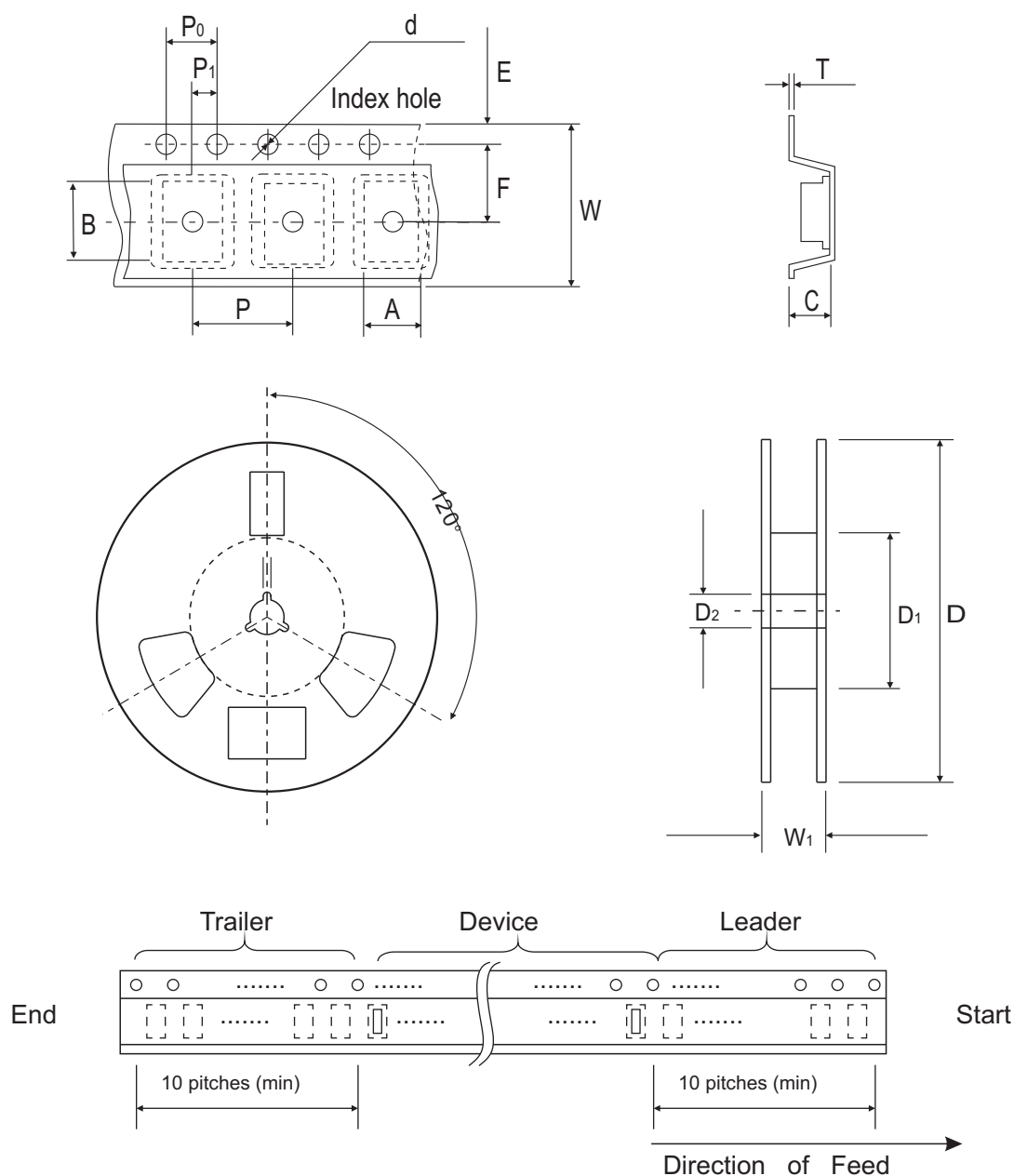
Part No	Breakdown voltage V_{BR} @ I_T			Maximum Reverse Leakage @ V_{RWM} I_R (uA)	Working Peak Reverse Voltage V_{RWM} (V)	Maximum Reverse Surge Current @ 10/1000us sinewave I_{PP} (A)	Maximum Clamping Voltage @ I_{PP} V_C (V)	Marking Code	
	V_{BR} Min. (V)	V_{BR} Max. (V)	I_T (mA)					UNI	BI
TV05A400K(B)-HF	44.4	54.3	1	5	40.0	7.00	71.4	5CS	5YS
TV05A400J(B)-HF	44.4	49.1	1	5	40.0	7.75	64.5	5CT	5YT
TV05A430K(B)-HF	47.8	58.4	1	5	43.0	6.52	76.7	5CU	5YU
TV05A430J(B)-HF	47.8	52.8	1	5	43.0	7.20	69.4	5CV	5YV
TV05A450K(B)-HF	50.0	61.1	1	5	45.0	6.23	80.3	5CW	5YW
TV05A450J(B)-HF	50.0	55.3	1	5	45.0	6.88	72.7	5CX	5YX
TV05A480K(B)-HF	53.3	65.1	1	5	48.0	5.85	85.5	5CY	5YY
TV05A480J(B)-HF	53.3	58.9	1	5	48.0	6.46	77.4	5CZ	5YZ
TV05A510K(B)-HF	56.7	69.3	1	5	51.0	5.49	91.1	5RD	5ZD
TV05A510J(B)-HF	56.7	62.7	1	5	51.0	6.07	82.4	5RE	5ZE
TV05A540K(B)-HF	60.0	73.3	1	5	54.0	5.19	96.3	5RF	5ZF
TV05A540J(B)-HF	60.0	66.3	1	5	54.0	5.74	87.1	5RG	5ZG
TV05A580K(B)-HF	64.4	78.7	1	5	58.0	4.85	103	5RH	5ZH
TV05A580J(B)-HF	64.4	71.2	1	5	58.0	5.34	93.6	5RK	5ZK
TV05A600K(B)-HF	66.7	81.5	1	5	60.0	4.67	107	5RL	5ZL
TV05A600J(B)-HF	66.7	73.7	1	5	60.0	5.17	96.8	5RM	5ZM
TV05A640K(B)-HF	71.1	86.9	1	5	64.0	4.39	114	5RN	5ZN
TV05A640J(B)-HF	71.1	78.6	1	5	64.0	4.85	103	5RP	5ZP
TV05A700K(B)-HF	77.8	95.1	1	5	70.0	4.00	125	5RQ	5ZQ
TV05A700J(B)-HF	77.8	86.0	1	5	70.0	4.42	113	5RR	5ZR
TV05A750K(B)-HF	83.3	102	1	5	75.0	3.73	134	5RS	5ZS
TV05A750J(B)-HF	83.3	92.1	1	5	75.0	4.13	121	5RT	5ZT
TV05A780K(B)-HF	86.7	106	1	5	78.0	3.60	139	5RU	5ZU
TV05A780J(B)-HF	86.7	95.8	1	5	78.0	3.97	126	5RV	5ZV
TV05A800K(B)-HF	89.0	109	1	5	80.0	3.49	143	5RW	5ZW
TV05A800J(B)-HF	88.8	97.6	1	5	80.0	3.86	130	5RX	5ZX
TV05A850K(B)-HF	94.4	115	1	5	85.0	3.31	151	5RY	5ZY
TV05A850J(B)-HF	94.4	104	1	5	85.0	3.65	137	5RZ	5ZZ
TV05A900K(B)-HF	100	122	1	5	90.0	3.13	160	5SD	5VD
TV05A900J(B)-HF	100	111	1	5	90.0	3.42	146	5SE	5VE
TV05A101K(B)-HF	111	136	1	5	100	2.79	179	5SF	5VF
TV05A101J(B)-HF	111	123	1	5	100	3.09	162	5SG	5VG
TV05A111K(B)-HF	122	149	1	5	110	2.55	196	5SH	5VH
TV05A111J(B)-HF	122	135	1	5	110	2.82	177	5SK	5VK
TV05A121K(B)-HF	133	163	1	5	120	2.34	214	5SL	5VL
TV05A121J(B)-HF	133	147	1	5	120	2.59	193	5SM	5VM
TV05A131K(B)-HF	144	176	1	5	130	2.16	231	5SN	5VN
TV05A131J(B)-HF	144	159	1	5	130	2.39	209	5SP	5VP
TV05A141K(B)-HF	156	190	1	5	140	2.00	251	5SQ	5VQ
TV05A141J(B)-HF	155	171	1	5	140	2.20	227	5SR	5VR
TV05A151K(B)-HF	167	204	1	5	150	1.87	268	5SS	5VS
TV05A151J(B)-HF	167	185	1	5	150	2.06	243	5ST	5VT
TV05A161K(B)-HF	178	218	1	5	160	1.74	287	5SU	5VU
TV05A161J(B)-HF	178	197	1	5	160	1.93	259	5SV	5VV
TV05A171K(B)-HF	189	231	1	5	170	1.64	304	5SW	5VW
TV05A171J(B)-HF	189	209	1	5	170	1.82	275	5SX	5VX
TV05A181K(B)-HF	200	245	1	5	180	1.55	322	5SY	5VY
TV05A181J(B)-HF	200	220	1	5	180	1.71	292	5SZ	5VZ
TV05A191K(B)-HF	211	258	1	5	190	1.47	340	5TD	5UD
TV05A191J(B)-HF	211	232	1	5	190	1.62	308	5TE	5UE

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 V_R of 10 volts and under, the I_R limit is double.
4. For Uni-directional devices V_F max=3.5V at I_F =25 A 300us square wave pulse.

REV:A

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)	1.55 ± 0.10	330.00	50.00 (min)	13.00 ± 0.20
	(inch)	0.110 ± 0.004	0.210 ± 0.004	0.177 (max)	0.061 ± 0.004	13.000	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	12.00 ± 0.30	18.40 (max)
	(inch)	0.069 ± 0.004	0.217 ± 0.002	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.002	0.472 ± 0.012	0.724 (max)

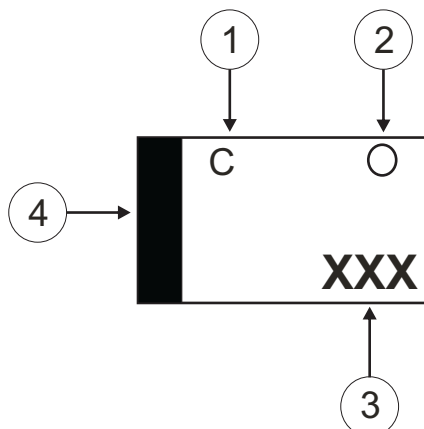
Marking Code

1. C: COMCHIP
2. ○: Package

○	PKG
A	SMA
B	SMB
C	SMC

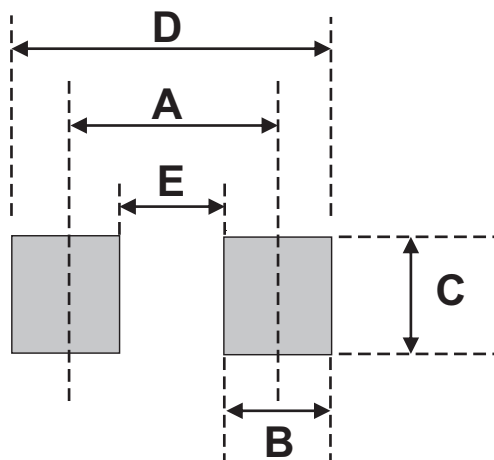
3. XXX: Marking code (see Page.3~4)

4. ■: Cathod Band



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 Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
DO-214AC (SMA)	5,000	13