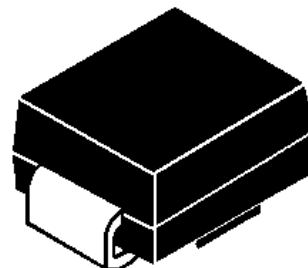


Features

- Working peak reverse voltage range – 5.0V to 440V.
- Peak power dissipation 1500W @10 x 1000 us Pulse
- Low profile package.
- Excellent clamping capability.
- Glass passivated junction.
- Fast response time: typically less than 1 ns for Uni-direction.
Less than 5 ns for Bi-direction, from 0 Volts to BV min
- Typical IR less than 1uA above 10V.
- Plastic material has UL flammability classification 94V-O
- RoHS compliant in lead-free versions
- Moisture Sensitivity: Level 1 per J-STD-020



Mechanical Characteristics

CASE: Void-free, JEDEC DO-214AA Molded Plastic over glass passivated junction..

Mounting Position: Any

Polarity: by cathode band denotes uni-directional device, none cathode band denotes bi-directional device.

Terminal: Solder plated, solderable per MIL-STD-750, Method 2026

Maximum Ratings And Characteristics @ 25°C Ambient Temperature (unless otherwise noted)

Parameter	Symbol	Value	Units
Peak Pulse Power Dissipation on 10/1000 us Waveform (Note 1, 2, FIG.1)	P _{PPM}	Min 1500	W
Peak Pulse Current of on 10/1000us Waveform (Note 1, FIG.3)	I _{PPM}	See Table 1	Amps
Peak Forward Surge Current, 8.3ms Single Half Sine-wave Superimposed on Rated Load, (JEDEC Method) (Note 2. 3)	I _{FSM}	200	Amps
Operating Junction Temperature Range	T _J	-55 to 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 5.0mm² (0.03mm thick) Copper Pads to each terminal.
3. 8.3 ms single half sine-wave, or equivalent square wave, Duty cycle=4 pluses per minute maximum.

Electrical Specification @ Tamb 25°C

Type Number		Marking		Reverse Stand-Off Voltage	Breakdown Voltage Min. @I _T	Breakdown Voltage Max. @ I _T	Test Current	Maximum Clamping Voltage @I _{PP}	Peak Pulse Current	Reverse Leakage @V _{RMW}
(Uni)	(Bi)	(Uni)	(Bi)	V _{RMW} (V)	V _{BR MIN} (V)	V _{BR MAX} (V)	I _T (mA)	V _C (V)	I _{PP} (A)	I _R (uA)
KWSMCJ5.0	KWSMCJ5.0C	GDD	BDD	5.0	6.40	7.55	10.0	9.6	156.3	800.0
KWSMCJ5.0A	KWSMCJ5.0CA	GDE	BDE	5.0	6.40	7.25	10.0	9.2	163.0	800.0
KWSMCJ6.0	KWSMCJ6.0C	GDF	BDF	6.0	6.67	8.45	10.0	11.4	131.6	800.0
KWSMCJ6.0A	KWSMCJ6.0CA	GDG	BDG	6.0	6.67	7.67	10.0	10.3	145.6	800.0
KWSMCJ6.5	KWSMCJ6.5C	GDH	BDH	6.5	7.22	9.14	10.0	12.3	122.0	500.0
KWSMCJ6.5A	KWSMCJ6.5CA	GDK	BDK	6.5	7.22	8.30	10.0	11.2	133.9	500.0
KWSMCJ7.0	KWSMCJ7.0C	GDL	BDL	7.0	7.78	9.86	10.0	13.3	112.8	200.0
KWSMCJ7.0A	KWSMCJ7.0CA	GDM	BDM	7.0	7.78	8.95	10.0	12.0	125.0	200.0
KWSMCJ7.5	KWSMCJ7.5C	GDN	BDN	7.5	8.33	10.67	1.0	14.3	104.9	100.0
KWSMCJ7.5A	KWSMCJ7.5CA	GDP	BDP	7.5	8.33	9.58	1.0	12.9	116.3	100.0
KWSMCJ8.0	KWSMCJ8.0C	GDQ	BDQ	8.0	8.89	11.3	1.0	15.0	100.0	50.0
KWSMCJ8.0A	KWSMCJ8.0CA	GDR	BDR	8.0	8.89	10.23	1.0	13.6	110.3	50.0
KWSMCJ8.5	KWSMCJ8.5C	GDS	BDS	8.5	9.44	11.92	1.0	15.9	94.3	20.0
KWSMCJ8.5A	KWSMCJ8.5CA	GDT	BDT	8.5	9.44	10.82	1.0	14.4	104.2	20.0
KWSMCJ9.0	KWSMCJ9.0C	GDU	BDU	9.0	10.0	12.6	1.0	16.9	88.8	10.0
KWSMCJ9.0A	KWSMCJ9.0CA	GDV	BDV	9.0	10.0	11.5	1.0	15.4	97.4	10.0
KWSMCJ10	KWSMCJ10C	GDW	BDW	10	11.1	14.1	1.0	18.8	79.8	5.0
KWSMCJ10A	KWSMCJ10CA	GDX	BDX	10	11.1	12.8	1.0	17.0	88.2	5.0
KWSMCJ11	KWSMCJ11C	GDY	BDY	11	12.2	15.4	1.0	20.1	74.6	5.0
KWSMCJ11A	KWSMCJ11CA	GDZ	BDZ	11	12.2	14.0	1.0	18.2	82.4	5.0
KWSMCJ12	KWSMCJ12C	GED	BED	12	13.3	16.9	1.0	22.0	68.2	5.0
KWSMCJ12A	KWSMCJ12CA	GEE	BEE	12	13.3	15.3	1.0	19.9	75.4	5.0
KWSMCJ13	KWSMCJ13C	GEF	BEF	13	14.4	18.2	1.0	23.8	63.0	5.0
KWSMCJ13A	KWSMCJ13CA	GEG	BEG	13	14.4	16.5	1.0	21.5	69.8	5.0
KWSMCJ14	KWSMCJ14C	GEH	BEH	14	15.6	19.8	1.0	25.8	58.1	5.0
KWSMCJ14A	KWSMCJ14CA	GEK	BEK	14	15.6	17.9	1.0	23.2	64.7	5.0
KWSMCJ15	KWSMCJ15C	GEL	BEL	15	16.7	21.1	1.0	26.9	55.8	5.0
KWSMCJ15A	KWSMCJ15CA	GEM	BEM	15	16.7	19.2	1.0	24.4	61.5	5.0
KWSMCJ16	KWSMCJ16C	GEN	BEN	16	17.8	22.6	1.0	28.8	52.1	5.0
KWSMCJ16A	KWSMCJ16CA	GEP	BEP	16	17.8	20.5	1.0	26.0	57.7	5.0
KWSMCJ17	KWSMCJ17C	GEQ	BEQ	17	18.9	23.9	1.0	30.5	49.2	5.0
KWSMCJ17A	KWSMCJ17CA	GER	BER	17	18.9	21.7	1.0	27.6	54.3	5.0
KWSMCJ18	KWSMCJ18C	GES	BES	18	20.0	25.3	1.0	32.2	46.6	5.0
KWSMCJ18A	KWSMCJ18CA	GET	BET	18	20.0	23.3	1.0	29.2	51.4	5.0
KWSMCJ20	KWSMCJ20C	GEU	BEU	20	22.2	28.1	1.0	35.8	41.9	5.0
KWSMCJ20A	KWSMCJ20CA	GEV	BEV	20	22.2	25.5	1.0	32.4	46.3	5.0

※ For Bi-directional type having VRWM of 10 Volts and less, the IR limit is double

Type Number		Marking		Reverse Stand-Off Voltage	Breakdown Voltage Min. @I _T	Breakdown Voltage Max. @ I _T	Test Current	Maximum Clamping Voltage @I _{PP}	Peak Pulse Current	Reverse Leakage @V _{RMW}
(Uni)	(Bi)	(Uni)	(Bi)	V _{RMW} (V)	V _{BR MIN} (V)	V _{BR MAX} (V)	I _T (mA)	V _C (V)	I _{PP} (A)	I _R (uA)
KWSMCJ22	KWSMCJ22C	GEW	BEW	22	24.4	30.9	1.0	39.4	38.1	5.0
KWSMCJ22A	KWSMCJ22CA	GEX	BEX	22	24.4	28.0	1.0	35.5	42.3	5.0
KWSMCJ24	KWSMCJ24C	GEY	BEY	24	26.7	33.8	1.0	43.0	34.9	5.0
KWSMCJ24A	KWSMCJ24CA	GEZ	BEZ	24	26.7	30.7	1.0	38.9	38.6	5.0
KWSMCJ26	KWSMCJ26C	GFD	BFD	26	28.9	36.6	1.0	46.6	32.2	5.0
KWSMCJ26A	KWSMCJ26CA	GFE	BFE	26	28.9	33.2	1.0	42.1	35.6	5.0
KWSMCJ28	KWSMCJ28C	GFF	BFF	28	31.1	39.4	1.0	50.0	30.0	5.0
KWSMCJ28A	KWSMCJ28CA	GFG	BFG	28	31.1	35.8	1.0	45.4	33.0	5.0
KWSMCJ30	KWSMCJ30C	GFH	BFH	30	33.3	42.2	1.0	53.5	28.0	5.0
KWSMCJ30A	KWSMCJ30CA	GFK	BFK	30	33.3	38.3	1.0	48.4	31.0	5.0
KWSMCJ33	KWSMCJ33C	GFL	BFL	33	36.7	46.5	1.0	59.0	25.4	5.0
KWSMCJ33A	KWSMCJ33CA	GFM	BFM	33	36.7	42.2	1.0	53.3	28.1	5.0
KWSMCJ36	KWSMCJ36C	GFN	BFN	36	40.0	50.7	1.0	64.3	23.3	5.0
KWSMCJ36A	KWSMCJ36CA	GFP	BFP	36	40.0	46.0	1.0	58.1	25.8	5.0
KWSMCJ40	KWSMCJ40C	GFQ	BFQ	40	44.4	56.3	1.0	71.4	21.0	5.0
KWSMCJ40A	KWSMCJ40CA	GFR	BFR	40	44.4	51.1	1.0	64.5	23.3	5.0
KWSMCJ43	KWSMCJ43C	GFS	BFS	43	47.8	60.5	1.0	76.7	19.6	5.0
KWSMCJ43A	KWSMCJ43CA	GFT	BFT	43	47.8	54.9	1.0	69.4	21.6	5.0
KWSMCJ45	KWSMCJ45C	GFU	BFU	45	50.0	63.3	1.0	80.3	18.7	5.0
KWSMCJ45A	KWSMCJ45CA	GFV	BFV	45	50.0	57.5	1.0	72.7	20.6	5.0
KWSMCJ48	KWSMCJ48C	GJS	BJS	48	53.3	67.5	1.0	85.5	17.5	5.0
KWSMCJ48A	KWSMCJ48CA	GJT	BJT	48	53.3	61.3	1.0	77.4	19.4	5.0
KWSMCJ51	KWSMCJ51C	GJU	BJU	51	56.7	71.8	1.0	91.1	16.5	5.0
KWSMCJ51A	KWSMCJ51CA	GJV	BJV	51	56.7	65.2	1.0	82.4	18.2	5.0
KWSMCJ54	KWSMCJ54C	GFW	BFW	54	60.0	76.0	1.0	96.3	15.6	5.0
KWSMCJ54A	KWSMCJ54CA	GFX	BFX	54	60.0	69.0	1.0	87.1	17.2	5.0
KWSMCJ58	KWSMCJ58C	GFY	BFY	58	64.4	81.6	1.0	103	14.6	5.0
KWSMCJ58A	KWSMCJ58CA	GFZ	BFZ	58	64.4	74.1	1.0	93.6	16.0	5.0
KWSMCJ60	KWSMCJ60C	GGD	BGD	60	66.7	84.5	1.0	107	14.0	5.0
KWSMCJ60A	KWSMCJ60CA	GGE	BGE	60	66.7	76.7	1.0	96.8	15.5	5.0
KWSMCJ64	KWSMCJ64C	GGF	BGF	64	71.1	90.1	1.0	114	13.2	5.0
KWSMCJ64A	KWSMCJ64CA	GGG	BGG	64	71.1	81.8	1.0	103	14.6	5.0
KWSMCJ70	KWSMCJ70C	GGH	BGH	70	77.8	98.6	1.0	125	12.0	5.0
KWSMCJ70A	KWSMCJ70CA	GGK	BGK	70	77.8	89.5	1.0	113	13.3	5.0
KWSMCJ75	KWSMCJ75C	GGL	BGL	75	83.0	105.7	1.0	134	11.2	5.0
KWSMCJ75A	KWSMCJ75CA	GGM	BGM	75	83.0	95.8	1.0	121	12.4	5.0
KWSMCJ78	KWSMCJ78C	GGN	BGN	78	86.0	109.8	1.0	139	10.8	5.0
KWSMCJ78A	KWSMCJ78CA	GGP	BGP	78	86.0	99.7	1.0	126	11.9	5.0

※ For Bi-directional type having VRWM of 10 Volts and less, the IR limit is double



KWSMCJ5.0---KWSMCJ440CA

1500W Surface Mount Transient Voltage Suppressors

Type Number		Marking		Reverse Stand-Off Voltage	Breakdown Voltage Min. @I _T	Breakdown Voltage Max. @ I _T	Test Current	Maximum Clamping Voltage @I _{PP}	Peak Pulse Current	Reverse Leakage @V _{RMW}
(Uni)	(Bi)	(Uni)	(Bi)	V _{RMW} (V)	V _{BR MIN} (V)	V _{BR MAX} (V)	I _T (mA)	V _C (V)	I _{PP} (A)	I _R (uA)
KWSMCJ85	KWSMCJ85C	GGQ	BGQ	85	94.0	119.2	1.0	151	9.9	5.0
KWSMCJ85A	KWSMCJ85CA	GGR	BGR	85	94.0	108.2	1.0	137	10.9	5.0
KWSMCJ90	KWSMCJ90C	GGS	BGS	90	100	126.5	1.0	160	9.4	5.0
KWSMCJ90A	KWSMCJ90CA	GGT	BGT	90	100	115.5	1.0	146	10.3	5.0
KWSMCJ100	KWSMCJ100C	GGU	BGU	100	111	141.0	1.0	179	8.4	5.0
KWSMCJ100A	KWSMCJ100CA	GGV	BGV	100	111	128.0	1.0	162	9.3	5.0
KWSMCJ110	KWSMCJ110C	GGW	BGW	110	122	154.5	1.0	196	7.7	5.0
KWSMCJ110A	KWSMCJ110CA	GGX	BGX	110	122	140.5	1.0	177	8.5	5.0
KWSMCJ120	KWSMCJ120C	GGY	BGY	120	133	169.0	1.0	214	7.0	5.0
KWSMCJ120A	KWSMCJ120CA	GGZ	BGZ	120	133	153.0	1.0	193	7.8	5.0
KWSMCJ130	KWSMCJ130C	GHD	BHD	130	144	182.5	1.0	231	6.5	5.0
KWSMCJ130A	KWSMCJ130CA	GHE	BHE	130	144	165.5	1.0	209	7.2	5.0
KWSMCJ150	KWSMCJ150C	GHF	BHF	150	167	211.5	1.0	268	5.6	5.0
KWSMCJ150A	KWSMCJ150CA	GHG	BHG	150	167	192.5	1.0	243	6.2	5.0
KWSMCJ160	KWSMCJ160C	GHH	BHH	160	178	226.0	1.0	287	5.2	5.0
KWSMCJ160A	KWSMCJ160CA	GHK	BHK	160	178	205.0	1.0	259	5.8	5.0
KWSMCJ170	KWSMCJ170C	GHL	BHL	170	189	239.5	1.0	304	4.9	5.0
KWSMCJ170A	KWSMCJ170CA	GHM	BHM	170	189	217.5	1.0	275	5.5	5.0
KWSMCJ180	KWSMCJ180C	GHN	BHN	180	200	253.8	1.0	321	4.7	5.0
KWSMCJ180A	KWSMCJ180CA	GHP	BHP	180	200	230.4	1.0	290	5.2	5.0
KWSMCJ190	KWSMCJ190C	GHQ	BHQ	190	211	267.9	1.0	339	4.4	5.0
KWSMCJ190A	KWSMCJ190CA	GHR	BHR	190	211	243.2	1.0	306	4.9	5.0
KWSMCJ200	KWSMCJ200C	GHW	BHW	200	222	282.0	1.0	356	4.2	5.0
KWSMCJ200A	KWSMCJ200CA	GHX	BHX	200	222	256.0	1.0	322	4.7	5.0
KWSMCJ210	KWSMCJ210C	GHY	BHY	210	233	296.1	1.0	375	4.0	5.0
KWSMCJ210A	KWSMCJ210CA	GHZ	BHZ	210	233	268.8	1.0	339	4.4	5.0
KWSMCJ220	KWSMCJ220C	GJD	BJD	220	244	310.2	1.0	392	3.8	5.0
KWSMCJ220A	KWSMCJ220CA	GJE	BJE	220	244	281.6	1.0	355	4.2	5.0
KWSMCJ250	KWSMCJ250C	GJF	BJF	250	278	342.5	1.0	447	3.4	5.0
KWSMCJ250A	KWSMCJ250CA	GJG	BJG	250	278	309.0	1.0	403	3.7	5.0
KWSMCJ300	KWSMCJ300C	GJH	BJH	300	333	411.0	1.0	535	2.8	5.0
KWSMCJ300A	KWSMCJ300CA	GJK	BJK	300	333	371.0	1.0	484	3.1	5.0
KWSMCJ350	KWSMCJ350C	GJL	BJL	350	389	479.5	1.0	624	2.4	5.0
KWSMCJ350A	KWSMCJ350CA	GJM	BJM	350	389	432.0	1.0	565	2.7	5.0
KWSMCJ400	KWSMCJ400C	GJN	BJN	400	444	548.0	1.0	687	2.2	5.0
KWSMCJ400A	KWSMCJ400CA	GJP	BJP	400	444	494.0	1.0	645	2.3	5.0
KWSMCJ440	KWSMCJ440C	GJQ	BJQ	440	489	602.8	1.0	786	1.9	5.0
KWSMCJ440A	KWSMCJ440CA	GJR	BJR	440	489	543.0	1.0	710	2.1	5.0

※ For Bi-directional type having VRWM of 10 Volts and less, the IR limit is double

Ratings and Characteristic Curves $T_A=25^\circ\text{C}$ unless otherwise noted

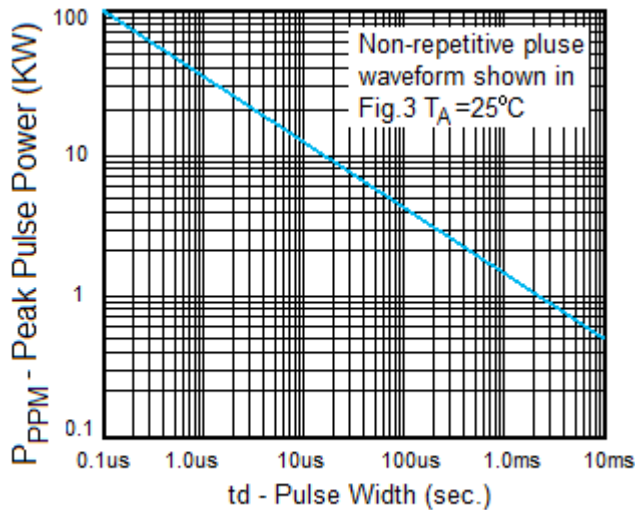


Fig. 1 Peak Pulse Power Rating

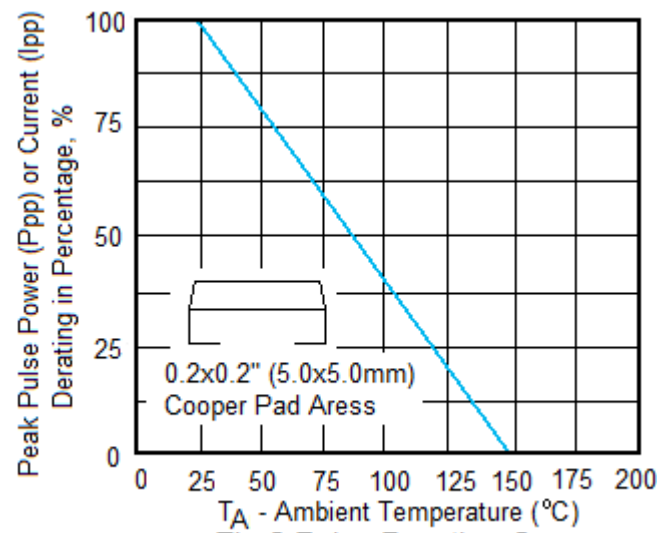


Fig. 2 Pulse Derating Curve

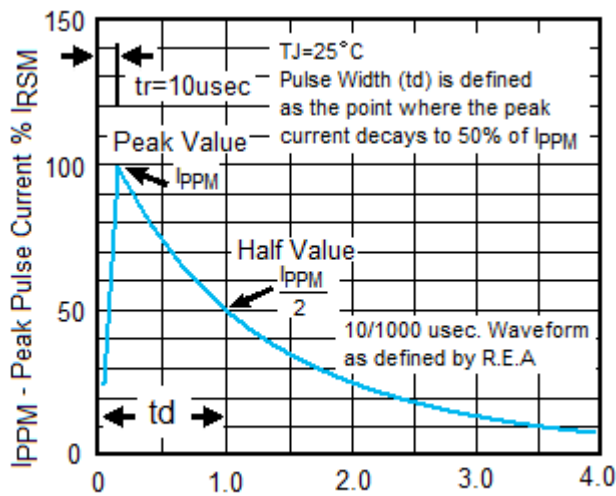


Fig. 3 Pulse Waveform

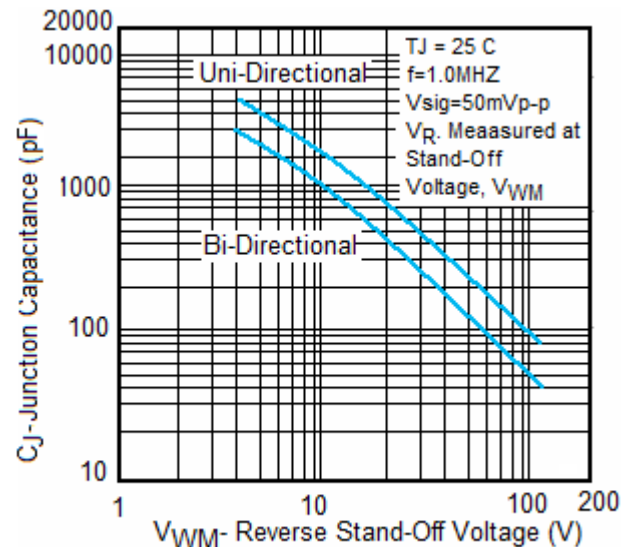
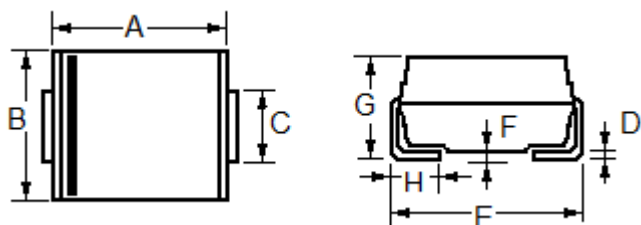


Fig. 4- Typical Junction Capacitance

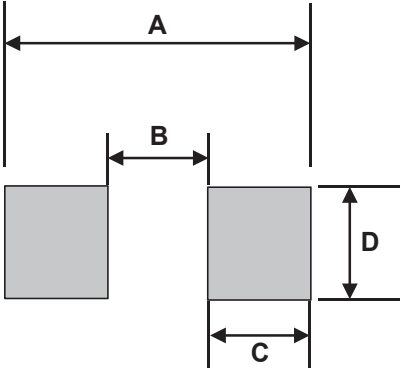
Package Outline Dimensions and Pad Layouts

DO-214AB (SMC)



Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	6.60	7.11	0.260	0.280
B	5.59	6.22	0.220	0.245
C	2.90	3.20	0.114	0.126
D	0.125	0.305	0.006	0.012
E	7.60	8.13	0.299	0.320
F	----	0.203	----	0.008
G	2.06	2.85	0.079	0.112
H	0.76	1.52	0.030	0.060

Suggested PAD Layout

SIZE	DO-214AB(SMC)		
	(mm)	(inch)	
A	8.13	0.320	
B	4.69 MAX	0.185 MAX	
C	1.52 MIN	0.06 MIN	
D	3.20 MIN	0.126 MIN	

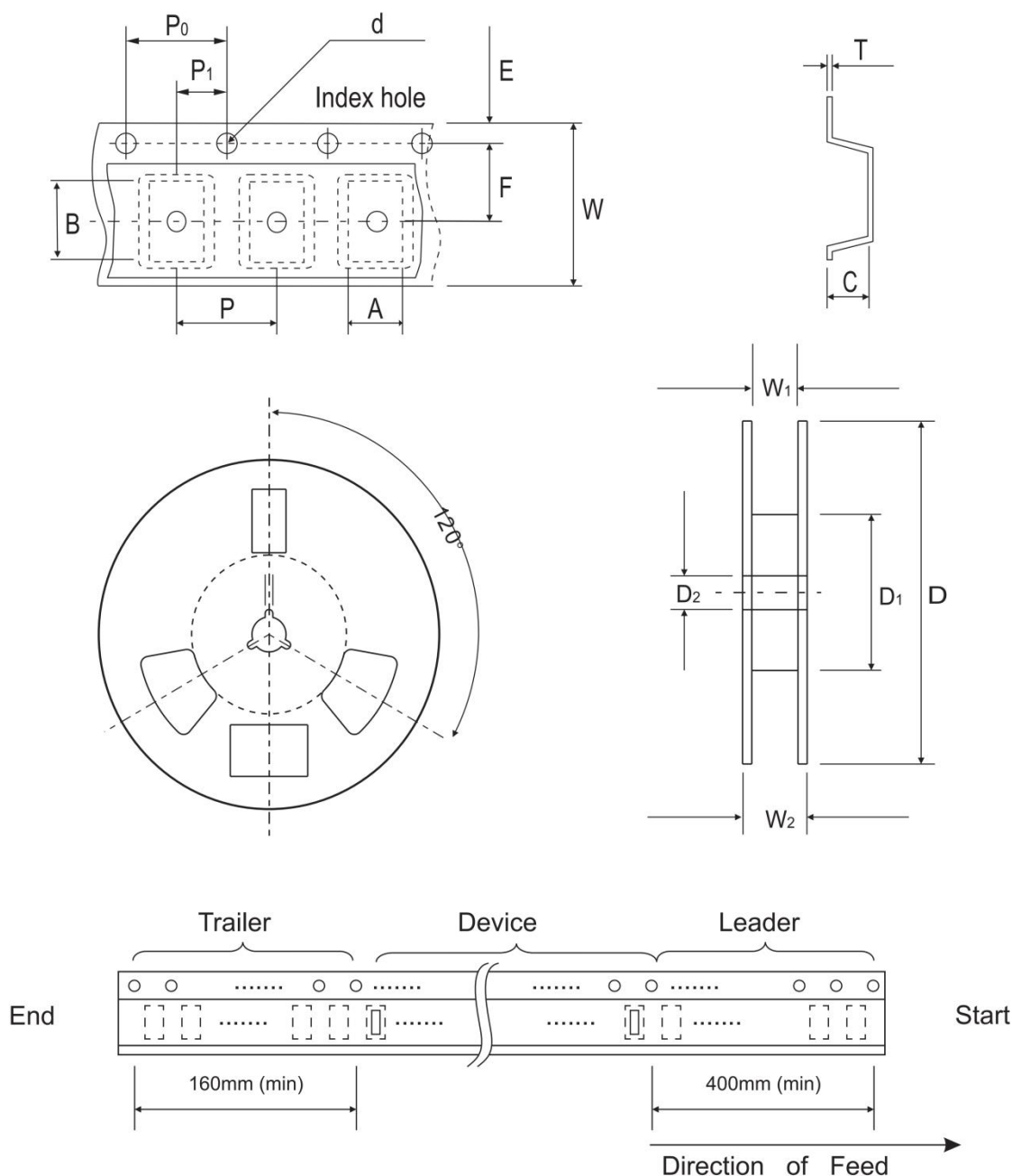
Marking Code

Part Number	
KWSMCJ5.0A(CA) Thru. KWSMCJ440A(CA)	
Polarity Indicator: Cathode Band (Note: Bi-directional devices have no polarity indicator.) GDE: Marking Code	

Ordering Information

Part Number	Package	Weight	Base qty	Reel Size	Delivery mode
		grams(approx.)	(pcs)	(inch)	
KWSMCJ5.0A(CA) Thru. KWSMCJ440A(CA)	DO-214AB (SMC)	0.230	3000	13	Tape and reel

Reel Taping Specification



DO-214AB (SMC)	SYMBOL	A	B	C	d	T	D	D1	D2
	(mm)	See Note 1			1.55 ± 0.05	0.40 (Max.)	330	50.00 (Min.)	13.00 + 0.50 - 0.20
	(inch)				0.061 ± 0.002	0.016 (Max.)	13	1.969 (Min.)	0.512 + 0.020 - 0.008
	SYMBOL	E	F	P	P0	P1	W	W1	W2
	(mm)	1.75 ± 0.10	7.50 ± 0.05	8.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	16.00 ± 0.10	16.40 + 2.00 - 0.00	22.40 (Max.)
	(inch)	0.069±0.004	0.295±0.002	0.315±0.004	0.157±0.004	0.079±0.002	0.630±0.004	0.646 + 0.079 - 0.000	0.882 (Max.)

Notes: 1. A, B, and C the clearance between the component and the cavity must be within 0.5 mm max. for 8 mm tape and 12 mm tape, 1.0 mm max. for 16mm tape and 24 mm tape.