

SMAF Plastic-Encapsulate Diodes

Transient Voltage Suppressor Diodes

Features

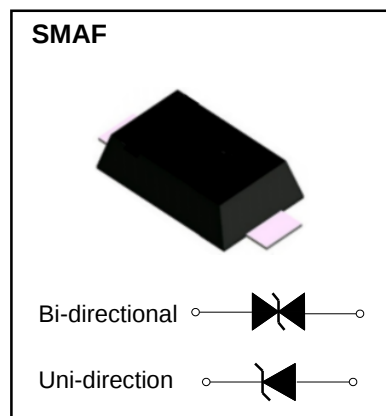
- P_{PPM} 400W
- V_{RWM} 5.0V- 200V
- Low power loss, high efficiency
- Excellent clamping capability

Applications

- Protect sensitive circuit from damage by high voltage transients
- Lighting, ESD transient voltage protection of IC, system
- Inductive switching load protection of IC, system
- Electrical Fast Transient Immunity protection of IC, system

Mechical Data

- Case: SMAF molded plastic
- Molding compound: UL flammability classification rating 94V-0
- Terminals: Solder plated, solderable per MIL- STD-202, Method 208
- Polarity: Color band denotes cathode end



Limiting Values (Absolute Maximum Rating)

Item	Symbol	Unit	Conditions	Max
Peak power dissipation	P_{PPM}	W	with a 10/1000us waveform ⁽¹⁾	400
Peak pulse current	I_{PPM}	A	with a 10/1000us waveform	See Next Table
Surge(Non-repetitive)Forward Current	I_{FSM}	A	Peak forward surge current, 8.3 ms single half sinewave unidirectional only	40
Peak Forward Voltage	V_F	V	Maximum instantaneous forward voltage at 25 A for unidirectional only	3.5
Operating junction and storage temperature range	T_J, T_{STG}	°C		-55 to +150
Thermal resistance	$R_{\theta JL}$	°C/W	Between junction and lead	30
	$R_{\theta JA}$	°C/W	Between junction and Ambient	150
	$R_{\theta JC}$	°C/W	Between junction and Case	25

Notes:

(1) Non-repetitive current pulse at $T_A=25^{\circ}\text{C}$, per waveform of Figure 4.

Electrical Characteristics (T_A=25°C unless otherwise noted)

PART NUMBER		REVERSE STAND-OFF VOLTAGE V _{RWM}	BREAKDOWN VOLTAGE V _(BR) @ I _T (VOLTS)			MAXIMUM CLAMPING VOLTAGE @ I _{PP}	PEAK PULSE CURRENT I _{PP}	MAXIMUM REVERSE LEAKAGE @V _{RWM} I _R
UNI-POLAR	BI-POLAR	(VOLTS)	MIN	MAX	I _T (mA)	(VOLTS)	(AMPS)	(μA)
SMAF5.0A	SMAF5.0CA	5.0	6.40	7.00	10	9.2	43.5	800
SMAF6.0A	SMAF6.0CA	6.0	6.67	7.37	10	10.3	38.8	800
SMAF6.5A	SMAF6.5CA	6.5	7.22	7.98	10	11.2	35.7	500
SMAF7.0A	SMAF7.0CA	7.0	7.78	8.60	10	12.0	33.3	200
SMAF7.5A	SMAF7.5CA	7.5	8.33	9.21	1	12.9	31.0	100
SMAF8.0A	SMAF8.0CA	8.0	8.89	9.83	1	13.6	29.4	50
SMAF8.5A	SMAF8.5CA	8.5	9.44	10.4	1	14.4	27.7	20
SMAF9.0A	SMAF9.0CA	9.0	10.0	11.1	1	15.4	26.0	10
SMAF10A	SMAF10CA	10	11.1	12.3	1	17.0	23.5	5
SMAF11A	SMAF11CA	11	12.2	13.5	1	18.2	22.0	1
SMAF12A	SMAF12CA	12	13.3	14.7	1	19.9	20.1	1
SMAF13A	SMAF13CA	13	14.4	15.9	1	21.5	18.6	1
SMAF14A	SMAF14CA	14	15.6	17.2	1	23.2	17.2	1
SMAF15A	SMAF15CA	15	16.7	18.5	1	24.4	16.4	1
SMAF16A	SMAF16CA	16	17.8	19.7	1	26.0	15.3	1
SMAF17A	SMAF17CA	17	18.9	20.9	1	27.6	14.5	1
SMAF18A	SMAF18CA	18	20.0	22.1	1	29.2	13.7	1
SMAF20A	SMAF20CA	20	22.2	24.5	1	32.4	12.3	1
SMAF22A	SMAF22CA	22	24.4	26.9	1	35.5	11.2	1
SMAF24A	SMAF24CA	24	26.7	29.5	1	38.9	10.3	1
SMAF26A	SMAF26CA	26	28.9	31.9	1	42.1	9.5	1
SMAF28A	SMAF28CA	28	31.1	34.4	1	45.4	8.8	1
SMAF30A	SMAF30CA	30	33.3	36.8	1	48.4	8.3	1
SMAF33A	SMAF33CA	33	36.7	40.6	1	53.3	7.5	1
SMAF36A	SMAF36CA	36	40.0	44.2	1	58.1	6.9	1
SMAF40A	SMAF40CA	40	44.4	49.1	1	64.5	6.2	1
SMAF43A	SMAF43CA	43	47.8	52.8	1	69.4	5.7	1
SMAF45A	SMAF45CA	45	50.0	55.3	1	72.7	5.5	1
SMAF48A	SMAF48CA	48	53.3	58.9	1	77.4	5.2	1
SMAF51A	SMAF51CA	51	56.7	62.7	1	82.4	4.9	1
SMAF54A	SMAF54CA	54	60.0	66.3	1	87.1	4.6	1
SMAF58A	SMAF58CA	58	64.4	71.2	1	93.6	4.3	1
SMAF60A	SMAF60CA	60	66.7	73.7	1	96.8	4.1	1
SMAF64A	SMAF64CA	64	71.1	78.6	1	103	3.9	1
SMAF70A	SMAF70CA	70	77.8	86.0	1	113	3.5	1
SMAF75A	SMAF75CA	75	83.3	92.1	1	121	3.3	1
SMAF78A	SMAF78CA	78	86.7	95.8	1	126	3.2	1
SMAF85A	SMAF85CA	85	94.4	104	1	137	2.9	1
SMAF90A	SMAF90CA	90	100	111	1	146	2.7	1
SMAF100A	SMAF100CA	100	111	123	1	162	2.5	1
SMAF110A	SMAF110CA	110	122	135	1	177	2.3	1
SMAF120A	SMAF120CA	120	133	147	1	193	2.1	1
SMAF130A	SMAF130CA	130	144	159	1	209	1.9	1
SMAF150A	SMAF150CA	150	167	185	1	243	1.6	1
SMAF160A	SMAF160CA	160	178	197	1	259	1.5	1
SMAF170A	SMAF170CA	170	189	209	1	275	1.5	1
SMAF180A	SMAF180CA	180	201	222	1	292	1.4	1
SMAF200A	SMAF200CA	200	224	247	1	324	1.2	1

Typical Characteristics

FIG1: Peak Pulse Power Rating Curve

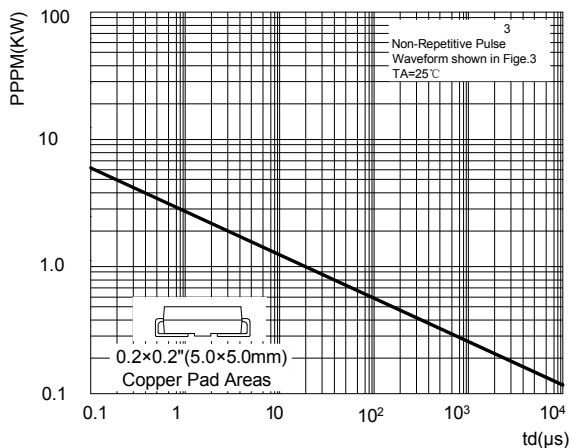


FIG2: Pulse Power or Current vs. Initial Junction Temperature

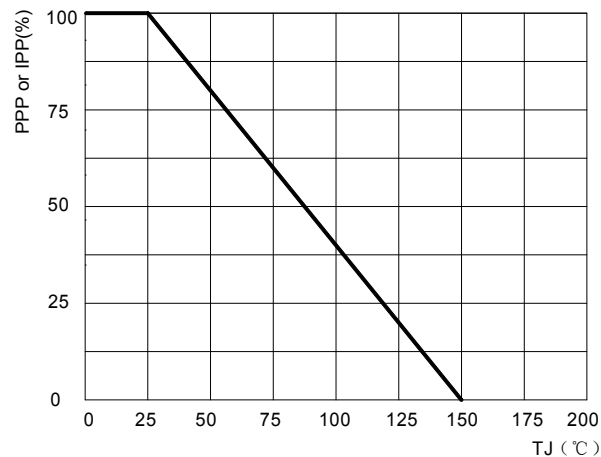


FIG3: Pulse Waveform

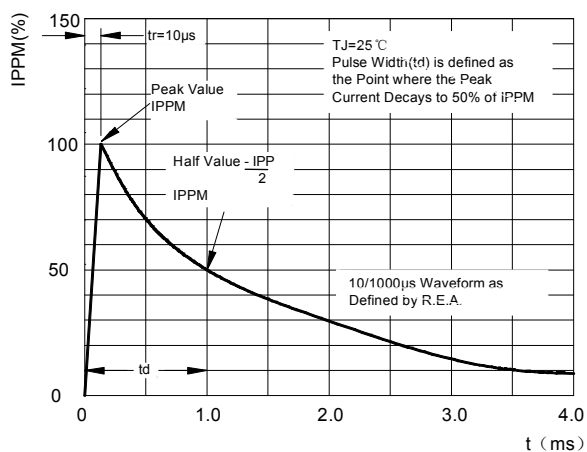


FIG4: Typical Transient Thermal Impedance

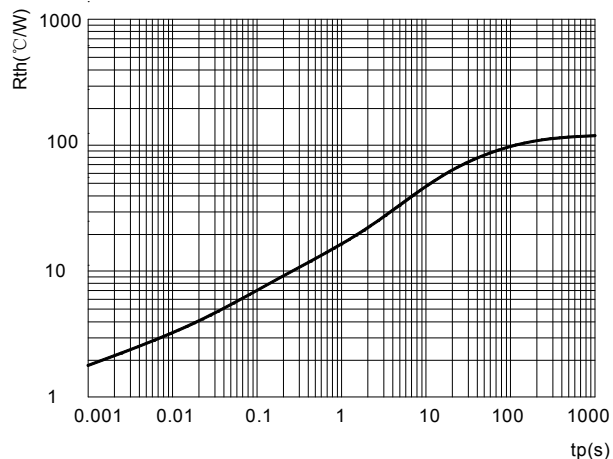


FIG5: Maximum Non-Repetitive Surge Current

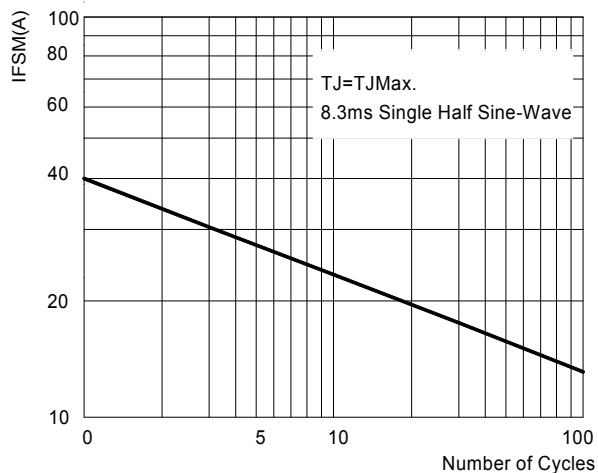
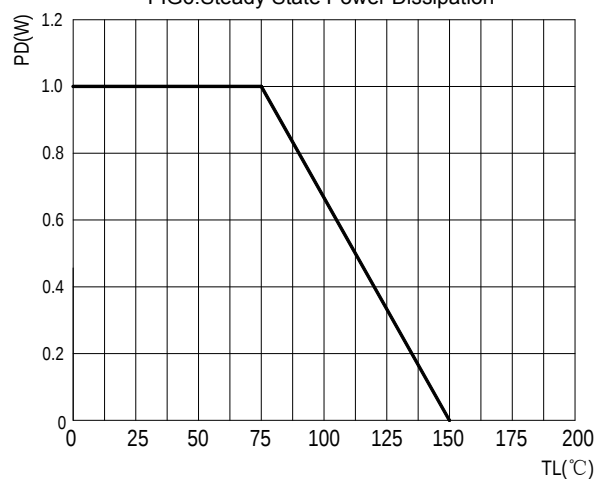
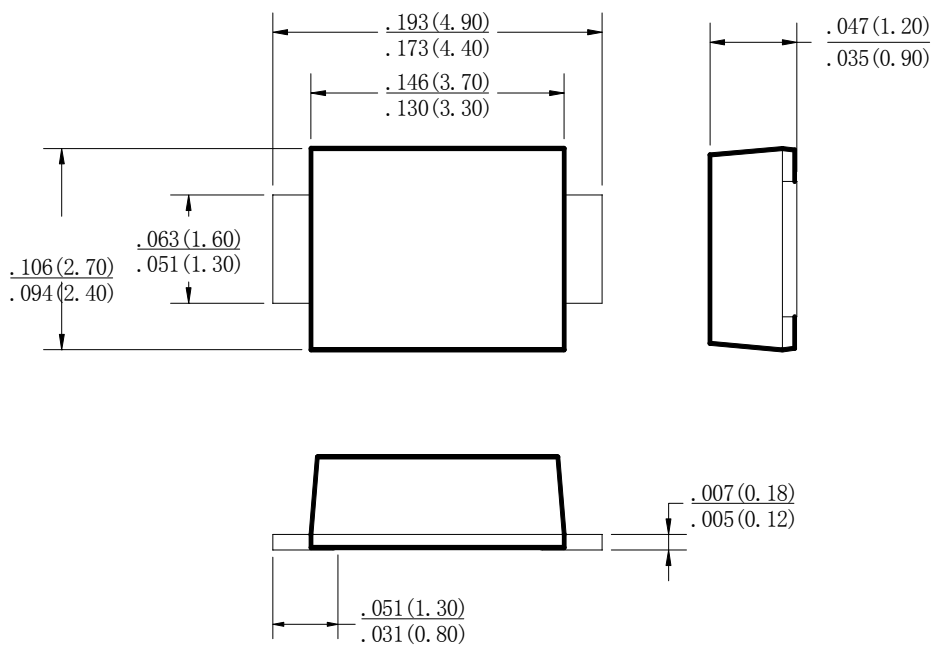


FIG6: Steady State Power Dissipation

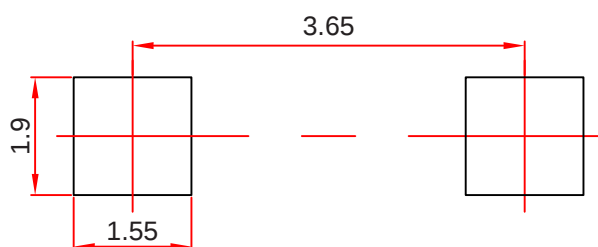


SMAF Package Outline Dimensions



Dimensions in inches and (millimeters)

SMAF Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.

Ordering Information

Part Number	Package	Shipping Quantity
SMAF5.0(C)A-SMAF200(C)A	SMAF	3000/tape&Reel

Marking Diagram

Uni-direction



X: From 5.0 To 200

Bi-directional



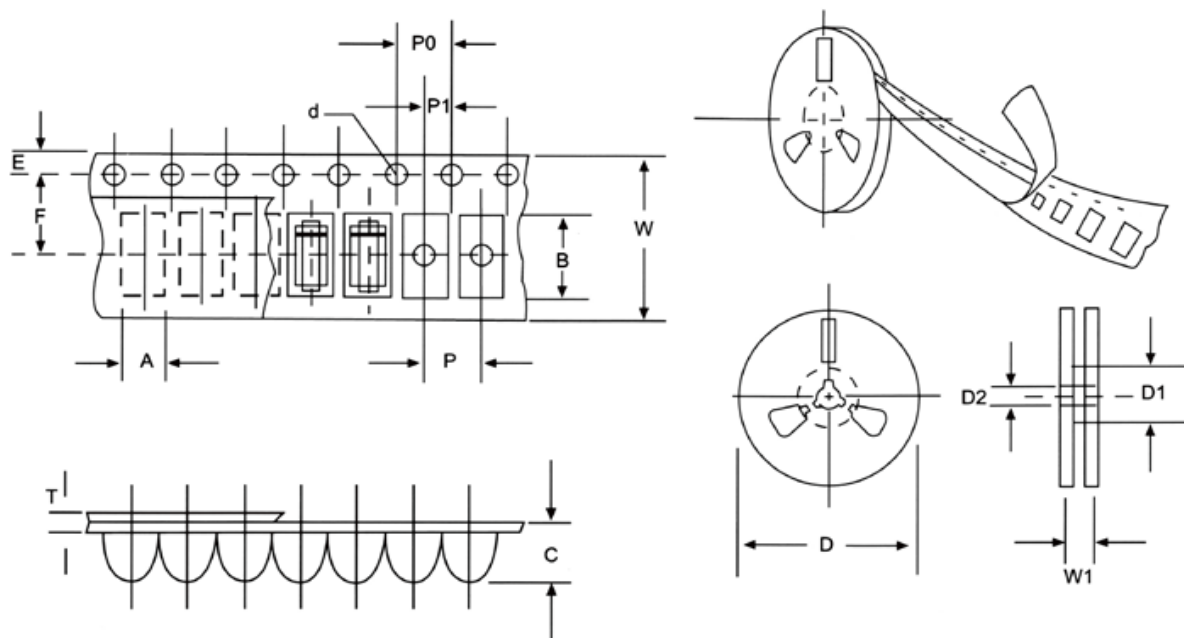


FIG: CONFIGURATION OF SURFACE MOUNTED DEVICES TAPING

ITEM	SYMBOL	SMAF mm(inch)
Carrier width	A	2.83+0.1(0.112+0.004)
Carrier length	B	4.90+0.1(0.193+0.004)
Carrier depth	C	1.45+0.1(0.057+0.004)
Sprocket hole	d	1.55+0.05(0.061+0.002)
Reel outside diameter	D	178+2.0(7.0+0.079)
Reel inner diameter	D1	54±1.0(2.13±0.039)
Feed hole diameter	D2	13+0.5(0.512+0.020)
Sprocket hole position	E	1.75+0.1(0.069+0.004)
Punch hole position	F	5.5+0.05(0.217+0.002)
Punch hole pitch	P	4.0+0.1(0.157+0.004)
Sprocket hole pitch	P0	4.0+0.1(0.157+0.004)
Embossment center	P1	2.0+0.1(0.079+0.004)
Totall tape thickness	T	0.23-0.29(0.009-0.011)
Tape width	W	12.0+0.1(0.472+0.004)
Reel width	W1	16.8+2.0(0.661+0.079)

NOTE: Devices are packde in accordance with EIA standard RS-481-A and specification given above.