

# Semiconductor (AC) fuses

## Protistor® Square-body Fuses PSC gR/aR sizes 000/00 gR/aR - 500 to 690 VAC DIN 000

**GERMAN STANDARD**  
gRB - URB from 20 to 400 A  
Size: 000

- EXTREMELY HIGH BREAKING CAPACITY FUSES: PROTECTION OF POWER SEMICONDUCTORS ACCORDING TO IEC 60269-1 and 4
- 690V VOLTAGE RATING (RATING 20 TO 400 A)
- gR CLASS (gRB RATINGS 20 TO 125 A) ACCORDING TO VDE 636-23
- CLEARING ALL OVERLOADS
- IMPROVING SAFETY AND PROTECTION
- ENABLING SELECTIVE COORDINATION WITH ALL FUSES
- aR CLASS (URB RATINGS 80 TO 400 A) ACCORDING TO VDE 636-23 AND IEC 60269.4
- ALL MODELS COMPLYING WITH DIN 43653-00C ARE WITH OR WITHOUT BLOWN FUSE INDICATION WITH TRIP INDICATOR
- MODEL COMPLYING WITH DIN 43620 (00C) STANDARD WITH BLOWN FUSE INDICATION - WITH TRIP INDICATOR



### Main Characteristics

Voltage rating U <sub>N</sub> ( VAC)	Class	Current rating I <sub>N</sub> (A)	Pre-arcing I <sup>2</sup> t @ 1 ms I <sup>2</sup> tp (A <sup>2</sup> s)	Total clearing I <sup>2</sup> t @ 660V I <sup>2</sup> tt (A <sup>2</sup> s)	Watts loss		Tested Breaking Capacity	Estimated Breaking Capacity
					0.8 I <sub>N</sub>	I <sub>N</sub>		
690	gRB	16	8,2	60	-	5,6	200 k A @ 690 V	300 k A @ 690 V
		20	12	80	3.8	7		
		25	20	150	5.0	9		
		32	39	270	5.5	10		
		40	70	460	6.6	12		
		50	102	730	7.7	14		
		63	210	1500	8.8	16		
		80	475	2900	9.9	18		
		100	970	6000	11	20		
		125	1900	11800	11.6	21		
690	URB	80	390	2500	11.6	21	200 k A @ 690 V	300 k A @ 690 V
		100	690	4200	12.7	23		
		125	1300	8900	14.3	26		
		160	2700	16000	17.0	31		
		200	5250	31500	19.8	36		
		250	9900	52000	24.8	45		
500	URB	350	22400	110000*	31.9	58	120 k A @ 500 V	
		400	33200	160000*	36.3	66		

\* @ U<sub>n</sub>

Minimum operating voltage for blown fuse indicator: 20 V

Minimum operating voltage for trip-indicator: 20 V

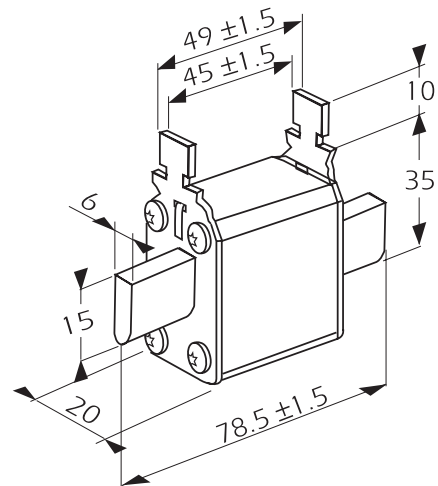
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### German standard blade-type DIN 43620 with trip-indicator

Current rating	Designation	Ref. Number	I/N*	Catalog Number
16	6,9 GRB 000 PV016	Y210609	1	PC000GB69V16PV
20	6,9 GRB 000 PV020	Z210610	1	PC000GB69V20PV
25	6,9 GRB 000 PV025	A210611	1	PC000GB69V25PV
32	6,9 GRB 000 PV032	B210612	1	PC000GB69V32PV
40	6,9 GRB 000 PV040	C210613	1	PC000GB69V40PV
50	6,9 GRB 000 PV050	D210614	1	PC000GB69V50PV
63	6,9 GRB 000 PV063	E210615	1	PC000GB69V63PV
80	6,9 GRB 000 PV080	F210616	1	PC000GB69V80PV
100	6,9 GRB 000 PV100	G210617	1	PC000GB69V100PV
125	6,9 GRB 000 PV125	H210618	0,9	PC000GB69V125PV



Microswitches  
MS 4L 2-5 B6 + PRES Ref. F210156  
MS 4L 2-5 B2 + PRES Ref. G210157

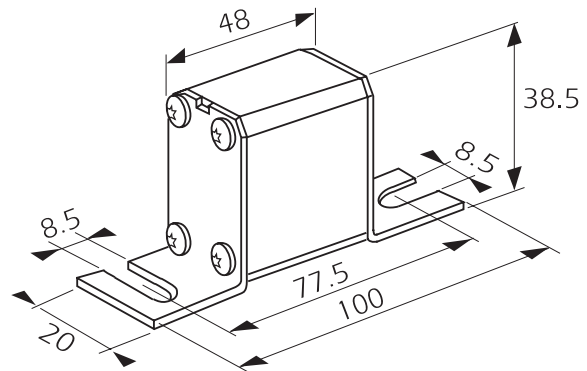
Weight: 150g  
Packaging: 3 pieces

\* Fuse base: 00-EP Ref Number F215170  
Pull out grip handle: Ref Number K217244

### German standard without blown fuse indicator



Current rating	Designation	Ref. Number	I/N*	Catalog Number
16	6,9 GRB 000 D08/016	L330060	1	DN000GB69V16
20	6,9 GRB 000 D08/020	D330030	1	DN000GB69V20
25	6,9 GRB 000 D08/025	E330031	1	DN000GB69V25
32	6,9 GRB 000 D08/032	F330032	1	DN000GB69V32
40	6,9 GRB 000 D08/040	G330033	1	DN000GB69V40
50	6,9 GRB 000 D08/050	H330034	1	DN000GB69V50
63	6,9 GRB 000 D08/063	J330035	1	DN000GB69V63
80	6,9 GRB 000 D08/080	A330073	1	DN000GB69V80
100	6,9 GRB 000 D08/100	S330112	1	DN000GB69V100
125	6,9 GRB 000 D08/125	T330113	0,9	DN000GB69V125
80	6,9 URB 000 D08/080	K330036	1	DN000UB69V80
100	6,9 URB 000 D08/100	L330037	1	DN000UB69V100
125	6,9 URB 000 D08/125	M330038	0,9	DN000UB69V125
160	6,9 URB 000 D08/160	N330039	0,85	DN000UB69V160
200	6,9 URB 000 D08/200	P330040	0,85	DN000UB69V200
250	6,9 URB 000 D08/250	Q330041	0,8	DN000UB69V250
315	6,9 URB 000 D08/315	R330042	0,7	DN000UB69V315
350	5 URB 000 D08/350	V330114	0,7	DN000UB50V350
400	5 URB 000 D08/400	D330191	0,65	DN000UB50V400



\* Fuse base: SI 000 DIN 80  
Ref. Number: C220710

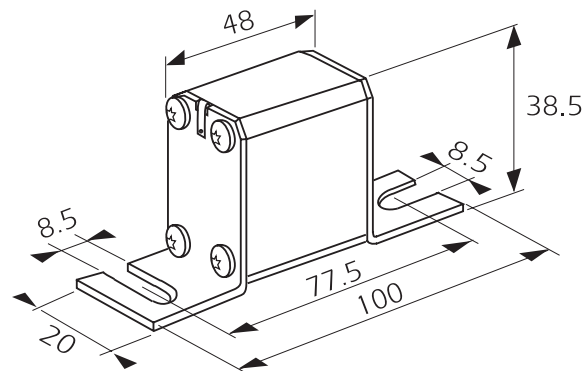
Weight: 130 g  
Packaging: 6 pieces

## Protistor® Square-body Fuses PSC gR/aR sizes 000/00 gR/aR - 500 to 690 VAC DIN 000

### German standard with blown fuse indicator



Current rating	Designation	Ref. Number	I/I <sub>N</sub> * fuse base	Catalog Number
16	6,9 gRB 000 D08V/016	C330190	1	DN000GB69V16V
20	6,9 gRB 000 D08V/020	P330017	1	DN000GB69V20V
25	6,9 gRB 000 D08V/025	Q330018	1	DN000GB69V25V
32	6,9 gRB 000 D08V/032	R330019	1	DN000GB69V32V
40	6,9 gRB 000 D08V/040	S330020	1	DN000GB69V40V
50	6,9 gRB 000 D08V/050	T330021	1	DN000GB69V50V
63	6,9 gRB 000 D08V/063	V330022	1	DN000GB69V63V
80	6,9 gRB 000 D08V/080	G330102	1	DN000GB69V80V
100	6,9 gRB 000 D08V/100	Q330110	1	DN000GB69V100V
125	6,9 gRB 000 D08V/125	R330111	0,9	DN000GB69V125V
80	6,9 URB 000 D08V/080	W330023	1	DN000UB69V80V
100	6,9 URB 000 D08V/100	X330024	1	DN000UB69V100V
125	6,9 URB 000 D08V/125	Y330025	0,95	DN000UB69V125V
160	6,9 URB 000 D08V/160	Z330026	0,85	DN000UB69V160V
200	6,9 URB 000 D08V/200	A330027	0,85	DN000UB69V200V
250	6,9 URB 000 D08V/250	B330028	0,8	DN000UB69V250V
315	6,9 URB 000 D08V/315	C330029	0,7	DN000UB69V315V
350	5 URB 000 D08V/350	W330115	0,7	DN000UB69V350V
400	5 URB 000 D08V/400	E330192	0,65	DN000UB69V400V



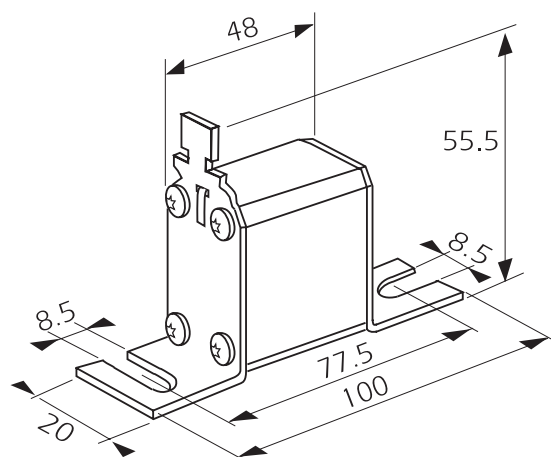
Weight: 130 g  
Packaging: 6 pieces

Fuse base: SI 000 DIN 80 Ref. Number : C 20710

### German standard with trip-indicator



Current rating	Designation	Ref. Number	I/I <sub>N</sub> * fuse base	Catalog Number
16	6,9 gRB 000 D08L/016	X330277	1	DN000GB69V16L
20	6,9 gRB 000 D08L/020	J330173	1	DN000GB69V20L
25	6,9 gRB 000 D08L/025	K330174	1	DN000GB69V25L
32	6,9 gRB 000 D08L/032	L330175	1	DN000GB69V32L
40	6,9 gRB 000 D08L/040	M330176	1	DN000GB69V40L
50	6,9 gRB 000 D08L/050	N330177	1	DN000GB69V50L
63	6,9 gRB 000 D08L/063	P330178	1	DN000GB69V63L
80	6,9 gRB 000 D08L/080	Q330179	1	DN000GB69V80L
100	6,9 gRB 000 D08L/100	R330180	1	DN000GB69V100L
125	6,9 gRB 000 D08L/125	S330181	0,9	DN000GB69V125L
80	6,9 URB 000 D08L/080	T330182	1	DN000UB69V80L
100	6,9 URB 000 D08L/100	V330183	1	DN000UB69V100L
125	6,9 URB 000 D08L/125	W330184	0,95	DN000UB69V125L
160	6,9 URB 000 D08L/160	X330185	0,85	DN000UB69V160L
200	6,9 URB 000 D08L/200	Y330186	0,85	DN000UB69V200L
250	6,9 URB 000 D08L/250	Z330187	0,8	DN000UB69V250L
315	6,9 URB 000 D08L/315	A330188	0,7	DN000UB69V315L
350	5 URB 000 D08L/350	B330189	0,7	DN000UB69V350L
400	5 URB 000 D08L/400	F330193	0,65	DN000UB69V400L



Weight: 130 g  
Packaging: 6 pieces

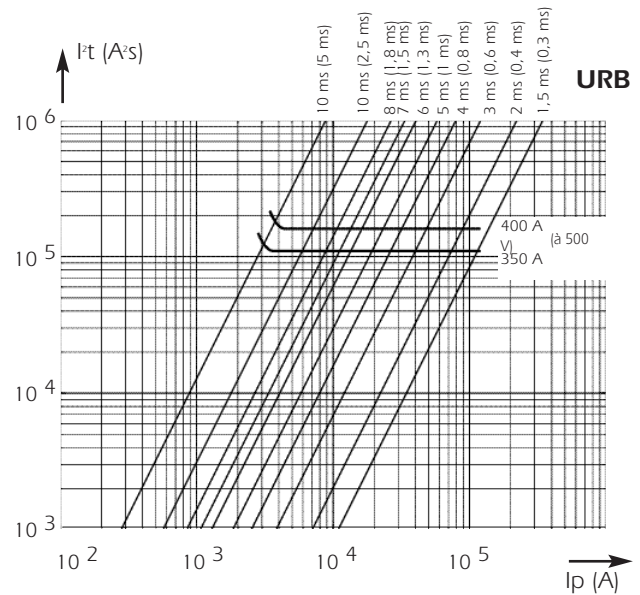
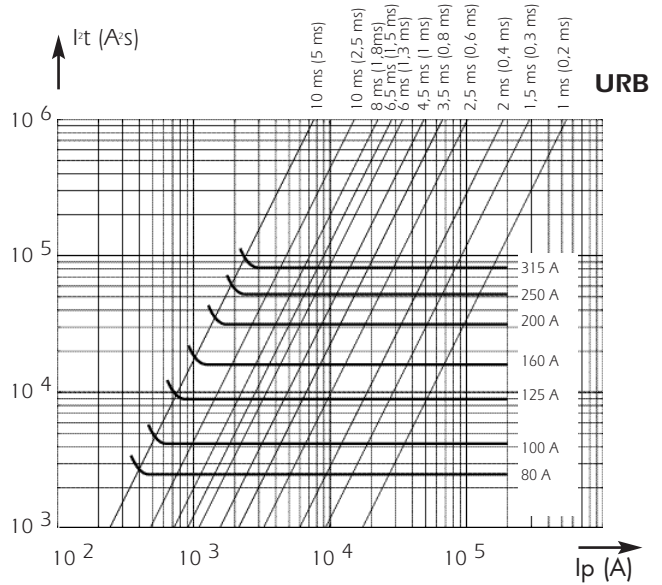
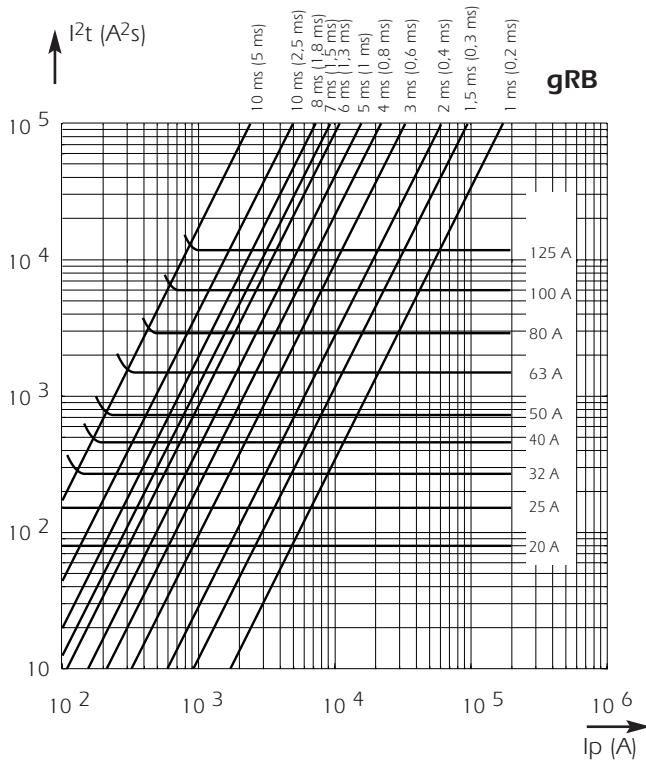
Microswitch  
MC 4L 2-5 B6 + PRES Ref. Number : F210156  
MC 4L 2-5 B2 + PRES Ref. Number : G210157  
Fuse base: SI 000 DIN 80 Ref. Number : C 20710

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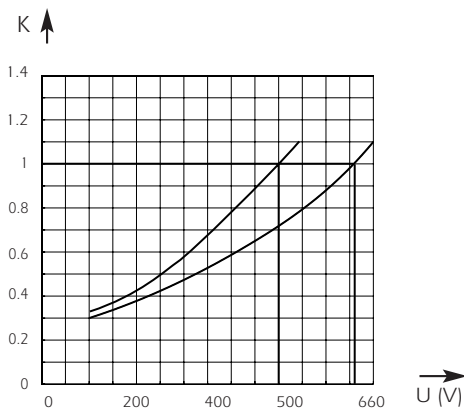
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### Total clearing I<sup>2</sup>t



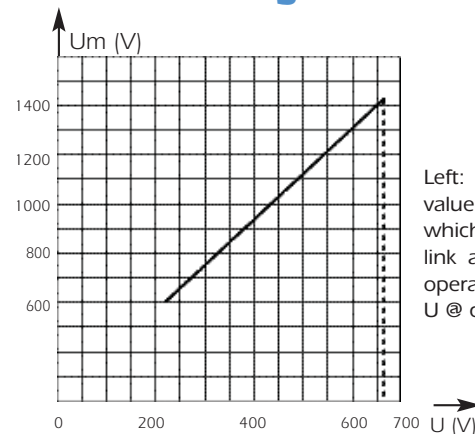
Above: Horizontal curves show, for each rated current, values of total clearing  $I^2t$  ( $I^2t_{tt}$ ) as a function of prospective current  $I_p$ . @ UN with  $\cos \phi = 0.15$ . Oblique lines indicate total clearing duration  $T_t$ , with associated pre-arcing duration in brackets.

### I<sup>2</sup>t corrective factor



Above: Mean curves show variation of total clearing time ( $I^2t$ ) and total clearing duration  $T_t$  as a function of operating voltage  $U$ .

### Peak arc voltage

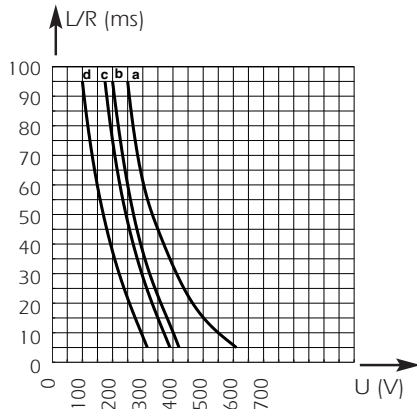


Left: Curve shows peak value  $U_m$  of arc voltage which appears across fuse link as a function of the operating voltage  $U$  @  $\cos \phi = 0.15$

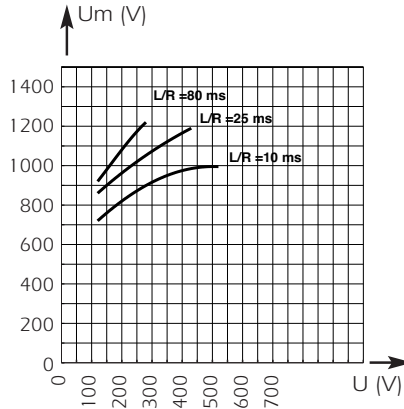
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### DC Application data



Above: Curves indicate permissible value of time constant L/R as a function of DC working voltage.  
Curve a: Ratings from 20 to 160 A  
Curve b: Rating 200 A  
Curve c: Ratings from 250 to 315 A  
Curve d: Ratings from 350 to 400 A



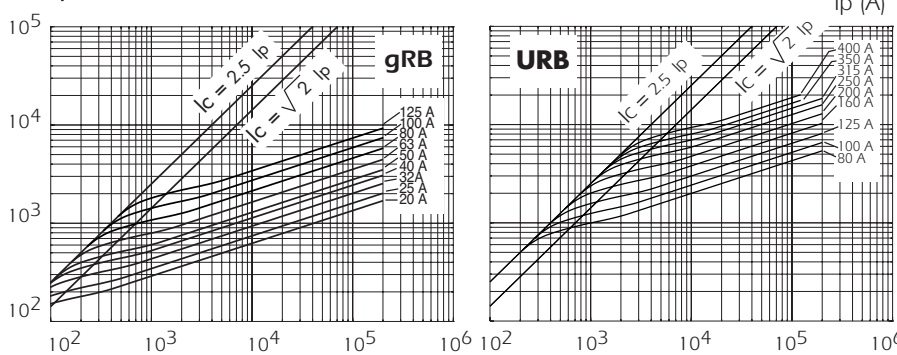
Above: Curves indicates peak arc voltage  $U_m$  which may appear across fuse terminals at working voltage  $U$ .

Rated current (A)	Curve	$I_{pm}$ (A)
20	a	60
25	a	65
32	a	90
40	a	120
50	a	150
63	a	200
80	a	270
100	a	370
125	a	500
160	a	700
200	b	1200
250	c	1800
315	c	2200
350	d	2600
400	d	3100

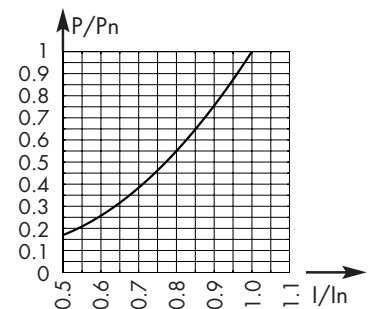
$I_{pm}$  values give minimum DC interrupting current in amps.

### Current limitation curves

Below: Curves show, for each rating, value of peak let-through current  $I_c$  as a function of available fault current  $I_p$ .

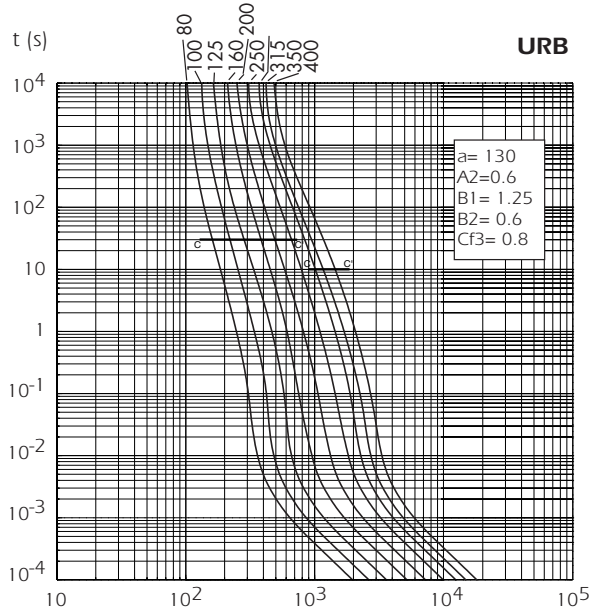
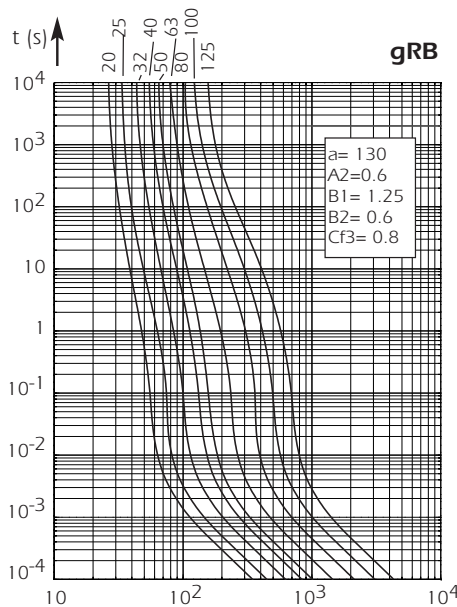


### Watts loss



Above: Curve enables computation of power losses  $P$  for an IN-rated fuse as a function of R.M.S. current  $I$  (as a multiple of  $I_N$  for steady state operation)

### Time vs current characteristics



Left: Curves show, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current

Tolerance for mean pre-arcing current  $\pm 8\%$ .