

## 3000W, 12V- 47V Surface Mount Transient Voltage Suppressor

### FEATURES

- AEC-Q101 qualified
- Moisture sensitivity level: level 1, per J-STD-020
- Meets IEC 61000-4-2 (Level: 4) / ISO 10605 (Level: L4)
- Meets ISO 7637-2 (Pulse 1/2a/2b/3a/3b)
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

### APPLICATIONS

- Switching mode power supply (SMPS)
- Motor for BLDC
- Lighting application
- Battery Management System
- Automotive

### MECHANICAL DATA

- Case: DO-214AB (SMC)
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: Indicated by cathode band
- Weight: 0.210g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$V_{WM}$	10 - 40	V
$V_{BR}$	12 - 47	V
$P_{PPM}$	3000	W
$T_{J\ MAX}$	175	°C
Polarity	Uni-directional	
Package	DO-214AB (SMC)	


**HALOGEN  
FREE**

**DO-214AB (SMC)**


ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Non-repetitive peak impulse power dissipation with 10/1000 $\mu\text{s}$ waveform <sup>(1)</sup>	$P_{PPM}$	3000	W
Steady state power dissipation at $T_L = 25^\circ\text{C}$ <sup>(2)</sup>	$P_D$	8.5	W
Peak forward surge current 8.3ms single half sine-wave	$I_{FSM}$	300	A
Junction temperature	$T_J$	-55 to +175	°C
Storage temperature	$T_{STG}$	-55 to +175	°C

#### Notes:

1. Non-repetitive current pulse per Fig.3 and derated above  $T_A = 25^\circ\text{C}$  per Fig.1
2. Units mounted on PCB (16mm x 16mm Cu pad test board)

**THERMAL PERFORMANCE**

PARAMETER	SYMBOL	TYP	UNIT
Junction-to-lead thermal resistance	$R_{\theta JL}$	17	°C/W
Junction-to-ambient thermal resistance	$R_{\theta JA}$	50	°C/W
Junction-to-case thermal resistance	$R_{\theta JC}$	10	°C/W

**Thermal Performance Note:** Units mounted on PCB (16mm x 16mm Cu pad test board)

**ELECTRICAL SPECIFICATIONS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

Part number	Marking code	$I_R$ max at $V_{WM}$		$V_{BR}$ at $I_T^{(1)}$				$V_C$ at $I_{PPM}$ 10 / 1000 $\mu\text{s}$		$R_D$ 10 / 1000 $\mu\text{s}$	$\alpha T^{(2)}$
				Min	Typ	Max	$I_T$	Max			Max
		$\mu\text{A}$	V	V		mA		$V^{(3)}$	$A^{(4)}$	$\Omega$	$10^{-4}/^\circ\text{C}$
3KSMC12AH	3K12A	5	10	11.4	12.0	12.6	1	17.0	176	0.028	7.8
3KSMC15AH	3K15A	3	13	14.3	15.0	15.8	1	21.5	140	0.046	8.4
3KSMC18AH	3K18A	3	15	16.7	17.6	18.5	1	24.4	123.0	0.055	8.8
3KSMC19AH	3K19A	3	16	17.8	18.7	19.6	1	26.0	115.4	0.063	8.8
3KSMC21AH	3K21A	3	18	20	21.1	22.2	1	29.2	102.7	0.079	9.2
3KSMC23AH	3K23A	3	20	22.2	23.4	24.6	1	32.4	92.6	0.097	9.4
3KSMC26AH	3K26A	3	22	24.4	25.7	27.0	1	35.5	84.5	0.116	9.6
3KSMC28AH	3K28A	3	24	26.7	28.1	29.5	1	38.9	77.1	0.140	9.6
3KSMC30AH	3K30A	3	26	28.9	30.4	31.9	1	42.1	71.3	0.164	9.7
3KSMC33AH	3K33A	3	28	31.1	32.7	34.3	1	45.4	66.1	0.192	9.8
3KSMC35AH	3K35A	3	30	33.3	35.1	36.9	1	48.4	62.0	0.215	9.9
3KSMC39AH	3K39A	3	33	36.7	38.6	40.5	1	53.3	56.3	0.261	10.0
3KSMC42AH	3K42A	3	36	40.0	42.1	44.2	1	58.1	48.4	0.331	10.0
3KSMC47AH	3K47A	3	40	44.4	46.7	49.0	1	64.5	43.5	0.409	10.1

**Notes:**

- Pulse test:  $t_p < 30\text{ms}$
- To calculate  $V_{BR}$  or  $V_C$  versus junction temperature, use following formulas:  
 $V_{BR}$  at  $T_J = V_{BR}$  at  $25^\circ\text{C} \times (1 + \alpha T \times (T_J - 25))$   
 $V_C$  at  $T_J = V_C$  at  $25^\circ\text{C} \times (1 + \alpha T \times (T_J - 25))$
- To calculate maximum clamping voltage at other surge level, use the following formula:  
 $V_{Cmax} = V_C - R_D \times (I_{PP} - I_{PPappli})$  where  $I_{PPappli}$  is the surge current in the application.

**ORDERING INFORMATION**

ORDERING CODE	PACKAGE	PACKING
3KSMCxAH	DO-214AB (SMC)	3,000 / Tape & Reel

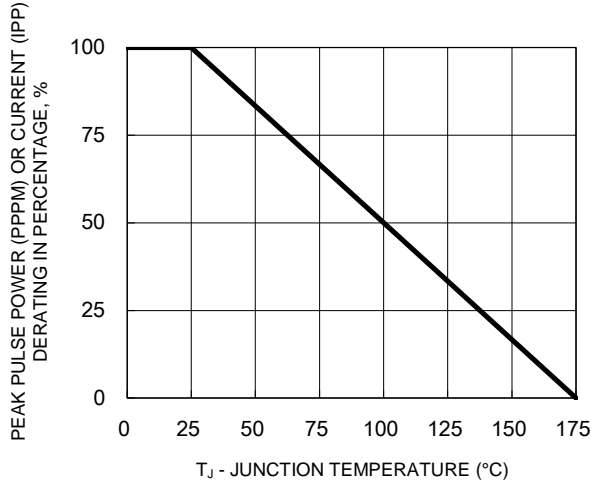
**Notes:**

- "x" defines voltage from 12V (3KSMC12AH) to 47V (3KSMC47AH)

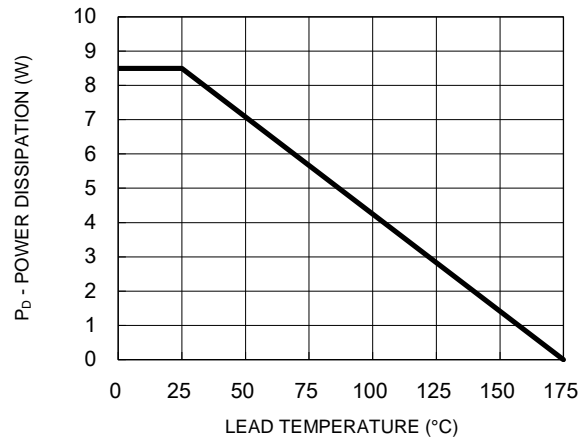
## CHARACTERISTICS CURVES

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

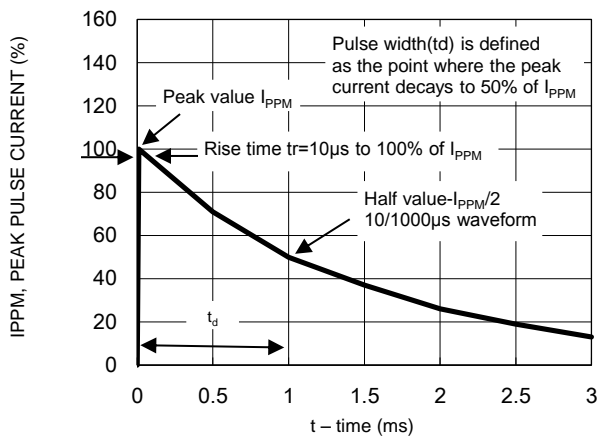
**Fig.1 Pulse Power or Current vs. Initial Junction Temperature**



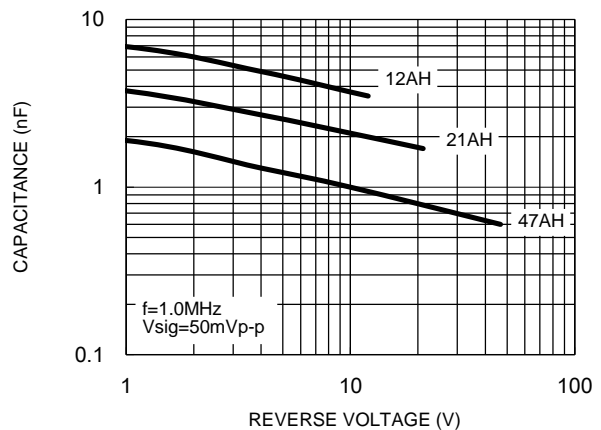
**Fig.2 Steady State Power Derating**



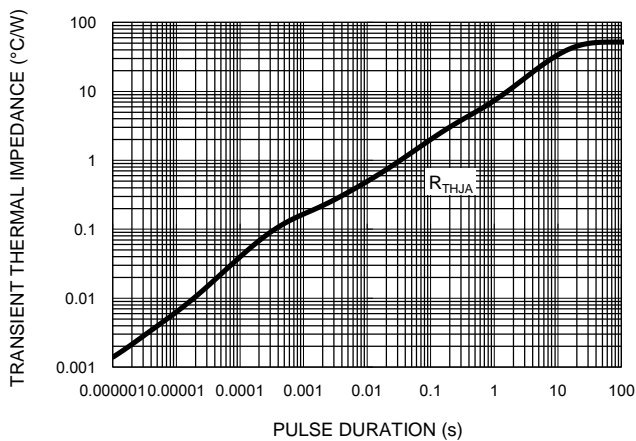
**Fig.3 Clamping Power Pulse Waveform**



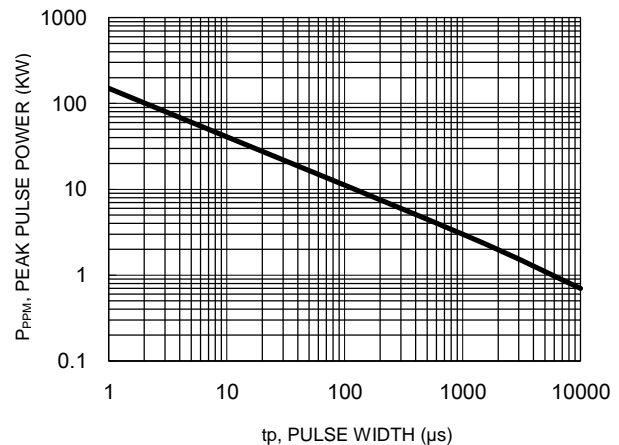
**Fig.4 Typical Junction Capacitance**



**Fig.5 Typical Transient Thermal Impedance**

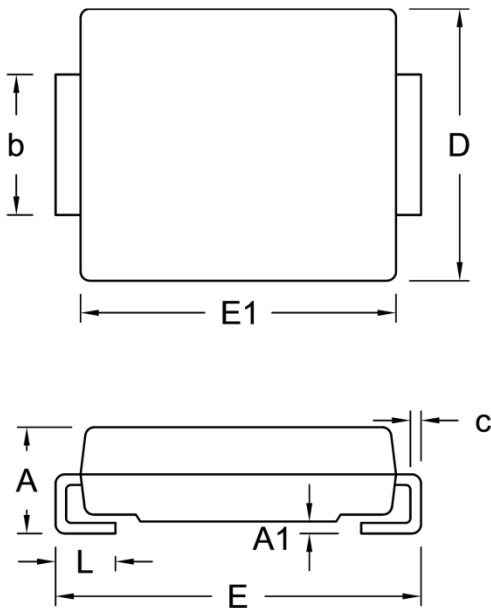


**Fig.6 Peak Pulse Power Rating Curve**



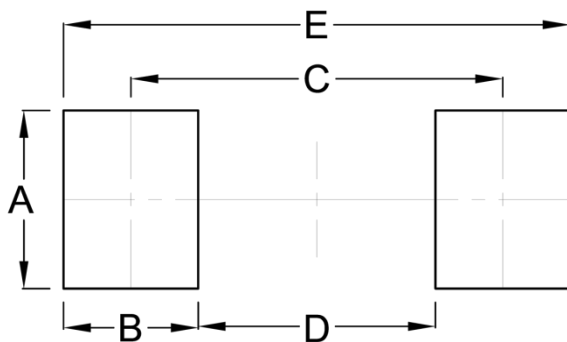
## PACKAGE OUTLINE DIMENSIONS

DO-214AB (SMC)



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	2.00	2.62	0.079	0.103
A1	-	0.20	-	0.008
b	2.90	3.20	0.114	0.126
c	0.15	0.31	0.006	0.012
D	5.59	6.22	0.220	0.245
E	7.75	8.13	0.305	0.320
E1	6.60	7.11	0.260	0.280
L	1.00	1.60	0.039	0.063

## SUGGESTED PAD LAYOUT



Symbol	Unit (mm)	Unit (inch)
A	3.30	0.130
B	2.50	0.098
C	6.90	0.272
D	4.40	0.173
E	9.40	0.370

## MARKING DIAGRAM



P/N = Marking Code  
 G = Green Compound  
 YW = Date Code  
 F = Factory Code

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