

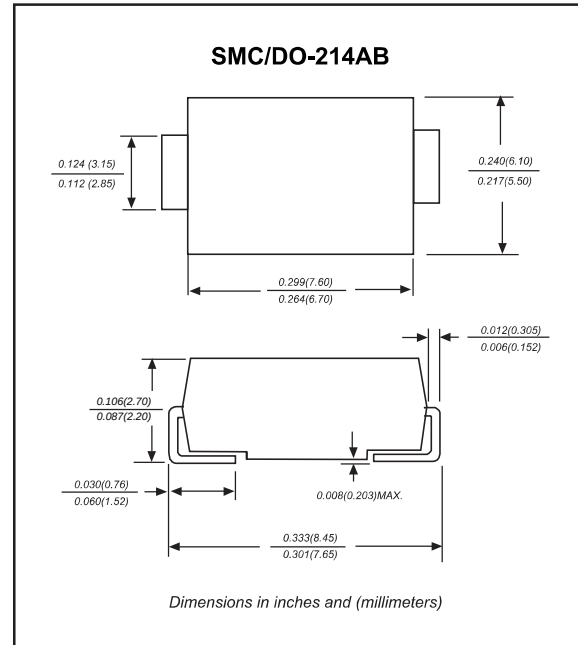
Features

- 3000W peak pulse power capability with a 10/1000us waveform, repetition rate (duty cycle): 0.05%.
- Excellent clamping capability.
- Low incremental surge resistance.
- Fast response time from 0V to VBR, typically less than 1pS for uni-directional & 5 nS for bi-directional types.
- Ultra high-speed switching.
- Glass passivated chip junction.
- Lead-free parts meet environmental standards of MIL-STD-19500 /228
- Compliant to Halogen-free
- Suffix "-Q1" for AEC-Q101

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, DO-214AB / SMC
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any

Package outline



Maximum ratings (AT $T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER	CONDITIONS	Symbol	3KP SERIES	UNIT
Peak power dissipation	with a 10/1000us waveform, Note 1 & Fig. 1	P_{PPM}	3000	W
Peak pulse current	with a 10/1000us waveform	I_{PPM}	See table 1	A
Steady state power dissipation	at $T_L=75^\circ\text{C}$ lead length 0.375" (9.5 mm)	$P_{M(AV)}$	6.5	W
Peak forward surge current	8.3mS single half sine-wave superimposed on rated load (jedec method), note 2	I_{FSM}	300	A
Maximum instantaneous forward voltage	at 100A for uni-directional types only, note 3	V_F	3.5 / 5.0	V
Operating temperature range		T_J	-55~+150	$^\circ\text{C}$
Storage temperature range		T_{STG}	-55~+150	$^\circ\text{C}$

Note 1. Non-repetitive current pulse, per Fig. 3 and derated above $T_A=25^\circ\text{C}$ per Fig. 2

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

3. $V_F<3.5\text{V}$. for devices of $V_{BR}\leq 220\text{V}$, and $V_F<5.0\text{V}$. for devices of $V_{BR}>201\text{V}$

Electrical characteristics (at T_A = 25°C unless otherwise noted)

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)
3.0SMC6.8-Q1	3.0SMC6.8C-Q1	6V8	6V8C	5.50	6.12	7.48	10.0	10.8	277.8	800.0
3.0SMC6.8A-Q1	3.0SMC6.8CA-Q1	6V8A	6V8CA	5.80	6.45	7.14	10.0	10.5	285.7	800.0
3.0SMC7.5-Q1	3.0SMC7.5C-Q1	7V5	7V5C	6.05	6.75	8.25	10.0	11.7	256.4	500.0
3.0SMC7.5A-Q1	3.0SMC7.5CA-Q1	7V5A	7V5CA	6.40	7.13	7.88	10.0	11.3	265.5	500.0
3.0SMC8.2-Q1	3.0SMC8.2C-Q1	8V2	8V2C	6.63	7.38	9.02	10.0	12.5	240.0	200.0
3.0SMC8.2A-Q1	3.0SMC8.2CA-Q1	8V2A	8V2CA	7.02	7.79	8.61	10.0	12.1	247.9	200.0
3.0SMC9.1-Q1	3.0SMC9.1C-Q1	9V1	9V1C	7.37	8.19	10.0	1.0	13.8	217.4	100.0
3.0SMC9.1A-Q1	3.0SMC9.1CA-Q1	9V1A	9V1CA	7.78	8.65	9.55	1.0	13.4	223.9	100.0
3.0SMC10-Q1	3.0SMC10C-Q1	10	10C	8.10	9.00	11.0	1.0	15.0	200.0	50.0
3.0SMC10A-Q1	3.0SMC10CA-Q1	10A	10CA	8.55	9.50	10.5	1.0	14.5	206.9	50.0
3.0SMC11-Q1	3.0SMC11C-Q1	11	11C	8.92	9.90	12.1	1.0	16.2	185.2	20.0
3.0SMC11A-Q1	3.0SMC11CA-Q1	11A	11CA	9.40	10.5	11.6	1.0	15.6	192.3	20.0
3.0SMC12-Q1	3.0SMC12C-Q1	12	12C	9.72	10.8	13.2	1.0	17.3	173.4	10.0
3.0SMC12A-Q1	3.0SMC12CA-Q1	12A	12CA	10.2	11.4	12.6	1.0	16.7	179.6	10.0
3.0SMC13-Q1	3.0SMC13C-Q1	13	13C	10.5	11.7	14.3	1.0	19.0	157.9	1.0
3.0SMC13A-Q1	3.0SMC13CA-Q1	13A	13CA	11.1	12.4	13.7	1.0	18.2	164.8	1.0
3.0SMC15-Q1	3.0SMC15C-Q1	15	15C	12.1	13.5	16.5	1.0	22.0	136.4	1.0
3.0SMC15A-Q1	3.0SMC15CA-Q1	15A	15CA	12.8	14.3	15.8	1.0	21.2	141.5	1.0
3.0SMC16-Q1	3.0SMC16C-Q1	16	16C	12.9	14.4	17.6	1.0	23.5	127.7	1.0
3.0SMC16A-Q1	3.0SMC16CA-Q1	16A	16CA	13.6	15.2	16.8	1.0	22.5	133.3	1.0
3.0SMC18-Q1	3.0SMC18C-Q1	18	18C	14.5	16.2	19.8	1.0	26.5	113.2	1.0
3.0SMC18A-Q1	3.0SMC18CA-Q1	18A	18CA	15.3	17.1	18.9	1.0	25.2	119.0	1.0
3.0SMC20-Q1	3.0SMC20C-Q1	20	20C	16.2	18.0	22.0	1.0	29.1	103.1	1.0
3.0SMC20A-Q1	3.0SMC20CA-Q1	20A	20CA	17.1	19.0	21.0	1.0	27.7	108.3	1.0
3.0SMC22-Q1	3.0SMC22C-Q1	22	22C	17.8	19.8	24.2	1.0	31.9	94.0	1.0
3.0SMC22A-Q1	3.0SMC22CA-Q1	22A	22CA	18.8	20.9	23.1	1.0	30.6	98.0	1.0
3.0SMC24-Q1	3.0SMC24C-Q1	24	24C	19.4	21.6	26.4	1.0	34.7	86.5	1.0
3.0SMC24A-Q1	3.0SMC24CA-Q1	24A	24CA	20.5	22.8	25.2	1.0	33.2	90.4	1.0
3.0SMC27-Q1	3.0SMC27C-Q1	27	27C	21.8	24.3	29.7	1.0	39.1	76.7	1.0
3.0SMC27A-Q1	3.0SMC27CA-Q1	27A	27CA	23.1	25.7	28.4	1.0	37.5	80.0	1.0
3.0SMC30-Q1	3.0SMC30C-Q1	30	30C	24.3	27.0	33.0	1.0	43.5	69.0	1.0
3.0SMC30A-Q1	3.0SMC30CA-Q1	30A	30CA	25.6	28.5	31.5	1.0	41.4	72.5	1.0
3.0SMC33-Q1	3.0SMC33C-Q1	33	33C	26.8	29.7	36.3	1.0	47.7	62.9	1.0
3.0SMC33A-Q1	3.0SMC33CA-Q1	33A	33CA	28.2	31.4	34.7	1.0	45.7	65.6	1.0
3.0SMC36-Q1	3.0SMC36C-Q1	36	36C	29.1	32.4	39.6	1.0	52.0	57.7	1.0
3.0SMC36A-Q1	3.0SMC36CA-Q1	36A	36CA	30.8	34.2	37.8	1.0	49.9	60.1	1.0
3.0SMC39-Q1	3.0SMC39C-Q1	39	39C	31.6	35.1	42.9	1.0	56.4	53.2	1.0
3.0SMC39A-Q1	3.0SMC39CA-Q1	39A	39CA	33.3	37.1	41.0	1.0	53.9	55.7	1.0
3.0SMC43-Q1	3.0SMC43C-Q1	43	43C	34.8	38.7	47.3	1.0	61.9	48.5	1.0
3.0SMC43A-Q1	3.0SMC43CA-Q1	43A	43CA	36.8	40.9	45.2	1.0	59.3	50.6	1.0
3.0SMC47-Q1	3.0SMC47C-Q1	47	47C	38.1	42.3	51.7	1.0	67.8	44.2	1.0
3.0SMC47A-Q1	3.0SMC47CA-Q1	47A	47CA	40.2	44.7	49.4	1.0	64.8	46.3	1.0
3.0SMC51-Q1	3.0SMC51C-Q1	51	51C	41.3	45.9	56.1	1.0	73.5	40.8	1.0
3.0SMC51A-Q1	3.0SMC51CA-Q1	51A	51CA	43.6	48.5	53.6	1.0	70.1	42.8	1.0

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



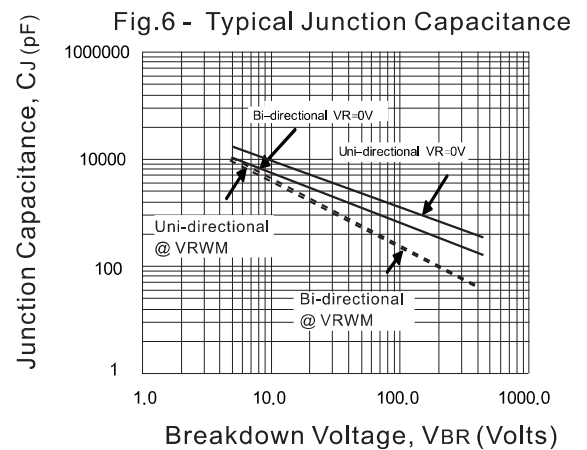
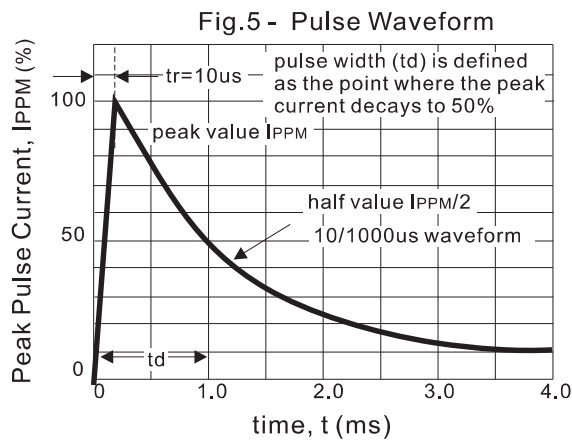
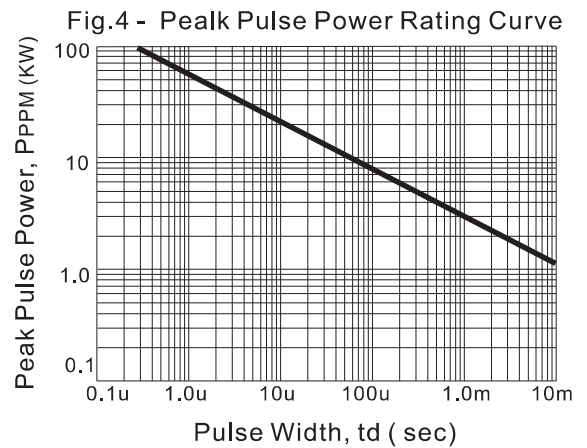
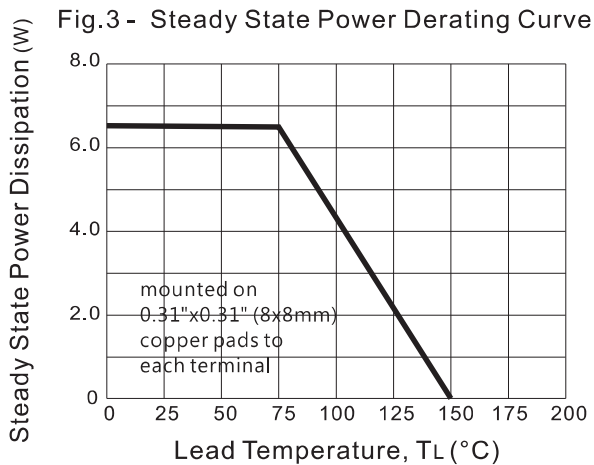
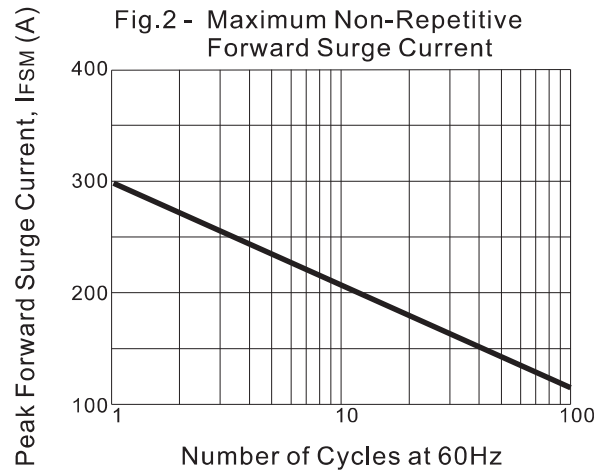
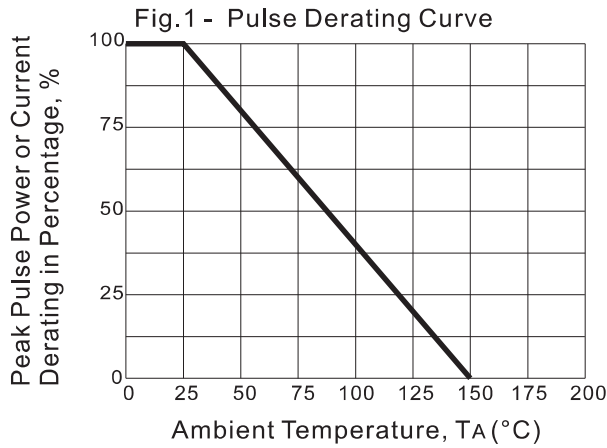
Electrical characteristics (at T_A = 25°C unless otherwise noted)

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 _{RWM}
(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)
3.0SMC56-Q1	3.0SMC56C-Q1	56	56C	45.4	50.4	61.6	1.0	80.5	37.3	1.0
3.0SMC56A-Q1	3.0SMC56CA-Q1	56A	56CA	47.8	53.2	58.8	1.0	77.0	39.0	1.0
3.0SMC62-Q1	3.0SMC62C-Q1	62	62C	50.2	55.8	68.2	1.0	89.0	33.7	1.0
3.0SMC62A-Q1	3.0SMC62CA-Q1	62A	62CA	53.0	58.9	65.1	1.0	85.0	35.3	1.0
3.0SMC68-Q1	3.0SMC68C-Q1	68	68C	55.1	61.2	74.8	1.0	98.0	30.6	1.0
3.0SMC68A-Q1	3.0SMC68CA-Q1	68A	68CA	58.1	64.6	71.4	1.0	92.0	32.6	1.0
3.0SMC75-Q1	3.0SMC75C-Q1	75	75C	60.7	67.5	82.5	1.0	108	27.8	1.0
3.0SMC75A-Q1	3.0SMC75CA-Q1	75A	75CA	64.1	71.3	78.8	1.0	103	29.1	1.0
3.0SMC82-Q1	3.0SMC82C-Q1	82	82C	66.4	73.8	90.2	1.0	118	25.4	1.0
3.0SMC82A-Q1	3.0SMC82CA-Q1	82A	82CA	70.1	77.9	86.1	1.0	113	26.5	1.0
3.0SMC91-Q1	3.0SMC91C-Q1	91	91C	73.7	81.9	100	1.0	131	22.9	1.0
3.0SMC91A-Q1	3.0SMC91CA-Q1	91A	91CA	77.8	86.5	95.5	1.0	125	24.0	1.0
3.0SMC100-Q1	3.0SMC100C-Q1	100	100C	81.0	90.0	110	1.0	144	20.8	1.0
3.0SMC100A-Q1	3.0SMC100CA-Q1	100A	100CA	85.5	95.0	105	1.0	137	21.9	1.0
3.0SMC110-Q1	3.0SMC110C-Q1	110	110C	89.2	99.0	121	1.0	158	19.0	1.0
3.0SMC110A-Q1	3.0SMC110CA-Q1	110A	110CA	94.0	105	116	1.0	152	19.7	1.0
3.0SMC120-Q1	3.0SMC120C-Q1	120	120C	97.2	108	132	1.0	173	17.3	1.0
3.0SMC120A-Q1	3.0SMC120CA-Q1	120A	120CA	102	114	126	1.0	165	18.2	1.0
3.0SMC130-Q1	3.0SMC130C-Q1	130	130C	105	117	143	1.0	187	16.0	1.0
3.0SMC130A-Q1	3.0SMC130CA-Q1	130A	130CA	111	124	137	1.0	179	16.8	1.0
3.0SMC150-Q1	3.0SMC150C-Q1	150	150C	121	135	165	1.0	215	14.0	1.0
3.0SMC150A-Q1	3.0SMC150CA-Q1	150A	150CA	128	143	158	1.0	207	14.5	1.0
3.0SMC160-Q1	3.0SMC160C-Q1	160	160C	130	144	176	1.0	230	13.0	1.0
3.0SMC160A-Q1	3.0SMC160CA-Q1	160A	160CA	136	152	168	1.0	219	13.7	1.0
3.0SMC170-Q1	3.0SMC170C-Q1	170	170C	138	153	187	1.0	244	12.3	1.0
3.0SMC170A-Q1	3.0SMC170CA-Q1	170A	170CA	145	162	179	1.0	234	12.8	1.0
3.0SMC180-Q1	3.0SMC180C-Q1	180	180C	146	162	198	1.0	258	11.6	1.0
3.0SMC180A-Q1	3.0SMC180CA-Q1	180A	180CA	154	171	189	1.0	246	12.2	1.0
3.0SMC200-Q1	3.0SMC200C-Q1	200	200C	162	180	220	1.0	287	10.5	1.0
3.0SMC200A-Q1	3.0SMC200CA-Q1	200A	200CA	171	190	210	1.0	274	10.9	1.0
3.0SMC220-Q1	3.0SMC220C-Q1	220	220C	175	198	242	1.0	344	8.7	1.0
3.0SMC220A-Q1	3.0SMC220CA-Q1	220A	220CA	185	209	231	1.0	328	9.1	1.0
3.0SMC250-Q1	3.0SMC250C-Q1	250	250C	202	225	275	1.0	360	8.3	1.0
3.0SMC250A-Q1	3.0SMC250CA-Q1	250A	250CA	214	237	263	1.0	344	8.7	1.0
3.0SMC300-Q1	3.0SMC300C-Q1	300	300C	243	270	330	1.0	430	7.0	1.0
3.0SMC300A-Q1	3.0SMC300CA-Q1	300A	300CA	256	285	315	1.0	414	7.2	1.0
3.0SMC350-Q1	3.0SMC350C-Q1	350	350C	284	315	385	1.0	504	6.0	1.0
3.0SMC350A-Q1	3.0SMC350CA-Q1	350A	350CA	300	333	368	1.0	482	6.2	1.0
3.0SMC400-Q1	3.0SMC400C-Q1	400	400C	324	360	440	1.0	574	5.2	1.0
3.0SMC400A-Q1	3.0SMC400CA-Q1	400A	400CA	342	380	420	1.0	548	5.5	1.0
3.0SMC440-Q1	3.0SMC440C-Q1	440	440C	356	396	484	1.0	631	4.8	1.0
3.0SMC440A-Q1	3.0SMC440CA-Q1	440A	440CA	376	418	462	1.0	600	5.0	1.0

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Rating and characteristic curves



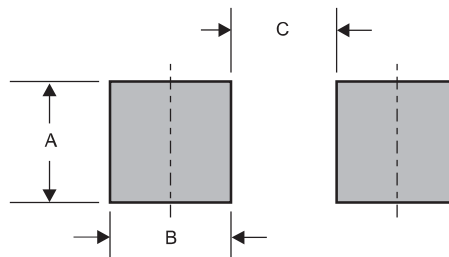
Pinning information

Pin	Simplified outline	Symbol
Uni-Directional Pin1 cathode Pin2 anode		
Bi-Directional		

Marking

Type number	Example
Uni-Directional	 Cathode band Marking code (see page 2 to page 3)
Bi-Directional	 Marking code (see page 2 to page 3)

Suggested solder pad layout



Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SMC	0.132 (3.30)	0.100 (2.50)	0.176 (4.40)