Bussmann®

High Speed Fuses

For the Protection of Power Semiconductors

COOPER
Bussmann

February 1998

British Style BS 88

Introduction

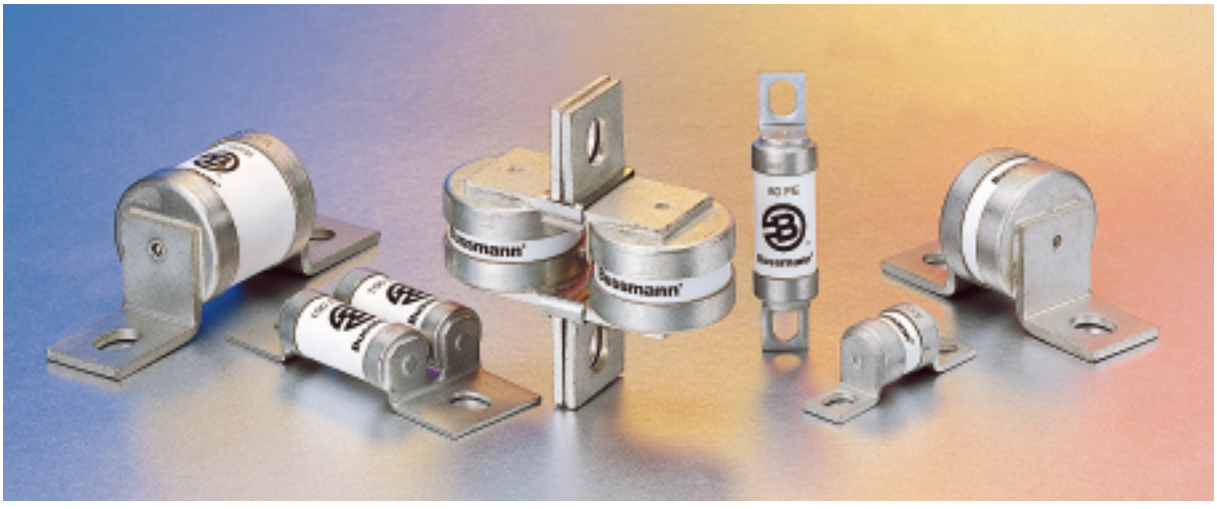


Table of Contents

General Information

Designed and tested to:

- BS 88: Part 4
- IEC 269: Part 4
- U.L. Recognized

Bussmann offers the industry's widest range of British style semiconductor fuses and accessories.

Bussmann British style products use innovative arc quenching techniques and high grade materials to provide:

- Minimal energy let-through (I^2t)
- Excellent DC performance
- Good surge withstand profile

British style fuses are typically found in equipment manufactured in the United Kingdom or British Commonwealth countries. However, North American manufacturers have begun to specify British style fuses — particularly in UPS applications at 240 volts or less — to take advantage of their size, performance and cost benefits.

Voltage Rating

All Bussmann British style fuses are tested to IEC 269: Part 4. This standard requires a test voltage which is 5% higher than the rated voltage. In North America, fuses are required to clear only their rated voltage.

Accessories

Trip-indicator fuses are available for use in parallel with the main fuse. Indicator fuses can be attached to the associated fuselink, or mounted separately in panel-mounted fuseclips. In addition, a push-on adaptor and microswitch attachment are available, to provide remote indication. Fuseblocks are also available for most applications.

Voltage	AC	DC	Ampere Range
240	X	—	6-900
150	—	X	6-900
690	X	—	6-700
450	—	X	6-700

British Style BS 88

240V 6-900A

Electrical Characteristics						Ordering Information			Dimensions	Curves
Type	Rated Current RMS-Amps	I^2t (A^2S) Pre-arc	I^2t (A^2S) Clearing at 120V	I^2t (A^2S) Clearing at 240V	Watts Loss	Part Number	Carton Qty.	Carton Weight (kg)	Figure Number	See Page or (BIF #)
LCT	6	2	6	9	1.0	6LCT	20	0.110	Fig. 1	page 73 (35785296)
	10	3.8	12	22	2.5	10LCT				
	12	7	22	32	2.5	12LCT				
	16	20	50	100	2.5	16LCT				
	20	25	80	160	4.0	20LCT				
LET	25	18	120	250	4.0	25LET	10	0.310	Fig. 2	page 73 (35785293)
	32	32	200	450	5.0	32LET				
	35	50	320	600	5.0	35LET				
	50	100	500	1400	7.0	50LET				
	63	180	1100	2200	9.0	63LET				
	80	300	1900	3800	10.0	80LET				
	100	600	3800	7500	10.0	100LET				
	125	600	3800	7500	16.0	125LET				
	160	1100	7000	16000	20.0	160LET				
	180	1600	12000	29000	21.0	180LET				
LMT	160	1100	7000	16000	17.0	160LMT	1	0.180	Fig. 3	page 74 (35785294)
	200	1500	10000	20000	28.0	200LMT				
	250	3200	20000	40000	28.0	250LMT				
	315	6000	35000	75000	35.0	315LMT				
	355	8000	50000	100000	35.0	355LMT				
	400	14000	70000	160000	40.0	400LMT				
	450	18000	100000	220000	42.0	450LMT				
LMMT	400	6000	35000	80000	60.0	400LMMT	1	0.370	Fig. 4	page 74 (35785295)
	500	14000	80000	170000	64.0	500LMMT				
	630	24000	150000	300000	75.0	630LMMT				
	710	32000	200000	460000	77.0	710LMMT				
	800	52000	300000	600000	82.0	800LMMT				
	900	75000	400000	800000	97.0	900LMMT				

- Interrupting rating 200kA RMS Symmetrical.
- 150 Vdc rating
- Watts loss provided at rated current.
- Note: 7LET, 10LET, 12LET and 16LET are available for replacement purposes on existing equipment.
- All fuses above have been tested at 318 Vac.
- See accessories on page 72.

1 kg = 2.2 lbs 1 lb = 0.45 kg

Dimensions

Fig. 1: LCT

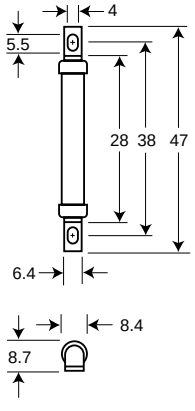
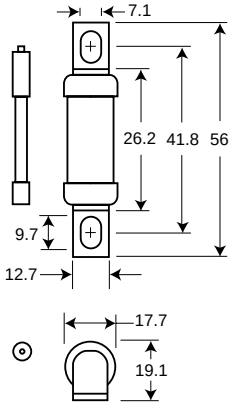


Fig. 2: LET



1mm = 0.0394″ 1″ = 25.4mm

BIF document: 720004

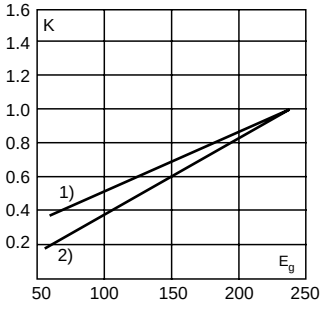
British Style BS 88

240V 6-900A

Electrical Characteristics

Total Clearing I^2t

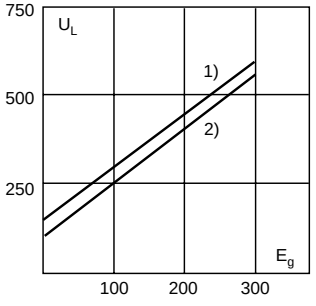
The total clearing I^2t at rated voltage and at power factor of 15% are given in the electrical characteristics. For other voltages, the clearing I^2t is found by multiplying by correction factor, K, given as a function of applied working voltage, E_g, (RMS).



1) LCT
2) LET, LMT, LMMT

Arc Voltage

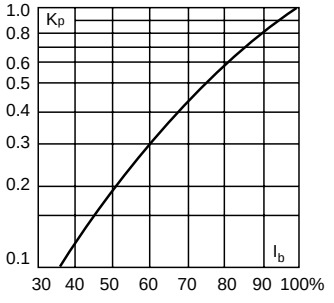
This curve gives the peak arc voltage, U_L, which may appear across the fuse during its operation as a function of the applied working voltage, E_g, (RMS) at a power factor of 15%.



1) LCT
2) LET, LMT, LMMT

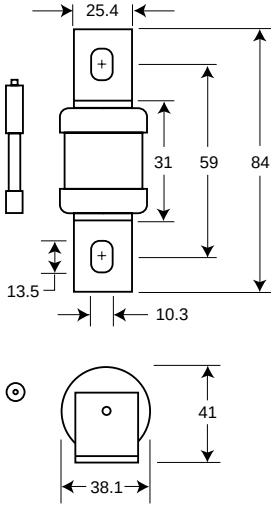
Power Losses

Watts loss at rated current is given in the electrical characteristics. The curve allows the calculation of the power losses at load currents lower than the rated current. The correction factor, K_p, is given as a function of the RMS load current, I_b, in % of the rated current.



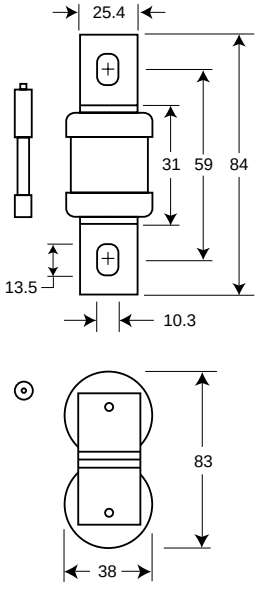
Dimensions

Fig. 3: LMT



Indicator (Optional)

Fig. 4: LMMT



1mm = 0.0394″ 1″ = 25.4mm

BIF document: 720004

British Style BS 88

690V 6-700A

Electrical Characteristics						Ordering Information			Dimensions	Curves
		I^2t (A^2S)								
Type	Rated Current RMS-Amps	Pre-arc	Clearing at 415V	Clearing at 660V	Watts Loss	Part Number	Carton Qty.	Carton Weight (kg)	Figure Number	See Page or (BIF #)
CT	6	1.8	8.5	12	2	6CT	20	0.160	Fig. 1	page 75 (35785312)
	10	7	30	48	3	10CT				
	12	10	40	65	3	12CT				
	16	16	66	110	7	16CT				
	20	32	150	220	7	20CT				
ET	25	25	150	250	7	25ET	10	0.420	Fig. 2	page 75 (35785312)
	32	32	190	350	11	32ET				
	35	52	310	500	11	35ET				
	40	103	600	900	9	40ET				
	45	103	680	1100	11	45ET				
	56	135	950	1500	14	56ET				
	63	171	1200	2000	16	63ET				
	80	360	2500	4000	18	80ET				
FE	35	33	130	200	9	35FE	10	0.420	Fig. 2	page 76 (35785314)
	40	52	180	300	9	40FE				
	45	76	270	450	11	45FE				
	50	103	380	600	11	50FE				
	63	135	480	750	12	63FE				
	71	210	600	950	17	71FE				
	80	250	900	1500	20	80FE				
	90	360	1300	2100	20	90FE				
	100	470	1800	2800	23	100FE				
EET	90	490	3000	4500	19	90EET	5	0.450	Fig. 3	page 75 (35785313)
	110	600	4000	6500	27	110EET				
	140	1050	7000	12000	35	140EET				
	160	1500	10000	17000	39	160EET				
FEE	100	400	1600	2400	24	100FEE	5	0.450	Fig. 3	page 77 (35785292)
	120	540	1900	3100	32	120FEE				
	140	850	2500	3800	36	140FEE				
	160	1000	3700	5700	46	160FEE				
	180	1400	5300	8400	46	180FEE				
	200	1900	7100	11400	52	200FEE				
FM	180	1400	7500	13500	40	180FM	1	0.240	Fig. 4	page 76 (35785314)
	200	2600	10500	18500	40	200FM				
	225	3700	14500	26500	44	225FM				
	250	5200	20500	37500	48	250FM				
	280	7000	30500	55000	48	280FM				
	315	10000	40000	77000	55	315FM				
	350	15000	60000	105000	55	350FM				
FMM	400	10000	40000	72500	85	400FMM	1	0.450	Fig. 5	page 77 (35785292)
	450	15000	60000	105000	90	450FMM				
	500	20000	82000	150000	100	500FMM				
	550	30000	120000	215000	100	550FMM				
	630	45000	180000	310000	100	630FMM				
	700	60000	245000	420000	120	700FMM				
MT†	160	2400	15000	25000	26	160MT	1	0.260	Fig. 4	page 75 (35785313)
	180	3800	25000	38000	26	180MT				
	200	6000	40000	58000	27	200MT				
	250	11500	80000	110000	32	250MT				
	280	16500	100000	150000	35	280MT				
	315	19000	125000	180000	42	315MT				
	355	22000	160000	200000	51	355MT				
MMT†	180	1650	12000	18000	42	180MMT	1	.0470	Fig. 5	page 76 (35785311)
	200	2200	16000	23000	42	200MMT				
	225	3700	26000	40000	42	225MMT				
	280	6600	47000	70000	47	280MMT				
	315	8600	62000	91000	51	315MMT				
	355	13500	97000	140000	54	355MMT				
	400	21000	150000	220000	60	400MMT				
	450	30000	220000	320000	57	450MMT				
	500	42000	300000	450000	64	500MMT				
	560	60000	430000	640000	64	560MMT				
	630	68500	500000	720000	86	630MMT				
	710	78000	600000	850000	105	710MMT				

- Interrupting rating 200kA RMS Symmetrical.
- 450 Vdc rating
- Watts loss provided at rated current.
- Note: FC, 8ET, 12ET, 15ET, 20ET, 65EET and 75EET are available for replacement purposes on existing equipment.
- See accessories on page 72.

1 kg = 2.2 lbs 1 lb = 0.45 kg

†350 Vdc (IEC) rating. Consult Bussmann for U.L. Recognition status.

BIF document: 720024

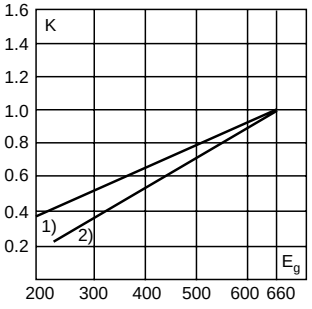
British Style BS 88

690V 6-700A

Electrical Characteristics

Total Clearing I^2t

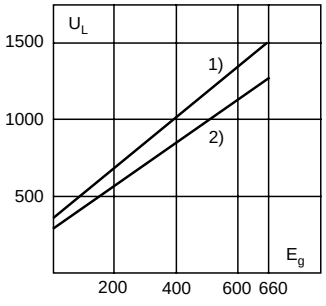
The total clearing I^2t at rated voltage and at power factor of 15% are given in the electrical characteristics. For other voltages, the clearing I^2t is found by multiplying by correction factor, K, given as a function of applied working voltage, E_g, (RMS).



1) CT, FE, EET, FEE
2) ET, FM, FMM

Arc Voltage

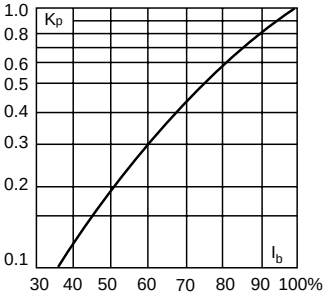
This curve gives the peak arc voltage, U_L, which may appear across the fuse during its operation as a function of the applied working voltage, E_g, (RMS) at a power factor of 15%.



1) CT
2) ET, FE, EET, FEE, FM, FMM

Power Losses

Watts loss at rated current is given in the electrical characteristics. The curve allows the calculation of the power losses at load currents lower than the rated current. The correction factor, K_p, is given as a function of the RMS load current, I_b, in % of the rated current.



Dimensions

Fig. 1: CT

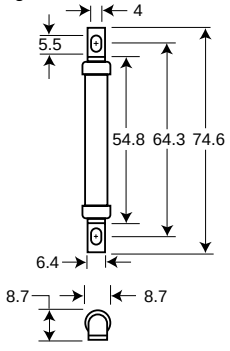


Fig. 2: ET, FE

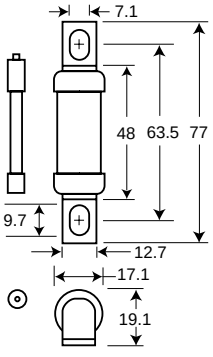


Fig. 3: EET, FEE

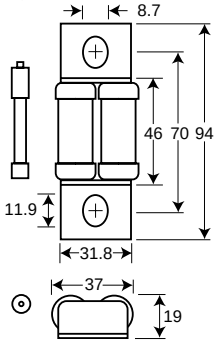


Fig. 4: FM, MT

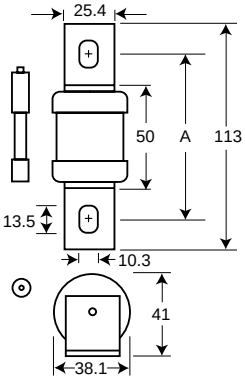
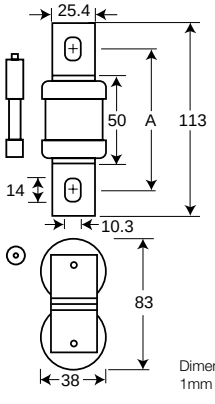


Fig. 5: FMM, MMT



Type	"A" Dimension
FM	80-85
FMM	80-85
MT	85
MMT	85

Dimensions in mm.
1mm = 0.0394″ 1″ = 25.4mm

BIF document: 720024

British Style BS 88 – Accessories

Indicator System and Fuse Bases (Blocks)

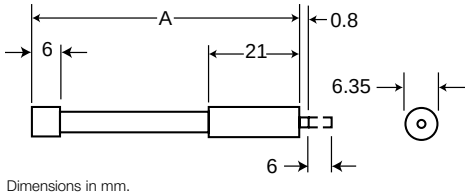
Trip-indicator fuselinks are available for use in parallel with the main fuselinks. They can either be attached to the associated fuselink or mounted separately in panel mounted fuse clips, Part No. CL1. A push-on adaptor and microswitch attachment is available for use with the trip indicator to give the facility of remote indication, reference MAI or MBI.

Fuse ratings of 20A and below cannot usually accommodate a trip fuselink in parallel.

Where trip indicator fuselinks are to be attached to the main fuselink, an accessory pack comprising a pair of mounting clips and an appropriate trip indicator fuselink will be required.

The ordering code references for these packs are listed below:

Fuse Type	Order Ref.	Fuse Type	Order Ref.
ET	EC-600	FM	MC-600
EET	EC-600	FMM	MC-600
FE	EC-600	LMT	MC-250
FEE	EC-600	LMMT	MC-250
LET	EC-250		



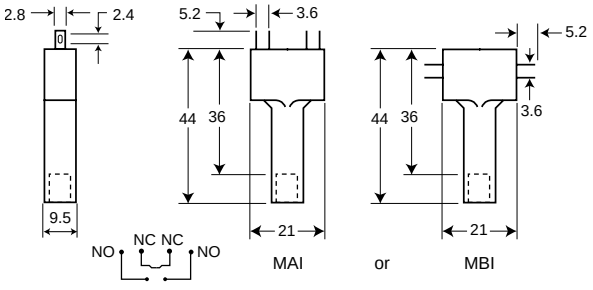
Dimensions in mm.
1mm = 0.0394″ 1″ = 25.4mm

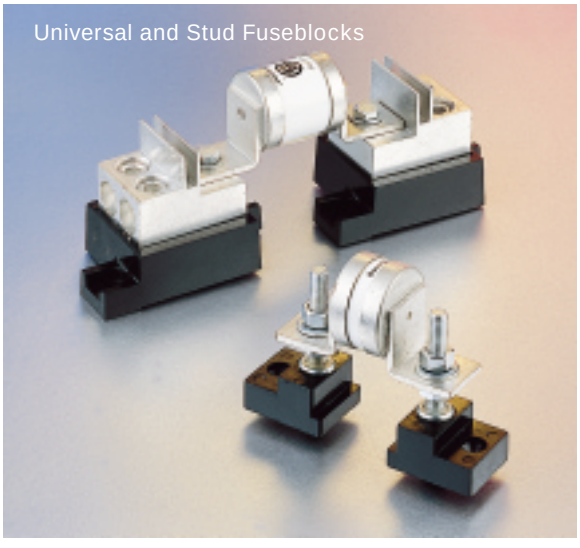
Trip-indicator Fuselink Data

Type	Dim. 'A' Max.	Voltage Rating	Type	Dim. 'A' Max.	Voltage Rating
TI250	37.6	250	TI1100	98.4	1100
TI500	47.5	500	TI1500	120.8	1500
TI600	55.7	600	TI2000	147.5	2000
TI700	61.8	700	TI2500	198.3	2500

Microswitch and Adaptor Type MAI

Current Rating:	
AC 50/60Hz resistive load @ 250 VRMS	4A
AC 50/60Hz resistive load @ 127 VRMS	6A
DC, resistive load @ 110 Vdc	0.7
DC, resistive load @ 30 Vdc	2
Maximum Working Voltage:	
Contact-to-contact (RMS)	1000V
Contact-to-contact (RMS)	1500V





Stud Fuseblocks

Part No.	Stud Height	Stud Dia. & Threads
C5268-1	1.00″	5/16-18
C5268-2	1.75″	5/16-18
C5268-3	0.75″	5/16-18
C5268-4	1.00″	1/4-20
C5268-5	1.75″	1/4-20

Universal Fuseblocks

Modular Base	Max. Voltage	Max. Fuse Current Rating	BIF Document
1BS101	600V	100A	1206
1BS102	600V	400A	1207
1BS103	600V	400A	1208
1BS104	600V	600A	1209

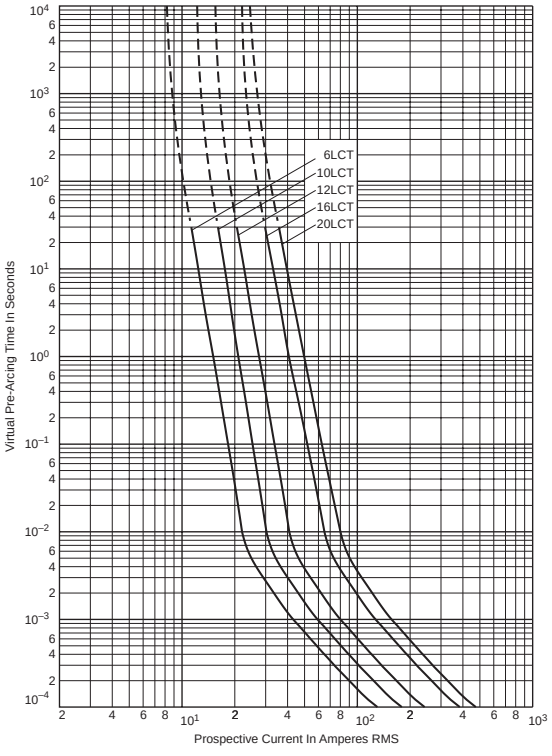
BIF document: 720037

British Style BS 88

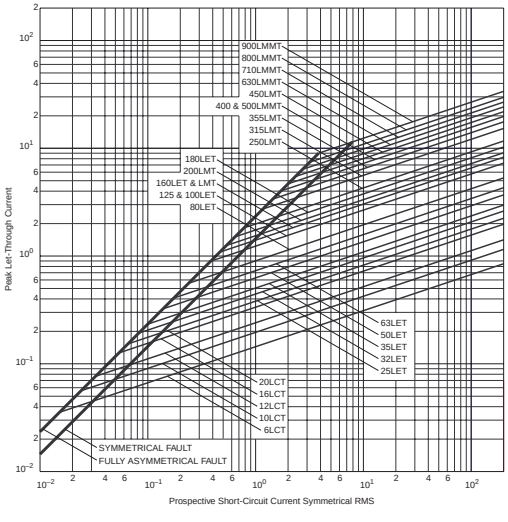
Curves

LCT 6-20: 240V

Time-Current Curve



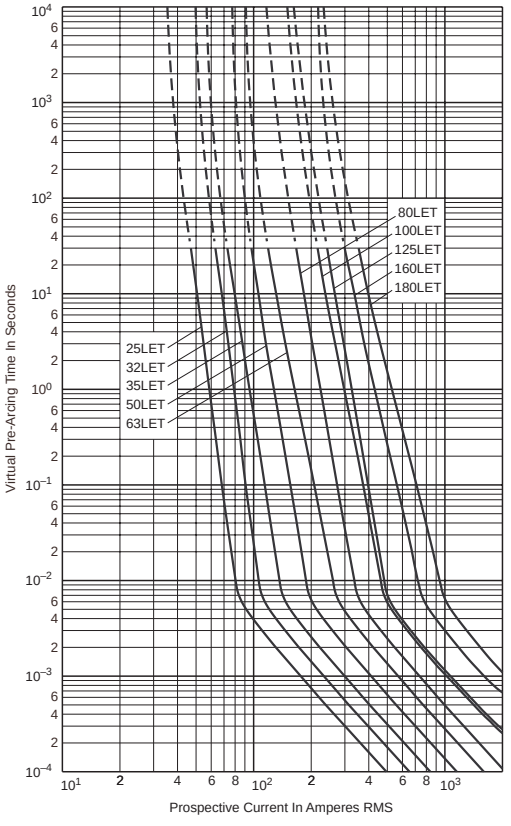
Peak Let-Through Curve



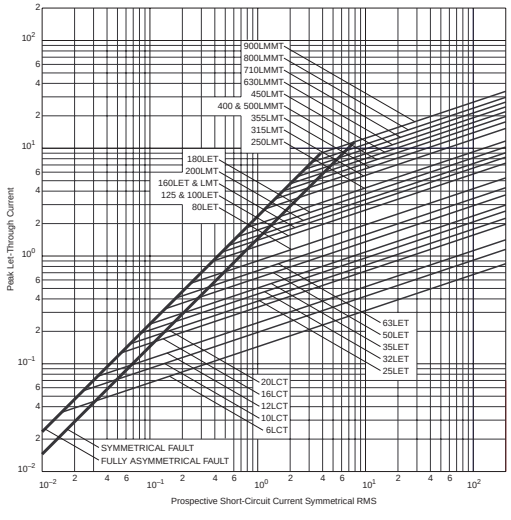
BIF document: 35785296

LET 25-180: 240V

Time-Current Curve



Peak Let-Through Curve



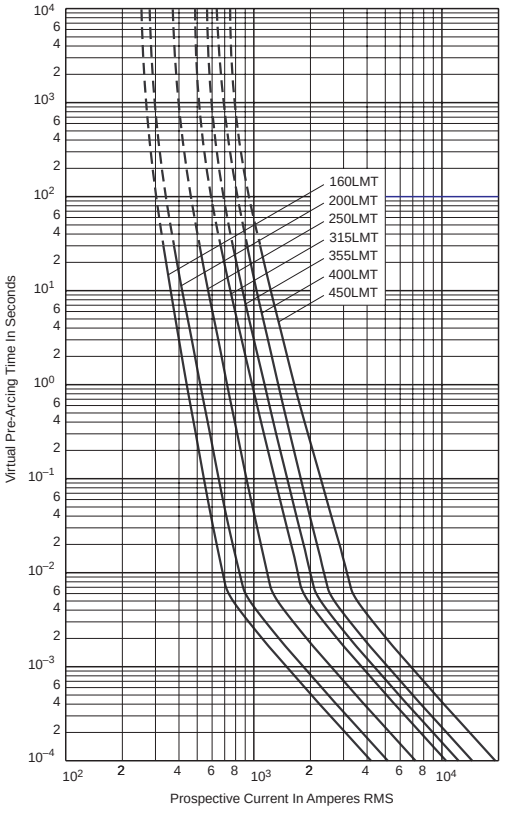
BIF document: 35785293

British Style BS 88

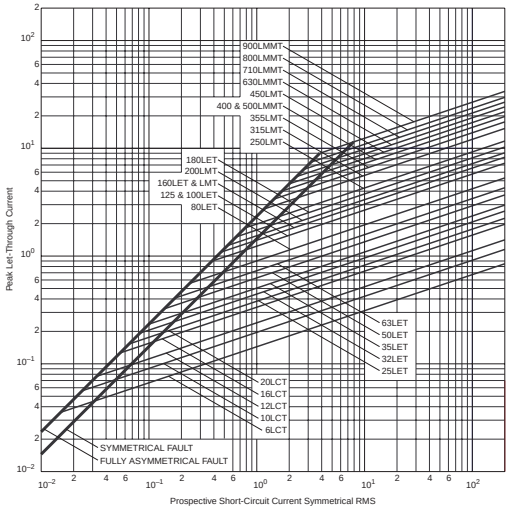
Curves

LMT 160-450: 240V

Time-Current Curve



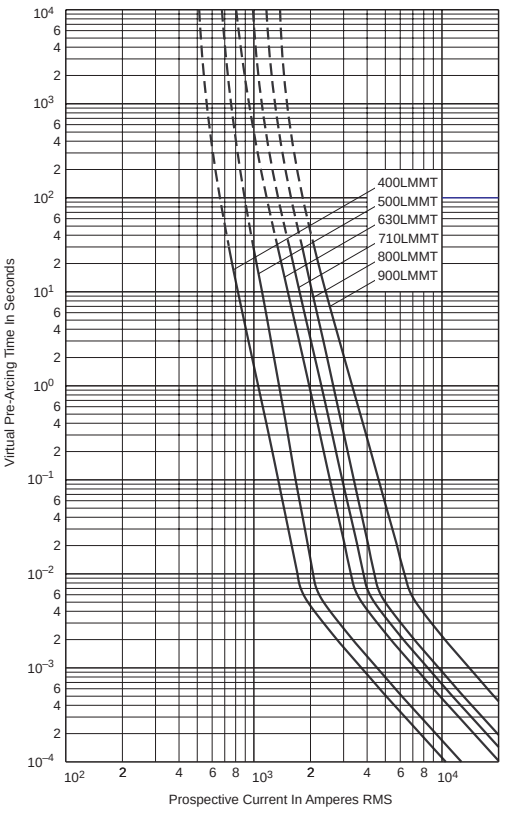
Peak Let-Through Curve



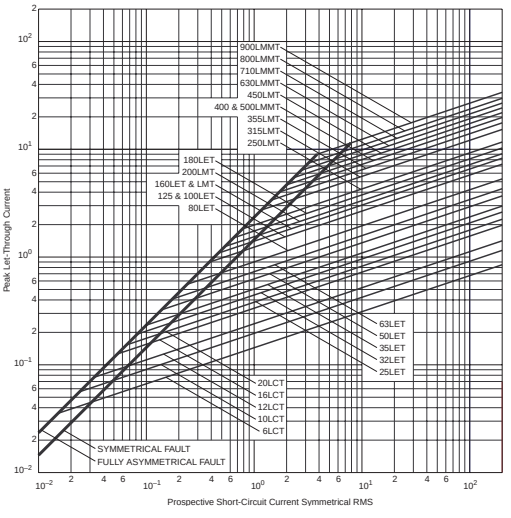
BIF document: 35785294

LMMT 400-900: 240V

Time-Current Curve



Peak Let-Through Curve



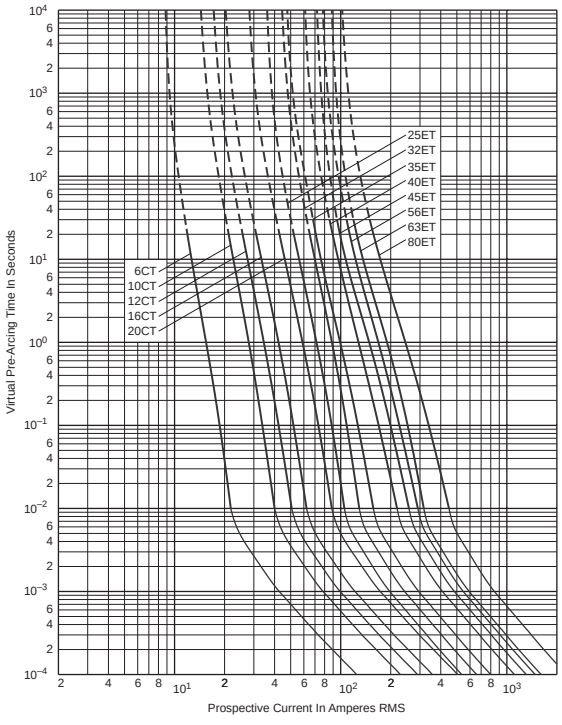
BIF document: 35785295

British Style BS 88

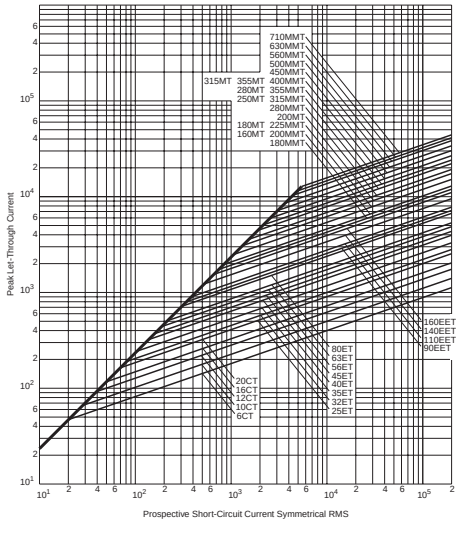
Curves

CT 6-20, ET 25-80: 690V

Time-Current Curve



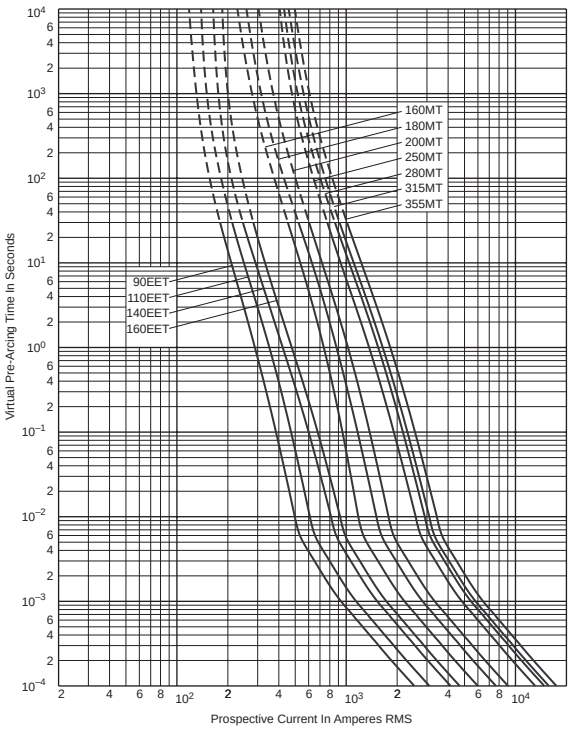
Peak Let-Through Curve



BIF document: 35785312

EET 90-160, MT 160-355: 690V

Time-Current Curve



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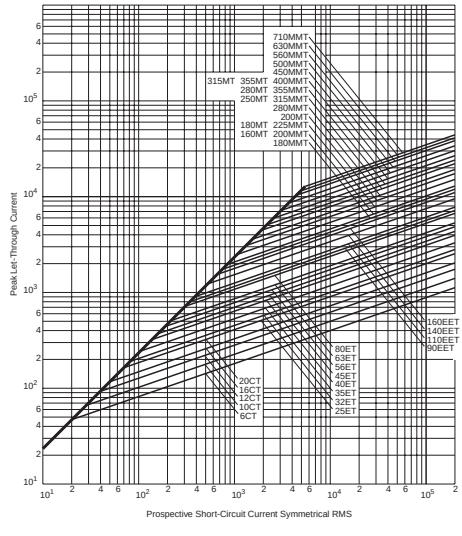


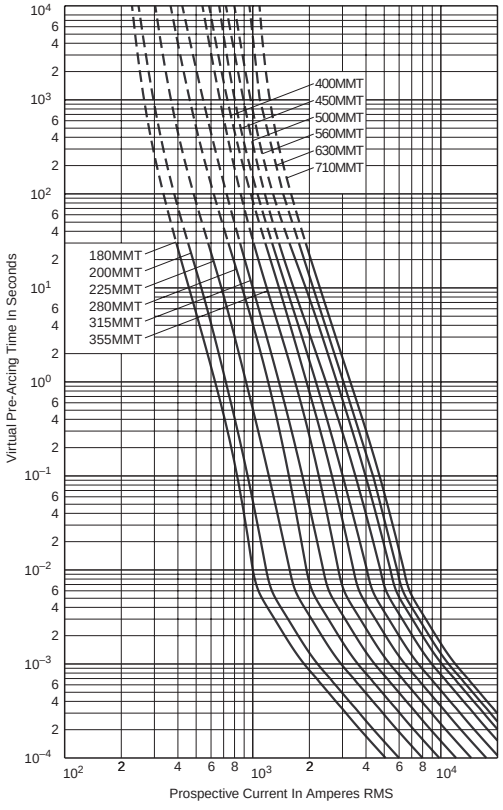
BIF document: 35785313

British Style BS 88

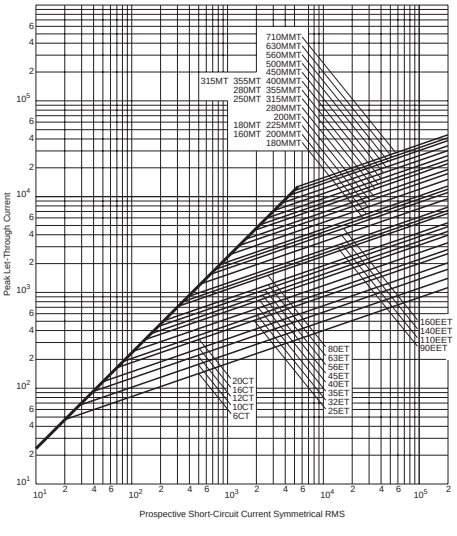
Curves

MMT 180-710: 690V

Time-Current Curve



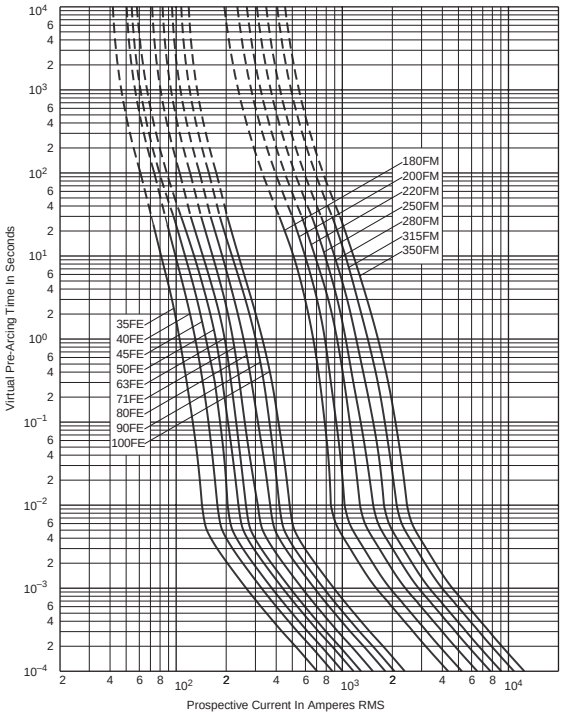
Peak Let-Through Curve



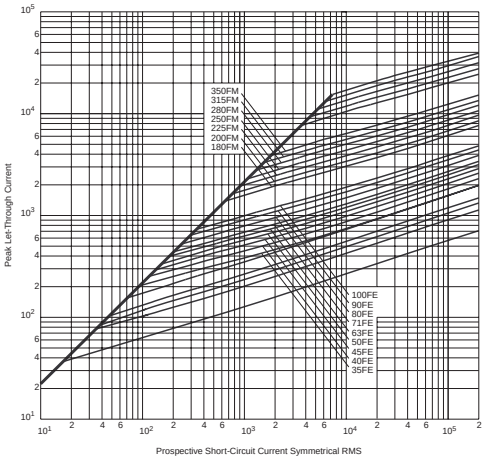
BIF document: 35785311

FE 35-100 & FM 180-350: 690V

Time-Current Curve



Peak Let-Through Curve



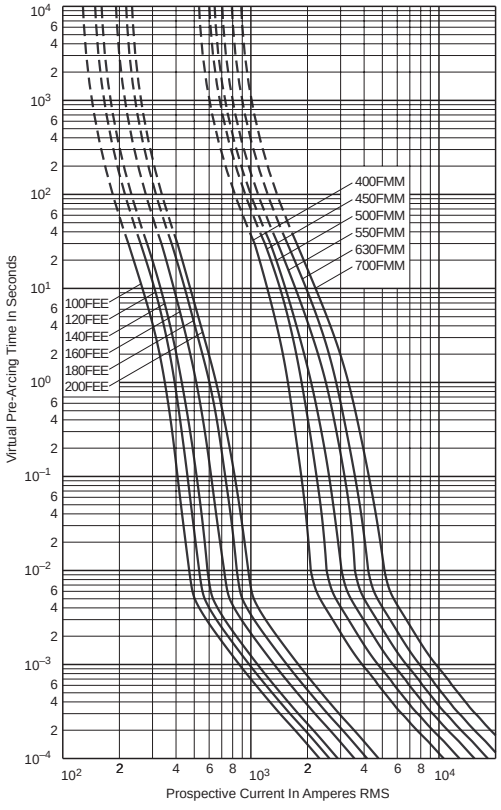
BIF document: 35785314

British Style BS 88

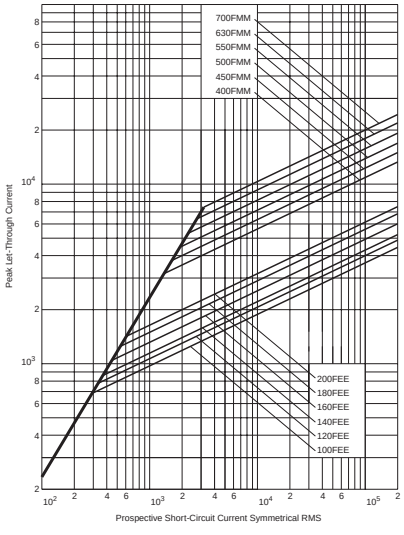
Curves

FEE 100-200 & FMM 400-700: 690V

Time-Current Curve



Peak Let-Through Curve



BIF document: 35785292

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