

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: 1.0μF to 68μF. **VOLTAGE RANGE:** 10VDC to 50VDC.

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

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

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

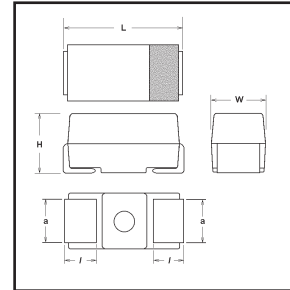
DISSIPATION FACTOR: 0.1μF to 1μF 4% Max 1.5 μF to 22 μF 5% MAX, 33μF 8% Max. **LEAKAGE CURRENT:** NOT MORE THAN 0.01CV μA or 0.5 μA WHICHEVER IS GREATER **FAILURE RATE:** 1% PER 1000 HRS.

LIFE TEST DETAILS

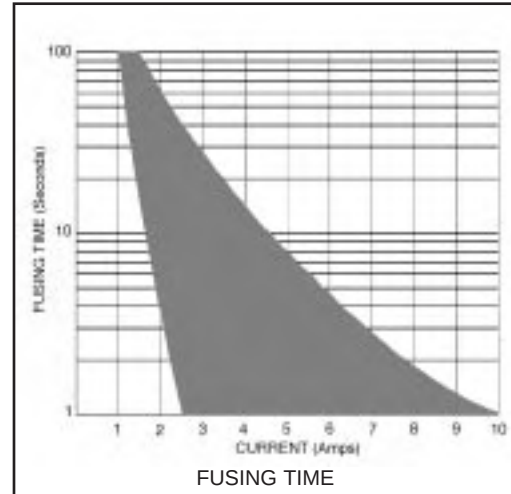
CAPACITORS SHALL WITHSTAND RATED DC VOLTAGE APPLIED AT 85°C FOR 2000 HRS. OR DERATED DC VOLTAGE APPLIED AT 125°C FOR 1000 HRS.
AFTER THE TEST:

1. CAPACITANCE CHANGE SHALL NOT EXCEED ±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	μF	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±0.2 (0.138±0.008)	2.8±0.2 (0.110±0.008)	1.9±0.2 (0.075±0.008)	0.8±0.3 (0.031±0.012)	2.2±0.1 (0.087±0.004)
C	6032	6.0±0.3 (0.236±0.012)	3.2±0.3 (0.126±0.012)	2.5±0.3 (0.098±0.012)	1.3±0.3 (0.051±0.012)	2.2±0.1 (0.087±0.004)
D	7343	7.3±0.3 (0.287±0.012)	4.3±0.3 (0.170±0.012)	2.8±0.3 (0.110±0.012)	1.3±0.3 (0.051±0.012)	2.4±0.1 (0.095±0.004)
F	7358	7.3±0.3 (0.287±0.012)	5.8±0.3 (0.228±0.012)	3.5±0.3 (0.138±0.012)	1.3±0.3 (0.052±0.012)	3.5±0.2 (0.138±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.