# C9 ACERT™, C13 ACERT, C15 ACERT, C18 ACERT Circuit Breakers

## Manually Operated Circuit Breakers

| Current (A) | Frame | Number of Poles | Interrupting Ratings (kA rms) | | | Trip Units | (Lugs) Cable Size Range / Phase | Auxiliary Options |
|---|---|---|---|---|---|---|---|---|
| | | | 240V | 480V | 600V | | | |
| 100 | H | 3 | 65 | 35 | 18 | Electronic LSI | 8-3/0 AWG | Form C (1NO + 1NC) Shunt Trip 24VDC |
| 250 | J | 3 | 65 | 35 | 18 | | (2) 3/0 – 250 kcmil | |
| 400 | T5N | 3 | 65 | 25 | 18 | Electronic LS/I (S or I) or LSI | (2) 3/0 – 250 kcmil | 1 Form C + 1 Bell Alarm 250VAC/VDC Shunt Trip 24VDC |
| 600 | T6N | 3 | 65 | 35 | 20 | | (3) 2/0 – 400 kcmil | |
| 800 | T6N | 3 | 65 | 35 | 20 | | (3) 2/0 – 400 kcmil | 1 Form C + 1 Bell Alarm 400VAC / 250VDC Shunt Trip 24VDC |
| 1200 | T7S | 3 | 65 | 50 | 25 | | (4) 2/0 – 500 kcmil | |
| 1600 | R | 3 | 65 | 35 | 18 | Electronic LSI | BUS BAR | Form C (1NO + 1NC) Shunt Trip 24VDC |
| 2000 | R | 3 | 65 | 35 | 18 | | BUS BAR | |
| 2500 | R | 3 | 65 | 35 | 18 | | BUS BAR | |
| 3000 | R | 3 | 65 | 35 | 18 | | BUS BAR | |

## Electrically Operated Circuit Breakers

| Current (A) | Frame | Number of Poles | Interrupting Ratings (kA rms) | | | Trip Units | (Lugs) Cable Size Range / Phase | Auxiliary Options |
|---|---|---|---|---|---|---|---|---|
| | | | 240V | 480V | 600V | | | |
| 800 | T 7M-S | 3 | 65 | 50 | 25 | Electronic LSI | (4) 4/0 – 500 kcmil | 2 Form C + 1 Bell Alarm 24VDC |
| 1200 | T 7M-S | 3 | 65 | 50 | 25 | Electronic LSI | (4) 4/0 – 500 kcmil | 2 Form C + 1 Bell Alarm 24VDC |
| 2000 | T8M-S | 3 | 125 | 125 | 100 | Electronic LSI | BUS BAR | 2 Form C + 1 Bell Alarm 24VDC |
| 3000 | T8M-S | 3 | 125 | 125 | 100 | Electronic LSI | BUS BAR | 2 Form C + 1 Bell Alarm 24VDC |

# Circuit Breakers

### Single Breaker Options (250 – 3000A)

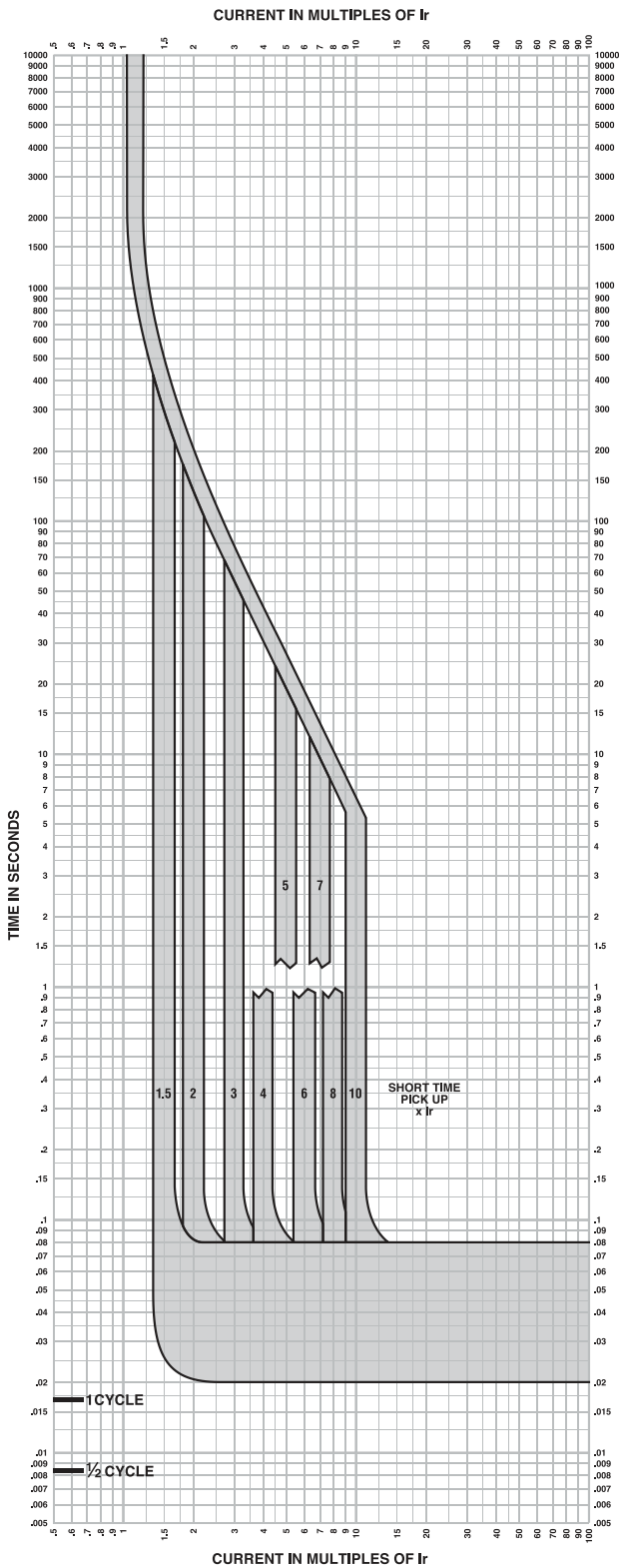
| Model | Current (A) | Operation |
|---|---|---|
| C9 ACERT™ | 250 | Manually Operated |
| C9 ACERT | 400 | Manually Operated |
| C9 ACERT, C13 ACERT, C15 ACERT, C18 ACERT | 600 | Manually Operated |
| C9 ACERT, C13 ACERT, C15 ACERT, C18 ACERT | 800 | Manually Operated or Electrically Operated |
| C9 ACERT, C13 ACERT, C15 ACERT, C18 ACERT | 1200 | Manually Operated or Electrically Operated |
| C13 ACERT, C15 ACERT, C18 ACERT | 1600 | Manually Operated |
| C15 ACERT, C18 ACERT | 2000 | Manually Operated or Electrically Operated |
| C18 ACERT | 2500 | Manually Operated |
| C18 ACERT | 3000 | Manually Operated or Electrically Operated |

### Multiple Breaker Options

| Model | Main Breaker Box | | Auxiliary Box |
|---|---|---|---|
| | 1st Breaker (Amps) | 2nd Breaker (Amps) | Breaker (Amps) |
| | Manually Operated | Manually Operated | Manually Operated |
| C9 ACERT, C13 ACERT, C15 ACERT, C18 ACERT | 250 | 250, 400, 600, 800, or 1200 | 3rd Breaker: 250 or 400 (Not available if 1st & 2nd Breaker = 1200A) |
| C9 ACERT, C13 ACERT, C15 ACERT, C18 ACERT | 400 | | |
| C9 ACERT, C13 ACERT, C15 ACERT, C18 ACERT | 600 | | |
| C9 ACERT, C13 ACERT, C15 ACERT, C18 ACERT | 800 | | |
| C9 ACERT, C13 ACERT, C15 ACERT, C18 ACERT | 1200 | | |
| C13 ACERT, C15 ACERT, C18 ACERT | 1600 | Not Available | 2nd Breaker: 250 or 400 |
| C15 ACERT, C18 ACERT | 2000 | | |
| C18 ACERT | 2500 | | |
| C18 ACERT | 3000 | | |

## H-Frame Circuit Breakers

### Electronic Trip Unit Long Time / Short Time Trip Curve




**Long Time/Short Time Trip Curve**
**60A, 100A, 150A H-Frame**

The time-current curve information is to be used for application and coordination purposes only.

**Notes:**

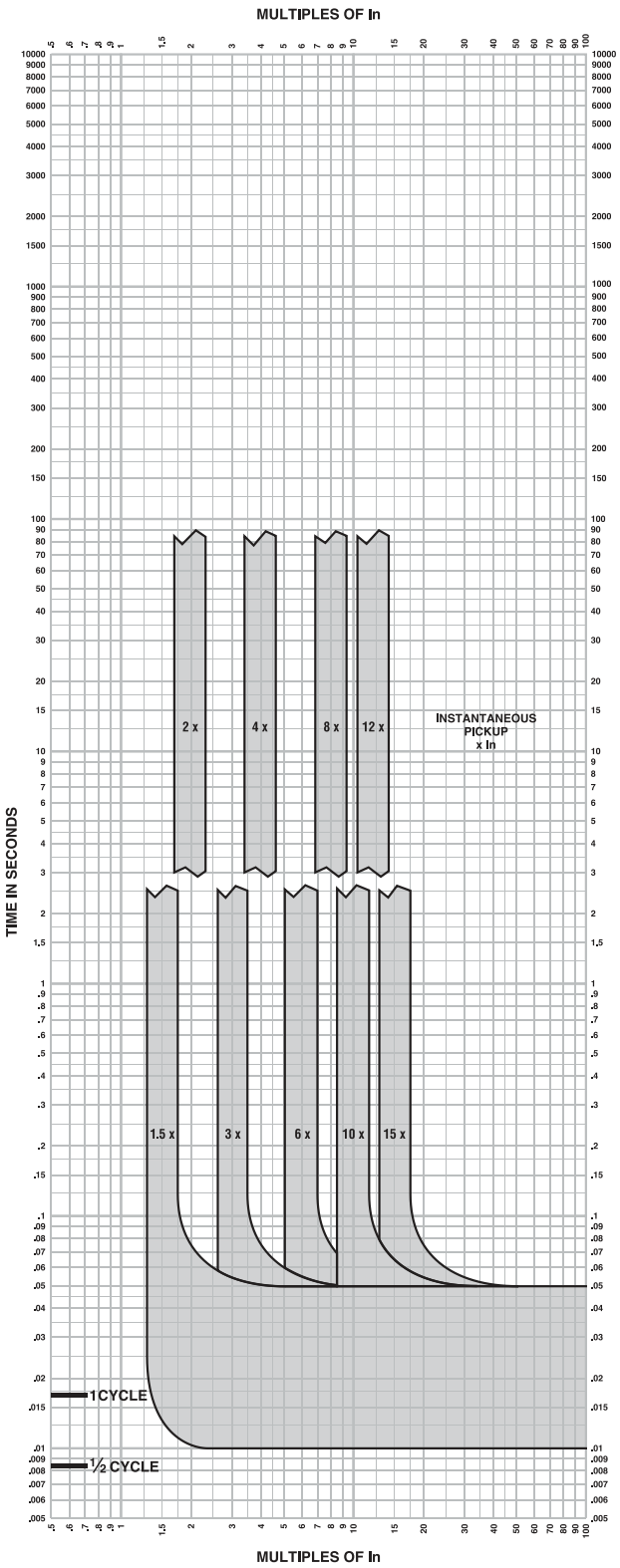
1. There is a thermal-imaging effect that can act to shorten the long-time delay. The thermal imaging effect comes into play if a current above the long-time delay pickup value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in a shorter time than normal. The amount of time delay reduction is inverse to the amount of time that has elapsed since the previous overload. Approximately 20 minutes is required between overloads to completely reset thermal-imaging.
2. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of the current.

Curves apply from -35°C to +70°C (-31°F to +158°F) ambient temperature.

Figure 1

## H-Frame Circuit Breakers

### Electronic Trip Unit Instantaneous Trip Curve




**Instantaneous Trip Curve**
**60A, 100A, 150A H-Frame**

The time-current curve information is to be used for application and coordination purposes only.

**Notes:**

1. There is a thermal-imaging effect that can act to shorten the long-time delay. The thermal imaging effect comes into play if a current above the long-time delay pickup value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in a shorter time than normal. The amount of time delay reduction is inverse to the amount of time that has elapsed since the previous overload. Approximately 20 minutes is required between overloads to completely reset thermal-imaging.
2. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of the current.
3. In = Maximum dial setting of Ir.
   60A H-Frame: In = 60A = Max Ir setting
   100A H-Frame: In = 100A = Max Ir setting
   150A H-Frame: In = 150A = Max Ir setting

Curves apply from -35°C to +70°C (-31°F to +158°F) ambient temperature.

Figure 2

## J-Frame 250 A Typical Peak Let-Through Curves

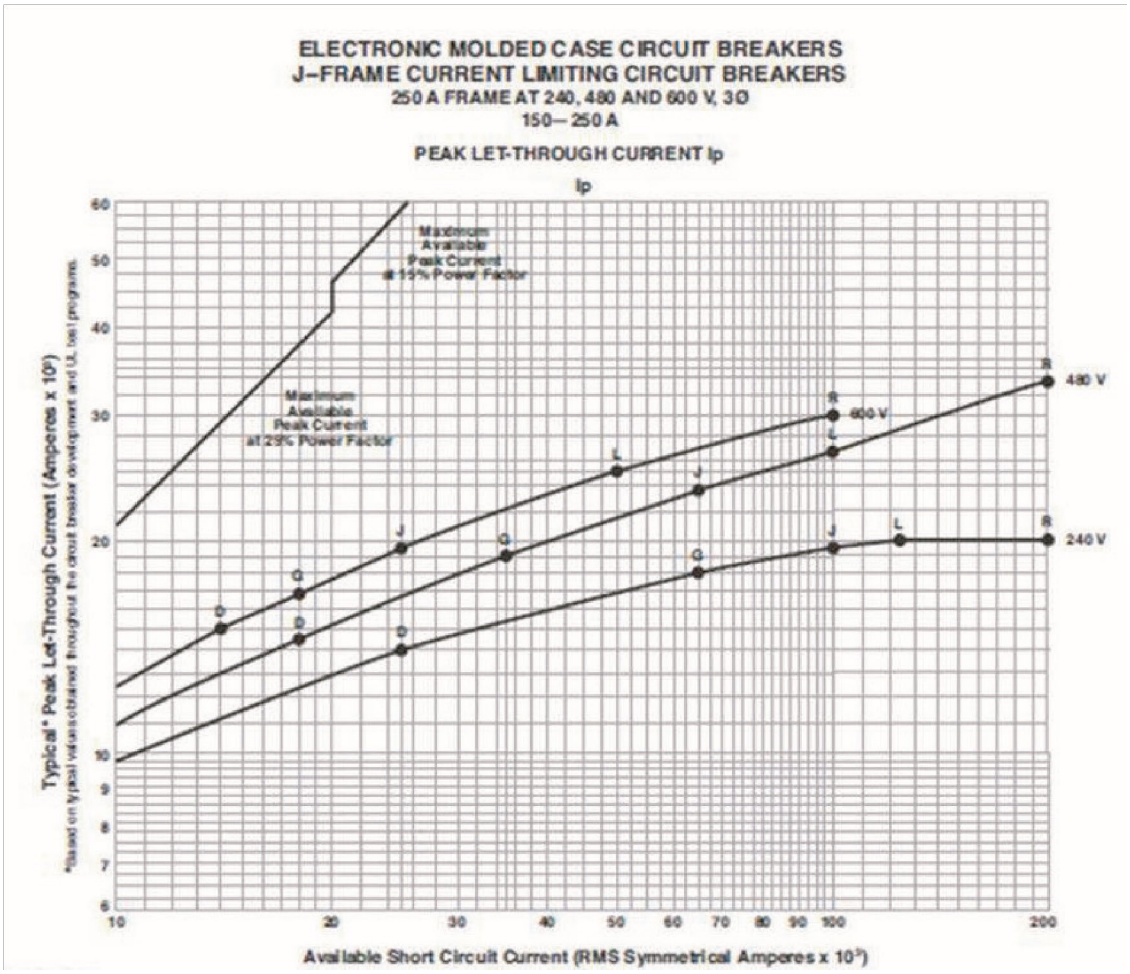



Figure 3

## J-Frame 150-250 A (JD, JG, JJ, JL, and JR) Thermal-Magnetic Trip

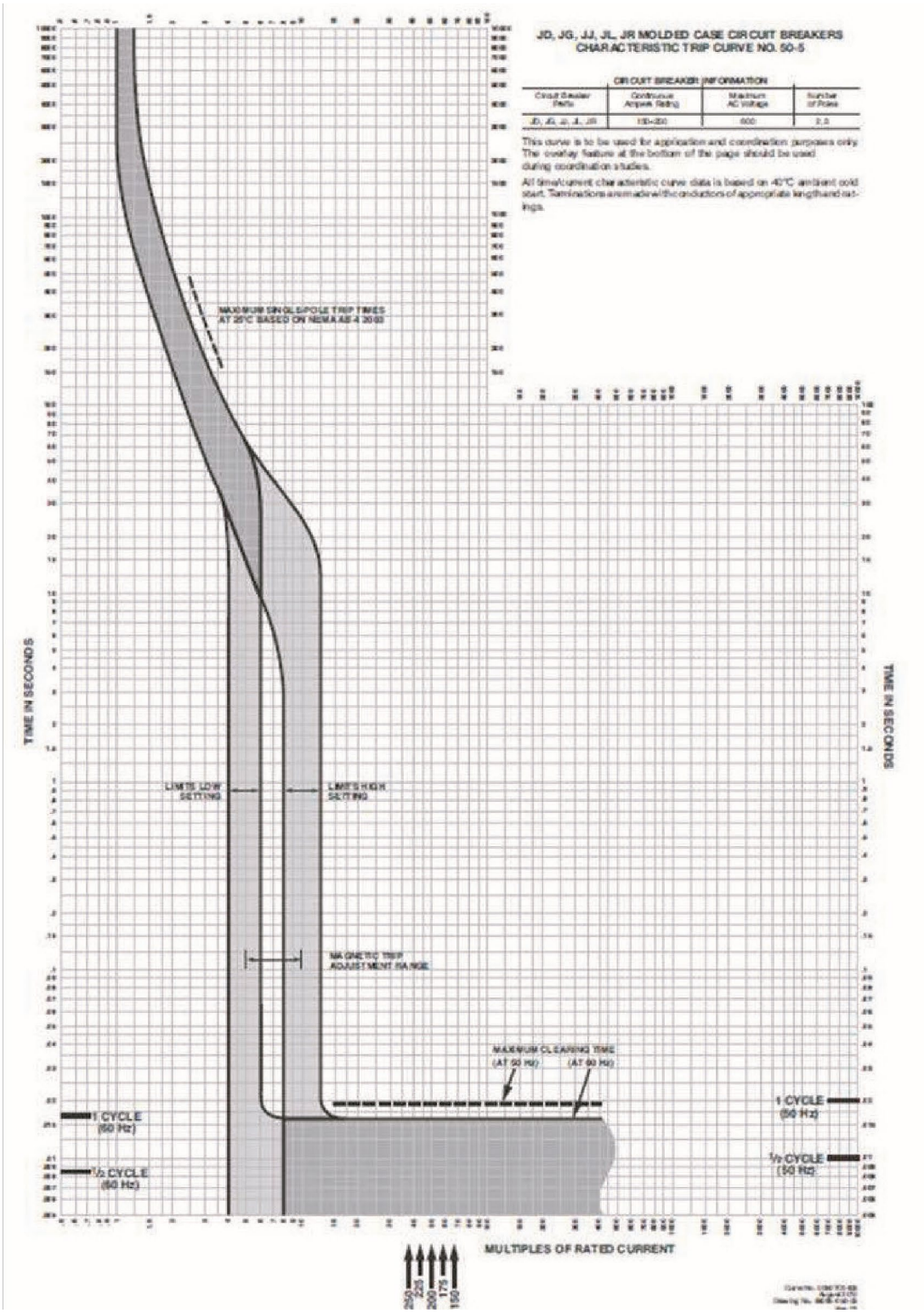



Figure 4

## Ground Fault Module GFM250JD Trip Curve

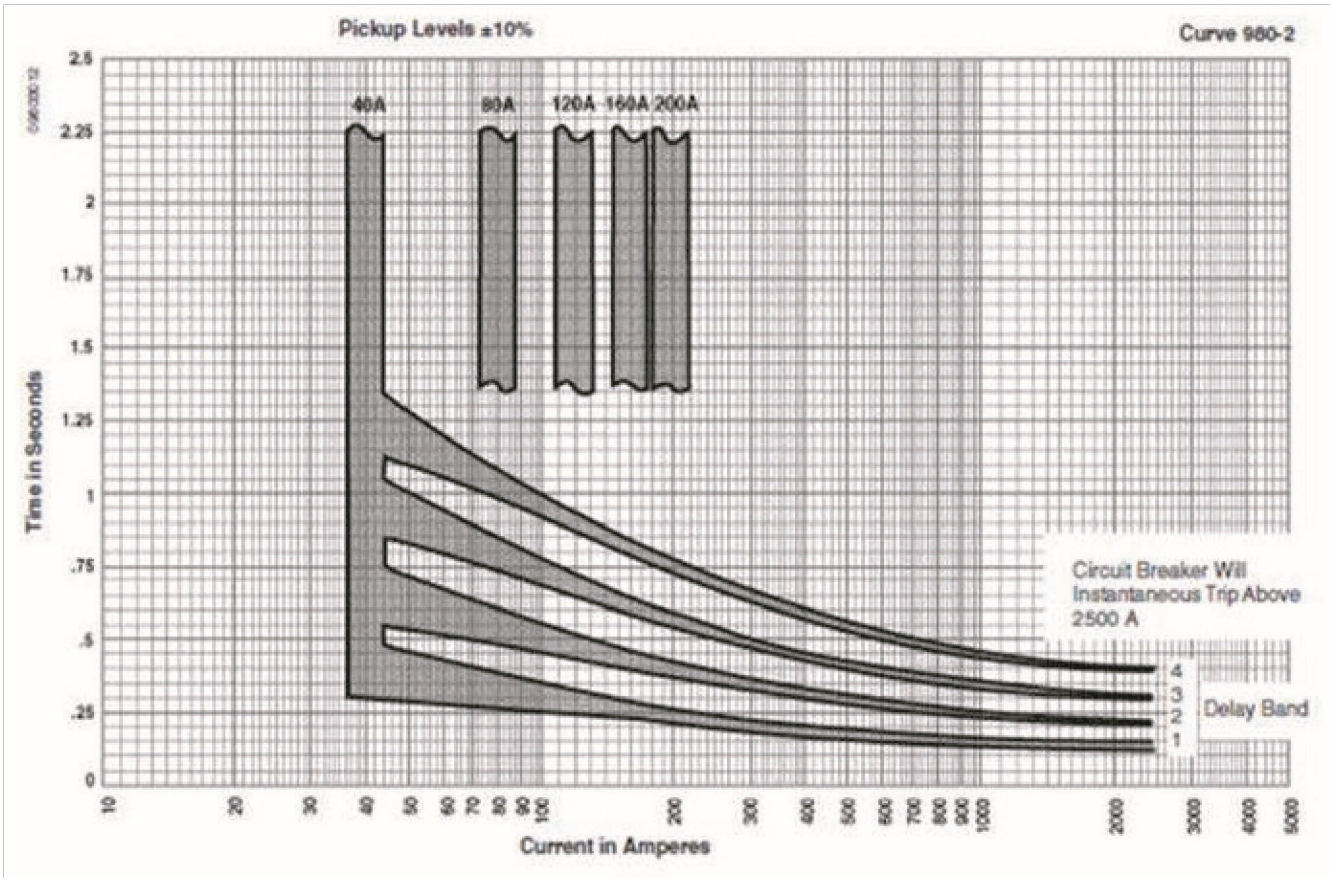
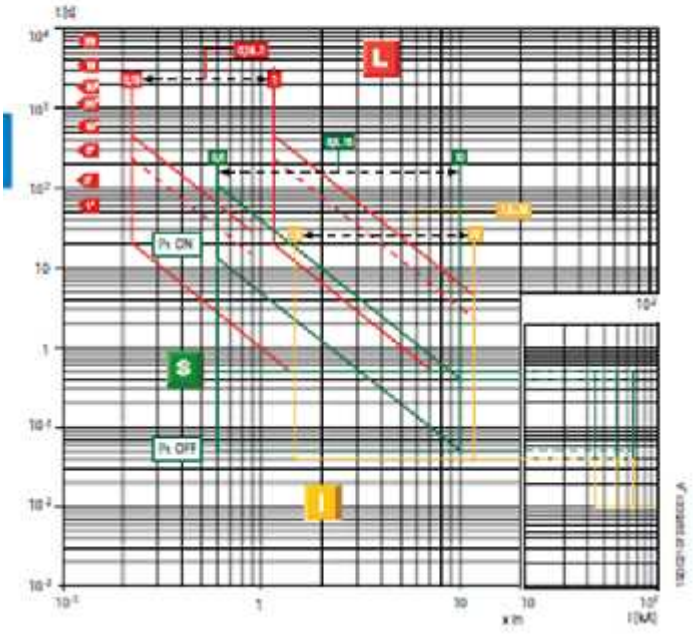



Figure 5

T5 400/ 600 – PR221DS

Tmax T5 Ekip E
L-S-I Functions




Tmax T5 Ekip E
L-S-I Functions

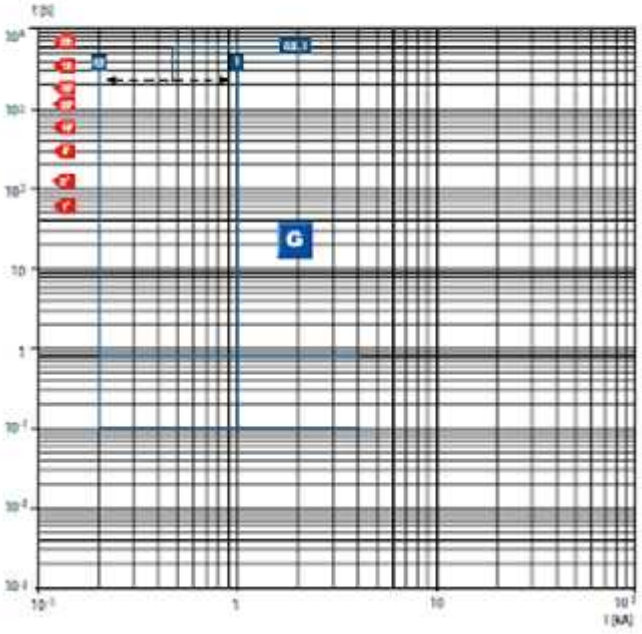



Figure 6

## T6 600 / 800 -PR221DS

L-1 Functions

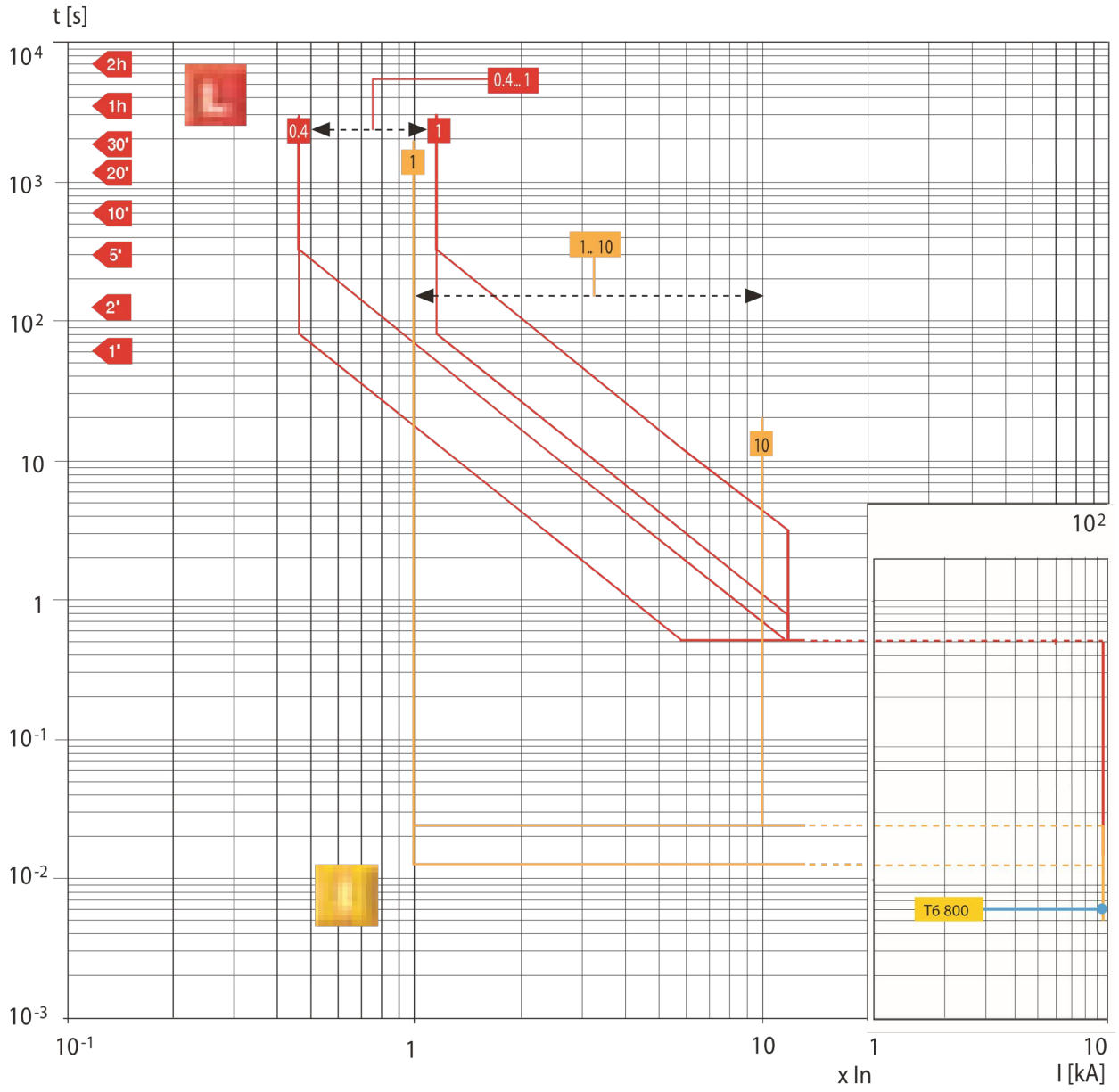



Figure 7

## T6 600 / 800 -PR221DS

L-S Functions

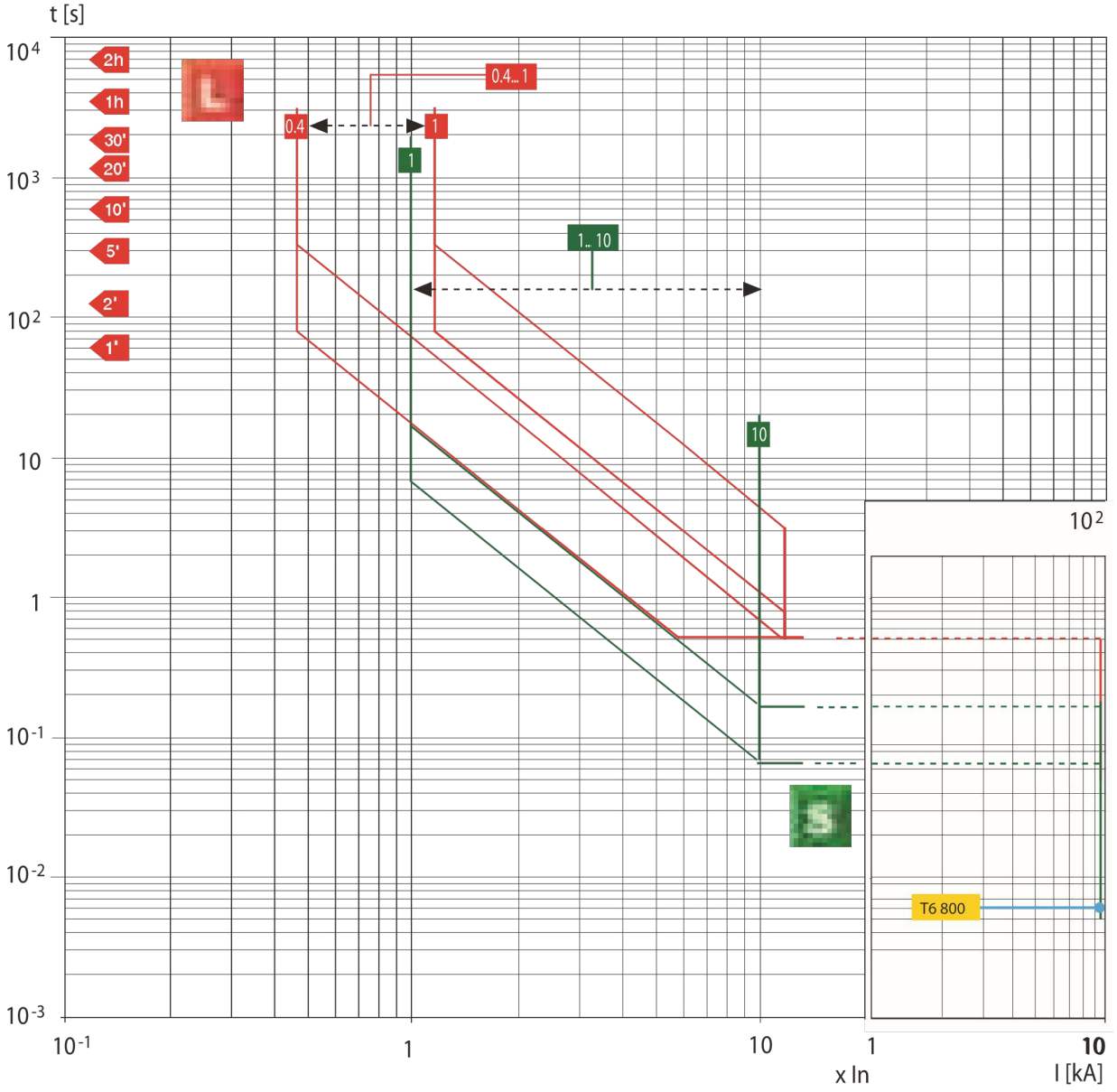



Figure 8

## Tmax T7 PR231/P Functions

L-S Functions

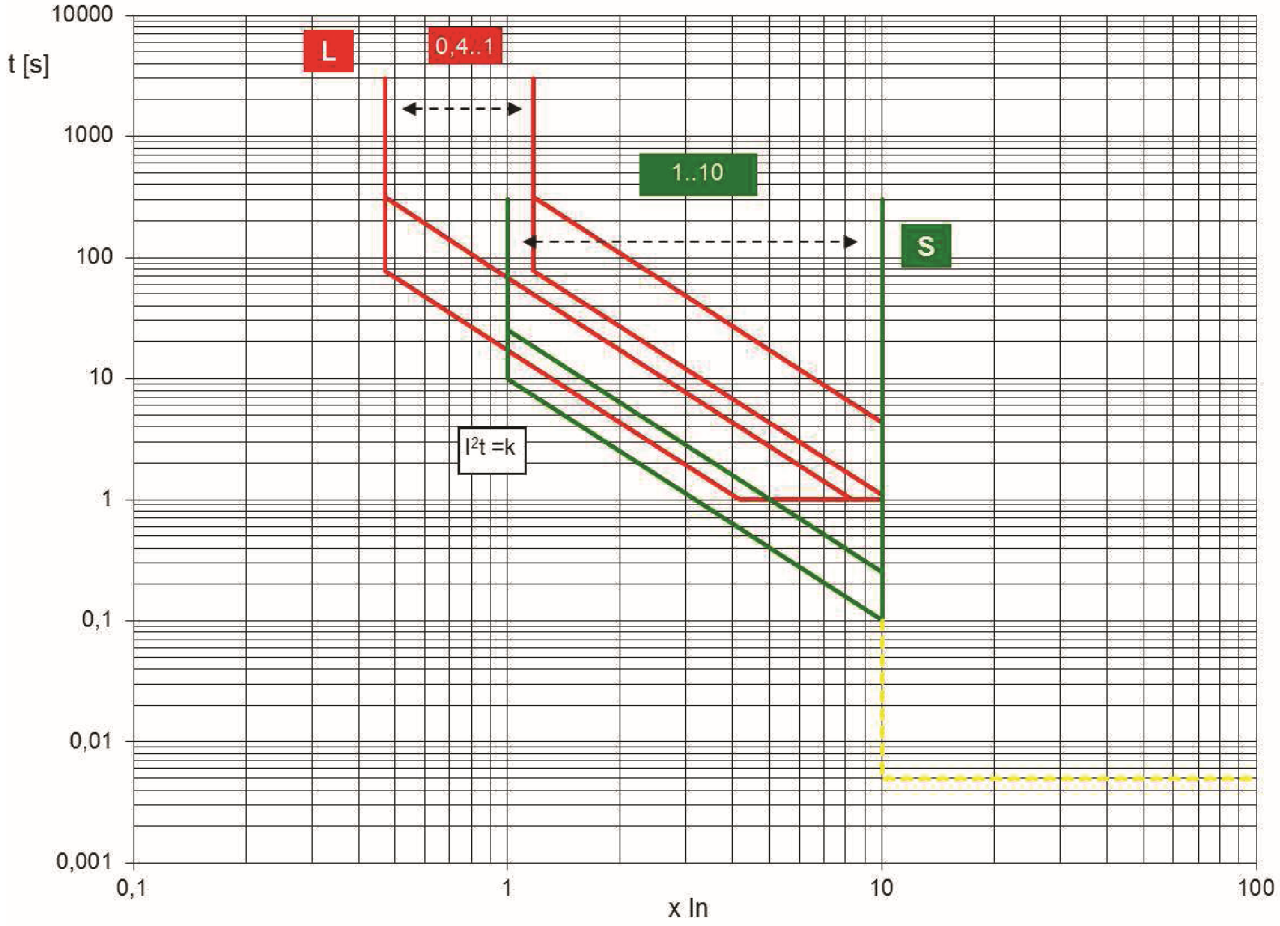



Figure 9

## T6 800 - PR222DS and PR222DS/PD-A

L-S-I Functions

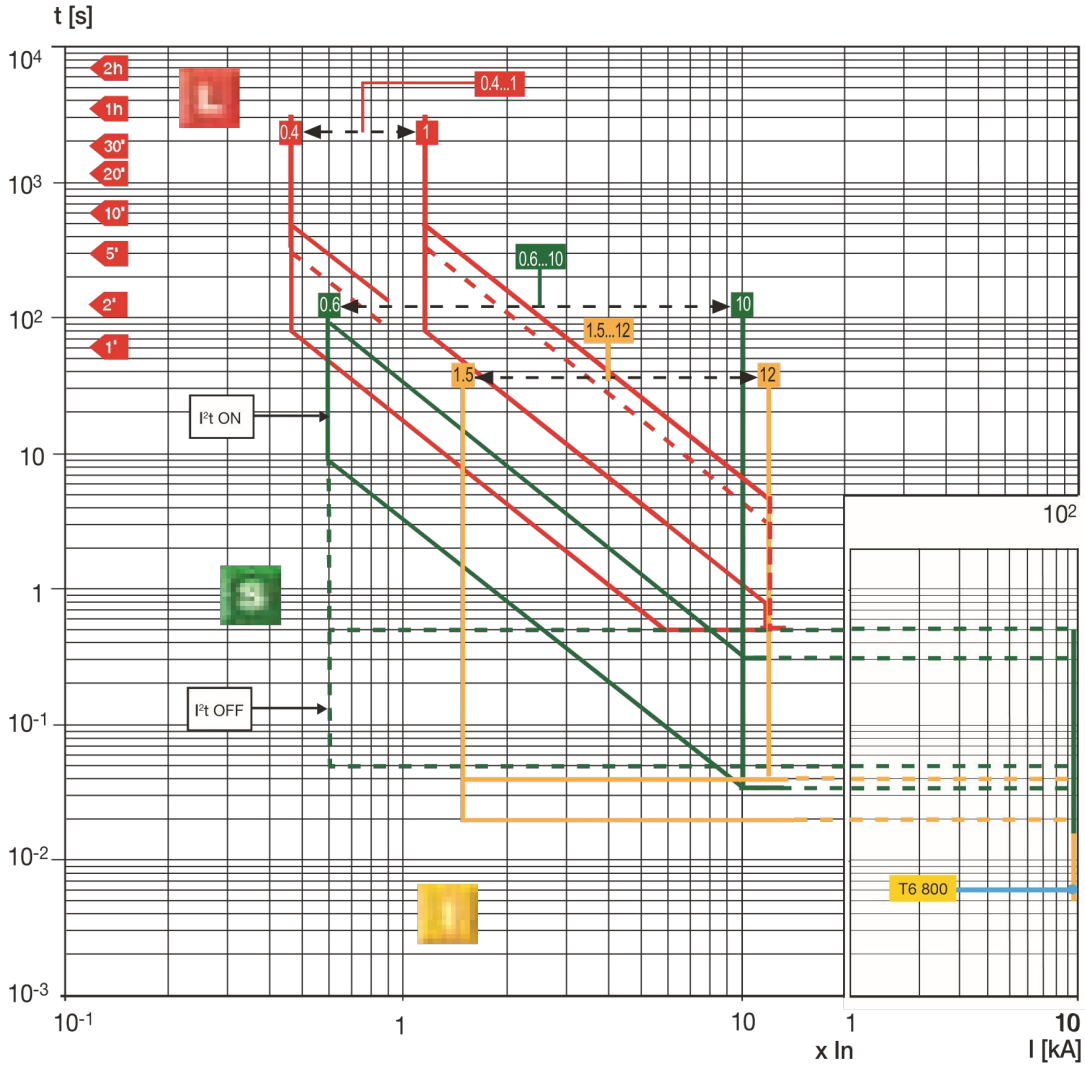



Figure 10

## T7 1000/1200 - PR232/P

L-S-I Functions

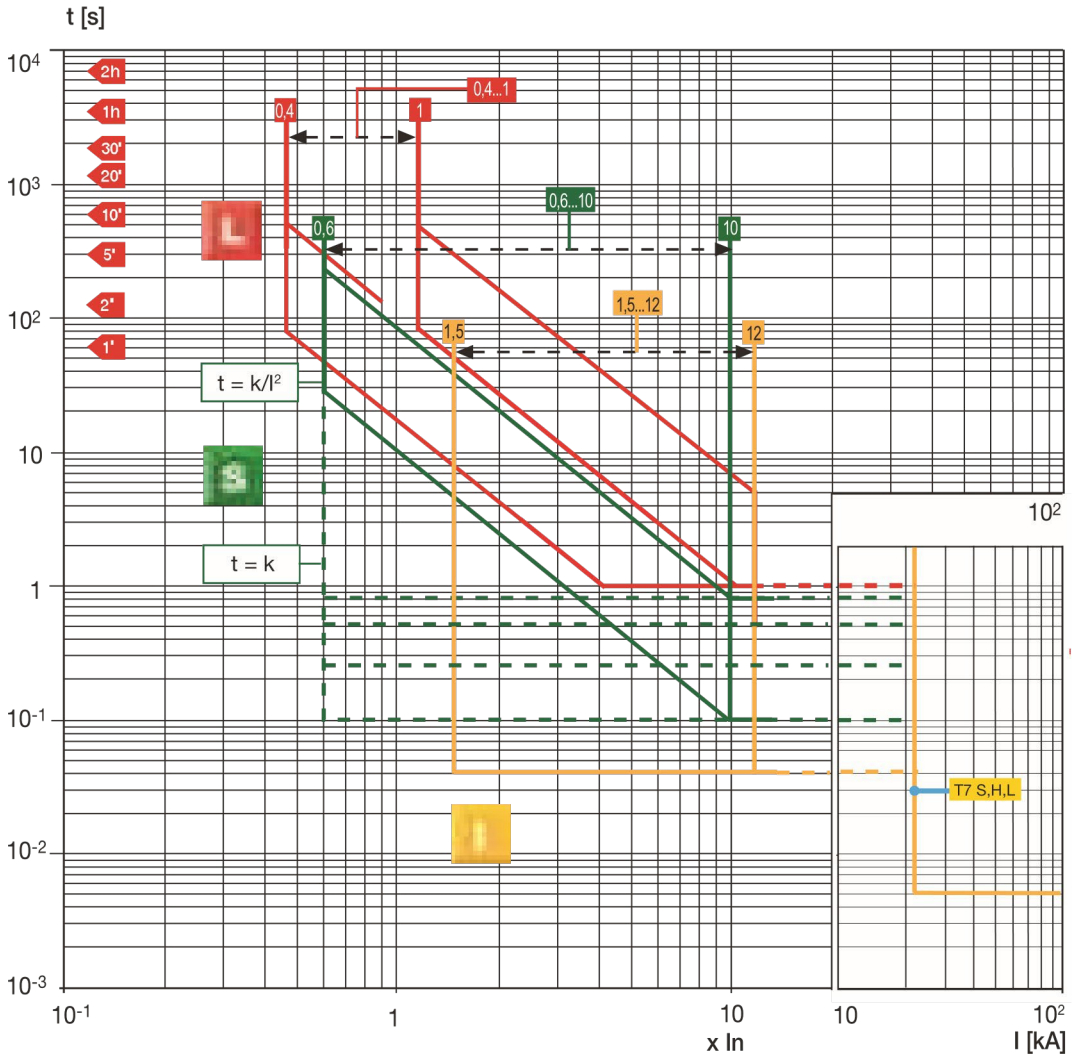



Figure 11

## T7 1000/1200 - PR332/P

L-S-I Functions

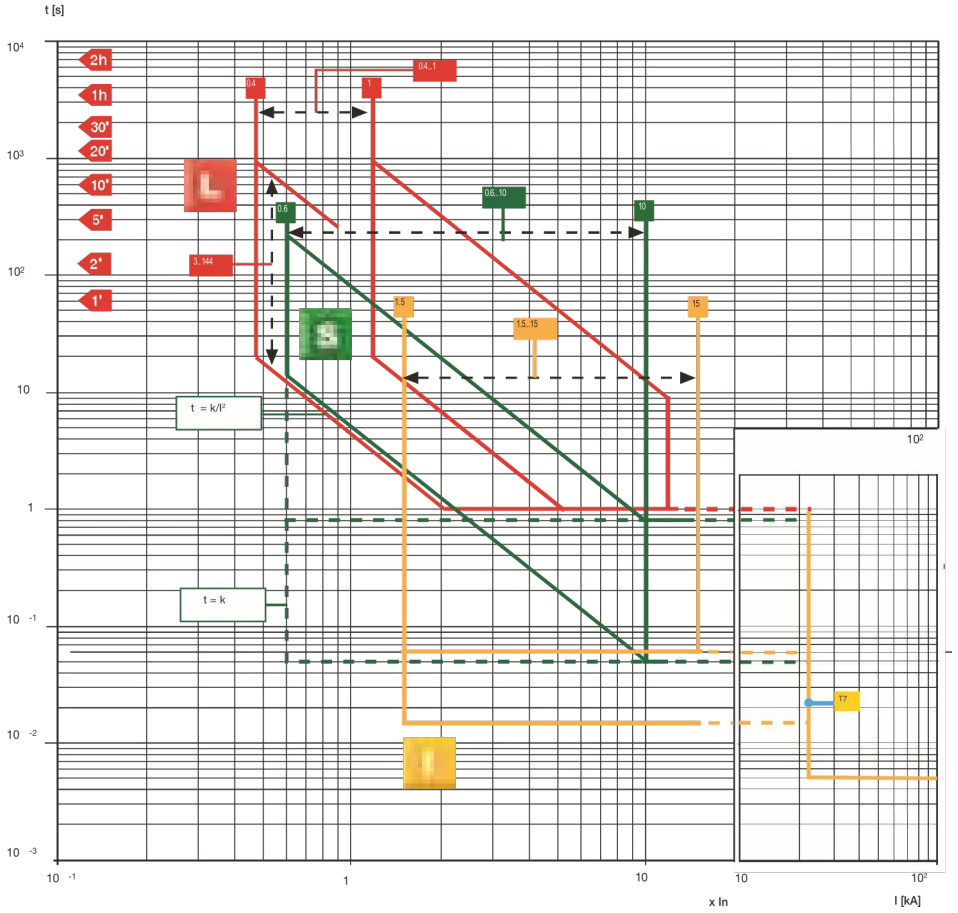



Figure 12

**T8 1600/2000/2500/3000 – PR232/P-T8**

L-S-I Functions

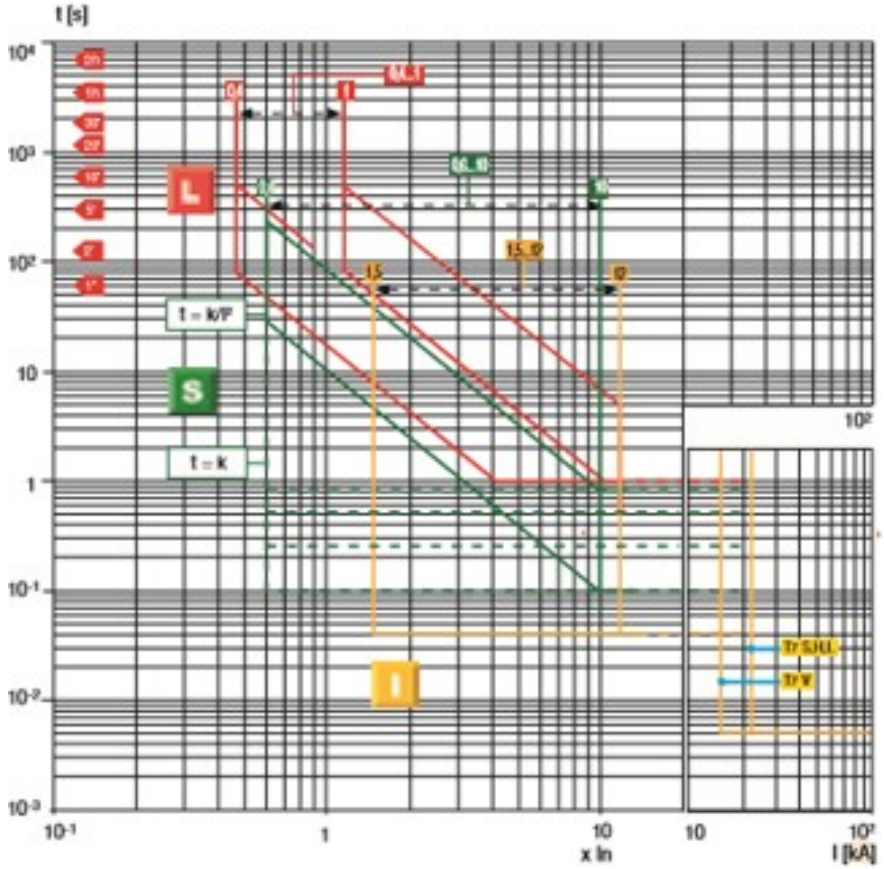



Figure - 13

## P, R, NS-Frame Long-Short Trip Curve and NW-Frame Long-Short Trip Curve

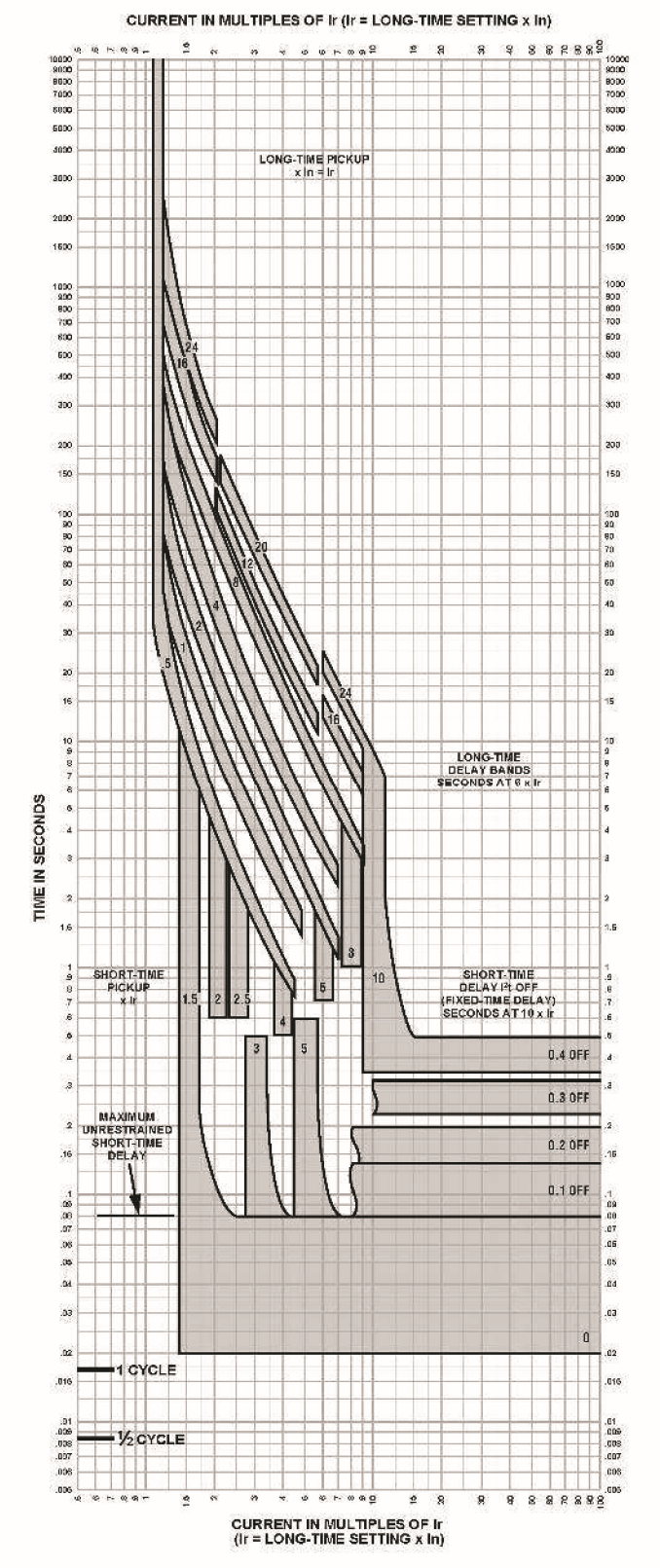



Figure - 14

### Long-time Pickup and Delay Short-time Pickup and I²t OFF Delay

The time-current curve information is to be used for application and coordination purposes only. Curves apply from -30°C to +60°C ambient temperature.

Notes:

1. There is a thermal-imaging effect that can act to shorten the long-time delay. The thermalimaging effect comes into play if a current above the long-time delay pickup value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in a shorter time than normal. The amount of time delay reduction is inverse to the amount of time that has elapsed since the previous overload. Approximately 20 minutes is required between overloads to completely reset thermal-imaging.
2. The end of the curve is determined by the interrupting rating of the circuit breaker.
3. With zone-selective interlocking on, short-time delay utilized and no restraining signal, the maximum unrestrained short-time delay time band applies regardless of the setting.
4. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of the current.
5. For a withstand circuit breaker, instantaneous can be turned OFF. See Page 22 for instantaneous trip curve. See tables on pages 03-18 for instantaneous override values..
6. Overload indicator illuminates at 100%.

## P, R, NS-Frame Instant Curve and NW-Frame Instant Trip Curve

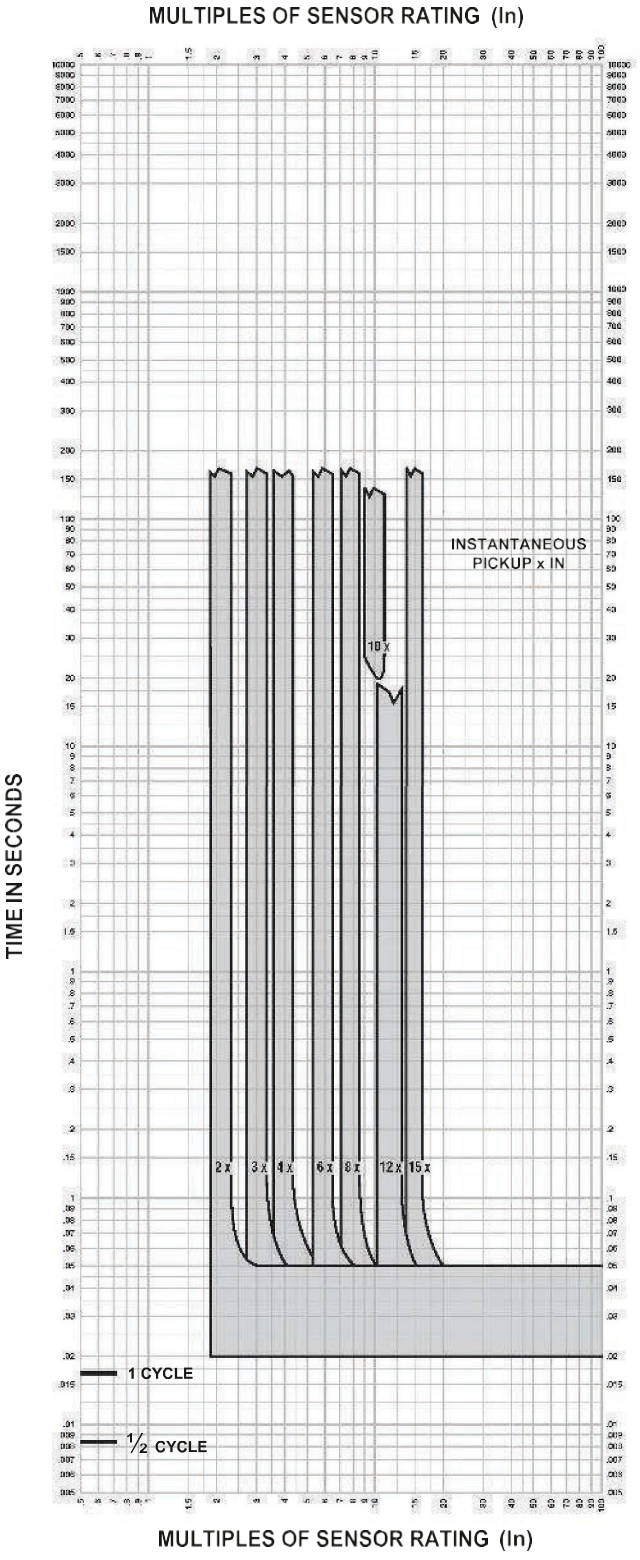



Figure 15

### Instantaneous Pickup 2x–15x and OFF

The time-current curve information is to be used for application and coordination purposes only.

Curves apply from -30° to +60°C ambient temperature.

Notes:

1. The end of the curve is determined by the interrupting rating of the circuit breaker.
2. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of the current.
3. The instantaneous region of the trip curve shows maximum total clearing times. Actual clearing times in this region can vary depending on the circuit breaker mechanism design and other factors. The actual clearing time can be considerably faster than indicated. Contact your local Sales Office for additional information.
4. For a withstand circuit breaker, instantaneous can be turned OFF. See tables on pages 03-18 for instantaneous override values.
5. See page 22 for long-time pickup, long-time delay, short-time pickup, and short time delay trip curves.

## P, R, NS-Frame Ground Curve and NW-Frame Ground Fault Trip Curve

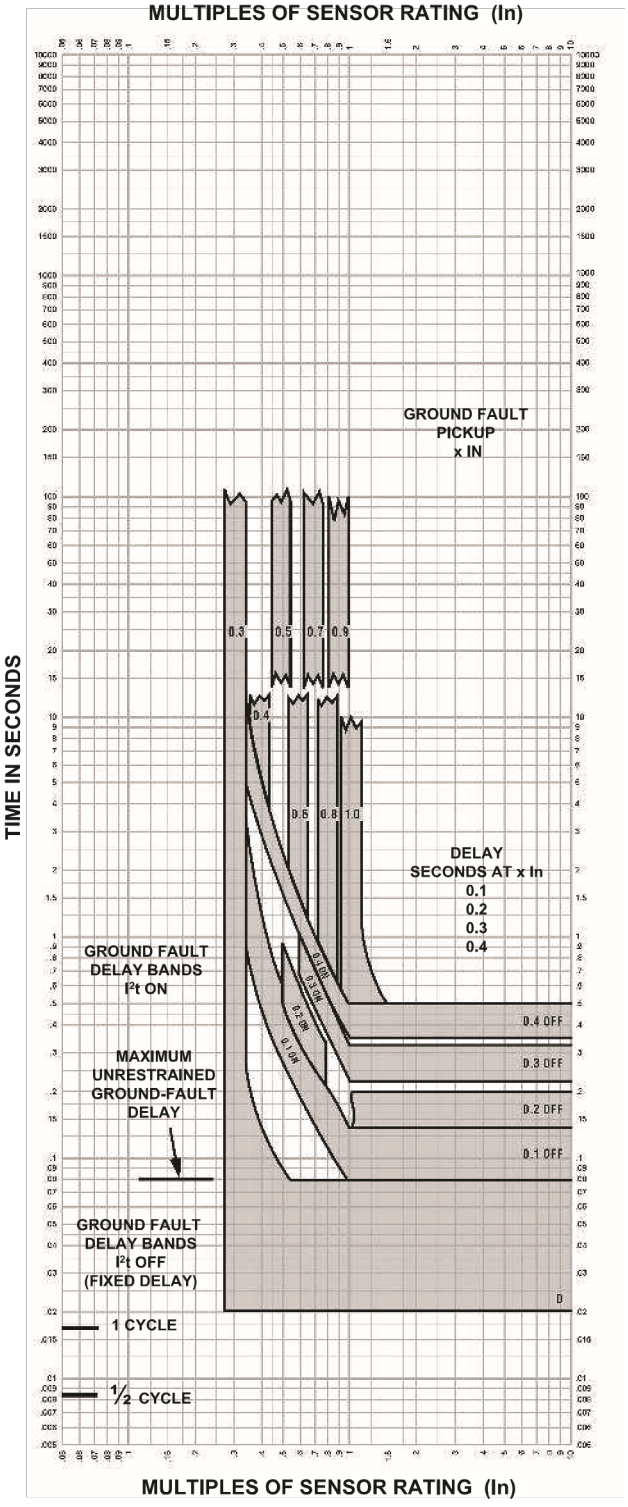



Figure - 16

### Ground-fault $I^2t$ OFF and ON In ≤ 400 A

The time-current curve information is to be used for application and coordination purposes only.

Curves apply from -30°C to +60°C ambient temperature.

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