



# Semiconductor (AC) fuses

## American Round Fuses Form 101 Range A50QS



### Semiconductor Protection Fuses

A50QS Amp-trap® Form 101 fuses grew out of the need to improve the overall performance of semiconductor fuses in response to new equipment requirements. The A50QS encompasses the best protection features - lower I<sup>2</sup>t to provide better protection for equipment, longer life when subjected to cyclic loading and lower watts loss. A50QS is today's best choice for the protection of dynamic solid state equipment such as motor drives, inverters, UPS, etc

### Features/Benefits

- Lowest I<sup>2</sup>t for greatest protection of semiconductor circuits
  - low watt loss for cooler operation
- Superior cycling ability gives an equipment design advantage
  - State of the art protection for 500 volt equipment
- ultra compact sizes allow down-sizing of existing equipment

### Ratings

▪ AC: 35-60A  
500VAC, 200kA I.R.

70-1200A  
500VAC, 200kA I.R.

▪ DC: 35-1200A  
500VDC, 100kA I.R.

### Approvals

▪ UL Recognized  
Component

▪ AC: UL Guide No.  
JFHR2

▪ DC Tested to UL  
Standard 198L  
parameters (70-1200A)

▪ CSA Certified  
LR12636

### Highlights

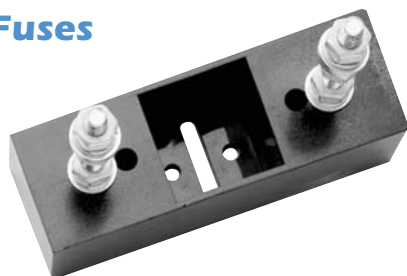
- 500V AC/DC Rated
- Lowest I<sup>2</sup>t
- Low Watts Loss
- Superior Cycling Ability

### Applications

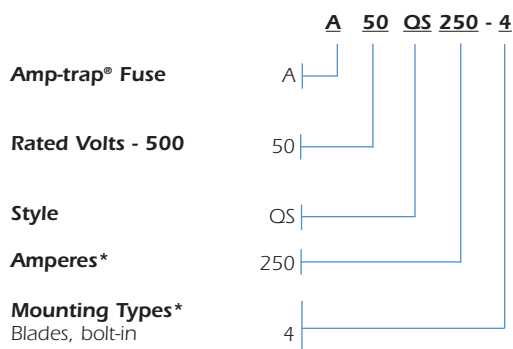
- Protection of 500V or less motor drives, UPS, inverters, etc.



### Single Pole Fuse Blocks for A50QS Fuses



### Catalog Numbering System



Fuse Ampere Rating	Mounting type	Fuse block	
		Catalog Number	Reference Number
35-200	4	P243E	X222016
225-600	4	P266C	K212897

\* For ampere ratings and types not listed, call Technical services.

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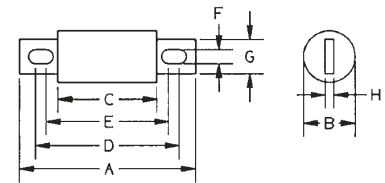


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### Standard Fuse Ampere Ratings, Catalog Numbers

Ampere Rating	Catalog Number	Reference Number	Ampere Rating	Catalog Number	Reference Number
35	A50QS35-4	Q214834	250	A50QS250-4	W211251
40	A50QS40-4	Y215853	300	A50QS300-4	D212799
50	A50QS50-4	W217392	350	A50QS350-4	T215343
60	A50QS60-4	A218937	400	A50QS400-4	B216362
70	A50QS70-4	B222664	450	A50QS450-4	E216871
80	A50QS80-4	L201513	500	A50QS500-4	L218418
90	A50QS90-4	X211252	600	A50QS600-4	O219457
100	A50QS100-4	A216361	700	A50QS700-4	N223181
125	A50QS125-4	K218417	800	A50QS800-4	C202287
150	A50QS150-4	P219456	900	A50QS900-4	R212282
175	A50QS175-4	A222663	1000	A50QS1000-4	V217391
200	A50QS200-4	T200968	1200	A50QS1200-4	C217904
225	A50QS225-4	K201512			

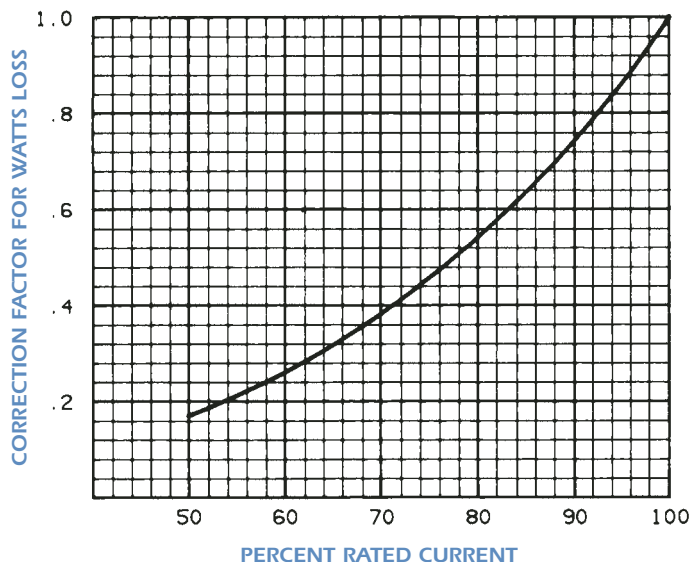


For ampere ratings and styles not listed, call Technical Services.

### Dimensions

Catalog Number	Mounting Type	Dimensions - Inches (mm)							
		A	B	C	D	E	F	G	H
A50QS35 to 100	4	3.63 (92.2)	1.00 (25.4)	2.13 (54.1)	2.94 (74.7)	2.75 (69.9)	0.31 (7.9)	0.75 (19.1)	0.13 (3.3)
A50QS125 to 200	4	3.63 (92.2)	1.22 (31.0)	2.13 (54.1)	2.94 (74.7)	2.81 (71.4)	0.31 (7.9)	1.00 (25.4)	0.19 (4.8)
A50QS225 to 400	4	4.34 (110)	1.50 (38.1)	2.09 (53.1)	3.41 (86.6)	2.78 (70.6)	0.41 (10.4)	1.00 (25.4)	0.25 (6.4)
A50QS450 to 600	4	4.47 (114)	2.00 (50.8)	2.22 (56.4)	3.53 (89.7)	2.91 (73.9)	0.41 (10.4)	1.50 (38.1)	0.25 (6.4)
A50QS700 to 800	4	6.47 (164.3)	2.50 (63.5)	2.22 (56.4)	5.00 (127.0)	3.44 (87.3)	.53 (13.5)	1.50 (38.1)	.25 (6.4)
A50QS900 to 1200	4	6.97 (177.0)	3.00 (76.2)	3.22 (81.8)	5.47 (138.9)	4.47 (113.5)	.63 (15.9)	2.38 (60.3)	.44 (11.1)

### Watts Loss vs. Percent Rated Current



### Watts Loss at Rated Current

Ampere Rating	Watts Loss (W)	Ampere Rating	Watts Loss (W)
35	6	250	41
40	7	300	49
50	8	350	57
60	10	400	65
70	12	450	69
80	14	500	77
90	15	600	92
100	17	700	110
125	21	800	130
150	25	900	140
175	29	1000	160
200	33	1200	175
225	37		

Correction factor example:  
At 80% rated current, watts loss equals .54 times watts loss at rated current.



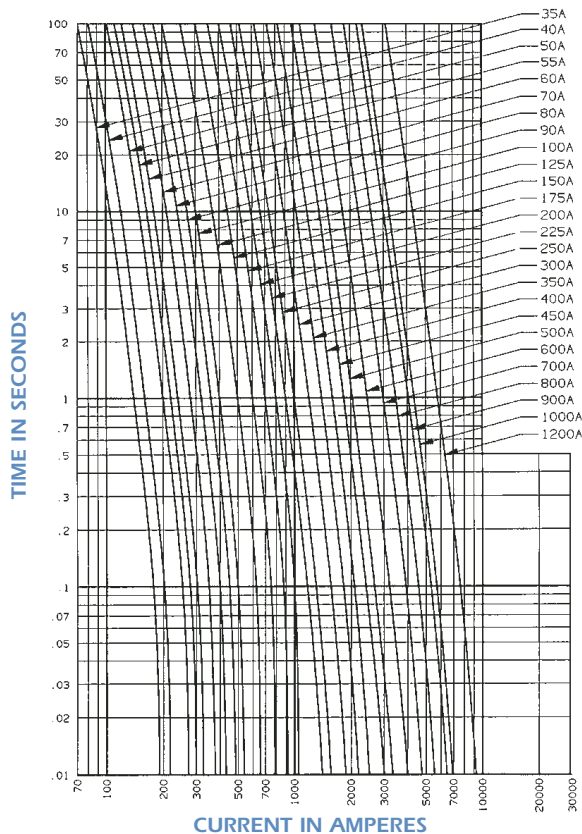
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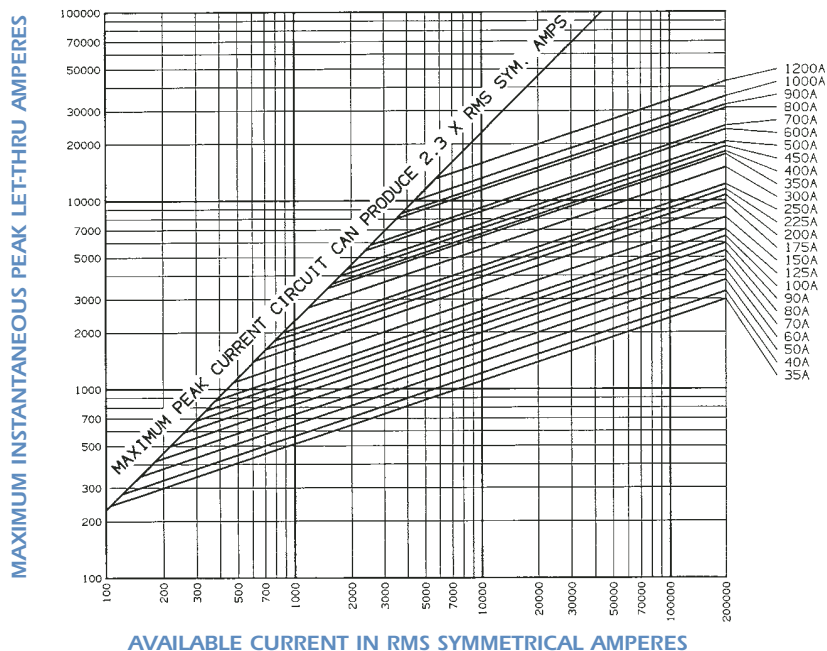
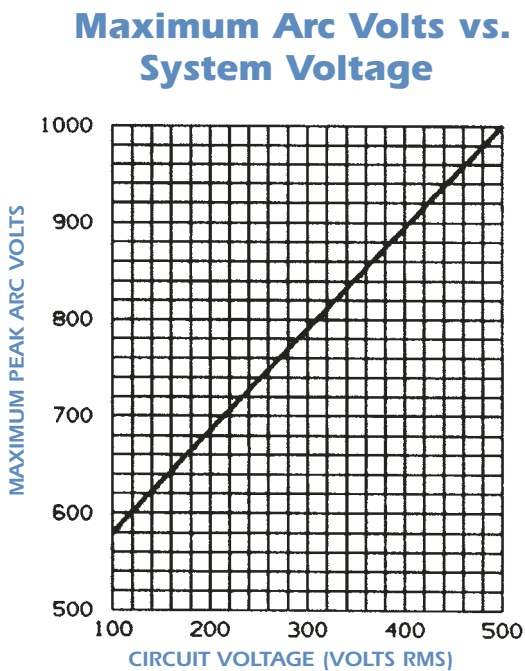
### Semiconductor Protection Fuses

#### A50QS35 to 1200

#### Melting Time - Current Data, 500V Fuses



#### Peak Let-Thru Current Data - A50QS35 to 1200, 500 Volts AC



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### Semiconductor Protection Fuses

#### I<sup>2</sup>t Data – 500 Volts AC

Fuse Ampere Rating	Melting I <sup>2</sup> t (A <sup>2</sup> s X 10 <sup>3</sup> )	I <sup>2</sup> t data	
		Max Clearing I <sup>2</sup> t @ 500 VAC	
		1 fuse (fig A) (A <sup>2</sup> s X 10 <sup>3</sup> )	2 Fuses in series (A <sup>2</sup> s X 10 <sup>3</sup> )(fig B)
35	.09	.56	.34
40	.11	.69	.4
50	.18	1.1	.68
60	.25	1.6	.94
70	.31	1.9	1.1
80	.43	2.6	1.5
90	.57	3.6	2.1
100	.74	4.4	2.7
125	.94	5.6	3.4
150	1.5	9	5.4
175	2.5	15	9
200	3.3	20	12
225	4.1	25	15
250	4.9	29	18
300	9.2	55	33
350	15	88	53
400	16	98	59
450	21	130	76
500	26	160	94
600	37	220	130
700	53	270	160
800	72	360	220
900	98	500	300
1000	112	560	330
1200	200	930	550

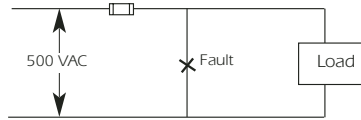


Fig. A

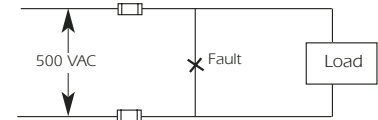
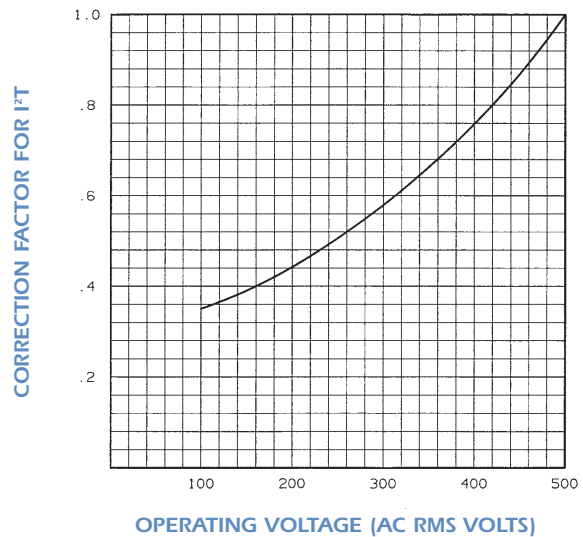


Fig. B

#### Clearing I<sup>2</sup>t vs. AC Operating Voltage



#### Clearing I<sup>2</sup>t at 500V DC, 100kA, L/R = 10 ms

Ampere Rating	Clearing I <sup>2</sup> t (A <sup>2</sup> s X 10 <sup>3</sup> )	Ampere Rating	Clearing I <sup>2</sup> t (A <sup>2</sup> s X 10 <sup>3</sup> )
35	.48	250	25
40	.58	300	47
50	1.0	350	75
60	1.3	400	83
70	1.6	450	110
80	2.2	500	130
90	3.0	600	190
100	3.8	700	220
125	4.8	800	260
150	7.7	900	350
175	13	1000	430
200	17	1200	660

DC Application: A50QS Fuses have been designed for both AC and DC operation. A50QS fuses (70-600) have UL Component Recognition at 500V DC and have been tested to circuit parameters as defined in Standard 198L.

#### DC Voltage Capability vs. Time Constant

