



SAF SERIES

INTRODUCTION

SAF Series molded Tantalum Chip Capacitors with Built-in fuse, are developed to provide safety to the PCB by opening the circuit in case of abnormal voltage or current.

FEATURES:

- HIGH HEAT RESISTANCE MAKES IT SUITABLE FOR ALL TYPES OF SOLDERING
- FUSE CHARACTERISTICS DESIGNED TO PREVENT FIRE OR SMOKE
- B, C & D CASE SIZES DESIGNED TO OPEN IN <100 SEC AT 1.5A OR <5SEC AT 5A. D & F CASE SIZES OPEN IN <5 SEC AT 5A. (REFERENCE GRAPH G1 FOR FUSING TIME PATTERN.)
- LOW ESR OF <2 OHMS AT 1MHZ LOW INDUCTANCE OF 5nH AT 200 MHZ.
- COMPONENTS MEET IEC SPEC QC 300801/US0001 AND EIA J RC- 3813 & JIS C 5102. REEL PACKING STDS - EIA J RC-1009B /EIA 481/IEC 286-3. EPOXY MOLDED COMPONENTS WITH CONSISTENT DIMENSIONS AND SURFACE FINISH.
- ENGINEERED FOR AUTOMATIC ONsertion.
- COMPATIBLE WITH ALL POPULAR HIGH SPEED ASSEMBLY MACHINES.

GENERAL SPECIFICATIONS

CAPACITANCE RANGE: 1.0 μ F to 68 μ F. **VOLTAGE RANGE:** 10VDC to 50VDC.

CAPACITANCE TOLERANCE: $\pm 20\%$ (M), $\pm 10\%$ (K), ($\pm 5\%$ (J) - UPON REQUEST)

TEMPERATURE RANGE: -55 to +125°C with DERATING ABOVE 85°C

ENVIRONMENTAL CLASSIFICATION: 55/125/56(IEC68-2)

DISSIPATION FACTOR: 0.1 μ F to 1 μ F 4% Max 1.5 μ F to 22 μ F 5% MAX, 33 μ F 8%

Max. **LEAKAGE CURRENT:** NOT MORE THAN 0.01CV μ A or 0.5 μ A WHICHEVER

IS GREATER **FAILURE RATE:** 1% PER 1000 HRS.

LIFE TEST DETAILS

CAPACITORS SHALL WITHSTAND RATED DC VOLTAGE APPLIED

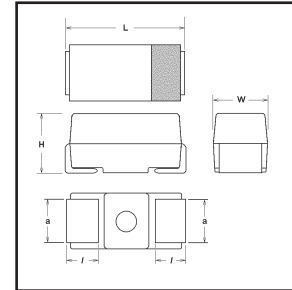
AT 85°C FOR 2000 HRS. OR DERATED DC VOLTAGE APPLIED AT

125°C FOR 1000 HRS.

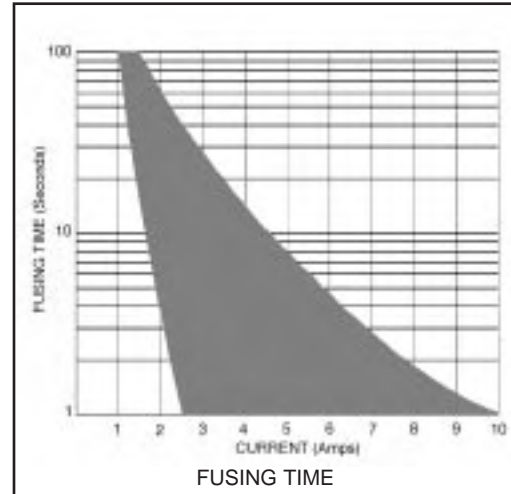
AFTER THE TEST:

1. CAPACITANCE CHANGE SHALL NOT EXCEED $\pm 10\%$ OF INITIAL VALUE.
2. DISSIPATION FACTOR SHALL BE WITHIN THE NORMAL SPECIFIED LIMITS.
3. DC LEAKAGE CURRENT SHALL BE WITHIN 125% OF NORMAL LIMIT.
4. NO REMARKABLE CHANGE IN APPEARANCE. MARKINGS TO REMAIN LEGIBLE.

**WITH
BUILT-IN
FUSE**



GRAPH G1



SAH SERIES RATINGS AND CASE CODES

CAPACITANCE	RATED VOLTAGE DC at 85 °C									
	CODE	μ F	4V	6.3V	10V	16V	20V	25V	35V	50V
104	0.1								A	A
154	0.15								A	B
224	0.22								A	B
334	0.33								A	B
474	0.47							A	B	C
684	0.68						A		B	C
105	1.0					A			B	C
155	1.5				A			B	C	D2, D
225	2.2		A				B		C	D2, D
335	3.3	A				B			C	
475	4.7				B			C	D2, D	
685	6.8		B				C		D2, D	
106	10	B				C		D2, D		
156	15				C		D2, D			
226	22		C			D2, D				
336	33	C			D2, D					
476	47		D2, D							
686	68	D2, D								

CASE DIMENSIONS IN MILLIMETERS (INCHES)						
CASE	EIA/IEC	L	W	H	l	a
B	3528	3.5 \pm 0.2 (0.138 \pm 0.008)	2.8 \pm 0.2 (0.110 \pm 0.008)	1.9 \pm 0.2 (0.075 \pm 0.008)	0.8 \pm 0.3 (0.031 \pm 0.012)	2.2 \pm 0.1 (0.087 \pm 0.004)
C	6032	6.0 \pm 0.3 (0.236 \pm 0.012)	3.2 \pm 0.3 (0.126 \pm 0.012)	2.5 \pm 0.3 (0.098 \pm 0.012)	1.3 \pm 0.3 (0.051 \pm 0.012)	2.2 \pm 0.1 (0.087 \pm 0.004)
D	7343	7.3 \pm 0.3 (0.287 \pm 0.012)	4.3 \pm 0.3 (0.170 \pm 0.012)	2.8 \pm 0.3 (0.110 \pm 0.012)	1.3 \pm 0.3 (0.051 \pm 0.012)	2.4 \pm 0.1 (0.095 \pm 0.004)
F	7358	7.3 \pm 0.3 (0.287 \pm 0.012)	5.8 \pm 0.3 (0.228 \pm 0.012)	3.5 \pm 0.3 (0.138 \pm 0.012)	1.3 \pm 0.3 (0.052 \pm 0.012)	3.5 \pm 0.2 (0.138 \pm 0.008)



SAF SERIES SPECIFICATIONS

10 V DC Rated Voltage
Surge Voltage 13 VDC @ 85°C
and 8 VDC @ 125°C

SHARMA PART NUMBER					CAP VALUE µF	DCL (MAX) µA	DF% (MAX) AT +25°C	ESR(max) at 100 KHz OHMS	RIPPLE (max) I rms Amps at 100 KHz
SAF B 475 M 10 R 202					4.7	0.5	6	4.0	0.113
SAF C 156 M 10 R 501					15	1.5	6	2.2	0.179
SAF D2 226 M 10 R 501					22	2.2	6	1.8	0.227
SAF D2 336 M 10 R 501					33	3.3	6	1.1	0.290
SAF D 336 M 10 R 501					33	3.3	6	1.1	0.295
SAF D2 476 M 10 R 501					47	4.7	6	0.9	0.321
SAF F 476 M 10 R 401					47	4.7	6	0.9	0.343
SAF F 686 M 10 R 401					68	6.8	6	0.8	0.363

16 V DC Rated Voltage
Surge Voltage 20 VDC @ 85°C
and 13 VDC @ 125°C

SAF B 335 M 16 R 202					3.3	0.5	6	4.4	0.108
SAF C 106 M 16 R 501					10	1.6	6	2.2	0.179
SAF D2 156 M 16 R 501					15	2.4	6	1.8	0.198
SAF D2 226 M 16 R 501					22	3.5	6	1.1	0.290
SAF D 226 M 16 R 501					22	3.5	6	1.1	0.295
SAF D 336 M 16 R 501					33	5.3	6	0.9	0.327
SAF F 336 M 16 R 401					33	5.3	6	0.8	0.363
SAF F 476 M 16 R 401					47	7.5	6	0.8	0.363

20 V DC Rated Voltage
Surge Voltage 26 VDC @ 85°C
and 16 VDC @ 125°C

SAF B 225 M 20 R 202					2.2	0.5	6	5.0	0.101
SAF C 685 M 20 R 501					6.8	1.4	6	2.4	0.219
SAF D2 106 M 20 R 501					10	2.0	6	1.3	0.272
SAF D2 156 M 20 R 501					15	3.0	6	1.1	0.290
SAF D 156 M 20 R 501					15	3.0	6	1.1	0.295
SAF D 226 M 20 R 501					22	4.4	6	0.9	0.327
SAF F 226 M 20 R 401					22	4.4	6	0.8	0.363
SAF F 336 M 20 R 401					33	6.6	6	0.8	0.363

25 V DC Rated Voltage
Surge Voltage 32 VDC @ 85°C
and 20 VDC @ 125°C

SAF B 155 M 25 R 202					1.5	0.5	6	5.5	0.097
SAF C 475 M 25 R 501					4.7	1.2	6	2.4	0.171
SAF D2 685 M 25 R 501					6.8	1.7	6	1.4	0.262
SAF D2 106 M 25 R 501					10	2.5	6	1.2	0.297
SAF D 106 M 25 R 501					10	2.5	6	1.2	0.283
SAF F 156 M 25 R 401					15	3.8	6	1.0	0.325

35 V DC Rated Voltage
Surge Voltage 45 VDC @ 85°C
and 28 VDC @ 125°C

SAF B 105 M 35 R 202					1	0.5	4	6.5	0.089
SAF C 155 M 35 R 501					1.5	0.5	6	4.5	0.125
SAF C 225 M 35 R 501					2.2	0.8	6	3.5	0.142
SAF C 335 M 35 R 501					3.3	1.2	6	2.5	0.168
SAF D2 475 M 35 R 501					4.7	1.6	6	1.5	0.249
SAF D2 685 M 35 R 501					6.8	2.4	6	1.3	0.267
SAF D 685 M 35 R 501					6.8	2.4	6	1.3	0.272
SAF F 106 M 35 R 401					10	3.5	6	1.0	0.325

50 V DC Rated Voltage
Surge Voltage 63 VDC @ 85°C
and 40 VDC @ 125°C

SAF C 105 M 50 R 501					1	0.5	4	5.5	0.113
SAF C 155 M 50 R 501					1.5	0.8	6	4.0	0.152
SAF D2 225 M 50 R 501					2.2	1.1	6	2.5	0.199
SAF D2 335 M 50 R 501					3.3	1.7	6	2.0	0.215
SAF D 335 M 50 R 501					3.3	1.7	6	2.0	0.215
SAF F 475 M 50 R 401					4.7	2.4	6	1.4	0.257

NOTE: FOR 10% TOLERANCE CHANGE TOLERANCE CODE FROM M TO K.
 FOR 5% TOLERANCE CHANGE TOLERANCE CODE FROM M TO J.
 STANDARD REEL SIZE AND ORIENTATION = R. FOR OTHER SEE ORDERING INFORMATION ON PAGE 3.