

## Other Protistor® Fuses

### Ferrule Fuses

## 14x51 gRC(URC) - 600 V to 690 VAC



600 - 690 V ~  
gRC - URC from 1 to 63 A  
Size: 14 x 51

EXTREMELY HIGH BREAKING CAPACITY FUSES: PROTECTION OF SEMICONDUCTORS  
COMPLYING WITH IEC STANDARD 60269.1 AND 4

600V - 690 V VOLTAGE RATING (CURRENT RATING 1 TO 50 A)  
AS PER IEC 33

gR CLASS (CURRENT RATING 1 TO 50 A) AS PER VDE 636-23

- CLEARING ALL OVERLOADS
- IMPROVED SAFETY AND PROTECTION
- ENABLING SELECTIVE COORDINATION AMONG ALL DISTRIBUTION CIRCUIT FUSES

aR CLASS (CURRENT RATING 63 A) ACCORDING TO VDE 636-23 AND IEC 60269.4

TWO MODELS: WITH OR WITHOUT TRIP-INDICATOR

gRC fuses FROM 8 TO 50 A are 700VAC-DC UL Recognized 

## Main Characteristics

Voltage rating $U_N$ $U_V$	Class	Current rating $I_N$ (A)	Pre-arcing $I^2t @ 1 \text{ ms}$ $I^2tp$ (A <sup>2</sup> s)	Total clearing $I^2t @ U_N$ $I^2tt$ (A <sup>2</sup> s)	Watts loss		Tested Breaking capacity	Estimated Breaking capacity
					$0.8 I_N$	$I_N$		
690	gRC	1	0.8/0.31*	3.5/1.4*	0.17	0.35	100k A @ 690 V	300k A @ 690 V
		2	1.5/1*	6.7/4.3*	0.33	0.60		
		4	7.2/6.7*	33/30*	0.77	1.4		
		6	1.4	19	1.3	2.5		
		8	2.4	30	1.5	3.0		
		10	4.3	44	1.75	3.3		
		12	5.4	65	2.25	4.25		
		16	13	110	2.5	4.8		
		20	27	175	2.75	5.25		
		25	53	300	3.0	5.8		
		32	97	550	3.5	7.0		
		40	210	1210	4.5	8.8		
50	390	2250	5.0	10				
600	URC	63	440	2200	8.0	16	100k A @ 600 V	300k A @ 600 V

\*  $I^2t$  values for fuses without trip-indicator.

Minimum operating voltage for the trip-indicator : 20 V

See Gears and Fuse gears section

# Semiconductor (AC) fuses

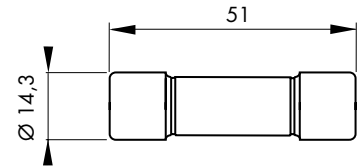
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#### 14 X 51 Without trip-indicator

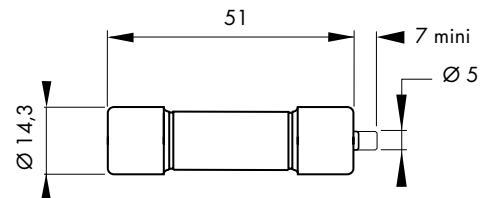
Current Rating	Designation	Ref. Number	Catalog Number
1	6.900 Cp gRC 14.51 1	E221080	FR14GC69V1
2	6.900 Cp gRC 14.51 2	H081473	FR14GC69V2
4	6.900 Cp gRC 14.51 4	J081474	FR14GC69V4
6	6.900 Cp gRC 14.51 6	T220909	FR14GC69V6
8	6.900 Cp gRC 14.51 8	S220908	FR14GC69V8
10	6.900 Cp gRC 14.51 10	R220907	FR14GC69V10
12	6.900 Cp gRC 14.51 12	Q220906	FR14GC69V12
16	6.900 Cp gRC 14.51 16	P220905	FR14GC69V16
20	6.900 Cp gRC 14.51 20	E220735	FR14GC69V20
25	6.900 Cp gRC 14.51 25	N220904	FR14GC69V25
32	6.900 Cp gRC 14.51 32	W220819	FR14GC69V32
40	6.900 Cp gRC 14.51 40	M220903	FR14GC69V40
50	6.900 Cp gRC 14.51 50	L220902	FR14GC69V50



Weight: 18 g  
Packaging: 10 pieces

#### 14 X 51 With trip-indicator

1	6.921 Cp gRC 14.51 1	F221081	FR14GC69V1T
2	6.921 Cp gRC 14.51 2	L081476	FR14GC69V2T
4	6.921 Cp gRC 14.51 4	F081517	FR14GC69V4T
6	6.921 Cp gRC 14.51 6	B220939	FR14GC69V6T
8	6.921 Cp gRC 14.51 8	A220938	FR14GC69V8T
10	6.921 Cp gRC 14.51 10	Z220937	FR14GC69V10T
12	6.921 Cp gRC 14.51 12	Y220936	FR14GC69V12T
16	6.921 Cp gRC 14.51 16	X220935	FR14GC69V16T
20	6.921 Cp gRC 14.51 20	W220934	FR14GC69V20T
25	6.921 Cp gRC 14.51 25	V220933	FR14GC69V25T
32	6.921 Cp gRC 14.51 32	V220818	FR14GC69V32T
40	6.921 Cp gRC 14.51 40	M220949	FR14GC69V40T
50	6.921 Cp gRC 14.51 50	N220950	FR14GC69V50T
63	6.21 Cp URC 14.51 63	V220910	FR14UC60V63T

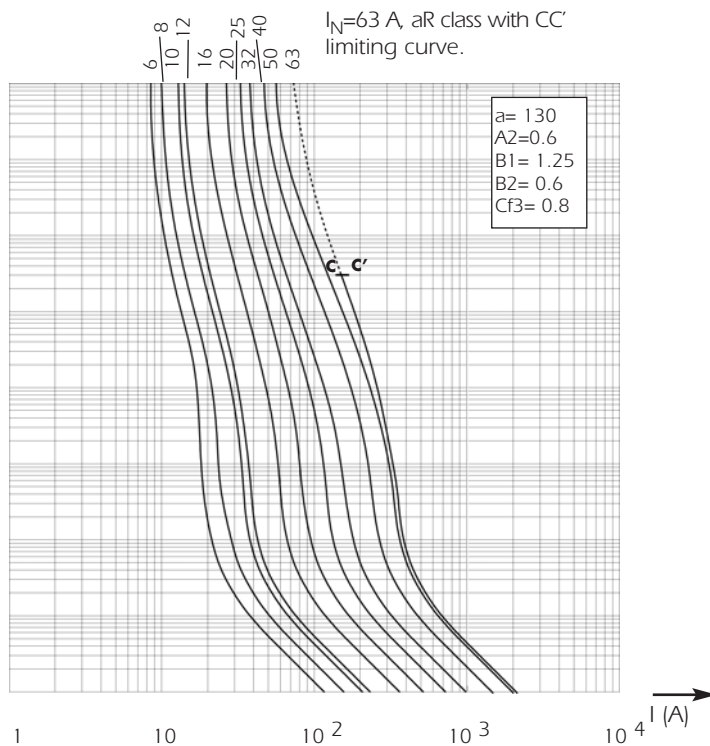
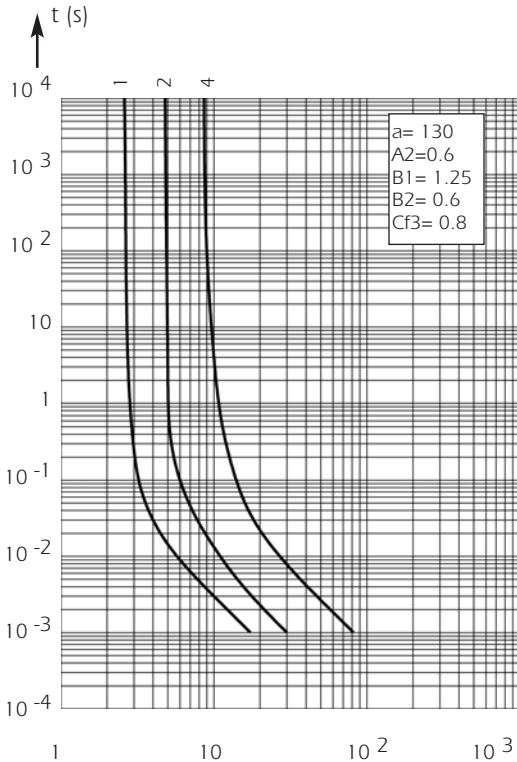


Weight: 18 g  
Packaging: 10 pieces



except 1 to 6 and 63A rating

#### Time vs current characteristics



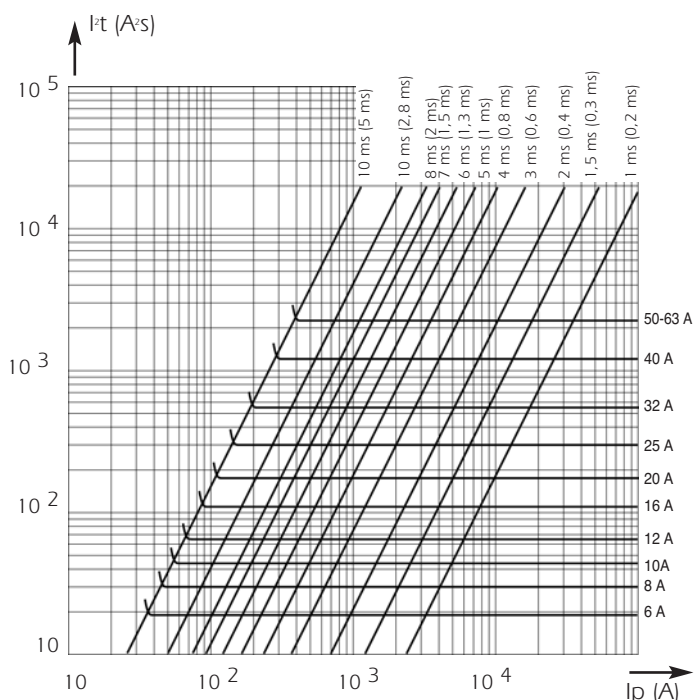
These curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current

Tolerance for mean pre-arcing current  
± 10% for current rating 1, 2, 4 A  
± 8% for current rating 6 to 63 A

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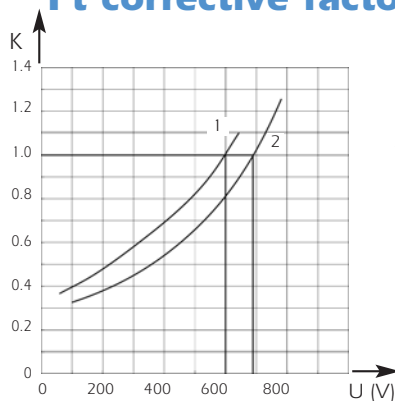
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#### Total clearing I<sup>2</sup>t



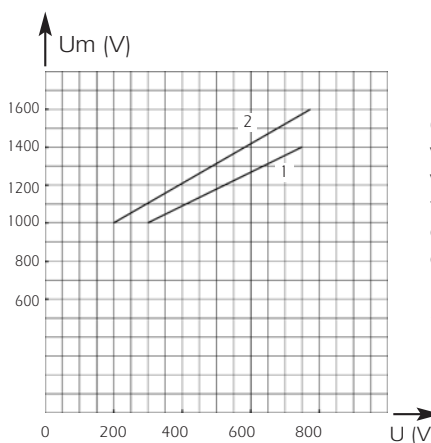
Horizontal curves show maximum values of total clearing  $I^2t$  ( $I^2t_t$ ) for each rated current as a function of prospective current  $I_p$  @ 690 V.  $\cos \phi = 0.15$  (for 63 A @ 600 V.  $\cos \phi = 0.15$ ). Oblique lines indicate total clearing duration  $T_t$ , with associated pre-arcing duration in brackets.

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



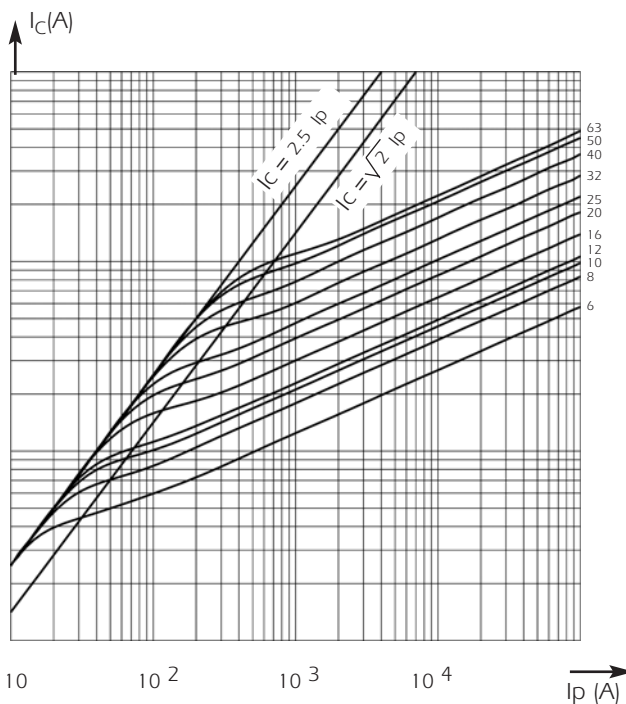
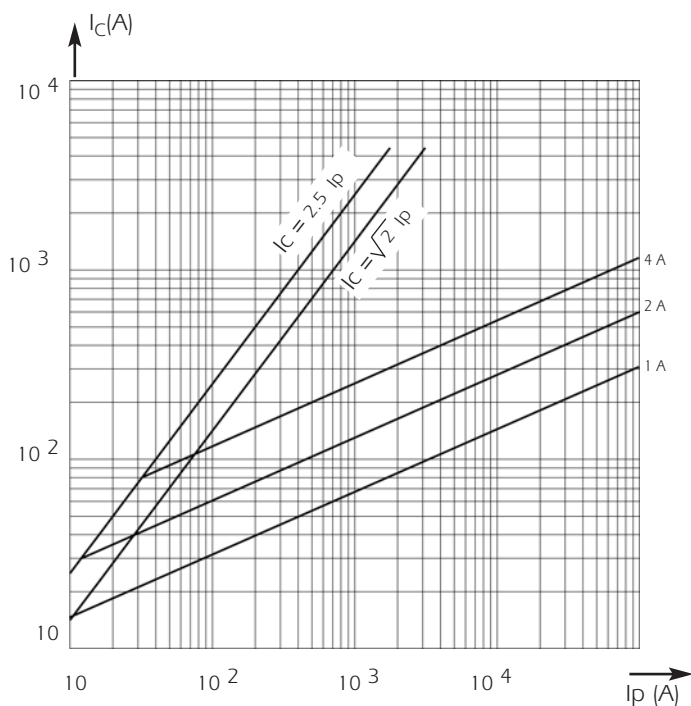
Mean curves showing variation of total clearing time ( $I^2t_t$ ) and total clearing duration  $T_t$  as a function of operating voltage  $U$ .  
1- 63 A rating - 600 V  
2- 1 to 50 A rating - 690 V

#### Peak arc voltage



Curves showing peak value  $U_m$  of arc voltage which appears across fuse-link as a function of operating voltage  $U$  @  $\cos \phi = 0.15$   
1-63A rating 600V  
2-1 to 50A rating 690V

#### Current limitation curves



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

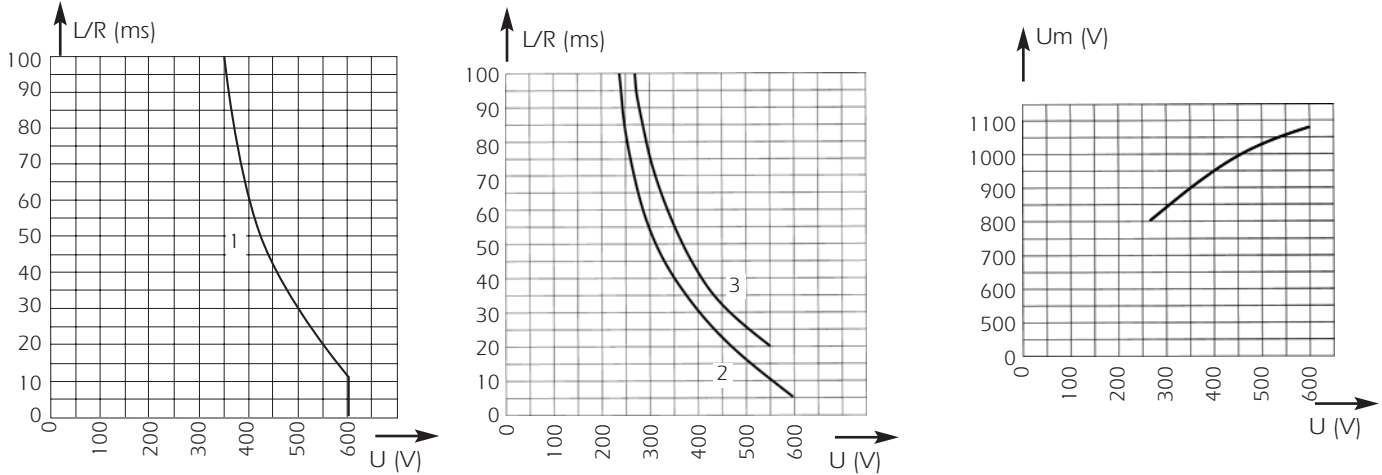
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#### DC Application data



Above, left and center: Curves indicate the permissible value of time constant  $L/R$  as a function of DC working voltage:

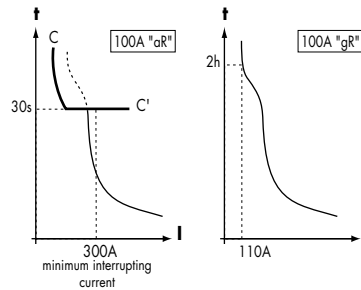
- 1- For rating 1, 2 and 4 A (gRC)  $I_p \geq 1,6 I_N$
- 2-  $I_p \geq 1,6 I_N$  for gRC only (rating 6 to 50 A)
- 3-  $I_p \geq 2,5 I_N$  for gRC and URC (rating 6 to 63 A)

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

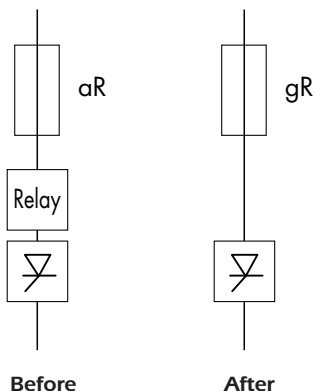
## NEW gR-CLASS

### OPTIMAL PROTECTION OF POWER EQUIPMENT

Thanks to recent technological developments, Ferraz Shawmut today markets gR-class PROTISTOR® fuses capable of clearing all types of overloads, from low multiples of current ratings up to very high short-circuit currents. Enhanced performance enables these fuses to provide solutions to many previously unsolved problems in power electronics: protection of cables without the use of additional components, protection of equipment from fire hazards, selective coordination of different fuses within a single power distribution installation...

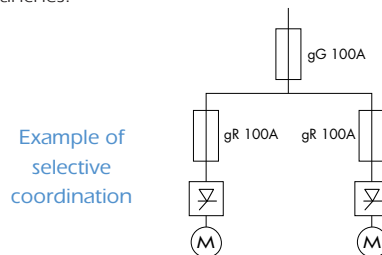


Example:  
100A aR vs. 100A gR



### SELECTIVE COORDINATION

gR-class semiconductor fuses can be utilized in association with gI and gG-class low voltage power distribution fuses of the same current rating, installed upstream. In a "selectively coordinated" distribution installation, melting is limited to the fuse associated with the faulted circuit, while upstream fuses remain intact. This prevents unnecessary down-time due to power blackouts in non-faulted branches.



### aR-CLASS vs. gR-CLASS

aR-class fuses feature a high minimum interrupting current as compared with their current rating. The primary time-current characteristic of aR-class fuses is the CC' curve, above which another protection device must be associated. The gR-class fuse represents considerably improved performance in semiconductor protection

### FERRAZ SHAWMUT EXPERTISE

gR-class fuses should be used in the design of low voltage equipment and in the protection of power electronics equipment. Designers can often substitute a gR-class fuse for an aR-class fuse (10x38, 14x51, 22x58, PSC 000 and 17x49 DIN80 or BS 88-4) but the reverse is not true: an aR fuse can never replace a gR fuse. Start protecting your new equipment with gR-class fuses today. The application of gR class fuses, with current ratings less than 100 Amps, offers enhanced protection, safety and reliability, along with reduced risk of replacement errors and assembly costs.