



Semiconductor Fuses



European Fuses

French Ferrule

6.900-6.921 cp gRC-URC

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

EXTREMELY HIGH INTERRUPTING-RATING FUSES:
PROTECTION OF SEMICONDUCTORS
COMPLYING WITH IEC STANDARD 269.1 AND 4

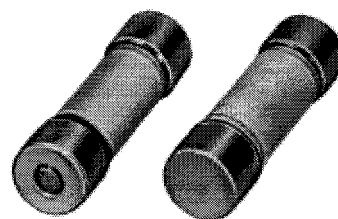
690 V VOLTAGE RATING (CURRENT RATING 1 TO 50 A)
AS PER IEC 33

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

gR CLASS (CURRENT RATING 63 A) ACCORDING TO VDE 636-23
AND IEC 269.4

TWO MODELS AS PER NF C 63210 AND 63211
WITH OR WITHOUT TRIP-INDICATOR

gRC fuses are 700VAC-DC UL Recognized 



MAIN CHARACTERISTICS

Voltage rating U_N (V)	Class	Current rating I_N (A)	Pre-arcing I_{2t}^* @ 1 ms I_{2t}^* (A ² s)	Total clearing I_{2t}^* @ U_N I_{2t}^* (A ² s)	Watts loss		Tested interrupting rating	Estimated interrupting rating
					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 Fuse Blocks and Fuse Holders section and Medium Voltage fuse clips



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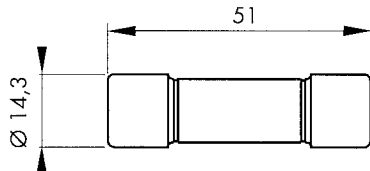


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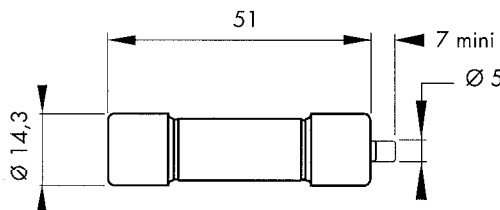
14 X 51 WITHOUT TRIP-INDICATOR



Weight: 18 g
Packaging: 10 pieces

Current rating	Catalog number	Ref. number
1	6,900 Cp gRC 14.51 1	E 221080
2	6,900 Cp gRC 14.51 2	H 081473
4	6,900 Cp gRC 14.51 4	J 081474
6	6,900 Cp gRC 14.51 6	T 220909
8	6,900 Cp gRC 14.51 8	S 220900
10	6,900 Cp gRC 14.51 10	R 220907
12	6,900 Cp gRC 14.51 12	Q 220906
16	6,900 Cp gRC 14.51 16	P 220905
20	6,900 Cp gRC 14.51 20	E 220735
25	6,900 Cp gRC 14.51 25	N 220904
32	6,900 Cp gRC 14.51 32	W 220819
40	6,900 Cp gRC 14.51 40	M 220903
50	6,900 Cp gRC 14.51 50	L 220902

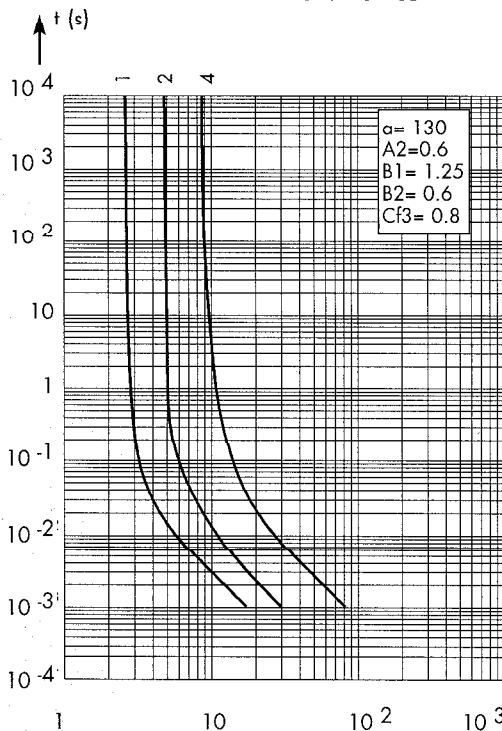
14 X 51 WITH TRIP-INDICATOR



Weight: 18 g
Packaging: 10 pieces

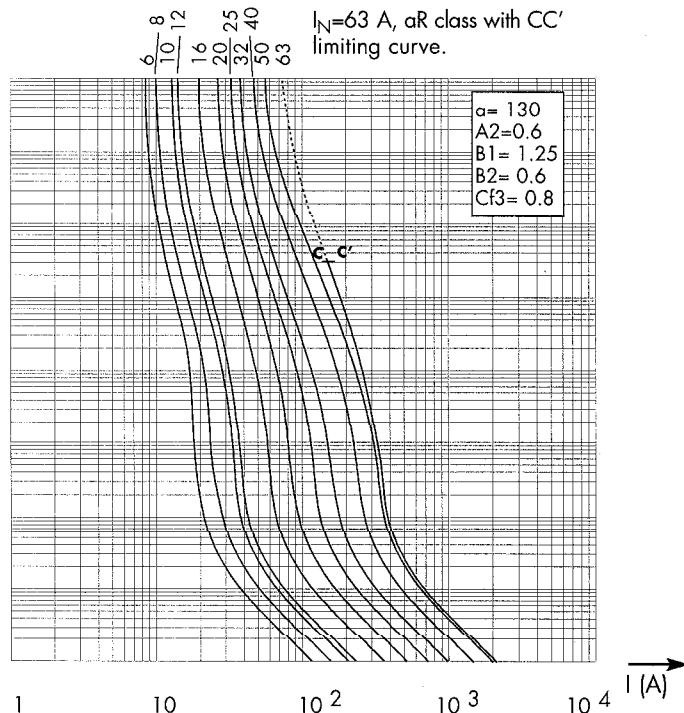
1	6,921 Cp gRC 14.51 1	F 221081
2	6,921 Cp gRC 14.51 2	L 081476
4	6,921 Cp gRC 14.51 4	F 081517
6	6,921 Cp gRC 14.51 6	B 220939
8	6,921 Cp gRC 14.51 8	A 220938
10	6,921 Cp gRC 14.51 10	Z 220937
12	6,921 Cp gRC 14.51 12	Y 220936
16	6,921 Cp gRC 14.51 16	X 220935
20	6,921 Cp gRC 14.51 20	W 220934
25	6,921 Cp gRC 14.51 25	V 220933
32	6,921 Cp gRC 14.51 32	V 220818
40	6,921 Cp gRC 14.51 40	M 220949
50	6,921 Cp gRC 14.51 50	N 220950
63	621 Cp URC 14.51 63	V 220910

Time vs current characteristics



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

cULUS except 63A rating
 $I_N=63$ A, aR class with CC' limiting curve.



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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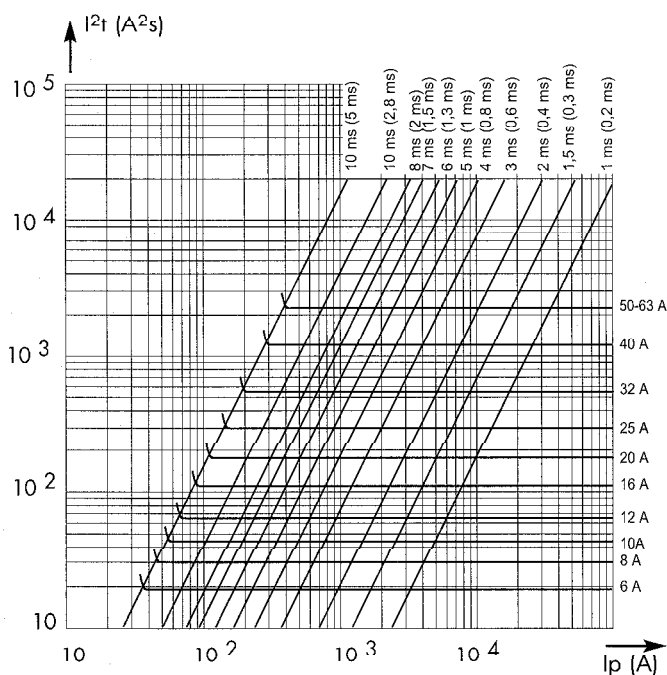
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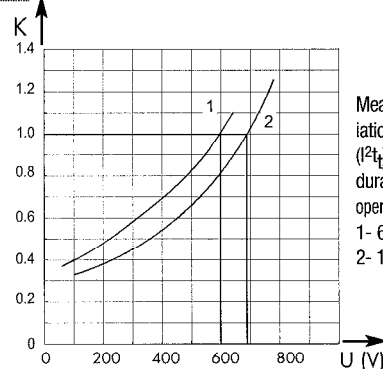


Total clearing I^2t



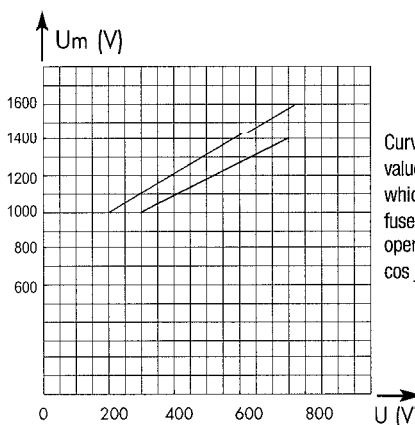
Horizontal curves show maximum values of total clearing I^2t (I^2t_t) for each rated current as a function of prospective current I_p @ 690 V, $\cos\phi = 0.15$ (for 63 A @ 600 V, $\cos\phi = 0.15$). Oblique lines indicate total clearing duration T_t , with associated pre-arcing duration in brackets.

I^2t corrective factor



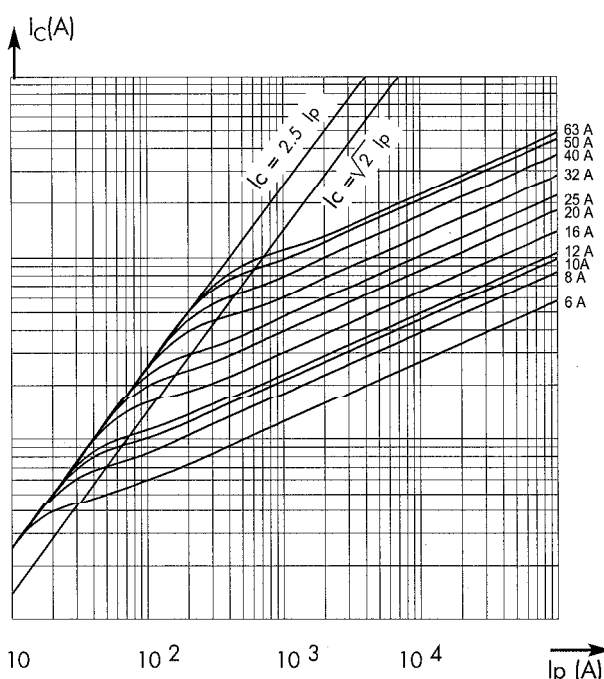
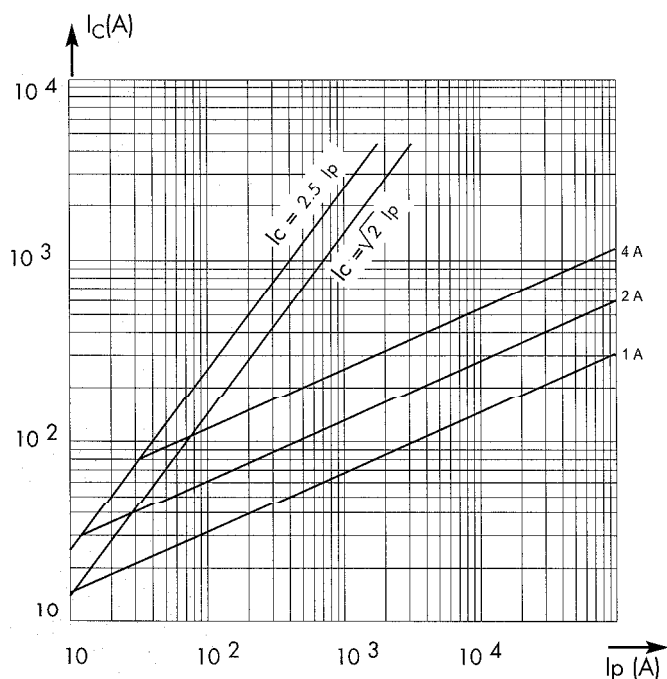
Mean curves showing variation of total clearing time (I^2t_t) and total clearing duration T_t as a function of operating voltage U .
1- 63 A rating - 600 V
2- 1 to 50 A rating - 690 V

Peak arc voltage



Curves showing peak value U_m of arc voltage which appears across fuse-link as a function of operating voltage U @ $\cos\phi = 0.15$

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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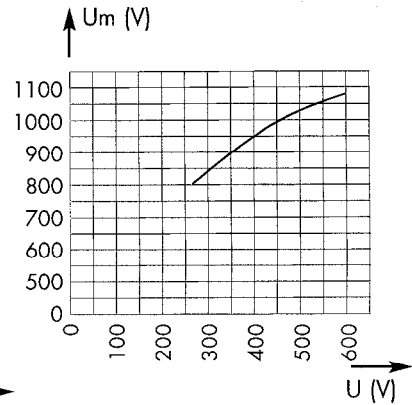
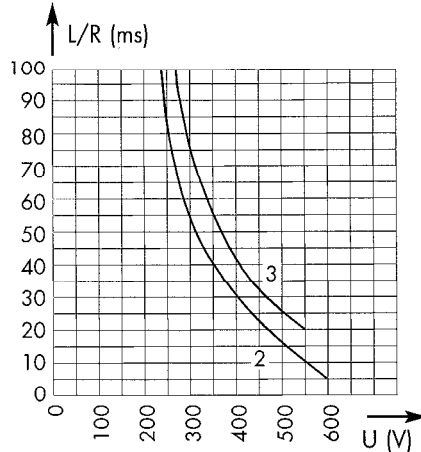
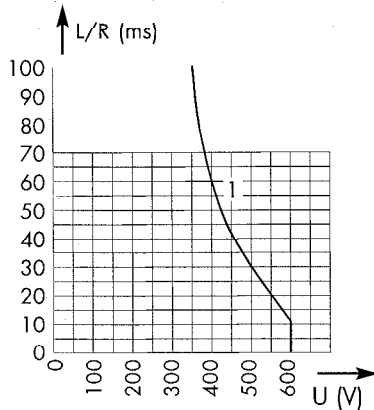


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DC Application data



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

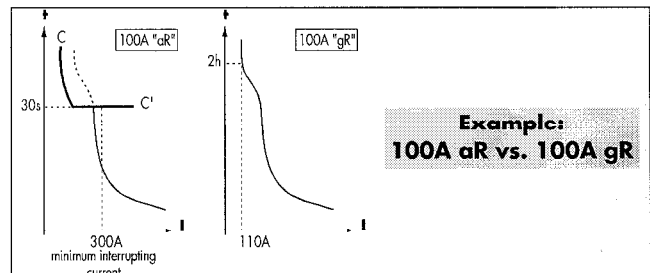
- 1- For rating 1, 2 and 4 A (gRC) $I_p = 1,6 I_N$
- 2- $I_p = 1,6 I_N$ for gRC only (rating 6 to 50 A)
- 3- $I_p = 2,5 I_N$ for gRC and URC (rating 6 to 63 A)

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

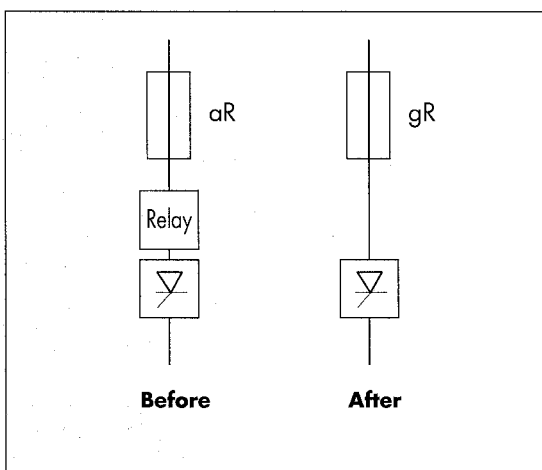
NEW gR-CLASS

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...

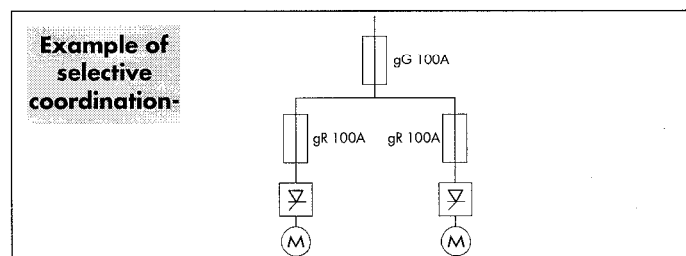


Example:
100A aR vs. 100A gR



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 a 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.