

# Protistor® BS88-4 17x49 aR URZ/URY

690VAC (IEC)

## SEMICONDUCTOR PROTECTION FUSES

## BRITISH STANDARD HIGH-SPEED FUSE-LINKS AC PROTECTION



The 690V Protistor® BS88-4 fuse-links provide maximum flexibility in equipment design and ultimate protection for protection of power semiconductors. These fuse-links are defined as per IEC 60269-1 and -4, VDE 636-23 and BS88-4 for a worldwide acceptance. The Protistor® have been engineered to provide state-of-the-art protection for semiconductors: diodes, thyristors, GTO's and IGBT devices. Fuses are assembled with pure silver, die-cut elements embedded in solidified sand, which helps control arcing characteristics for a lower  $I^2t$  and high interrupting rating level. Each fuse-link can be equipped with a low voltage trip-indicator which can operate a field mountable microswitch.

## TECHNICAL DATA OVERVIEW

Voltage AC	690 VAC
Ampere Range (A)	35 ... 100 A
Size per Standard	17x49
Speed/Characteristic	aR
I.R. AC (IEC)	200 kA

## FEATURES & BENEFITS

- Extremely fast acting
- Current limiting
- Very high breaking capacity
- Low watts loss

## APPLICATIONS

- Small inverters
- UPS systems
- Variable speed drives
- Similar 700V or less equipment

## STANDARDS

- IEC 60269-4
- UL Recognized Component (BS17UZ69V only) - UL File E76491



# Protistor® BS88-4 17x49 aR URZ/URY 690VAC (IEC)

## PRODUCT RANGE



BS17UZ69V63

### Size 17x49 aR URZ/URY 690VAC without trip-indicator

Catalog number	Item number	Rated voltage AC (IEC)	Rated current I <sub>n</sub>	Pre-arcing I <sup>2</sup> t	Clearing I <sup>2</sup> t at Rated Voltage	Rated breaking capacity AC	Power dissipation at I <sub>n</sub>	Package	Weight
BS17UZ69V35	L221247	690 V	35 A	53 A <sup>2</sup> s	330 A <sup>2</sup> s	200 kA	11 W	10	35 g
BS17UZ69V40	M221248	690 V	40 A	69 A <sup>2</sup> s	430 A <sup>2</sup> s	200 kA	13.5 W	10	35 g
BS17UZ69V45	N221249	690 V	45 A	96 A <sup>2</sup> s	610 A <sup>2</sup> s	200 kA	14.5 W	10	35 g
BS17UZ69V50	P221250	690 V	50 A	155 A <sup>2</sup> s	970 A <sup>2</sup> s	200 kA	17 W	10	35 g
BS17UZ69V63	Q221251	690 V	63 A	210 A <sup>2</sup> s	1320 A <sup>2</sup> s	200 kA	19.5 W	10	35 g
BS17UY69V71	R221252	690 V	71 A	240 A <sup>2</sup> s	1510 A <sup>2</sup> s	200 kA	24 W	10	35 g
BS17UY69V80	S221253	690 V	80 A	390 A <sup>2</sup> s	2450 A <sup>2</sup> s	200 kA	25.5 W	10	35 g
BS17UY69V90	T221254	690 V	90 A	520 A <sup>2</sup> s	3250 A <sup>2</sup> s	200 kA	27 W	10	35 g
BS17UY69V100	V221255	690 V	100 A	625 A <sup>2</sup> s	3900 A <sup>2</sup> s	200 kA	33 W	10	35 g



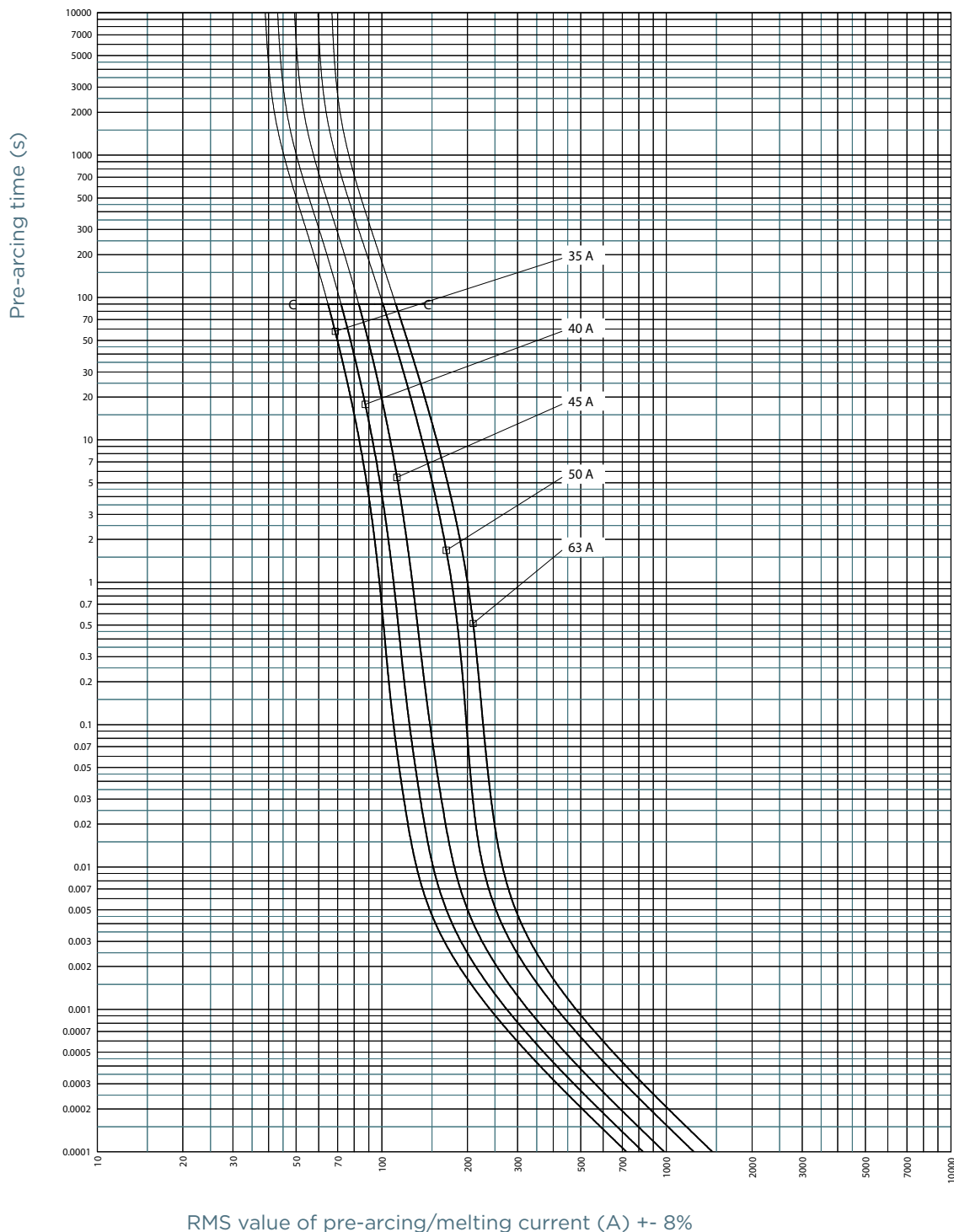
BS17UZ69V63P

### Size 17x49 aR URZ/URY 690VAC with separated trip-indicator

Catalog number	Item number	Rated voltage AC (IEC)	Rated current I <sub>n</sub>	Pre-arcing I <sup>2</sup> t	Clearing I <sup>2</sup> t at Rated Voltage	Rated breaking capacity AC	Power dissipation at I <sub>n</sub>	Package	Weight
BS17UZ69V35P	W221256	690 V	35 A	53 A <sup>2</sup> s	330 A <sup>2</sup> s	200 kA	11 W	10	50 g
BS17UZ69V40P	X221257	690 V	40 A	69 A <sup>2</sup> s	430 A <sup>2</sup> s	200 kA	13.5 W	10	50 g
BS17UZ69V45P	Y221258	690 V	45 A	96 A <sup>2</sup> s	610 A <sup>2</sup> s	200 kA	14.5 W	10	50 g
BS17UZ69V50P	Z221259	690 V	50 A	155 A <sup>2</sup> s	970 A <sup>2</sup> s	200 kA	17 W	10	50 g
BS17UZ69V63P	A221260	690 V	63 A	210 A <sup>2</sup> s	1320 A <sup>2</sup> s	200 kA	19.5 W	10	50 g
BS17UY69V71P	B221261	690 V	71 A	240 A <sup>2</sup> s	1510 A <sup>2</sup> s	200 kA	24 W	10	50 g
BS17UY69V80P	C221262	690 V	80 A	390 A <sup>2</sup> s	2450 A <sup>2</sup> s	200 kA	25.5 W	10	50 g
BS17UY69V90P	D221263	690 V	90 A	520 A <sup>2</sup> s	3250 A <sup>2</sup> s	200 kA	27 W	10	50 g
BS17UY69V100P	E221264	690 V	100 A	625 A <sup>2</sup> s	3900 A <sup>2</sup> s	200 kA	33 W	10	50 g

## TIME CURRENT CHARACTERISTIC CURVES

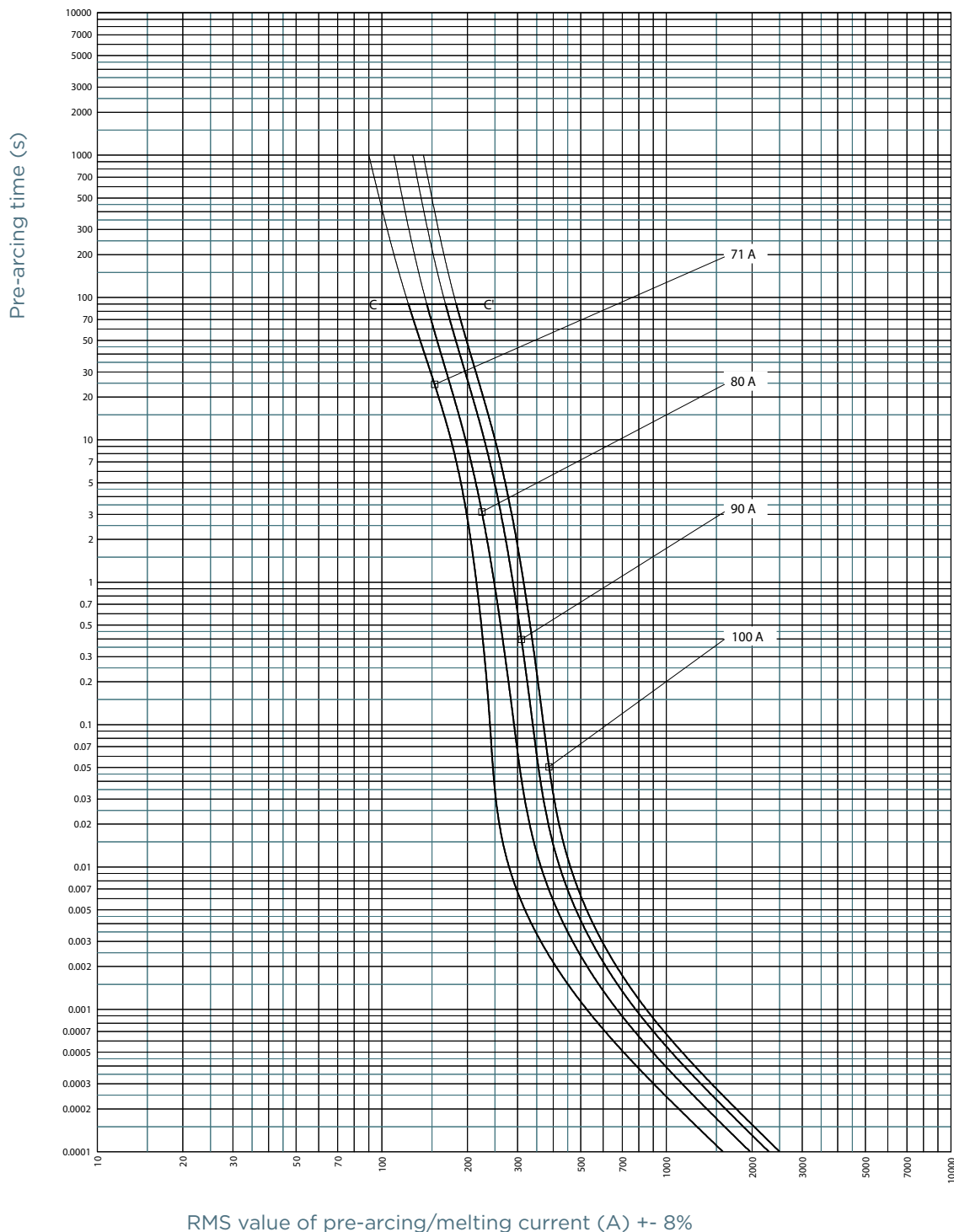
### URZ - With and Without Trip Indicator



MERSEN reserves the right to change, update or correct, without notice, any information contained in this datasheet.

## TIME CURRENT CHARACTERISTIC CURVES

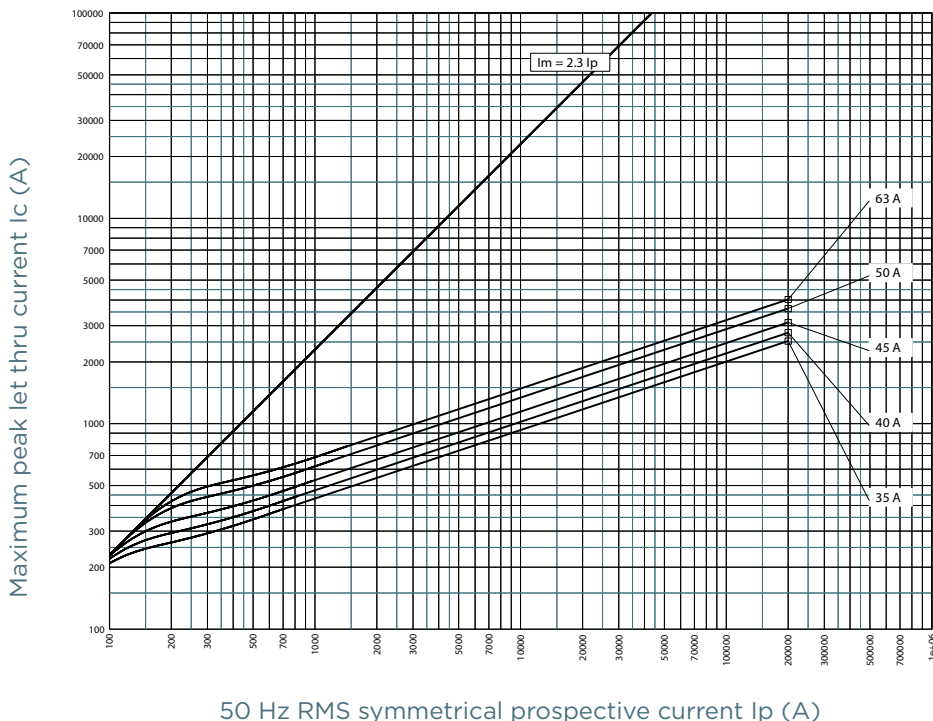
### URY - With and Without Trip Indicator



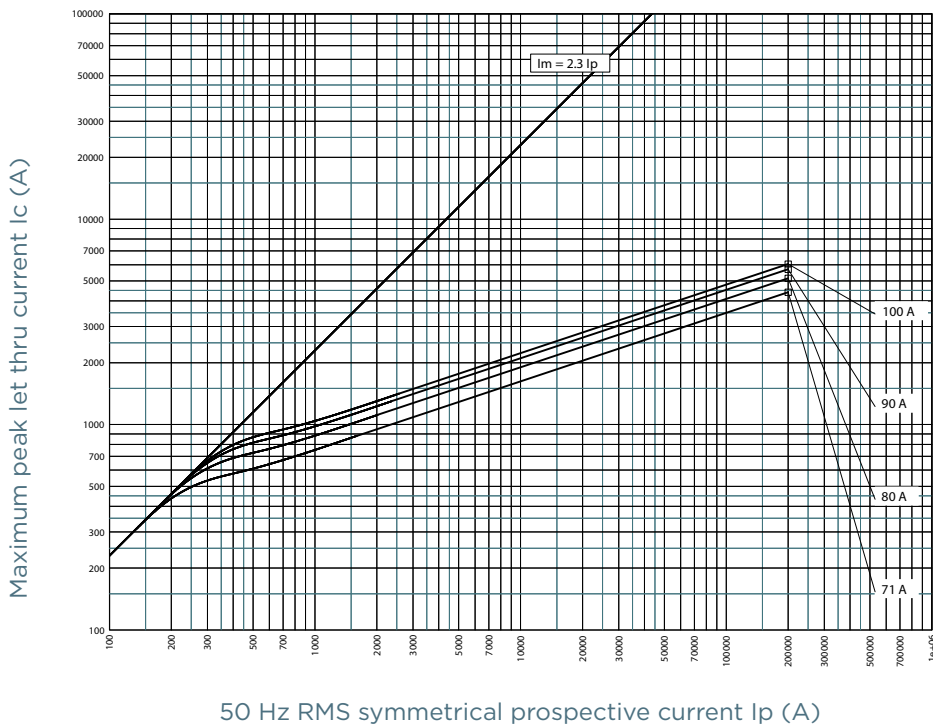
MERSEN reserves the right to change, update or correct, without notice, any information contained in this datasheet.

## CUT-OFF CURRENT CHARACTERISTIC

### URZ - With and Without Trip Indicator



### URY - With and Without Trip Indicator

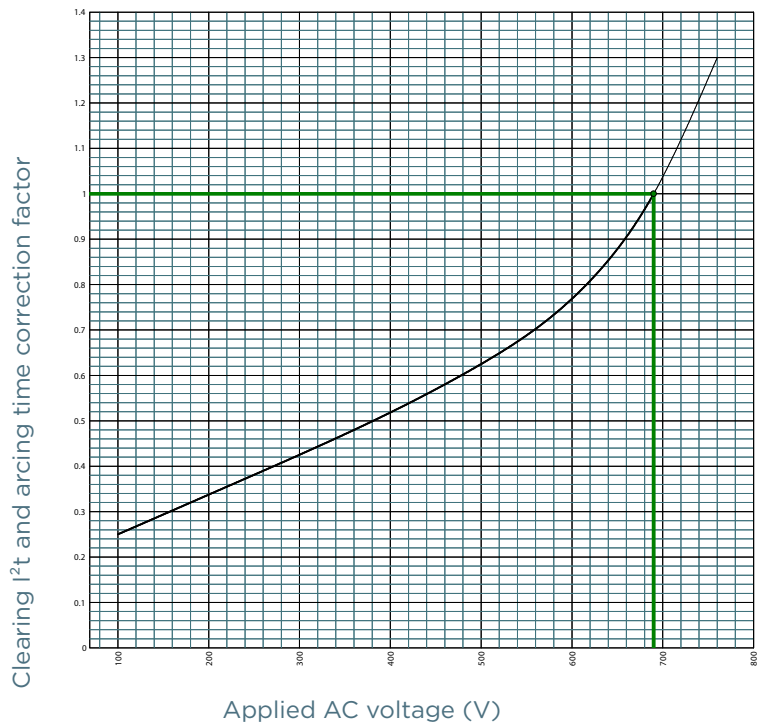


# Protistor® BS88-4 17x49 aR URZ/URY

690VAC (IEC)

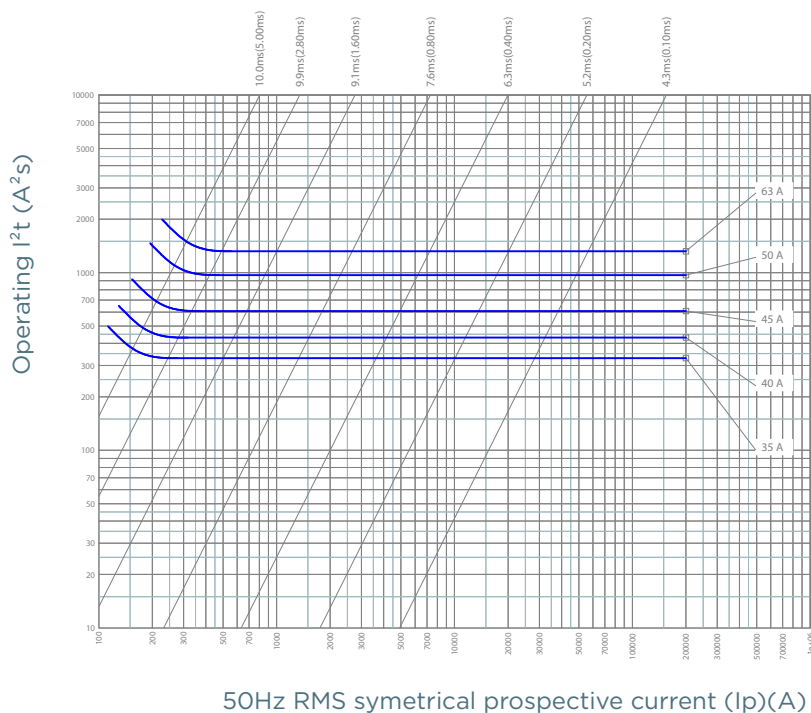
## I<sup>2</sup>T MULTIPLIER COEFFICIENT

### URY & URZ - With and Without Trip Indicator



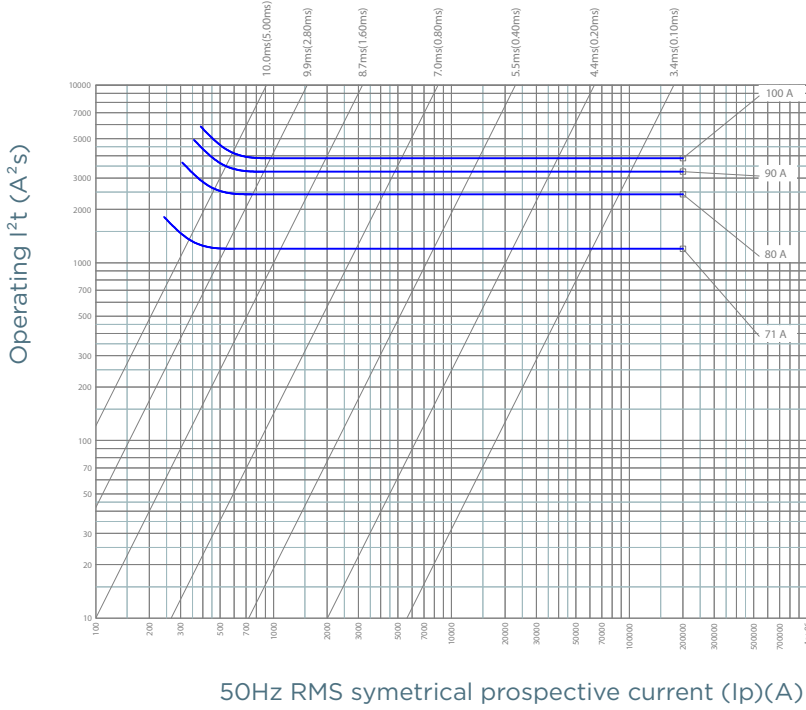
## CHARACTERISTICS TOTAL I<sup>2</sup>T CURVE

### URZ - With and Without Trip Indicator



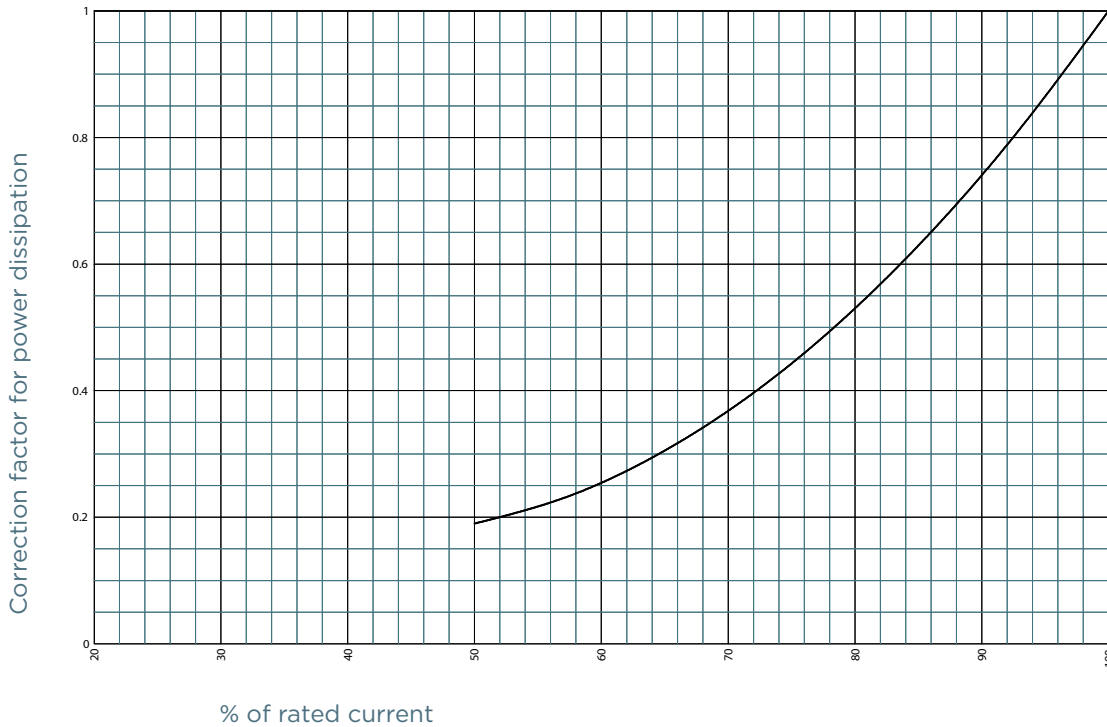
## CHARACTERISTICS TOTAL I<sup>2</sup>T CURVE

### URY - With and Without Trip Indicator



## POWER DISSIPATION

### URY & URZ - With and Without Trip Indicator

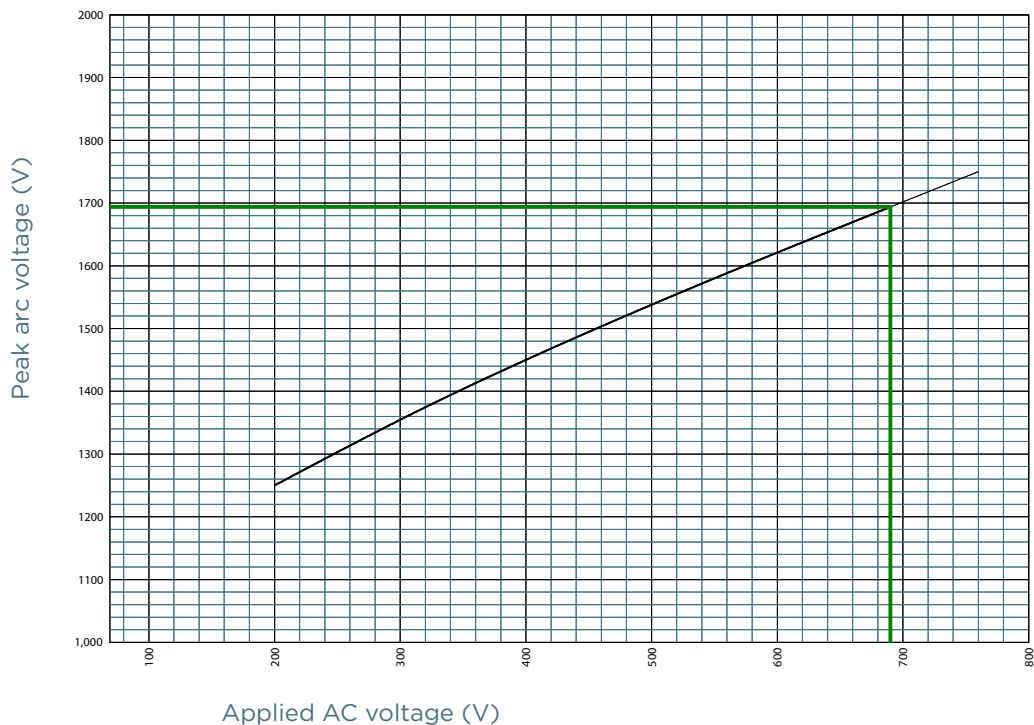


# Protistor® BS88-4 17x49 aR URZ/URY

690VAC (IEC)

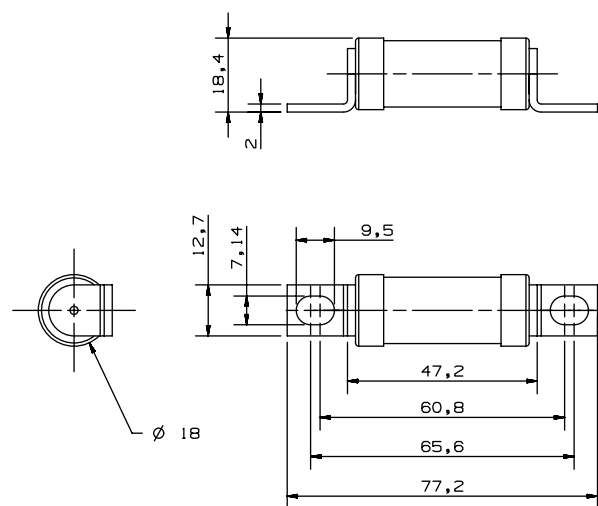
## PEAK ARC VOLTAGE

### URY & URZ - With and Without Trip Indicator



## DIMENSIONS

### Without trip indicator



Dimensions in mm



# Semiconductor (AC) fuses

## Other Protistor® Fuses BS88-4 Fuses 10x28, 17x27 - 250 VAC

**BRITISH STANDARD**  
**250 VAC - URE - URGS - URZ**  
**From 5 to 180 A**  
**Sizes 10x28 - 17x27**

Extremely high breaking capacity fuses:  
protection of power semiconductors as per  
IEC standard 60269.1 and 4

250 V voltage rating complying with IEC 33

gr class (ratings from 5 to 32 a)  
AS PER VDE 636-23 AND IEC 60269.4

aR CLASS (RATINGS FROM 7 to 180 A) COMPLYING WITH  
VDE 636-23 AND IEC 60269.4

TWO MODELS COMPLYING WITH BS 88-4

- WITHOUT INDICATOR
- WITH SEPARATE TRIP-INDICATOR (SIZE 17x27)

17x27 URGS are UL Recognized



### Main Characteristics

Voltage rating $U_N$ (V)	Size	Class	Current rating $I_N$ (A)	Pre-arcing $I^2t @ 1 \text{ ms}$ $I^2tp$ (A <sup>2</sup> s)	Total clearing $I^2t @ U_N$ A <sup>2</sup> s		Watts loss		Tested breaking capacity	
					$I_p \leq 30I_N$	$I_p > 30I_N$	$0.8 I_N$	$I_N$		
250V	10 x28	URE	5	1.3	10	11	0.6	1	160k A @ 250 V	
			6	1.8	13	15	0.7	1.2		
			10	2.4	18	20	1.2	2.1		
			12	4.3	28	33	1.6	2.8		
			15	6.7	41	48	2.0	3.5		
			20	15.0	85	100	2.2	4.0		
			25	27.0	135	160	2.6	4.7		
	32	53.0	240	280	3.0	5.4				
	250V	17x27	URGS	7	1.3	8,5	9,8	0.56	1	160k A @ 250 V
				10	4.5	21	23,8	0.84	1.5	
				12	5.9	27	31	1.1	2.0	
				16	11.2	50	59	1.7	3.0	
				20	15.6	80	100	2.2	3.9	
25				30.0	130	160	2.7	4.8		
30				45.0	195	235	3.2	5.6		
35				63.0	270	330	3.7	6.5		
50				180.0	7890	940	4.9	8.8		
60				250.0	1100	1310	5.8	10.4		
17x27		URZ	100	730.0	3350	4060	6.5	11.5	160k A @ 250 V	
			125	850.0	5720	6920	6.7	12.3		
			150	1250.0	7930	9590	7.4	13.6		
			160	1730.0	9600	11700	8.8	15.6		
			160	1730.0	9600	11700	8.8	15.6		
			180	2090.0	14500	17500	9.5	17		

Minimum Operating voltage for separate trip indicator = 20 V

FERRAZ SHAWMUT  
IS NOW

# Semiconductor (AC) fuses



## Other Protistor® Fuses

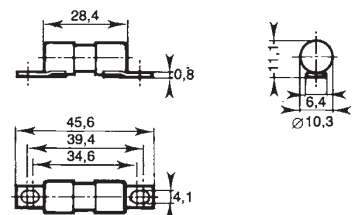
### BS88-4 Fuses

#### 10x28, 17x27 - 250 VAC

#### CP 10x28 - Without trip-indicator

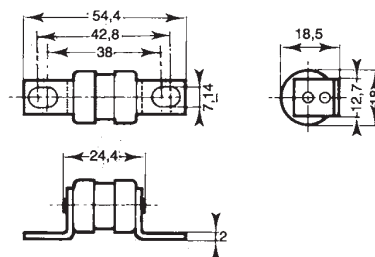
Size	Designation	Ref. Number	Pack.	Catalog Number
10x28	2.5 URE 10/5	M082489		BS10UE25V5
	2.5 URE 10/6	E097478		BS10UE25V6
	2.5 URE 10/10	L082488		BS10UE25V10
	2.5 URE 10/12	P097487	10	BS10UE25V12
	2.5 URE 10/15	K082487	(11g)	BS10UE25V15
	2.5 URE 10/20	J082486		BS10UE25V20
	2.5 URE 10/25	X097494		BS10UE25V25
	2.5 URE 10/32	N081984		BS10UE25V32

\*\*BBS 88 part 4 requires respectively Ø8.7 and 8.8



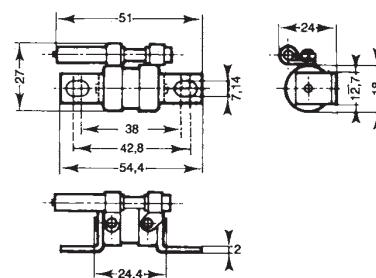
#### CP 17x27 - Without trip-indicator

Size	Designation	Ref. Number	Pack.	Catalog Number
17x27	2.5 URGS 17/7	M076647		BS17US25V7
	2.5 URGS 17/10	N076648		BS17US25V10
	2.5 URGS 17/12	P076649		BS17US25V12
	2.5 URGS 17/16	Q076650		BS17US25V16
	2.5 URGS 17/20	L097507		BS17US25V20
	2.5 URGS 17/25	R076651		BS17US25V25
	2.5 URGS 17/30	S076652	10	BS17US25V30
	2.5 URGS 17/35	T076653	(30g)	BS17US25V35
	2.5 URGS 17/50	V076654		BS17US25V50
	2.5 URGS 17/60	W076655		BS17US25V60
	2.5 URGS 17/75	X076656		BS17US25V75
	2.5 URGS 17/80	Z085559		BS17US25V80
	2.5 URZ 17/100	Y085558		BS17UZ25V100
	2.5 URZ 17/125	G097526		BS17UZ25V125
	2.5 URZ 17/150	W085556		BS17UZ25V150
	2.5 URZ 17/160	H097527		BS17UZ25V160
	2.5 URZ 17/180	N097532		BS17UZ25V180



#### CP 17x27 - With separated trip-indicator BS88-4

Size	Designation	Ref. Number	Pack.	Catalog Number
17x27	2.5 URGS 17P7	P097533		BS17US25V7P
	2.5 URGS 17P10	Q097534		BS17US25V10P
	2.5 URGS 17P12	S097536		BS17US25V12P
	2.5 URGS 17P16	X097540		BS17US25V16P
	2.5 URGS 17P20	B097544		BS17US25V20P
	2.5 URGS 17P25	D097546		BS17US25V25P
	2.5 URGS 17P30	E097547	10	BS17US25V30P
	2.5 URGS 17P35	F097548	(40g)	BS17US25V35P
	2.5 URGS 17P50	J097551		BS17US25V50P
	2.5 URGS 17P60	H081082		BS17US25V60P
	2.5 URGS 17P75	K097552		BS17US25V75P
	2.5 URGS 17P80	L097553		BS17US25V80P
	2.5 URZ 17P100	P097556		BS17UZ25V100P
	2.5 URZ 17P125	Q097557		BS17UZ25V125P
	2.5 URZ 17P150	R097558		BS17UZ25V150P
	2.5 URZ 17P160	S097559		BS17UZ25V160P
	2.5 URZ 17P180	T097560		BS17UZ25V180P

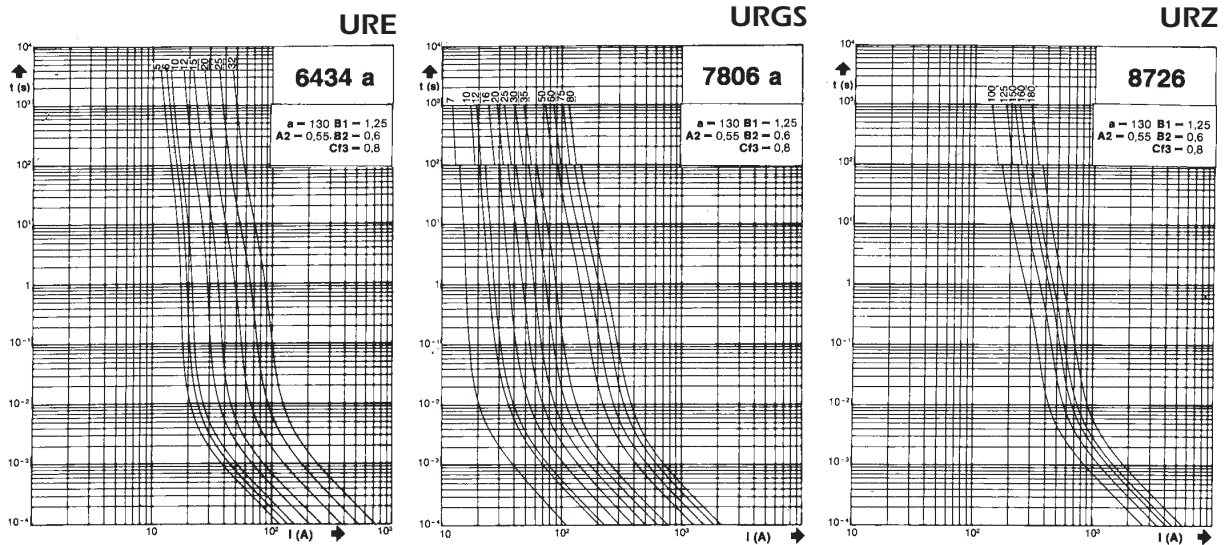


Microswitch MC6.3 GR 2-5N Ref: Y301015

## Other Protistor® Fuses BS88-4 Fuses 10x28, 17x27 - 250 VAC

### Electrical characteristics

### Times vs current characteristics

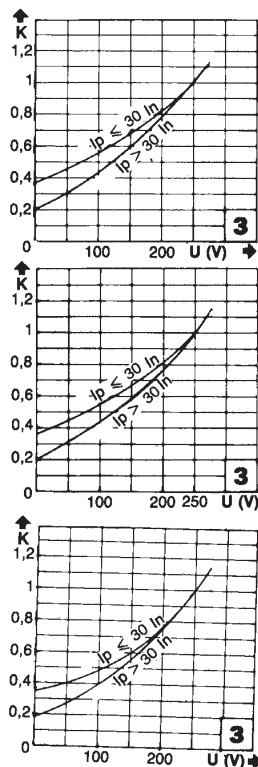


\* These curves indicate, for each rated current, the piercing time vs. the R.M.S. pre-arcing current.

\* Tolerance for the mean pre-arcing current  $\pm 10\%$

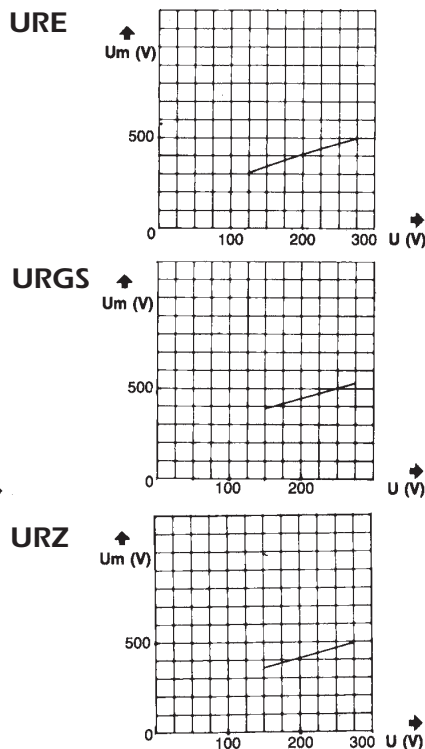
### Corrective factor - Peak arc voltage

#### Corrective factor



\* The mean curves show the variation of the total clearing time ( $I^2 t_t$ ) and the total clearing duration  $t_t$  as a function of operating voltage U

#### Peak arc voltage

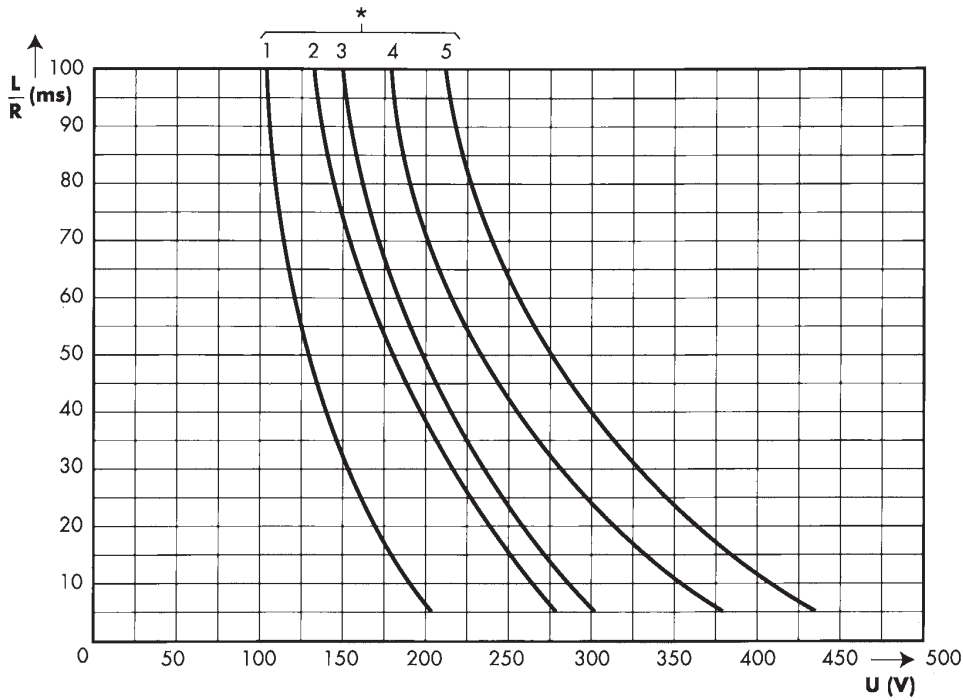


This curve show the peak value  $U_m$  of the arc voltage which appears across the fuse link as a function of the operating voltage U @  $\cos \varphi = 0.15$ .



## Other Protistor® Fuses BS88-4 Fuses 10x28, 17x27 - 250 VAC

### D.C Applications data



▪ These curve indicate the permissible value of time constant  $L/R$  as a function of the D.C. working voltage.

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

Curves # and $I_{pm}$ for each rating			
Class	Rated current	*	$I_{pm}(A)$
URE	5	5	40
	6	5	50
	10	5	55
	12	5	80
	15	5	100
	20	5	130
	25	5	175
URGS	32	5	255
	7	5	40
URZ	100	4	190
	125	3	250
	150	2	300
	160	2	330
	180	1	400

for URGS class fuses, consult us.

## Other Protistor® Fuses BS88-4 Fuses

### Microswitches for BS88-4 Protistor®

MICROSWITCH SYSTEMS ADAPTED  
TO THE FOLLOWING FUSES:

- BS88 - 4 separated trip-indicator
- BS88 - 4 built-in trip-indicator

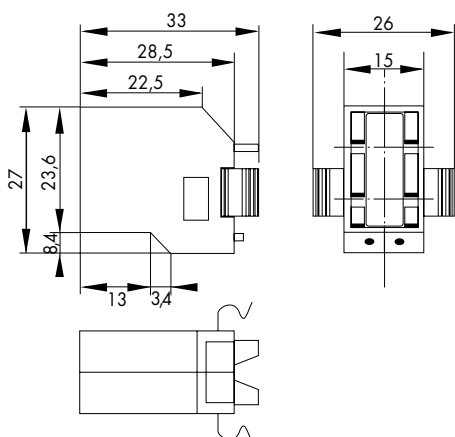
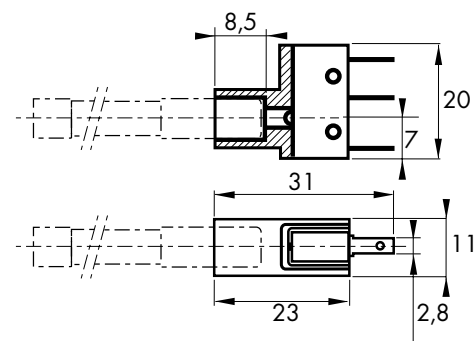
### Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Interrupting rating						AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 μs (**)	Fire class according to UL 94
					Non inductive circuit			Inductive circuit : L/R = 25ms					
					30V	110V	250V	30V	110V	250V			
MC 6,3 GR 2-5 N	1000 V	20 V 100 mA	5 A	50/60 Hz	-	5 A	0,3 A	-	3 A	2 A	3.5 kV	-	H.B.
				DC	4 A	0.4 A	-	3 A	0.4 A	-			
MC 36 GR 2-5	1000 V	20 V 100 mA	5 A	50/60 Hz	-	5 A	5 A	-	5 A	5 A	7.5 kV	-	H.B.
				DC	4 A	0.4 A	-	2 A	0.4 A	-			

\* Between power circuit and microswitch terminals as per IEC 60 and 694 (50/60 Hz 1 min duration in dry air)

\*\* Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 947-1

\*\*\* Between power circuit and microswitch terminals



Catalog Number	Ref. Number	Weight (g)	Pack.
MC 6,3 GR 2-5 N (for separate trip-indicator)	Y 310015	10	3

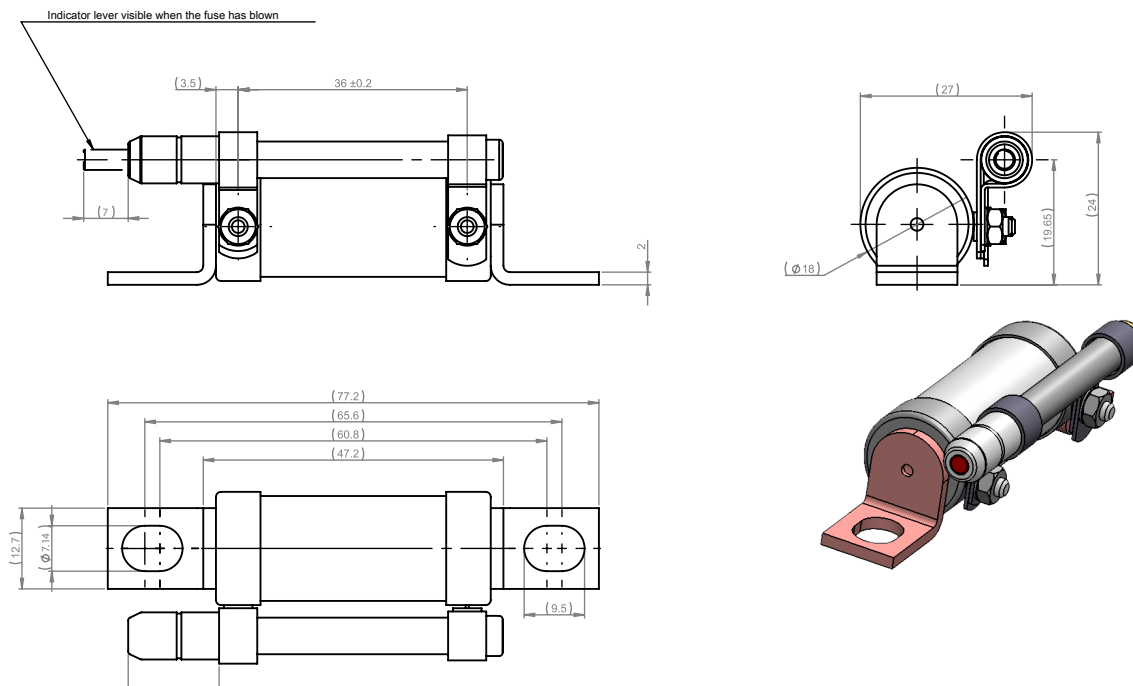
Catalog Number	Ref. Number	Weight (g)	Pack.
MC 36 GR 2-5 (for built-in trip-indicator)	P 092496	10	3

FERRAZ SHAWMUT  
IS NOW

# Protistor® BS88-4 17x49 aR URZ/URY 690VAC (IEC)

## DIMENSIONS

### With seperated trip indicator



Dimensions in mm



# Semiconductor (AC) fuses

## Other Protistor® Fuses BS88-4 Fuses 10x28, 17x27 - 250 VAC

**BRITISH STANDARD**  
**250 VAC - URE - URGS - URZ**  
**From 5 to 180 A**  
**Sizes 10x28 - 17x27**

Extremely high breaking capacity fuses:  
protection of power semiconductors as per  
IEC standard 60269.1 and 4

250 V voltage rating complying with IEC 33

gr class (ratings from 5 to 32 a)  
AS PER VDE 636-23 AND IEC 60269.4

aR CLASS (RATINGS FROM 7 to 180 A) COMPLYING WITH  
VDE 636-23 AND IEC 60269.4

TWO MODELS COMPLYING WITH BS 88-4

- WITHOUT INDICATOR
- WITH SEPARATE TRIP-INDICATOR (SIZE 17x27)

17x27 URGS are UL Recognized



### Main Characteristics

Voltage rating $U_N$ (V)	Size	Class	Current rating $I_N$ (A)	Pre-arcing $I^2t @ 1 \text{ ms}$ $I^2tp$ (A <sup>2</sup> s)	Total clearing $I^2t @ U_N$ A <sup>2</sup> s		Watts loss		Tested breaking capacity
					$I_p \leq 30I_N$	$I_p > 30I_N$	$0.8 I_N$	$I_N$	
250V	10 x28	URE	5	1.3	10	11	0.6	1	160k A @ 250 V
			6	1.8	13	15	0.7	1.2	
			10	2.4	18	20	1.2	2.1	
			12	4.3	28	33	1.6	2.8	
			15	6.7	41	48	2.0	3.5	
			20	15.0	85	100	2.2	4.0	
			25	27.0	135	160	2.6	4.7	
			32	53.0	240	280	3.0	5.4	
250V	17x27	URGS	7	1.3	8,5	9,8	0.56	1	160k A @ 250 V
			10	4.5	21	23,8	0.84	1.5	
			12	5.9	27	31	1.1	2.0	
			16	11.2	50	59	1.7	3.0	
			20	15.6	80	100	2.2	3.9	
			25	30.0	130	160	2.7	4.8	
			30	45.0	195	235	3.2	5.6	
			35	63.0	270	330	3.7	6.5	
			50	180.0	7890	940	4.9	8.8	
			60	250.0	1100	1310	5.8	10.4	
	17x27	URZ	100	730.0	3350	4060	6.5	11.5	160k A @ 250 V
			125	850.0	5720	6920	6.7	12.3	
			150	1250.0	7930	9590	7.4	13.6	
			160	1730.0	9600	11700	8.8	15.6	
			180	2090.0	14500	17500	9.5	17	

Minimum Operating voltage for separate trip indicator = 20 V

FERRAZ SHAWMUT  
IS NOW

# Semiconductor (AC) fuses



## Other Protistor® Fuses

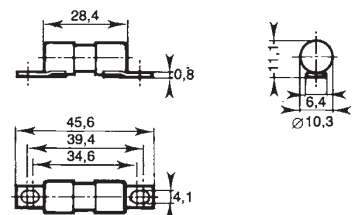
### BS88-4 Fuses

### 10x28, 17x27 - 250 VAC

#### CP 10x28 - Without trip-indicator

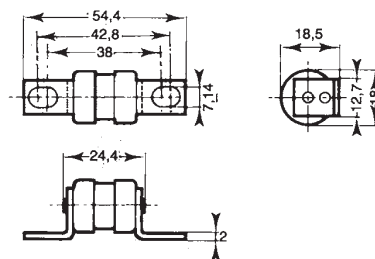
Size	Designation	Ref. Number	Pack.	Catalog Number
10x28	2.5 URE 10/5	M082489		BS10UE25V5
	2.5 URE 10/6	E097478		BS10UE25V6
	2.5 URE 10/10	L082488		BS10UE25V10
	2.5 URE 10/12	P097487	10	BS10UE25V12
	2.5 URE 10/15	K082487	(11g)	BS10UE25V15
	2.5 URE 10/20	J082486		BS10UE25V20
	2.5 URE 10/25	X097494		BS10UE25V25
	2.5 URE 10/32	N081984		BS10UE25V32

\*\*BBS 88 part 4 requires respectively Ø8.7 and 8.8



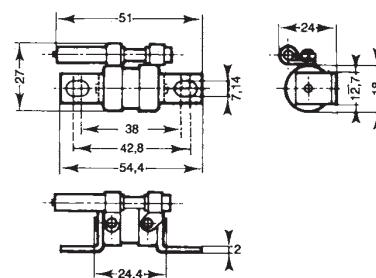
#### CP 17x27 - Without trip-indicator

Size	Designation	Ref. Number	Pack.	Catalog Number
17x27	2.5 URGS 17/7	M076647		BS17US25V7
	2.5 URGS 17/10	N076648		BS17US25V10
	2.5 URGS 17/12	P076649		BS17US25V12
	2.5 URGS 17/16	Q076650		BS17US25V16
	2.5 URGS 17/20	L097507		BS17US25V20
	2.5 URGS 17/25	R076651		BS17US25V25
	2.5 URGS 17/30	S076652	10	BS17US25V30
	2.5 URGS 17/35	T076653	(30g)	BS17US25V35
	2.5 URGS 17/50	V076654		BS17US25V50
	2.5 URGS 17/60	W076655		BS17US25V60
	2.5 URGS 17/75	X076656		BS17US25V75
	2.5 URGS 17/80	Z085559		BS17US25V80
	2.5 URZ 17/100	Y085558		BS17UZ25V100
	2.5 URZ 17/125	G097526		BS17UZ25V125
	2.5 URZ 17/150	W085556		BS17UZ25V150
	2.5 URZ 17/160	H097527		BS17UZ25V160
	2.5 URZ 17/180	N097532		BS17UZ25V180



#### CP 17x27 - With separated trip-indicator BS88-4

Size	Designation	Ref. Number	Pack.	Catalog Number
17x27	2.5 URGS 17P7	P097533		BS17US25V7P
	2.5 URGS 17P10	Q097534		BS17US25V10P
	2.5 URGS 17P12	S097536		BS17US25V12P
	2.5 URGS 17P16	X097540		BS17US25V16P
	2.5 URGS 17P20	B097544		BS17US25V20P
	2.5 URGS 17P25	D097546		BS17US25V25P
	2.5 URGS 17P30	E097547	10	BS17US25V30P
	2.5 URGS 17P35	F097548	(40g)	BS17US25V35P
	2.5 URGS 17P50	J097551		BS17US25V50P
	2.5 URGS 17P60	H081082		BS17US25V60P
	2.5 URGS 17P75	K097552		BS17US25V75P
	2.5 URGS 17P80	L097553		BS17US25V80P
	2.5 URZ 17P100	P097556		BS17UZ25V100P
	2.5 URZ 17P125	Q097557		BS17UZ25V125P
	2.5 URZ 17P150	R097558		BS17UZ25V150P
	2.5 URZ 17P160	S097559		BS17UZ25V160P
	2.5 URZ 17P180	T097560		BS17UZ25V180P



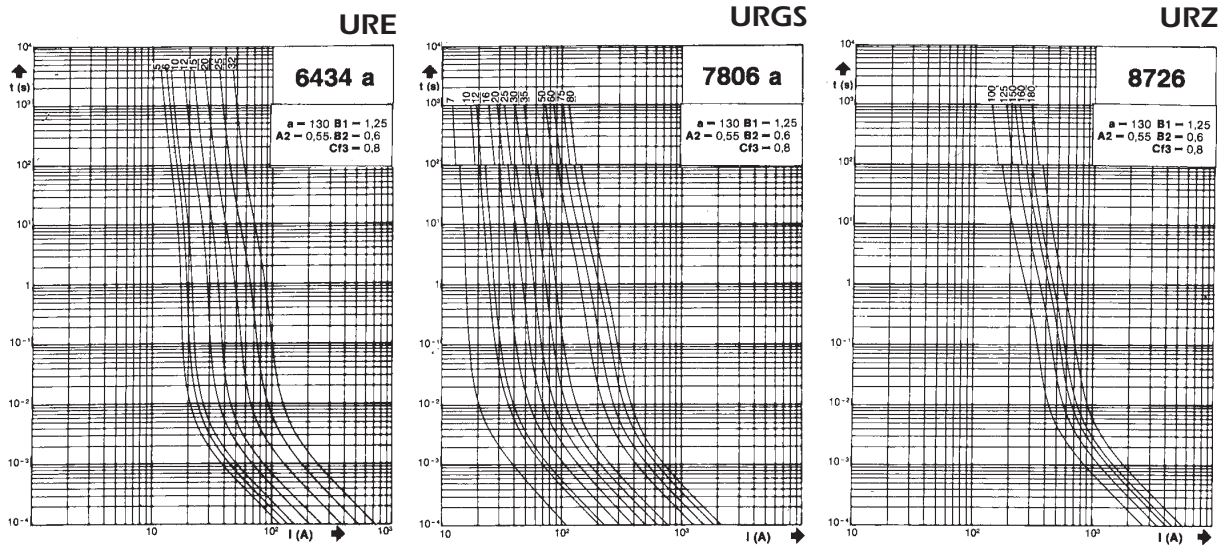
Microswitch MC6.3 GR 2-5N Ref: Y301015



## Other Protistor® Fuses BS88-4 Fuses 10x28, 17x27 - 250 VAC

### Electrical characteristics

### Times vs current characteristics

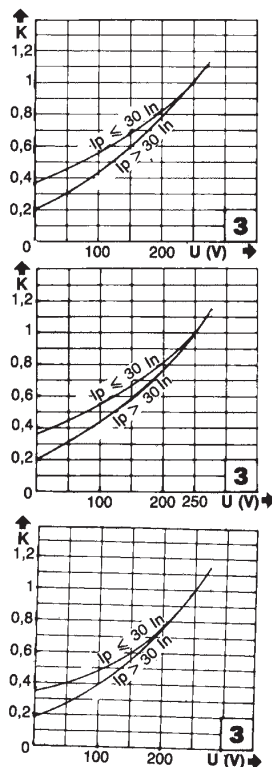


\* These curves indicate, for each rated current, the piercing time vs. the R.M.S. pre-arcing current.

\* Tolerance for the mean pre-arcing current  $\pm 10\%$

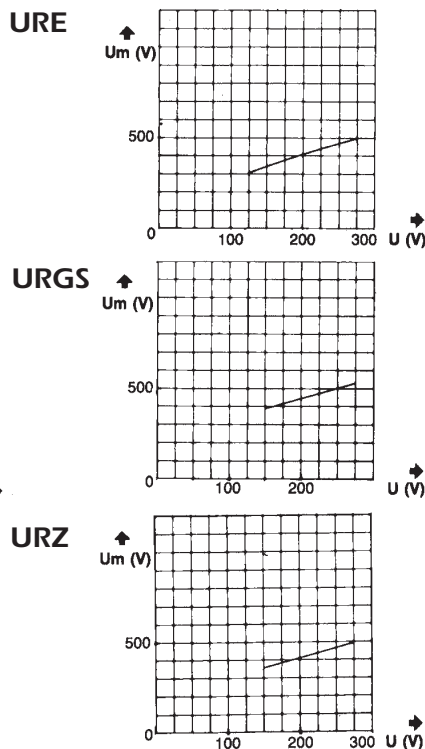
### Corrective factor - Peak arc voltage

#### Corrective factor



\* The mean curves show the variation of the total clearing time ( $I^2 t_t$ ) and the total clearing duration  $t_t$  as a function of operating voltage U

#### Peak arc voltage

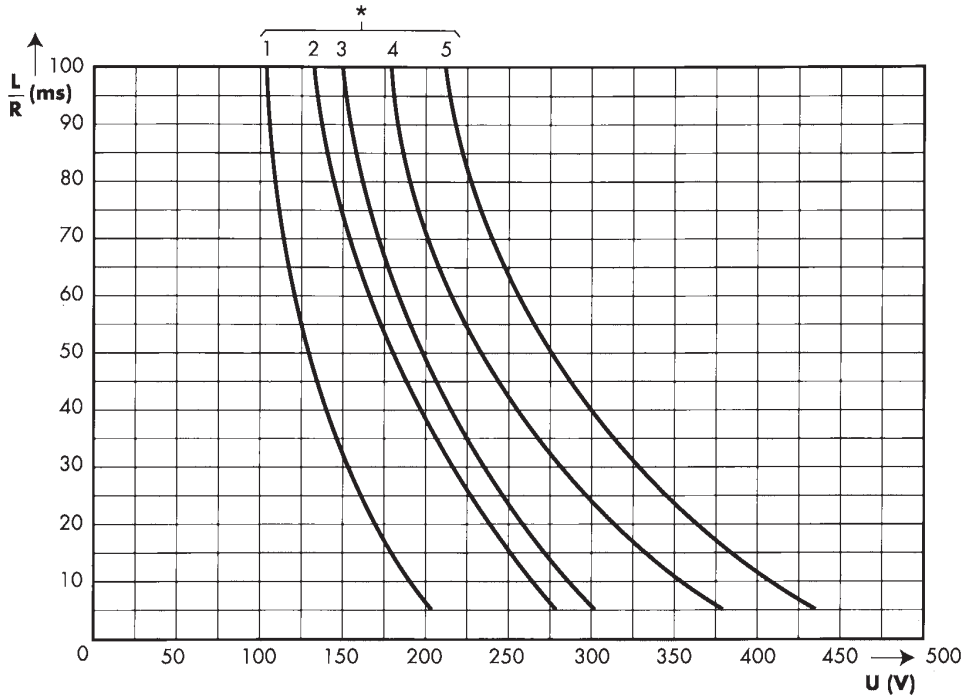


This curve show the peak value  $U_m$  of the arc voltage which appears across the fuse link as a function of the operating voltage U @  $\cos \varphi = 0.15$ .



## Other Protistor® Fuses BS88-4 Fuses 10x28, 17x27 - 250 VAC

### D.C Applications data



▪ These curve indicate the permissible value of time constant  $L/R$  as a function of the D.C. working voltage.

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

Curves # and $I_{pm}$ for each rating			
Class	Rated current	*	$I_{pm}(A)$
URE	5	5	40
	6	5	50
	10	5	55
	12	5	80
	15	5	100
	20	5	130
	25	5	175
URGS	32	5	255
	7	5	40
URZ	100	4	190
	125	3	250
	150	2	300
	160	2	330
	180	1	400

for URGS class fuses, consult us.

## Other Protistor® Fuses BS88-4 Fuses

### Microswitches for BS88-4 Protistor®

MICROSWITCH SYSTEMS ADAPTED  
TO THE FOLLOWING FUSES:

- BS88 - 4 separated trip-indicator
- BS88 - 4 built-in trip-indicator

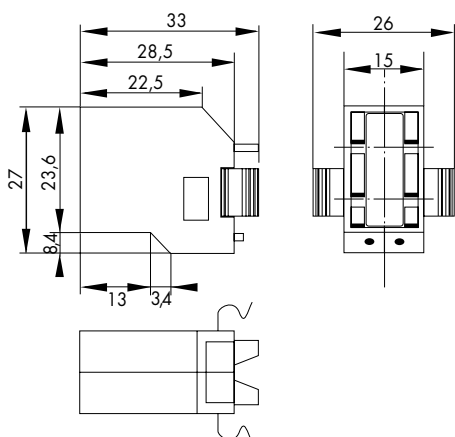
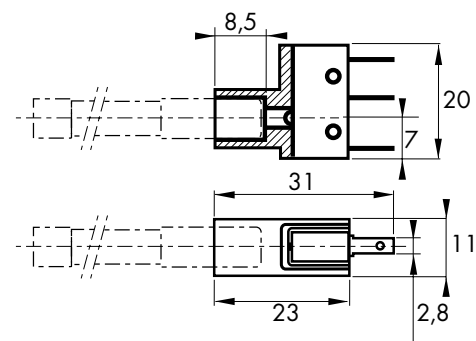
### Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Interrupting rating						AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 μs (**)	Fire class according to UL 94
					Non inductive circuit			Inductive circuit : L/R = 25ms					
					30V	110V	250V	30V	110V	250V			
MC 6,3 GR 2-5 N	1000 V	20 V 100 mA	5 A	50/60 Hz	-	5 A	0,3 A	-	3 A	2 A	3.5 kV	-	H.B.
				DC	4 A	0.4 A	-	3 A	0.4 A	-			
MC 36 GR 2-5	1000 V	20 V 100 mA	5 A	50/60 Hz	-	5 A	5 A	-	5 A	5 A	7.5 kV	-	H.B.
				DC	4 A	0.4 A	-	2 A	0.4 A	-			

\* Between power circuit and microswitch terminals as per IEC 60 and 694 (50/60 Hz 1 min duration in dry air)

\*\* Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 947-1

\*\*\* Between power circuit and microswitch terminals



Catalog Number	Ref. Number	Weight (g)	Pack.
MC 6,3 GR 2-5 N (for separate trip-indicator)	Y 310015	10	3

Catalog Number	Ref. Number	Weight (g)	Pack.
MC 36 GR 2-5 (for built-in trip-indicator)	P 092496	10	3

FERRAZ SHAWMUT  
IS NOW

## Other Protistor® Fuses BS88-4 Fuses 17x49 gRB/URB - 690 VAC



EXTREMELY HIGH BREAKING CAPACITY FUSES:  
PROTECTION OF SEMICONDUCTORS  
AS PER IEC STANDARD 60269.1 AND 4  
690 V VOLTAGE RATING AS PER IEC 33

gR CLASS (CURRENT RATING 12 TO 90 A) AS PER  
VDE 636-23

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

aR CLASS (CURRENT RATING 100 A) ACCORDING TO VDE  
636-23 AND IEC 60269.4

CONNECTION AS PER:

- GERMAN STANDARD DIN 43653/00C
- BRITISH STANDARD BS 88-4

These fuses are UL Recognized 

### Main Characteristics

Voltage rating $U_N$ ( 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	gRB	12	4.2	30	1.95	3.5	200 k A @ 690 V	300 k A @ 690 V
		16	9.6	65	2.2	4.0		
		20	17.1	110	3.0	5.5		
		25	26.8	170	4.4	8.0		
		32	52.5	330	5.0	9.0		
		35	69	430	5.2	9.5		
		40	96	610	5.8	10.5		
		45	130	820	6.3	11.5		
		50	154	970	7.2	13		
		55	210	1320	7.4	13.5		
		63	310	1950	8.0	14.5		
		75	520	3250	8.8	16		
80	620	3900	9.4	17				
90	840	5300	11	20				
690	URB	100	965	6150	13	23.5	200 k A @ 690 V	300 k A @ 690 V

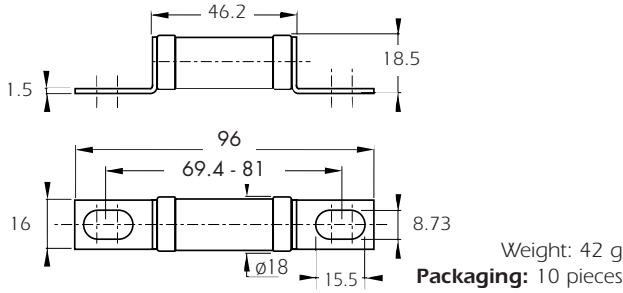
Minimum operating voltage for separate trip-indicator: 20 V

# Semiconductor (AC) fuses

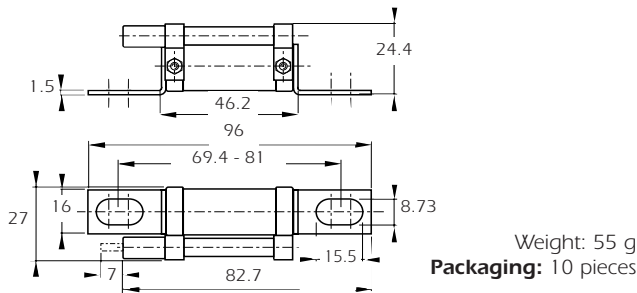


## Other Protistor® Fuses BS88-4 Fuses 17x49 gRB/URB - 690 VAC

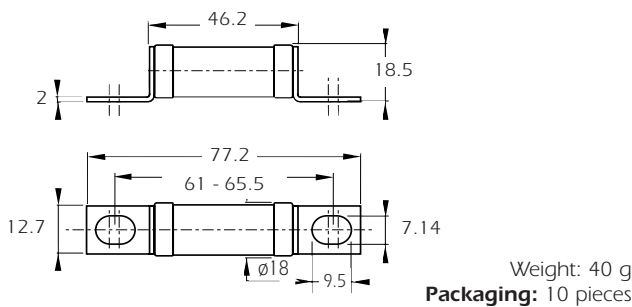
### German standard without blown fuse indication



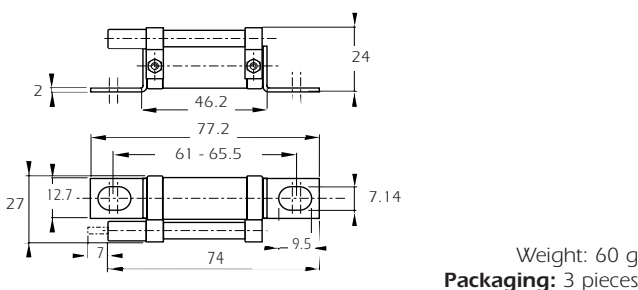
### German standard with separate trip-indicator DIN 43623/00C



### British standard without blown fuse indication



### British standard with separate trip-indicator BS 88-4



Current rating	Designation	Ref. Number	Catalog Number
12	6,9 gRB 17 D08/12	M220972	DN17GB69V12
16	6,9 gRB 17 D08/16	N220973	DN17GB69V16
20	6,9 gRB 17 D08/20	P220974	DN17GB69V20
25	6,9 gRB 17 D08/25	Q220975	DN17GB69V25
32	6,9 gRB 17 D08/32	R220976	DN17GB69V32
35	6,9 gRB 17 D08/35	S220977	DN17GB69V35
40	6,9 gRB 17 D08/40	T220978	DN17GB69V40
45	6,9 gRB 17 D08/45	V220979	DN17GB69V45
50	6,9 gRB 17 D08/50	W220980	DN17GB69V50
55	6,9 gRB 17 D08/55	X220981	DN17GB69V55
63	6,9 gRB 17 D08/63	Y220982	DN17GB69V63
75	6,9 gRB 17 D08/75	Z220983	DN17GB69V75
80	6,9 gRB 17 D08/80	A220984	DN17GB69V80
90	6,9 gRB 17 D08/90	B220985	DN17GB69V90
100	6,9 URB 17 D08/100	C220986	DN17UB69V100

Current rating	Designation	Ref. Number	Catalog Number
12	6,9 gRB 17 D08P 12	X221004	DN17GB69V12P
16	6,9 gRB 17 D08P 16	Y221005	DN17GB69V16P
20	6,9 gRB 17 D08P 20	Z221006	DN17GB69V20P
25	6,9 gRB 17 D08P 25	A221007	DN17GB69V25P
32	6,9 gRB 17 D08P 32	B221008	DN17GB69V32P
35	6,9 gRB 17 D08P 35	C221009	DN17GB69V35P
40	6,9 gRB 17 D08P 40	D221010	DN17GB69V40P
45	6,9 gRB 17 D08P 45	E221011	DN17GB69V45P
50	6,9 gRB 17 D08P 50	F221012	DN17GB69V50P
55	6,9 gRB 17 D08P 55	G221013	DN17GB69V55P
63	6,9 gRB 17 D08P 63	H221014	DN17GB69V63P
75	6,9 gRB 17 D08P 75	J221015	DN17GB69V75P
80	6,9 gRB 17 D08P 80	K221016	DN17GB69V80P
90	6,9 gRB 17 D08P 90	L221017	DN17GB69V90P
100	6,9 URB 17 D08P 100	M221018	DN17UB69V100P

Current rating	Designation	Ref. Number	Catalog Number
12	6,9 gRB 17/12	W220957	BS17GB69V12
16	6,9 gRB 17/16	X220958	BS17GB69V16
20	6,9 gRB 17/20	Y220959	BS17GB69V20
25	6,9 gRB 17/25	Z220960	BS17GB69V25
32	6,9 gRB 17/32	A220961	BS17GB69V32
35	6,9 gRB 17/35	B220962	BS17GB69V35
40	6,9 gRB 17/40	C220963	BS17GB69V40
45	6,9 gRB 17/45	D220964	BS17GB69V45
50	6,9 gRB 17/50	E220965	BS17GB69V50
55	6,9 gRB 17/55	F220966	BS17GB69V55
63	6,9 gRB 17/63	G220967	BS17GB69V63
75	6,9 gRB 17/75	H220968	BS17GB69V75
80	6,9 gRB 17/80	J220969	BS17GB69V80
90	6,9 gRB 17/90	K220970	BS17GB69V90
100	6,9 URB 17/100	L220971	BS17UB69V100

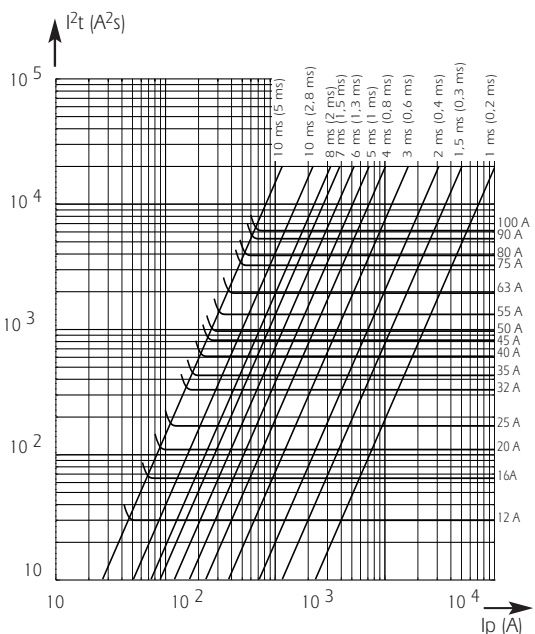
Current rating	Designation	Ref. Number	Catalog Number
12	6,9 gRB 17P12	D220987	BS17GB69V12P
16	6,9 gRB 17P16	E220988	BS17GB69V16P
20	6,9 gRB 17P20	F220989	BS17GB69V20P
25	6,9 gRB 17P25	G220990	BS17GB69V25P
32	6,9 gRB 17P32	H220991	BS17GB69V32P
35	6,9 gRB 17P35	J220992	BS17GB69V35P
40	6,9 gRB 17P40	K220993	BS17GB69V40P
45	6,9 gRB 17P45	L220994	BS17GB69V45P
50	6,9 gRB 17P50	M220995	BS17GB69V50P
55	6,9 gRB 17P55	N220996	BS17GB69V55P
63	6,9 gRB 17P63	P220997	BS17GB69V63P
75	6,9 gRB 17P75	Q220998	BS17GB69V75P
80	6,9 gRB 17P80	R220999	BS17GB69V80P
90	6,9 gRB 17P90	S221000	BS17GB69V90P
100	6,9 URB 17P100	T221001	BS17UB69V100P



# Semiconductor (AC) fuses

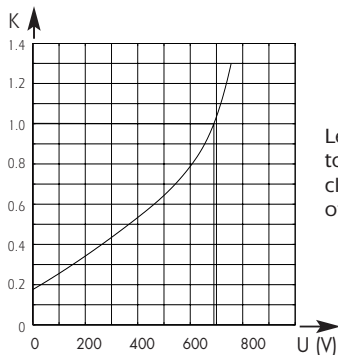
## Other Protistor® Fuses BS88-4 Fuses 17x49 gRB/URB - 690 VAC

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



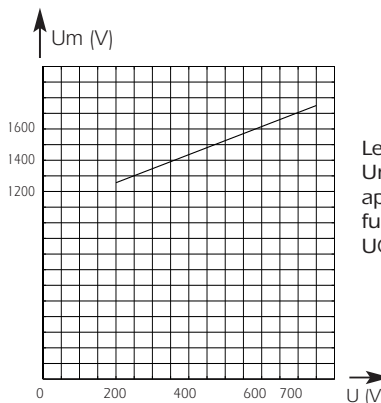
Above: Horizontal curves show for each rated current maximum values of total clearing  $I^2t$  ( $I^2t_t$ ) as a function of prospective current  $I_p$ . @ 690 V.  $\cos \varphi = 0.15$ . Oblique lines indicate total clearing duration  $T_t$  and associated pre-arcing duration in brackets.

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



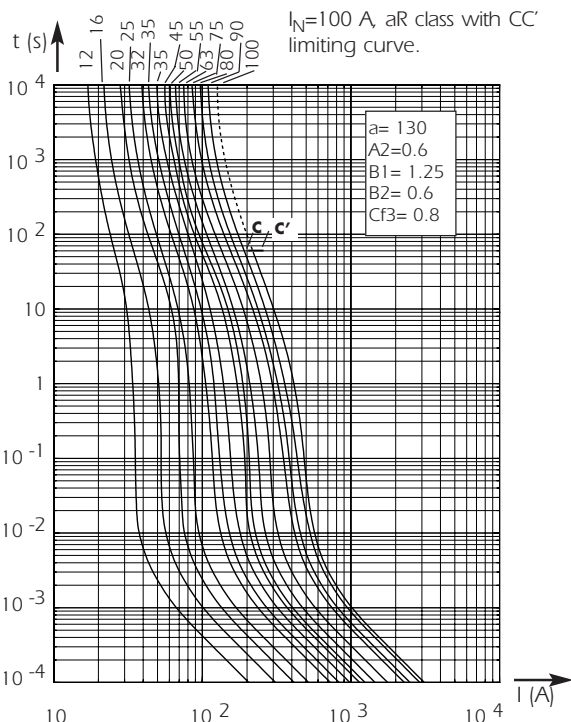
Left: Curve shows variation of total clearing time ( $I^2t_t$ ) and total clearing duration  $T_t$  as a function of operating voltage  $U$ .

### Peak arc voltage



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

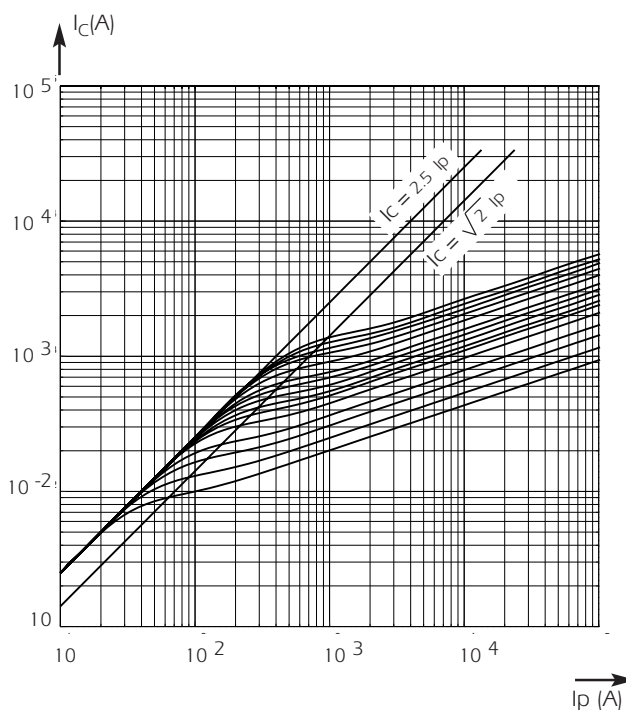
### Time vs current characteristics



Tolerance for mean pre-arcing current  $\pm 9\%$ .

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

### Current limitation curves



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

# Semiconductor (AC) fuses

## Other Protistor® Fuses BS88-4 Fuses 36x55, 2x36x55 - 690 VAC



EXTREMELY HIGH BREAKING CAPACITY FUSES:  
PROTECTION OF POWER SEMICONDUCTORS AS PER IEC  
STANDARD 60269.1 AND 4  
690 V VOLTAGE RATING COMPLYING WITH IEC 33  
AR CLASS (RATINGS FROM 75 TO 800 A) AS PER VDE 636-23  
AND IEC 60269.4  
THREE MODELS COMPLYING WITH BS 88-4  
- WITHOUT INDICATOR  
- WITH SEPARATE TRIP-INDICATOR  
- WITH BUILT-IN TRIP-INDICATOR

### Main Characteristics

Voltage rating $U_N$ ( V )	Size	Class	Current rating $I_N$ ( A )	Pre-arcing $I^2t @ 1 \text{ ms}$ $I^2tp$ (A <sup>2</sup> s)	Total clearing $I^2t @ 660 \text{ V}$ A <sup>2</sup> s		Watts loss		Tested Breaking capacity
					$I_p \leq 50 I_N$	$I_p > 50 I_N$	$0.8 I_N$	$I_N$	
690V	36x55	URR	75	350	1800	2000	9.7	19.5	200k A @ 690 V
			110	1180	6000	67000	11.3	22.8	
			200	3900	18500	20500	21.8	41.4	
			250	8760	41000	46000	23.6	44.1	
		URGL	50	180	860	990	7.3	14.0	
			65	335	1600	1840	8.8	17.1	
			85	480	3450	4000	12.2	23.5	
			90	720	41000	4700	13.2	25.5	
			150	2880	12600	14500	18.9	35.3	
			180	5350	22500	25500	19.1	35.7	
	URU	200	9510	40000	46000	17.7	33.1		
		250	21400	97000	11000	18.7	34.5		
		280	29100	125000	145000	20.3	38.0		
		315	38100	157000	180000	222.77	42.6		
	2x36x55	URU	355	48200	190000	215000	25.9	48.5	200k A @ 690 V
			400	72000	265000	305000	26.7	50.0	
			200	4700	24000	27000	18.4	33.0	
			235	6920	34500	39000	21.0	37.6	
			400	21200	100000	110000	34.8	62.3	
		URGM	500	35000	164000	184000	47.2	88.2	
630			97300	515000	575000	41.1	73.2		
175			2880	13800	16000	24.7	47.6		
300			13700	66000	68000	31.5	59.0		
325			21400	90000	102000	30.0	54.0		
355	25200	106000	120000	33.1	62.0				
450	65600	300000	340000	34.6	63.8				
500	85600	390000	440000	37.44	69.0				
630	152000	630000	720000	45.4	85.2				
710	193000	760000	860000	51.8	97.0				
800	282000	1.22 10 <sup>6</sup>	1.22 10 <sup>6</sup>	53.4	100.0				

Minimum operating voltage for built-in and separate trip indicator = 20 V

FERRAZ SHAWMUT  
IS NOW

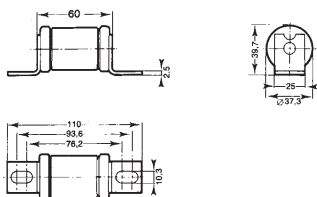
# Semiconductor (AC) fuses



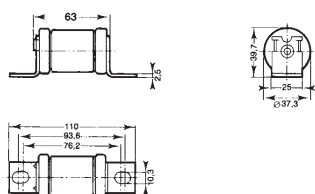
## Other Protistor® Fuses BS88-4 Fuses 36x55, 2x36x55 - 690 VAC

### Ref. Numbers

#### CP 36x55 without trip-indicator

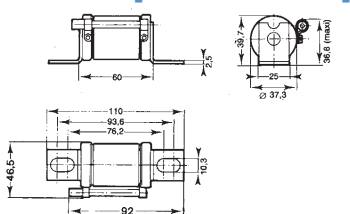


#### CP 36x55 with built-in trip-indicator



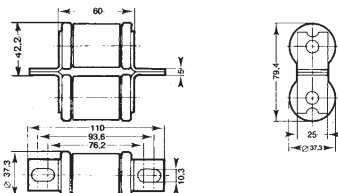
Microswitch MC 36 GR 2.5 - Ref. P 092496

#### CP 36x55 with separated trip-indicator BS88-4

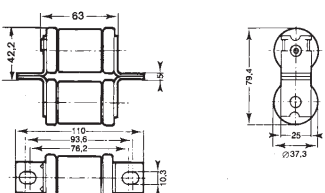


Microswitch MC 36 GR 2.5 - Ref. Y 310015

#### CP 2x36x55 without trip-indicator



#### CP 2x36x55 with built-in trip-indicator



Microswitch MC 36 GR 2.5 - Ref. P 092496

Size	Designation	Ref. Number	Pack.	Catalog Number
	6,9 URGL 36/50	X097103		BS36UL69V50
	6,9 URGL 36/65	H097113		BS36UL69V65
	6,9 URR 36/75	H097136		BS36UR69V75
	6,9 URGL 36/85	M097163		BS36UL69V85
	6,9 URGL 36/90	N097164		BS36UL69V90
	6,9 URR 36/110	P097165	6	BS36UR69V110
	6,9 URGL 36/150	O097166	(220g)	BS36UL69V150
	6,9 URGL 36/180	R097167		BS36UL69V180
	6,9 URR 36/200	S097168		BS36UR69V200
	6,9 URGL 36/200	T097169		BS36UL69V200
	6,9 URR 36/250	V097170		BS36UR69V250
	6,9 URGL 36/250	W097171		BS36UL69V250
	6,9 URGL 36/280	A097175		BS36UL69V280
	6,9 URGL 36/315	B097176		BS36UL69V315
	6,9 URGL 36/355	C097177		BS36UL69V355
	6,9 URGL 36/400	D097178		BS36UL69V400

Size	Designation	Ref. Number	Pack.	Catalog Number
	6,6 URGL 36T50	N097210		BS36UL69V50T
	6,9 URGL 36T65	K097230		BS36UL69V65T
	6,9 URR 36T75	H099965		BS36UR69V75T
	6,9 URGL 36T85	M097255		BS36UL69V85T
	6,9 URGL 36T90	N097256		BS36UL69V90T
	6,9 URR 36T110	R099973	6	BS36UR69V110T
	6,9 URGL 36T150	Z082178	(220g)	BS36UL69V150T
	6,9 URGL 36T180	P097257		BS36UL69V180T
	6,9 URR 36T200	A085560		BS36UR69V200T
	6,9 URGL 36T200	R097259		BS36UL69V200T
	6,9 URR 36T250	W097263		BS36UR69V250T
	6,9 URGL 36T250	X097264		BS36UL69V250T
	6,9 URGL 36T280	Y097265		BS36UL69V280T
	6,9 URGL 36T315	Z097266		BS36UL69V315T
	6,9 URGL 36T355	A097267		BS36UL69V355T
	6,9 URGL 36T400	C097269		BS36UL69V400T

Size	Designation	Ref. Number	Pack.	Catalog Number
	6,9 URGL 36P90	H097182		BS36UL69V90P
	6,9 URR 36P110	J097183		BS36UR69V110P
	6,9 URGL 36P150	K097184		BS36UL69V150P
	6,9 URGL 36P180	L097185		BS36UL69V180P
	6,9 URR 36P200	M097186		BS36UR69V200P
	6,9 URGL 36P200	N097187	6	BS36UL69V200P
	6,9 URR 36P250	P097188	(230g)	BS36UR69V250P
	6,9 URGL 36P250	O097189		BS36UL69V250P
	6,9 URGL 36P280	R097190		BS36UL69V280P
	6,9 URGL 36P315	V097193		BS36UL69V315P
	6,9 URGL 36P355	Y097196		BS36UL69V355P
	6,9 URGL 36P400	M097209		BS36UL69V400P

Size	Designation	Ref. Number	Pack.	Catalog Number
	6,9 URGM 236/175	D097270		BS236UM69V175
	6,9 URU 236/200	F097272		BS236UU69V200
	6,9 URU 236/235	J097275		BS236UU69V235
	6,9 URGM 236/300	K097276		BS236UM69V300
	6,9 URGM 236/325	R097282		BS236UM69V325
	6,9 URGM 236/355	S097283	3	BS236UM69V355
	6,9 URU 236/400	T097284	(400g)	BS236UU69V400
	6,9 URGM 236/450	Y097288		BS236UM69V450
	6,9 URGM 236/500	Z097289		BS236UM69V500
	6,9 URU 236/500	A097290		BS236UU69V500
	6,9 URGM 236/630	B097291		BS236UM69V630
	6,9 URU 236/630	R097351		BS236UU69V630
	6,9 URGM 236/710	S097352		BS236UM69V710
	6,9 URGM 236/800	Y097357		BS236UM69V800

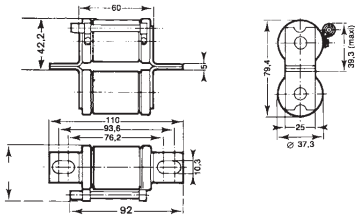
Size	Designation	Ref. Number	Pack.	Catalog Number
	6,9 URGM 236T175	F097456		BS236UM69V175T
	6,9 URU 236T200	G097457		BS236UU69V200T
	6,9 URU 236T235	A082179		BS236UU69V235T
	6,9 URGM 236T300	S085553		BS236UM69V300T
	6,9 URGM 236T325	J097459		BS236UM69V325T
	6,9 URGM 236T355	N097463	3	BS236UM69V355T
	6,9 URU 236T400	P097464	(400g)	BS236UU69V400T
	6,9 URGM 236T450	O097465		BS236UM69V450T
	6,9 URGM 236T500	R097466		BS236UM69V500T
	6,9 URU 236T500	S097467		BS236UU69V500T
	6,9 URGM 236T630	V097469		BS236UM69V630T
	6,9 URU 236T630	W097470		BS236UU69V630T
	6,9 URGM 236T710	C097476		BS236UM69V710T
	6,9 URGM 236T800	D097477		BS236UM69V800T



# Semiconductor (AC) fuses

## Other Protistor® Fuses BS88-4 Fuses 36x55, 2x36x55 - 690 VAC

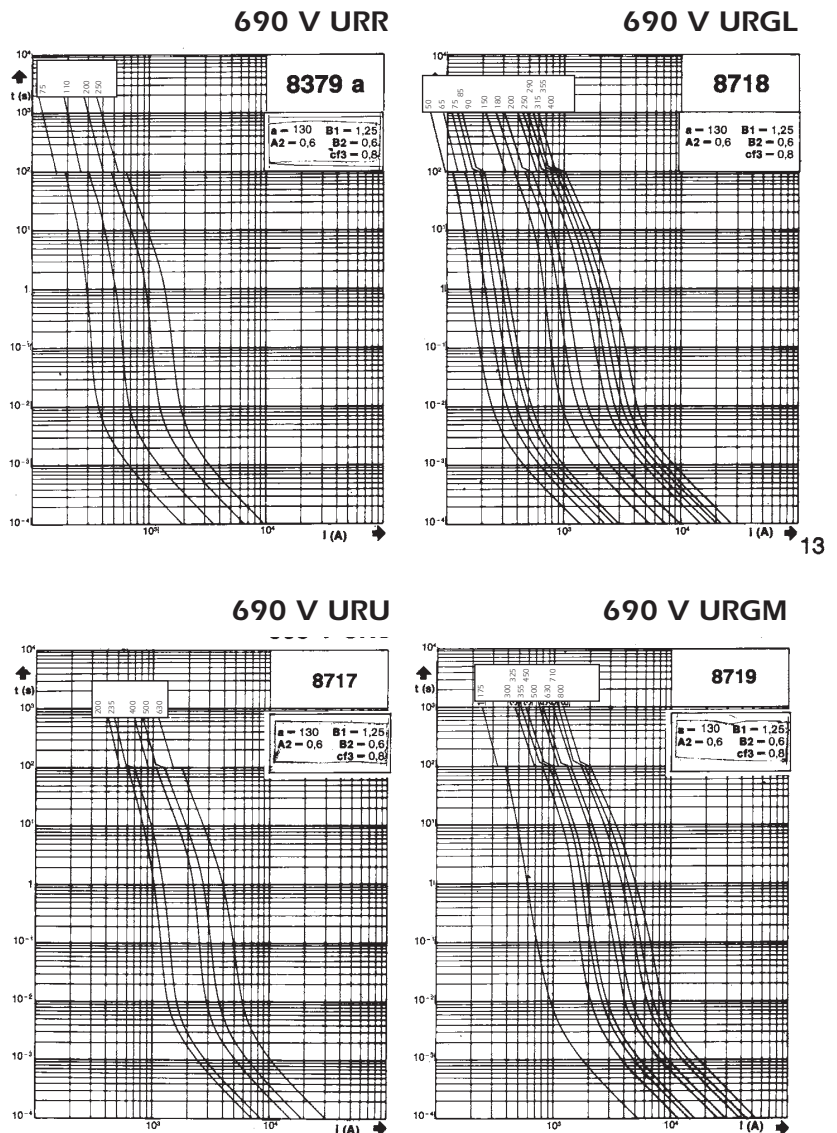
### CP 2x36x55 with separated trip-indicator BS88-4



Microswitch MC 6,3 GR 2.5 - Ref. Y 310015

Size	Designation	Ref. Number	Pack.	Catalog Number
2x36x55	6,9 URGM 236P175	A097359		BS236UM69V175P
	6,9 URU 236P200	E097363		BS236UU69V200P
	6,9 URU 236P235	F097364		BS236UU69V235P
	6,9 URGM 236P300	G097365		BS236UM69V300P
	6,9 URGM 236P325	Q097373		BS236UM69V325P
	6,9 URGM 236P355	R097374	3	BS236UM69V355P
	6,9 URU 236P400	S097375	(410g)	BS236UU69V400P
	6,9 URGM 236P450	T097376		BS236UM69V450P
	6,9 URU 236P500	V097377		BS236UU69V500P
	6,9 URGM 236P500	E097386		BS236UM69V500P
	6,9 URU 236P630	J097390		BS236UU69V630P
	6,9 URGM 236P630	P097395		BS236UM69V630P
6,9 URGM 236P710	B097452		BS236UM69V710P	
6,9 URGM 236P800	E097455		BS236UM69V800P	

### Electrical characteristics Times vs current characteristics



- These curves indicate, for each rated current, the pre-arcing time vs. the R/M.S. pre-arcing current.
- Tolerance for the mean pre-arcing current  $\pm 10\%$

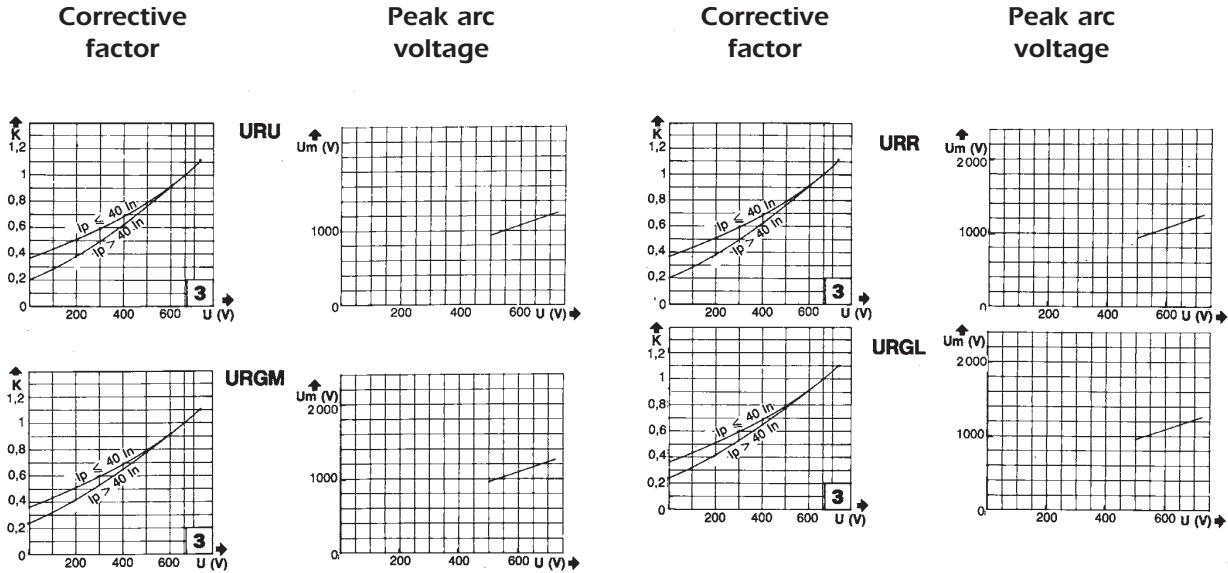
FERRAZ SHAWMUT  
IS NOW

# Semiconductor (AC) fuses



## Other Protistor® Fuses BS88-4 Fuses 36x55, 2x36x55 - 690 VAC

### Corrective factor - Peak arc voltage



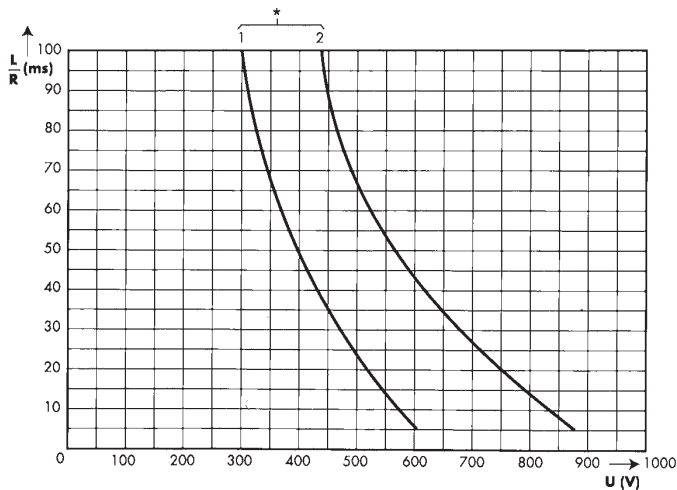
### Corrective factor

The mean curves shows the variation of total clearing time ( $I^2t_c$ ) and total clearing duration  $T_c$  as a function of operating voltage  $U$ .

### Peak arc voltage

This curve shows peak value  $U_m$  of the arc voltage which appears across the fuse-link as a function of the operating voltage  $U$  @  $\cos j = 0.15$

### DC Application data



Curves and $I_{pm}$ for each rating			
Class	Rated current	Curve*	$I_{pm}$ (A)
URR	75	2	225
	110	2	330
	200	2	600
	250	2	750
URU	200	2	600
	235	2	700
	400	2	1200
	500	2	1500
	630	1	1890

- This curves indicate the permissible value of time constant  $L/R$  as a function of DC working voltage
- $I_{pm}$  values give the minimum DC interrupting current in amps.

## Other Protistor® Fuses BS88-4 Fuses

### Microswitches for BS88-4 Protistor®

MICROSWITCH SYSTEMS ADAPTED  
TO THE FOLLOWING FUSES:

- BS88 - 4 separated trip-indicator
- BS88 - 4 built-in trip-indicator

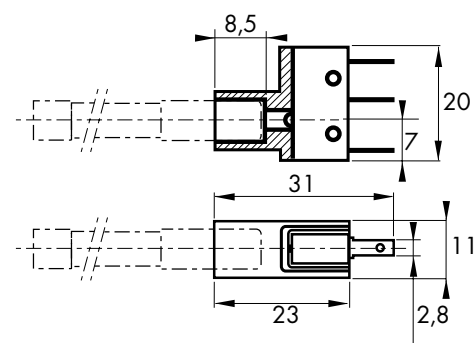
### Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Interrupting rating						AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 μs (**)	Fire class according to UL 94
					Non inductive circuit			Inductive circuit : L/R = 25ms					
					30V	110V	250V	30V	110V	250V			
MC 6,3 GR 2-5 N	1000 V	20 V 100 mA	5 A	50/60 Hz	-	5 A	0,3 A	-	3 A	2 A	3.5 kV	-	H.B.
				DC	4 A	0.4 A	-	3 A	0.4 A	-			
MC 36 GR 2-5	1000 V	20 V 100 mA	5 A	50/60 Hz	-	5 A	5 A	-	5 A	5 A	7.5 kV	-	
				DC	4 A	0.4 A	-	2 A	0.4 A	-			

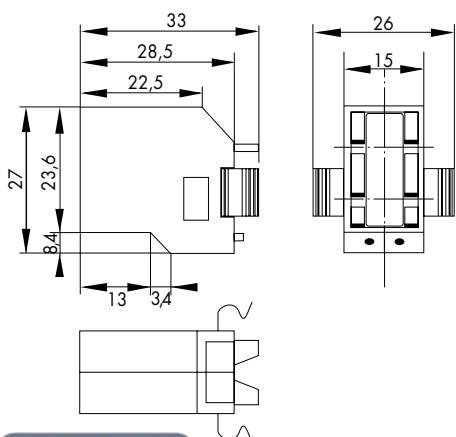
\* Between power circuit and microswitch terminals as per IEC 60 and 694 (50/60 Hz 1 min duration in dry air)

\*\* Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 947-1

\*\*\* Between power circuit and microswitch terminals



Catalog Number	Ref. Number	Weight (g)	Pack.
MC 6,3 GR 2-5 N (for separate trip-indicator)	Y 310015	10	3



Catalog Number	Ref. Number	Weight (g)	Pack.
MC 36 GR 2-5 (for built-in trip-indicator)	P 092496	10	3

FERRAZ SHAWMUT  
IS NOW  
MERSEN

# Semiconductor (AC) fuses

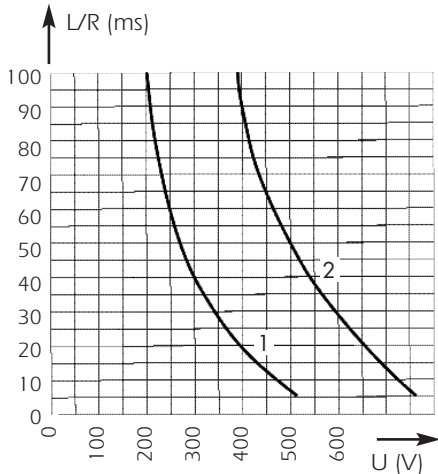


## Other Protistor® Fuses

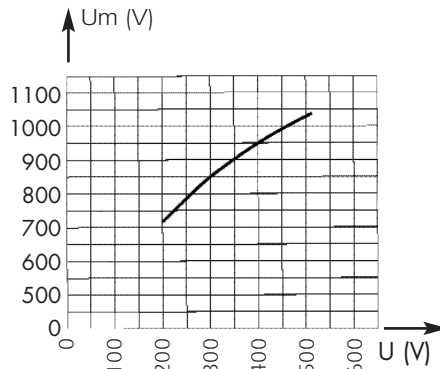
### BS88-4 Fuses

### 17x49 gRB/URB - 690 VAC

## DC Application data

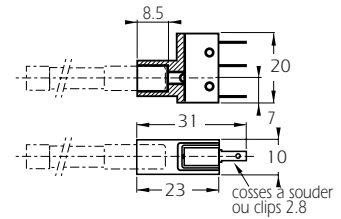


Above: Curves indicate permissible value of time constant  $L/R$  as a function of DC working voltage.  
 Curve 1:  $I_p \geq 1,6$  IN only for fuses gRB (current rating from 12 to 50 A)  
 Curve 2:  $I_p \geq 8$  IN for fuses gRB et URB



Curve indicates peak arc voltage  $U_m$  which may appear across the fuse terminals at working voltage  $U$ .

## Microswitch



Designation	Ref. Num.	Weight	Pack.
MC 6,3 GR 2,5	Y 310015	10 g	3 pieces

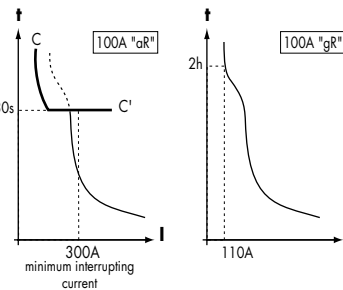
Electrical characteristics:  
 $I_N = 3$  A -  $U_N = 250$  VAC  
 $I_N = 2$  A -  $U_N = 30$  VDC

Certain minimum operating voltage/current  
 20 V-100 mA

## 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...

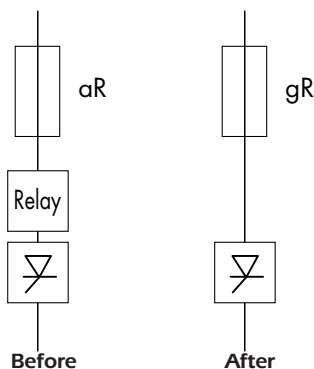
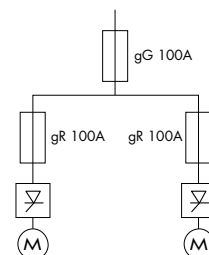


Example:  
 100A aR vs. 100A gR

### 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.

Example of selective coordination



### 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.

FERRAZ SHAWMUT IS NOW

## Other Protistor® Fuses BS88-4 Fuses

### Microswitches for BS88-4 Protistor®

MICROSWITCH SYSTEMS ADAPTED  
TO THE FOLLOWING FUSES:

- BS88 - 4 separated trip-indicator
- BS88 - 4 built-in trip-indicator

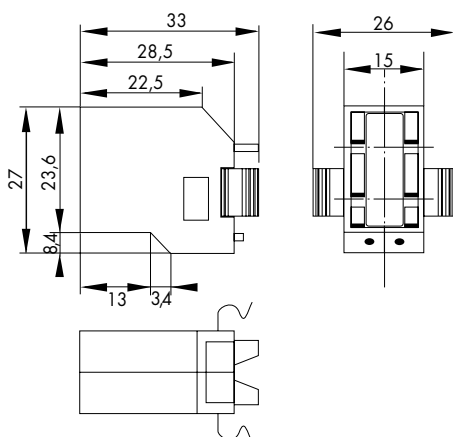
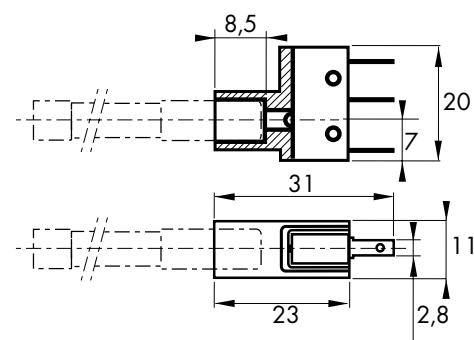
### Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Interrupting rating						AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 μs (**)	Fire class according to UL 94
					Non inductive circuit			Inductive circuit : L/R = 25ms					
					30V	110V	250V	30V	110V	250V			
MC 6,3 GR 2-5 N	1000 V	20 V 100 mA	5 A	50/60 Hz	-	5 A	0,3 A	-	3 A	2 A	3.5 kV	-	H.B.
				DC	4 A	0.4 A	-	3 A	0.4 A	-			
MC 36 GR 2-5	1000 V	20 V 100 mA	5 A	50/60 Hz	-	5 A	5 A	-	5 A	5 A	7.5 kV	-	H.B.
				DC	4 A	0.4 A	-	2 A	0.4 A	-			

\* Between power circuit and microswitch terminals as per IEC 60 and 694 (50/60 Hz 1 min duration in dry air)

\*\* Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 947-1

\*\*\* Between power circuit and microswitch terminals



Catalog Number	Ref. Number	Weight (g)	Pack.
MC 6,3 GR 2-5 N (for separate trip-indicator)	Y 310015	10	3

Catalog Number	Ref. Number	Weight (g)	Pack.
MC 36 GR 2-5 (for built-in trip-indicator)	P 092496	10	3