Standard Ratings:

VOLTAGE	CATALOG NUMBER	AMPERE RATINGS	UL COMPONENT RECOGNITION			
			AC VOLTS	AC A.I.R.	DC VOLTS	DC A.I.R.
130V	E13S(Amp)	1000 – 3000	130	200,000	130	
150V	E15SF(Amp) E15S(Amp)	5 – 60 70 – 1000	150	200,000	150	
250V	E25SFX(Amp) E25S(Amp) E25S(Amp)	5 – 30 35 – 800 1000 – 2500	250	200,000	250 250 —	10,000 10,000 —
500V	E50SF(Amp) E50S(Amp) E50S(Amp)	5 – 30 35 – 1600 900-1200	500	200,000	500 500 —	10,000 100,000 —
600V	E60C(Amp)	0 - 20 25 - 600 700 – 1000	600	10,000 100,000		
600V	E60SF(Amp) E60S(Amp)	5 – 30 35 – 600	600	200,000		
700V	E70SF(Amp) E70S(Amp) E70S(Amp)	5 – 30 35 – 800 1000 – 1200	700	200,000	700 700 —	10,000 10,000 —
1000V	E100SF(Amp) E100S(Amp) E100S(Amp)	20 – 30 40 – 500 600 – 800	1000	200,000	800 800 700	

CROSS REFERENCE							
VOLTS	EDISON	BUSSMANN	GOULD	LITTELFUSE	BRUSH	RELIANCE	INT'L RECT.
130V	E13S(Amp)	FWA(Amp)AH	A13X(Amp) - 128	L13S(Amp)	XL13X(Amp)HP	RFA(Amp)	SF13X(Amp)
130V/150V	E15SF(Amp)	FWA(Amp)A(10)F	A13X(Amp) - 1, - 2	L15S(Amp)	SF or XL13X(Amp)	RFA(Amp)	SF13X(Amp)
	E15S(Amp)	FWA(Amp)A	A13X(Amp) - 4	L15S(Amp)	SF or XL13X(Amp)	RFA(Amp)	SF13X(Amp)
250V	E25SF(Amp)	FWX(Amp)A(14)F	A25X(Amp) - 1	L25S(Amp)	XL25X(Amp)	RFN(Amp)	SF25X(Amp)
	E25S(Amp)	FWX(Amp)A	A25X(Amp) - 4	L25S(Amp)	XL25X(Amp)	RFN(Amp)	SF25X(Amp)
	E25S(Amp)	FWX(Amp)AH	A25X(Amp) - 128	L25S(Amp)	XL25X(Amp)HP	RFN(Amp)	SF25X(Amp)
500V	E50SF(Amp)	FWH(Amp)A(14)F	A50P(Amp) - 1	L50S(Amp)	XL50F(Amp)	RFV(Amp)	SF50P(Amp)
	E50S(Amp)	FWH(Amp)A	A50P(Amp) - 4	L50S(Amp)	XL50F(Amp)	RFV(Amp)	SF50P(Amp)
600V	E60C(Amp)	KAC(Amp)	A60X(Amp) - 4K	—	XL60C(Amp)	RFC(Amp)	SF60C(Amp)
	E60SF(Amp)	KBC(Amp)	A60X(Amp) - 1	L60S(Amp)	XL60X(Amp)	RFS(Amp)	SF60X(Amp)
	E60S(Amp)	KBC(Amp)	A60X(Amp) - 4	L60S(Amp)	XL60X(Amp)	RFS(Amp)	SF60X(Amp)
700V	E70SF(Amp)	FWP(Amp)A(14)F	A70P(Amp) - 1	L70S(Amp)	XL70F(Amp)	RFL(Amp)	SF70P(Amp)
	E70S(Amp)	FWP(Amp)A	A70P(Amp) - 4	L70S(Amp)	XL70F(Amp)	RFL(Amp)	SF70P(Amp
1000V	E100SF(Amp)	FWJ(Amp)A(14)F	A100P(Amp) - 1	—	XL100P(Amp)	RFK(Amp)	SF100P(Amp)
	E100S(Amp)	FWJ(Amp)A	A100P(Amp) - 4	—	XL100P(Amp)	RFK(Amp)	SF100P(Amp)

Technical Data
In many cases, the data in this catalog section which includes available ratings, dimensions, time current characteristics and I^2t let-through, will enable a suitable choice of fuse to be made. The following notes are a guide to assist fuse selection.

Voltage Rating
The test voltage is equal to the rated voltage. The d.c. voltage ratings are tested with a time constant of 10 ms. For longer time constants the following typical derating factors apply:

Time constant ms	25	40	60
Voltage derating factor	0.85	0.7	0.6

Current Rating
The maximum current carrying capability is at least equal to the current rating, provided that the ambient temperature is less than 30°C, conductor sizes are at least 1 mm^2 per amp, and there is natural convection cooling.

For ambient temperatures higher than 30°C, a derating of 0.5% per °C is recommended. In situations where the air temperature surrounding the fuse is higher than the ambient temperature, i.e. inside a converter cubicle, the derating should be based on the air temperature surrounding the fuses.

In many installations, power semiconductors are force cooled in an air stream. Fuses can be mounted in this air stream and their maximum current carrying capability can then be increased. This increase is up to approximately 20% in an air velocity of 5 m/s but higher velocities do not produce any substantial increase in rating.

Power Dissipation
The values of watts loss given are related to full rated current with the correct sizes of conductors and natural cooling.

Time Current Characteristics
Individual time current characteristics are subject to a ±10% tolerance on current and are based on symmetrical sinusoidal 60 Hz currents. A reduction in operating time is associated with current wave forms with high form factor and, if overcurrents occur from preloaded conditions. Semiconductor protection fuses are designed to clear fault currents associated with pre-arcing times of 30 seconds or less. Dashed lines on time-current characteristic curves represent overload conditions which, in general, should be avoided.

Permitted Overloads
In many applications, surges occur during the normal duty of equipment and under such permitted overloads, the fuse must not open.

For permitted overloads lasting longer than a few minutes, the fuse current rating should be selected based on the overload current. The current rating of the fuse should exceed the overload current.

For infrequent normal overloads, fuse selection can be made on the basis of an overload curve of not more than 75% of the published time current characteristic.

For highly repetitive overloads, such as in a steel mill thyristor drive, fuse selection should be made on the basis of an overload curve of not more than 60% of the published time current characteristic.

I^2t Characteristics
The melting I^2t of fuses is independent of voltage and reduces to a minimum value for times less than about 1 ms. For longer times, reference should be made to the time current characteristics.

The total I^2t values for operating times less than one half-cycle are shown in the data sheets and relate to a fault current of at least 20x rated current, I_n, with a power factor of 15%.

The total I^2t values reduce considerably at voltages below the rated voltage since the arc interruption is easier.

Breaking Capacity
In general, semi-conductor fuses perform well at very high fault currents and many products have been successfully tested up to 200kA rms symmetrical. The fuses are essentially for short circuit protection and therefore in general, only required to clear faults for melting times less than 30 seconds (currents in excess of approximately twice rated current).

Peak Let-Through Current Curves
Short circuit coordination of power semiconductors is assessed with the use of I^2t values. Traditional supplementary peak let-through current curves are also shown in the catalog.

Arc-Voltage Characteristics
Applications using modern power semiconductors are not normally sensitive to the peak arc voltages produced by Edison semiconductor protection fuses.

Typical values of arc voltages in relation to the rated fuse voltage, U_n, are:

System Voltage	Arc Voltage of Fuse
U_n	2.0 U_n
0.5 U_n	1.25 U_n
0.2 U_n	0.7 U_n

Example: a 500 volt Edison semiconductor fuse used on a 250 volt system would produce an arc voltage of approximately 625 volts.