

# Series G J-Frame

## 20-250A, 240-600V

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**Note:**

The following curves meet the requirements of UL, CSA, IEC, CCC and CE.  
 The following circuit breakers are derived from Eaton, Westinghouse, or Cutler-Hammer history.

**Time Current Curves are engineering reference documents for application and coordination purposes only.  
 For field testing molded case circuit breakers, refer to NEMA AB 4 guidelines.**

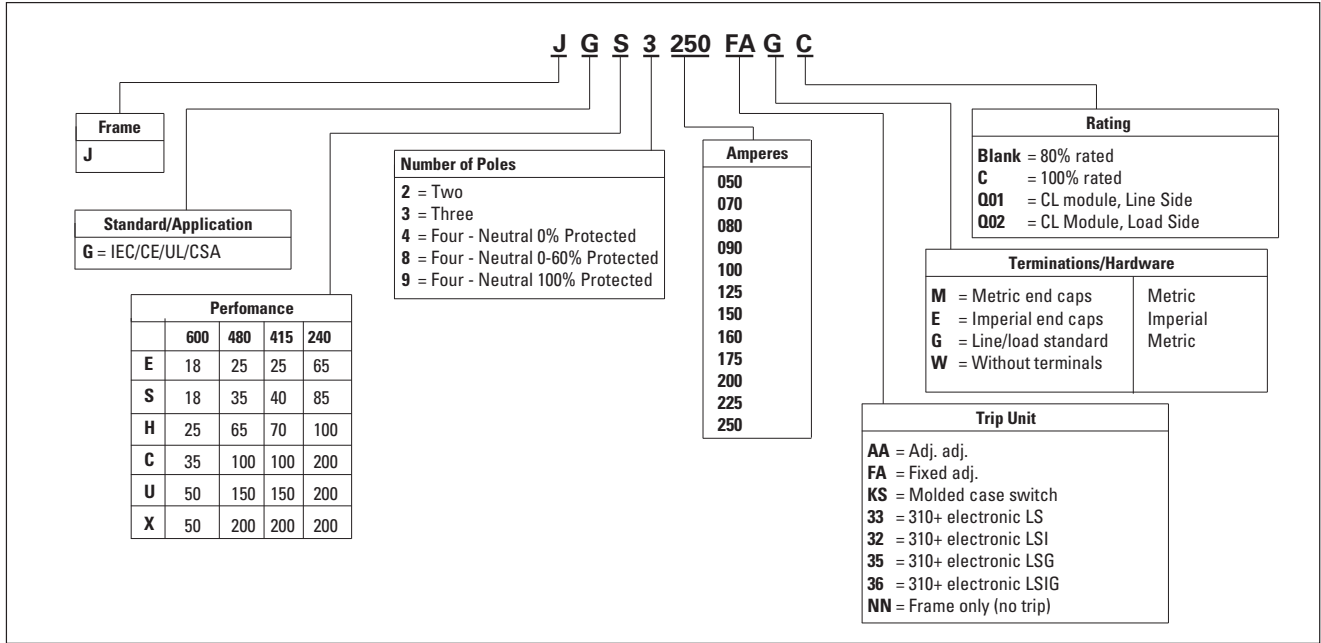
**Note:** Unless noted below, all curves remain unchanged from their prior revision.

<b>Revision</b>	<b>Curve Number</b>	<b>Page</b>	<b>Date</b>

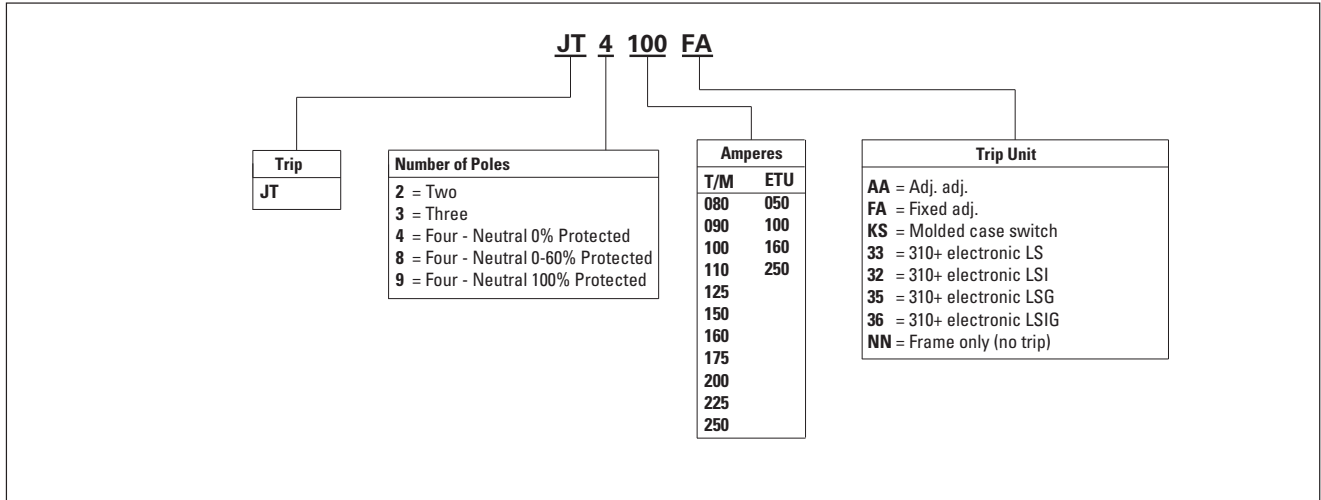
### Catalog Number Selection

This information is presented only as an aid to understanding catalog numbers. It is not to be used to build catalog numbers for circuit breakers or trip units.

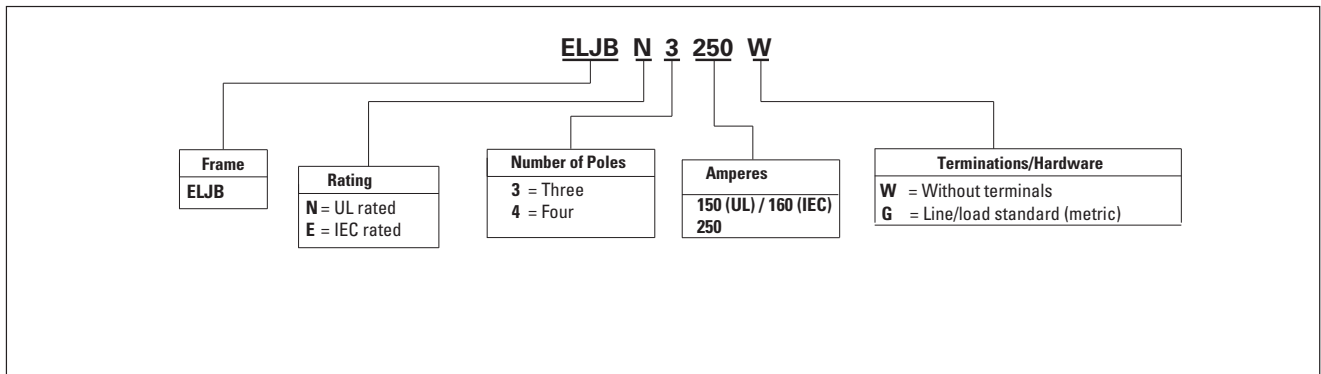
**Table 1. Series G JG-Frame (63-250 Amperes)**



**Table 2. Trip Unit**



**Table 3. Earth Leakage Modules**



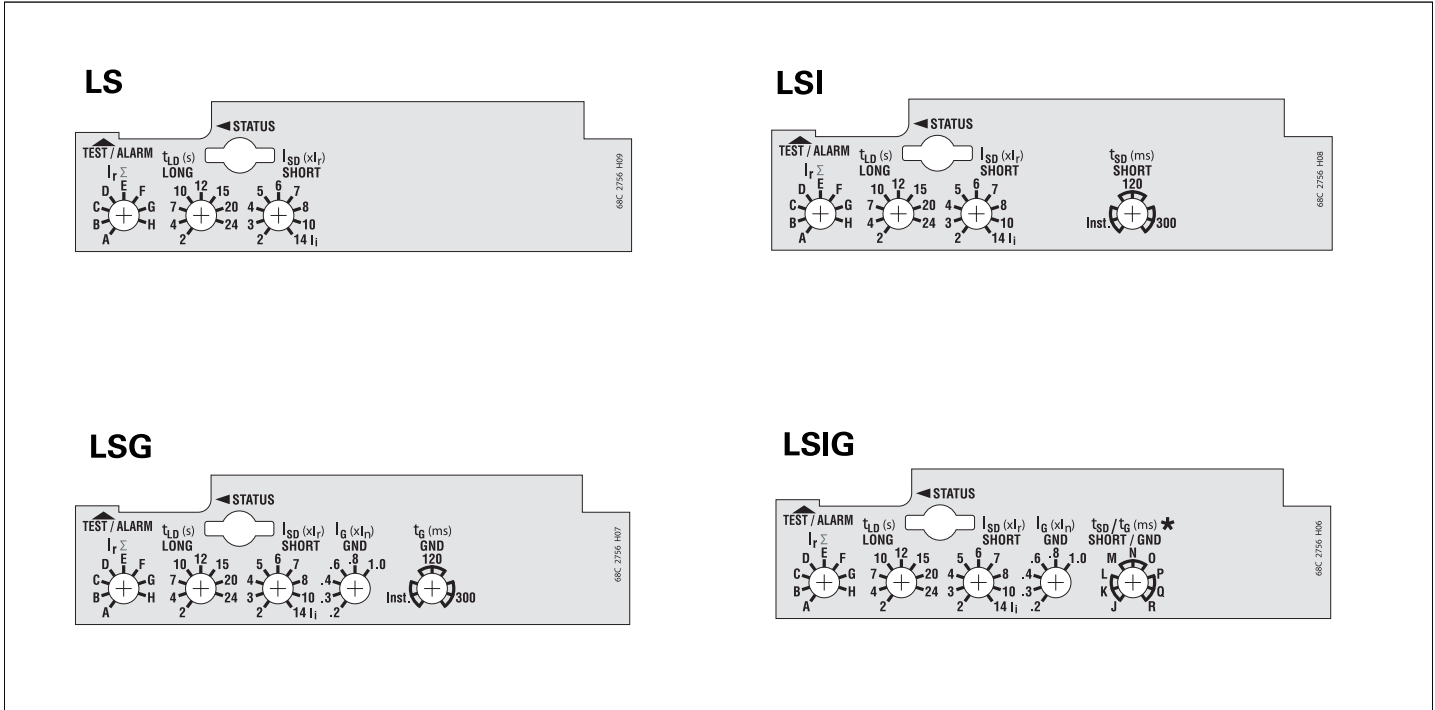


Figure 1. Digitrip 310+ Faceplates

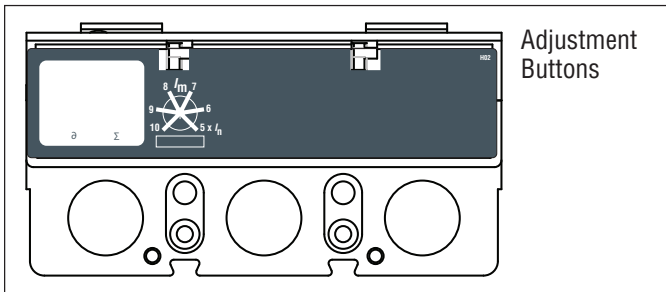


Figure 2. JG Thermal/Magnetic Faceplate

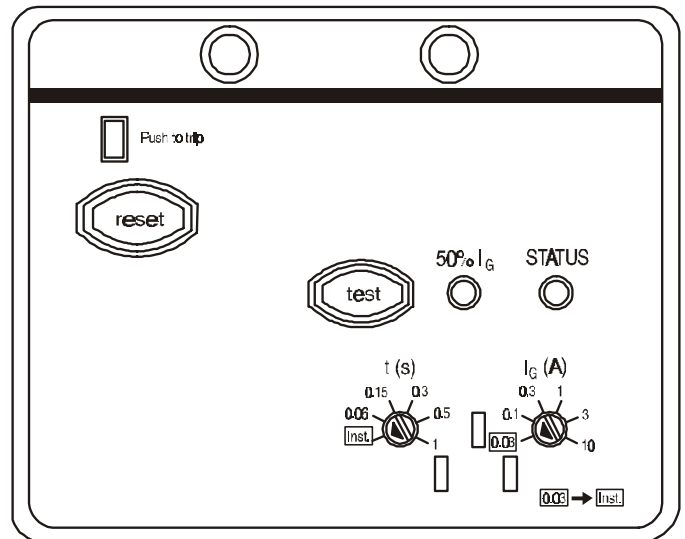


Figure 3. JG Earth Leakage Module Faceplate

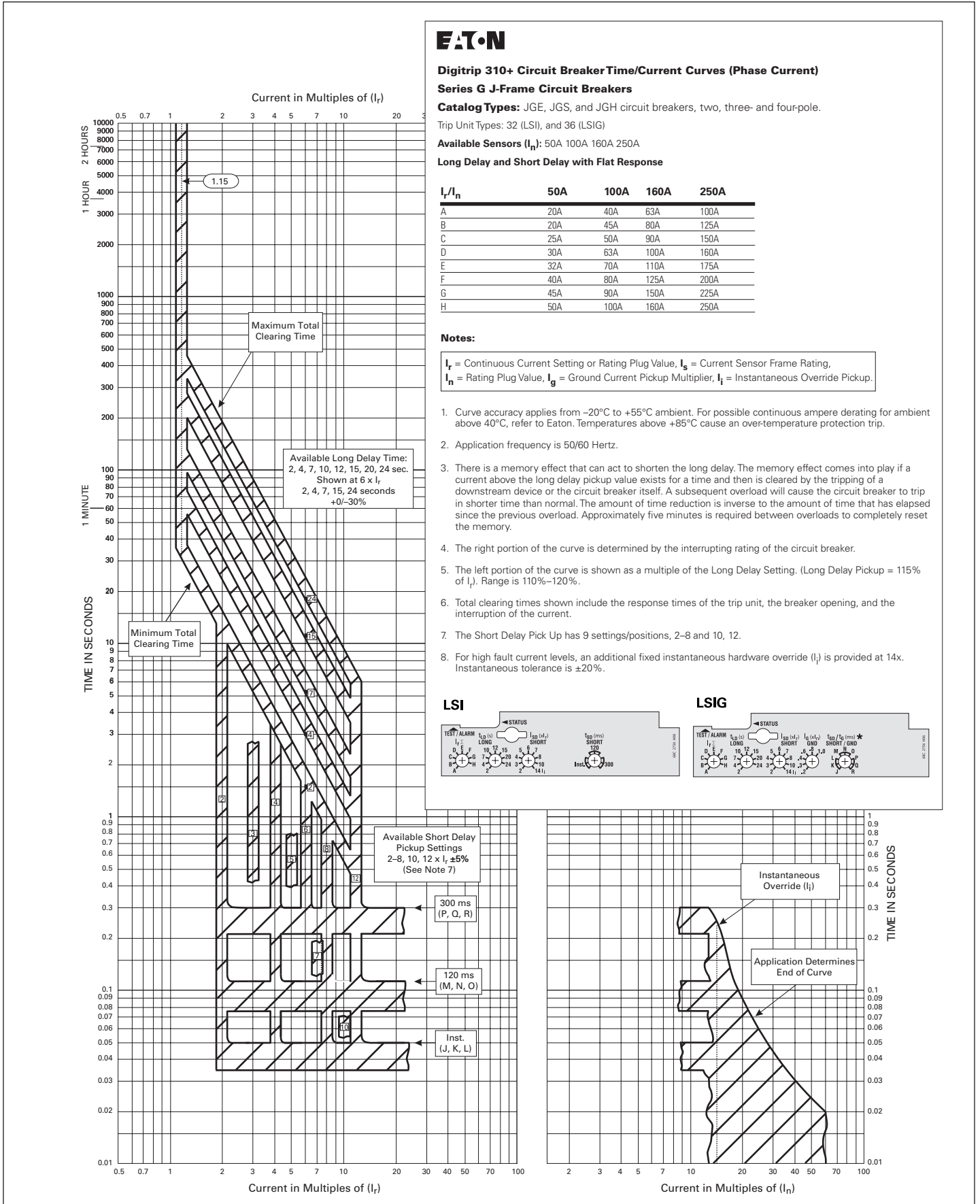
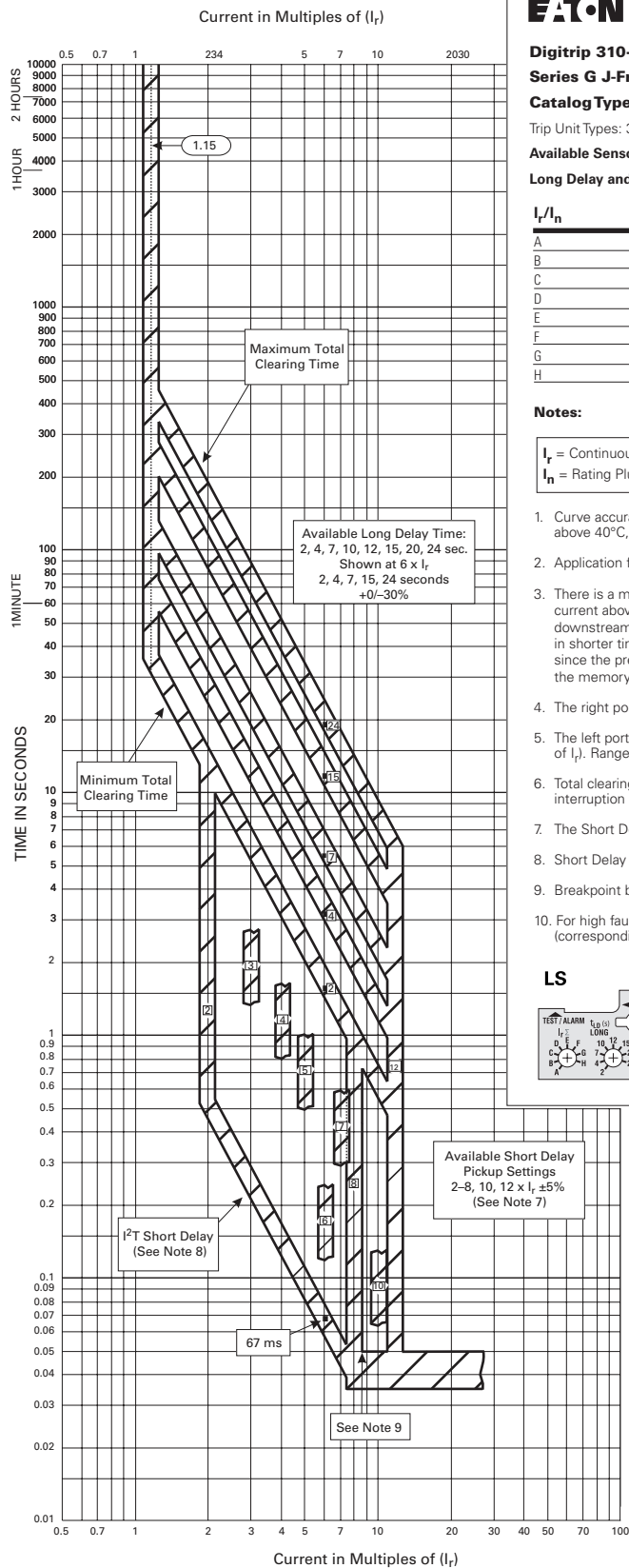


Figure 4. Digitrip 310+ Long Delay Response and Short Delay with Flat Response Curve (LSI, LSIG)—Curve Number TC01201001E, March 2012



**Digitrip 310+ Circuit Breaker Time/Current Curves (Phase Current)**  
**Series G J-Frame Circuit Breakers**

**Catalog Types:** JGE, JGS, and JGH circuit breakers, two- three- and four-pole.

**Trip Unit Types:** 33 (LS) and 35 (LSG)

**Available Sensors (I<sub>r</sub>):** 50A 100A 160A 250A

**Long Delay and Short Delay with I<sup>2</sup>T Response**

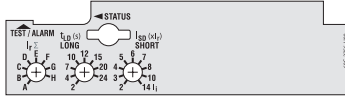
I <sub>r</sub> /I <sub>n</sub>	50A	100A	160A	250A
A	20A	40A	63A	100A
B	20A	45A	80A	125A
C	25A	50A	90A	150A
D	30A	63A	100A	160A
E	32A	70A	110A	175A
F	40A	80A	125A	200A
G	45A	90A	150A	225A
H	50A	100A	160A	250A

**Notes:**

I<sub>r</sub> = Continuous Current Setting or Rating Plug Value, I<sub>s</sub> = Current Sensor Frame Rating,  
 I<sub>n</sub> = Rating Plug Value, I<sub>g</sub> = Ground Current Pickup Multiplier, I<sub>i</sub> = Instantaneous Override Pickup.

1. Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambient above 40°C, refer to Eaton. Temperatures above +85°C cause an over-temperature protection trip.
2. Application frequency is 50/60 Hertz.
3. There is a memory effect that can act to shorten the long delay. The memory effect comes into play if a current above the long 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 shorter time than normal. The amount of time reduction is inverse to the amount of time that has elapsed since the previous overload. Approximately five minutes is required between overloads to completely reset the memory.
4. The right portion of the curve is determined by the interrupting rating of the circuit breaker.
5. The left portion of the curve is shown as a multiple of the Long Delay Setting. (Long Delay Pickup = 115% of I<sub>r</sub>). Range is 110%–120%.
6. Total clearing times shown include the response times of the trip unit, the breaker opening, and the interruption of the current.
7. The Short Delay Pick Up has 9 settings/positions, 2–8 and 10, 12.
8. Short Delay I<sup>2</sup>T band has a tolerance of ±15%.
9. Breakpoint back to FLAT response occurs at 8x I<sub>r</sub> for upper line of the I<sup>2</sup>T curve.
10. For high fault current levels, an additional fixed instantaneous hardware override (I<sub>i</sub>) is provided (corresponding to SDPU position 9) at 14x (I<sub>r</sub>). Instantaneous tolerance is ±20%.

**LS**



**LSG**

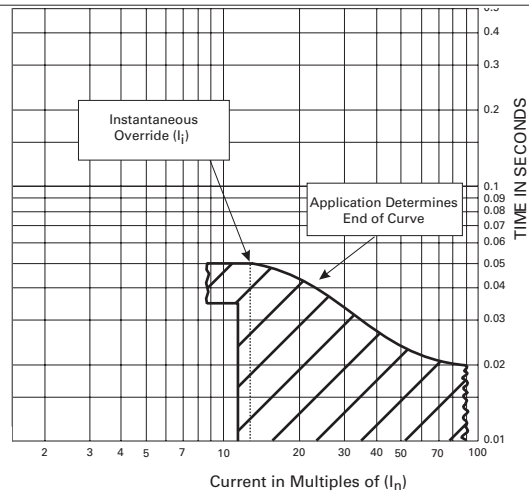
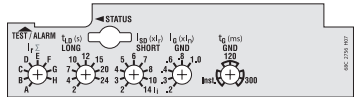


Figure 5. Digitrip 310+ Long Delay Response and Short Delay with I<sup>2</sup>T Response Curve (LS, LSG) – Curve Number TC01201002E, March 2012

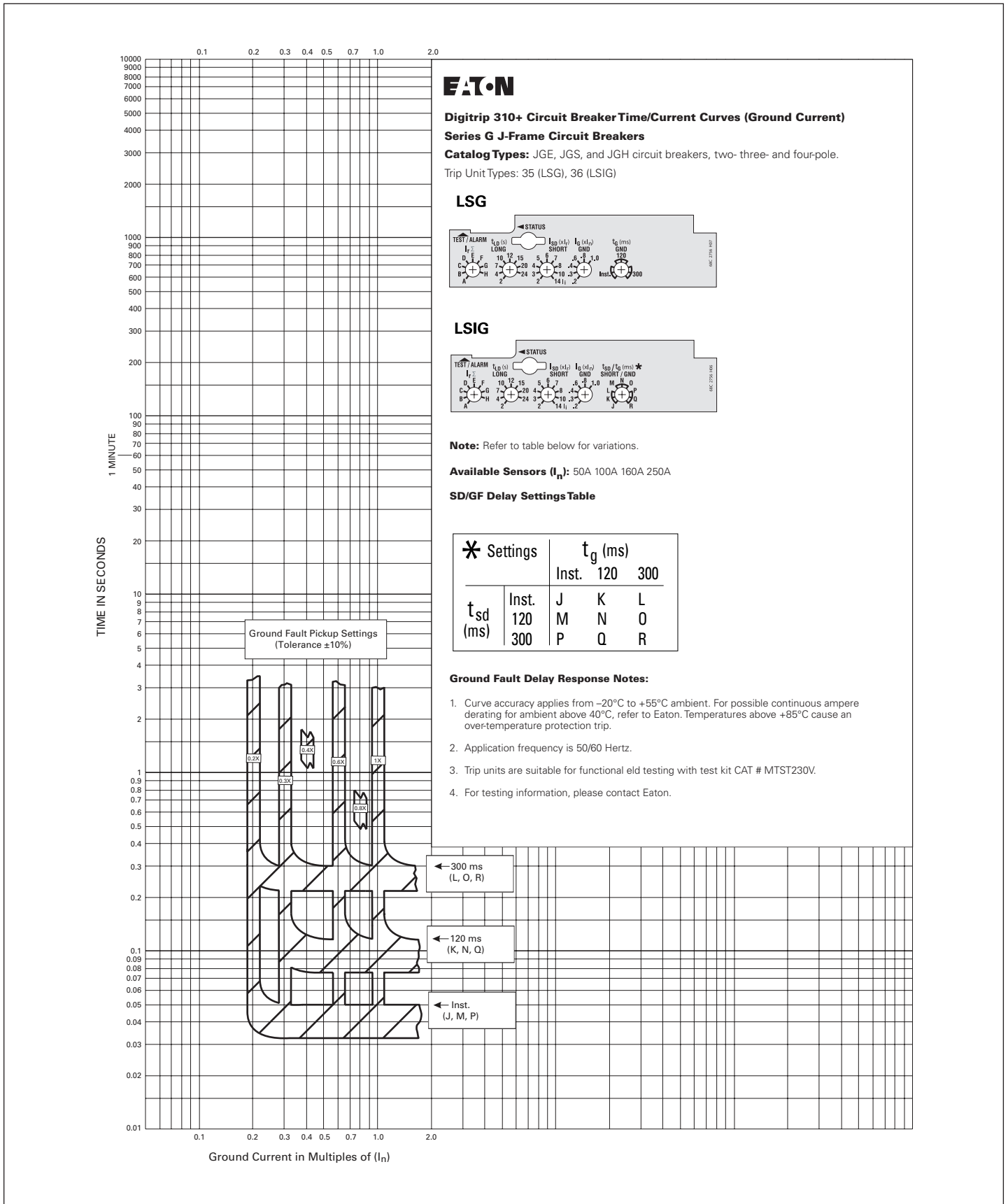


Figure 6. Ground Fault Delay Response Curve (LSG, LSI)—Curve Number TC01203004E, March 2012

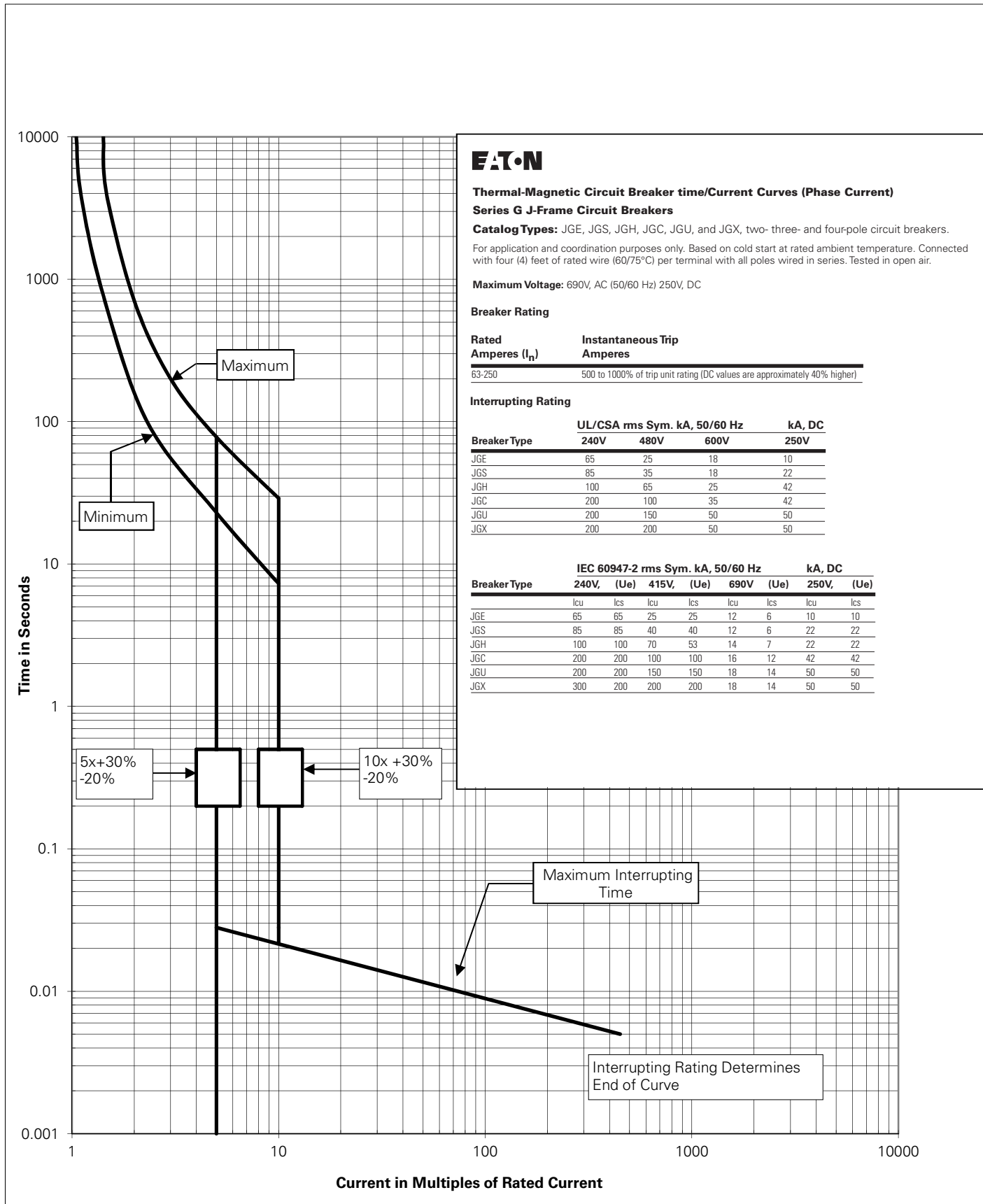


Figure 7. Thermal/Magnetic JGE, JGS, JGH, JGC, JGU, and JGX 2, 3, and 4 pole circuit breakers



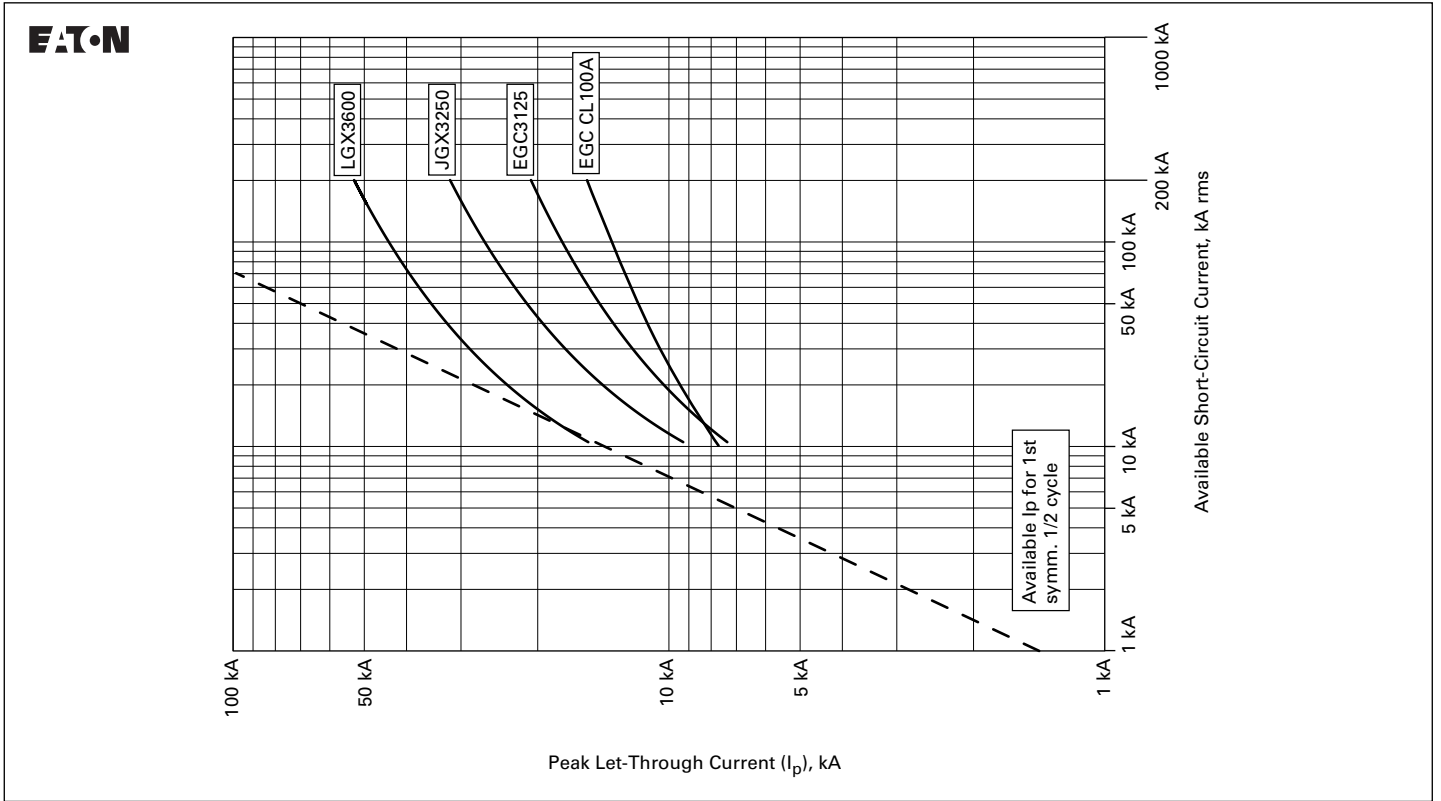


Figure 8. Peak Let-Through Current Series G Types LGX, JGX, EGC, and EGC CL (with Current Limiter), Molded-Case Circuit Breakers—240V—Curve Number TC01200001E-A, April 2012

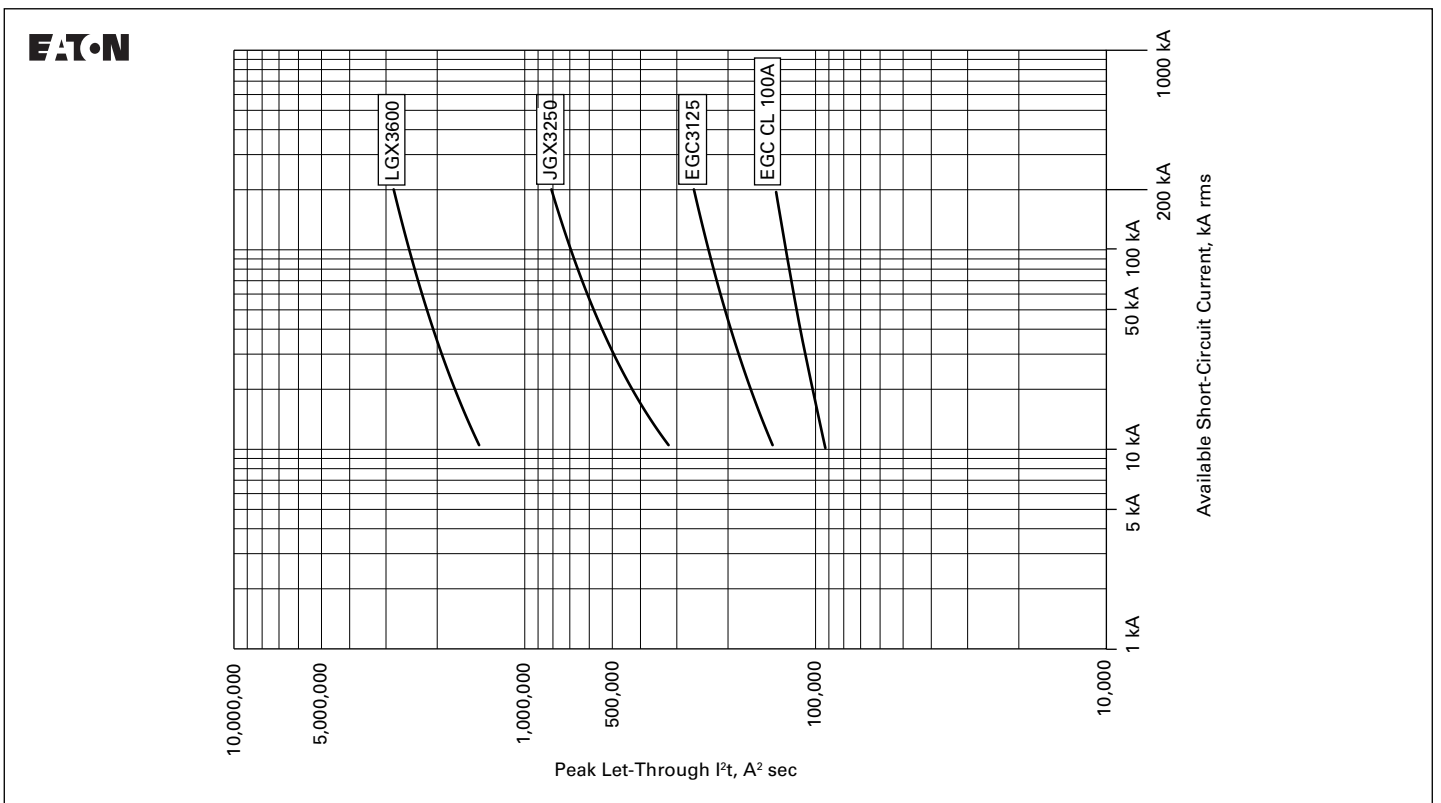


Figure 9. Peak Let-Through  $I^2t$  Series G Types LGX, JGX, EGC, and EGC CL (with Current Limiter), Molded-Case Circuit Breakers—240V—Curve Number TC01200001E-A, April 2012

Notes: All values are typical.

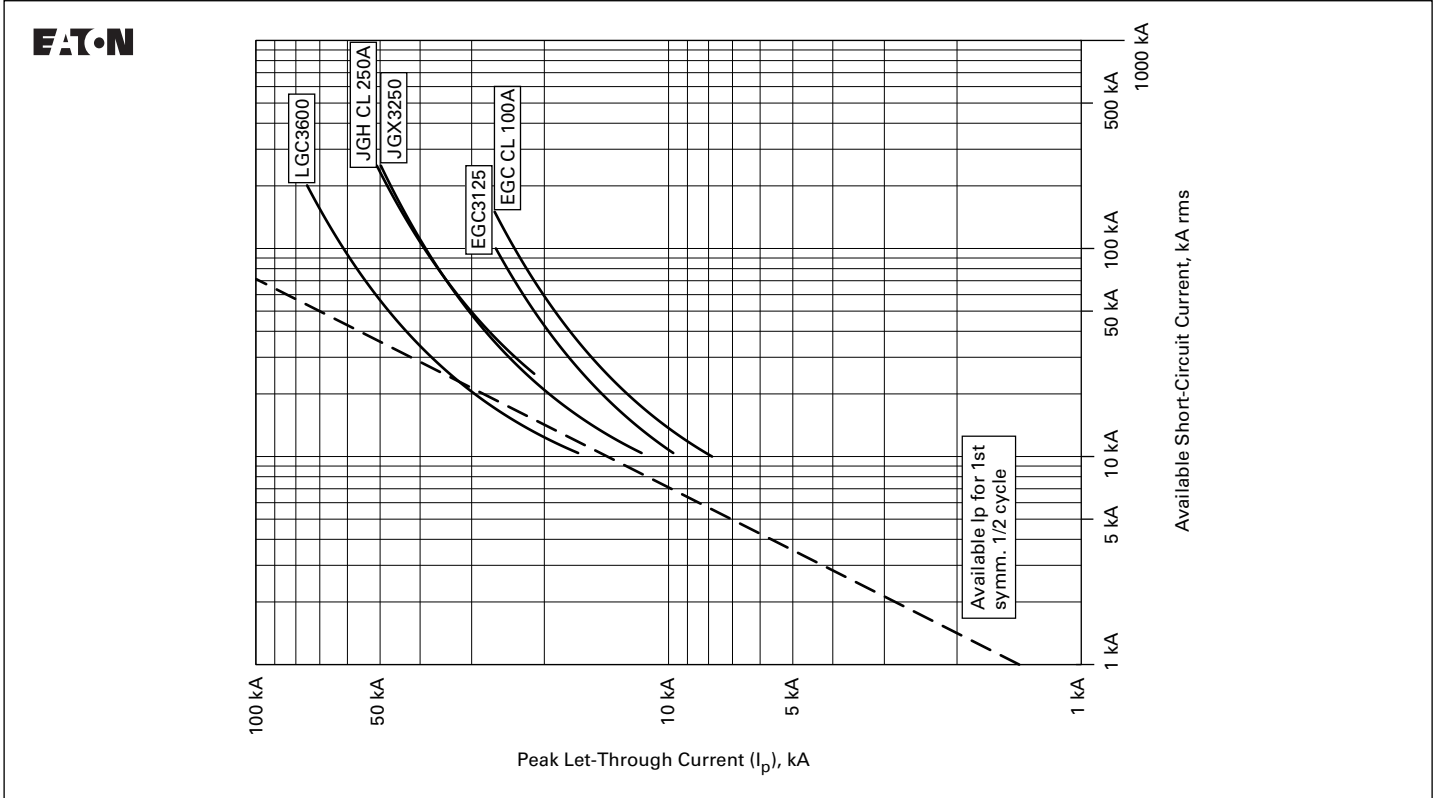


Figure 10. Peak Let-Through Current Series G Types LG, JG CL, JG, EG, and EG CL (with Current Limiter), Molded-Case Circuit Breakers—480V—Curve Number TC01200001E-B, April 2012

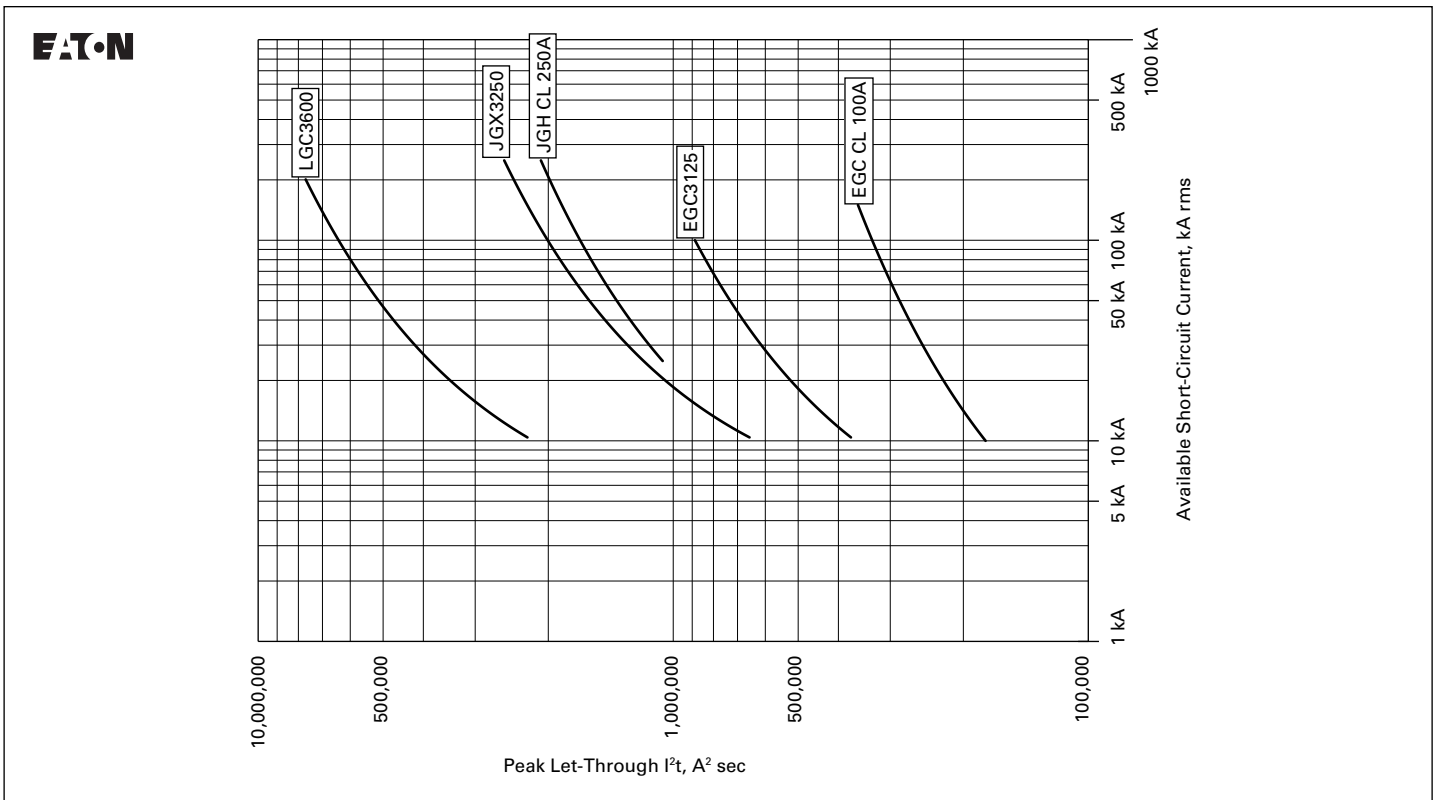


Figure 11. Peak Let-Through  $I^2t$  Series G Types LG, JG, JG CL, EG, and EG CL (with Current Limiter), Molded-Case Circuit Breakers—480V—Curve Number TC01200001E-B, April 2012

Notes: All values are typical.

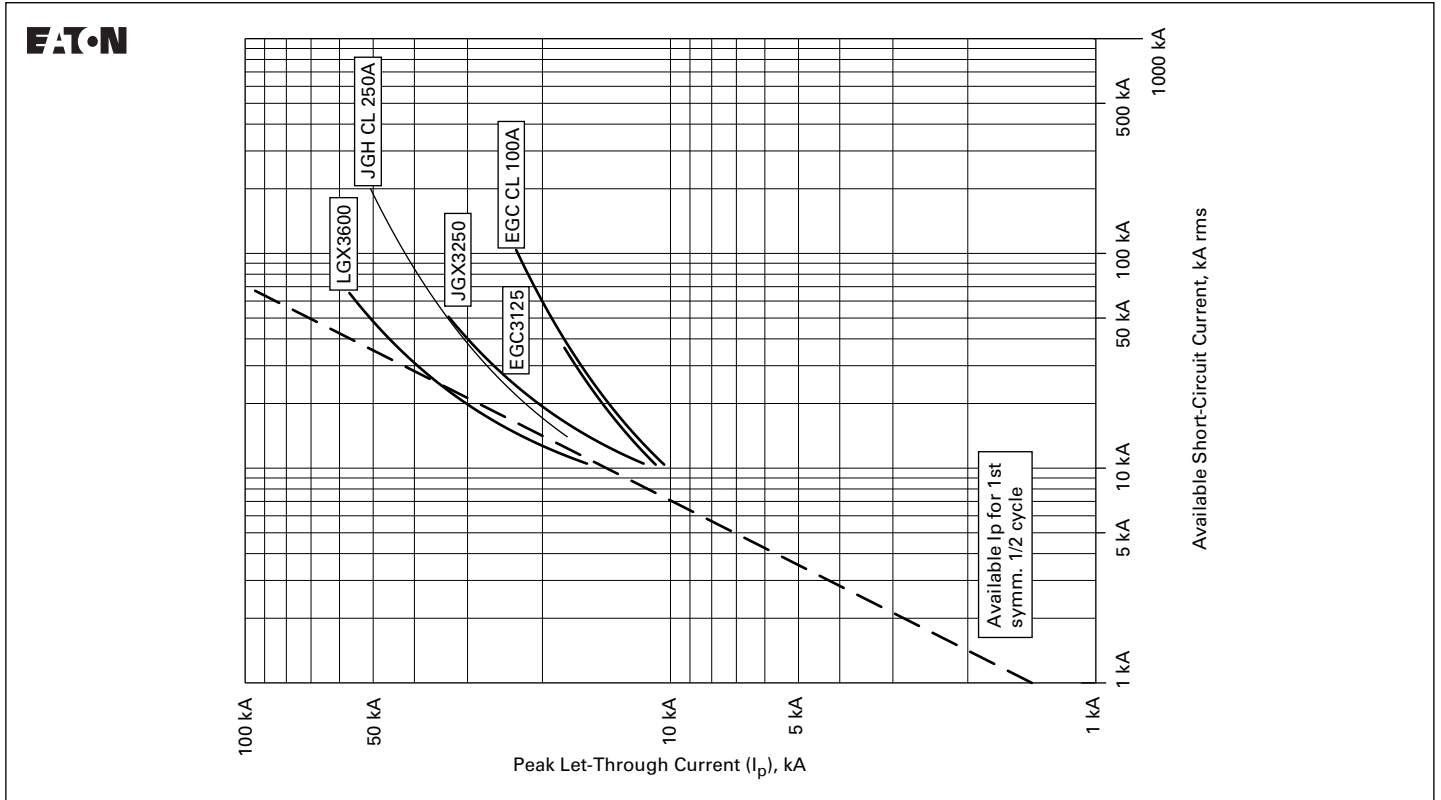


Figure 12. Peak Let-Through Current Series G Types LG, JG CL, JG, EG, and EG CL (with Current Limiter), Molded-Case Circuit Breakers—600V—Curve Number TC01200001E-C, April 2012

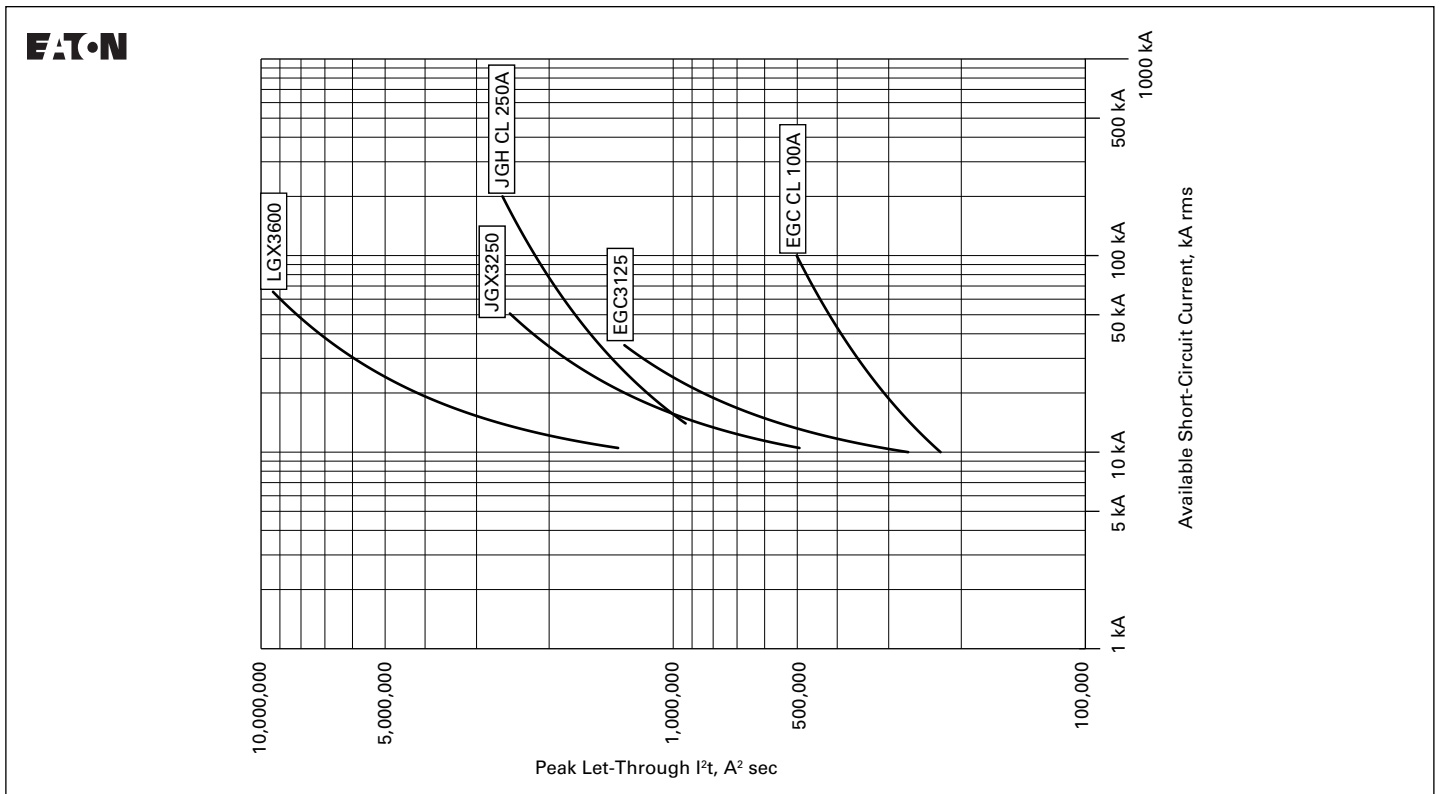


Figure 13. Peak Let-Through  $I^2t$  Series G Types LG, JG, JG CL, EG, and EG CL (with Current Limiter), Molded-Case Circuit Breakers—600V—Curve Number TC01200001E-C, April 2012

Notes: All values are typical.

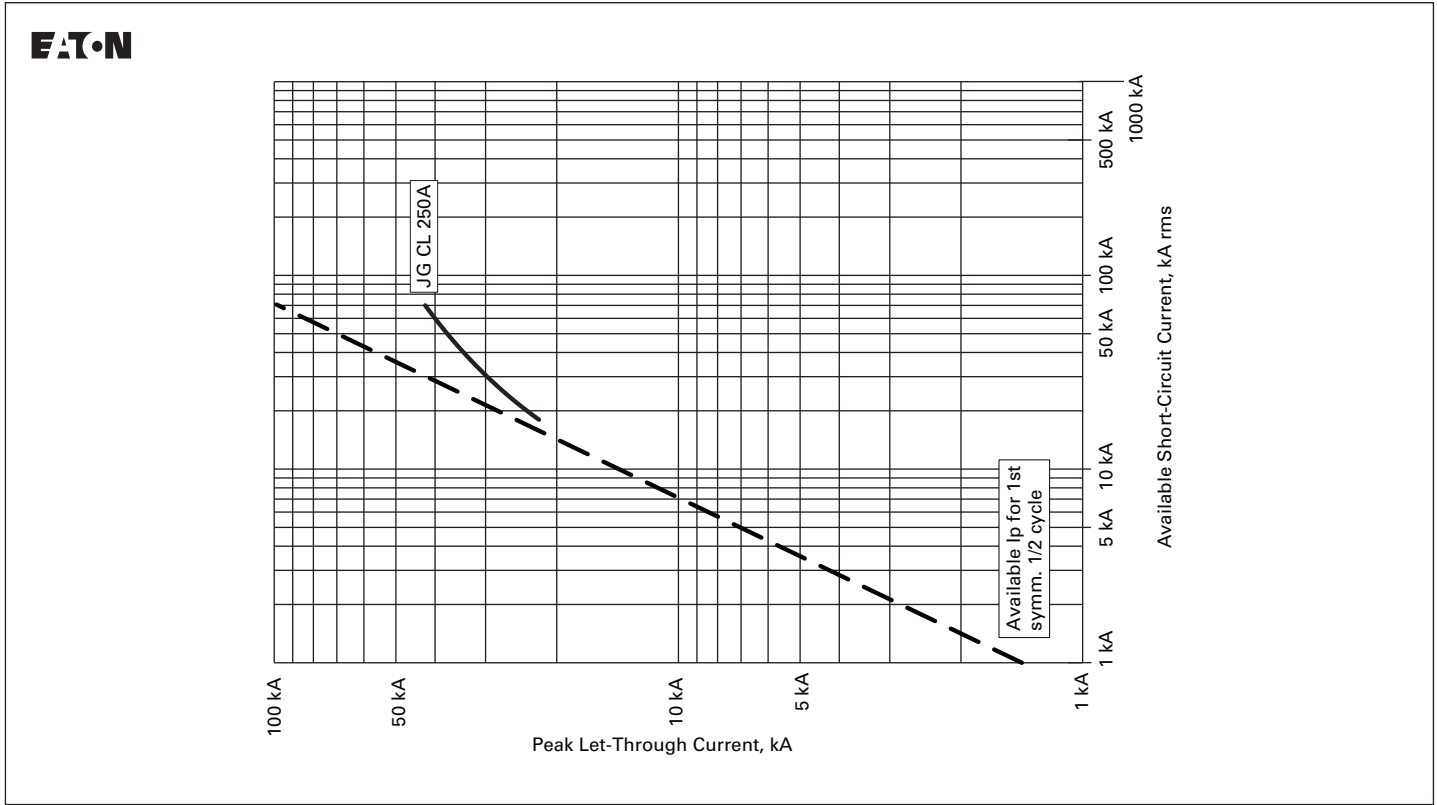


Figure 14. Series G Types JG CL Molded-Case Circuit Breakers—690V

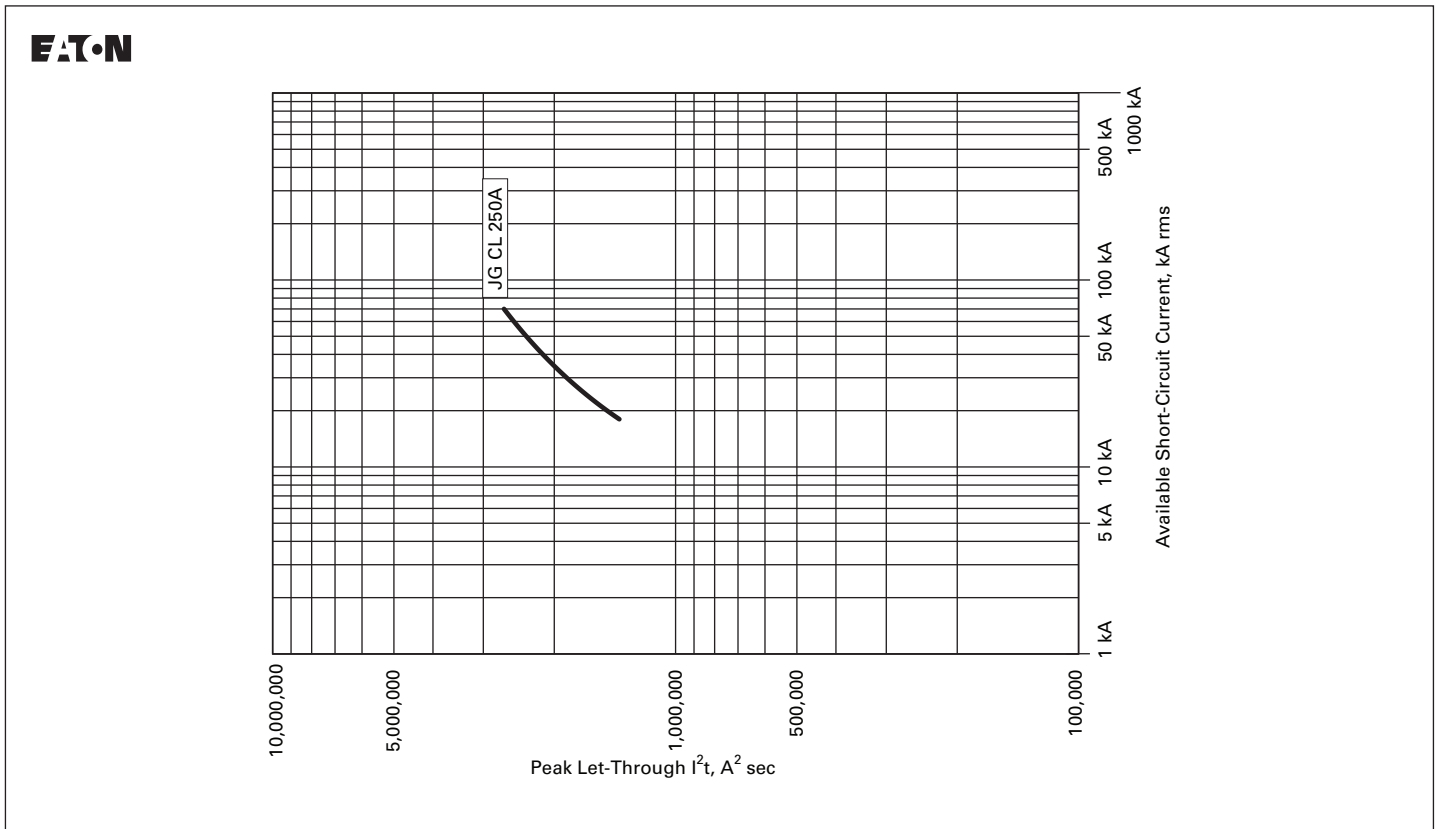


Figure 15. Series G Types JG CL Molded-Case Circuit Breakers—690V

Notes: All values are typical.

Figure 26. 240V Peak Let-Through (I<sub>p</sub>) and Clearing (I<sup>2</sup>t) Values for Series G High-Performance Breakers

Frame/Max. Amperes (UL)	Maximum Available Fault Current											
	35 kA		42 kA		65 kA		100 kA		150 kA		200 kA	
	I <sub>p</sub> (kA)	I <sup>2</sup> T (A <sup>2</sup> sec)	I <sub>p</sub> (kA)	I <sup>2</sup> T (A <sup>2</sup> sec)	I <sub>p</sub> (kA)	I <sup>2</sup> T (A <sup>2</sup> sec)	I <sub>p</sub> (kA)	I <sup>2</sup> T (A <sup>2</sup> sec)	I <sub>p</sub> (kA)	I <sup>2</sup> T (A <sup>2</sup> sec)	I <sub>p</sub> (kA)	I <sup>2</sup> T (A <sup>2</sup> sec)
JGC/250A	18	510,000	20	560,000	24	610,000	27	700,000	N/A	N/A	N/A	N/A
JGU/250A	18	510,000	20	560,000	24	610,000	27	700,000	29	750,000	N/A	N/A
JGX/250A	18	510,000	20	560,000	24	610,000	27	700,000	29	750,000	32	800,000

Figure 27. 480V Peak Let-Through (I<sub>p</sub>) and Clearing (I<sup>2</sup>t) Values for Series G High-Performance Breakers

Frame/Max. Amperes (UL)	Maximum Available Fault Current											
	35 kA		50 kA		65 kA		100 kA		150 kA		200 kA	
	I <sub>p</sub> (kA)	I <sup>2</sup> T (A <sup>2</sup> sec)	I <sub>p</sub> (kA)	I <sup>2</sup> T (A <sup>2</sup> sec)	I <sub>p</sub> (kA)	I <sup>2</sup> T (A <sup>2</sup> sec)	I <sub>p</sub> (kA)	I <sup>2</sup> T (A <sup>2</sup> sec)	I <sub>p</sub> (kA)	I <sup>2</sup> T (A <sup>2</sup> sec)	I <sub>p</sub> (kA)	I <sup>2</sup> T (A <sup>2</sup> sec)
JGC/250A	24	1,300,000	28	1,500,000	32	1,700,000	36	1,800,000	N/A	N/A	N/A	N/A
JGU/250A	24	1,300,000	28	1,500,000	32	1,700,000	36	1,800,000	40	2,100,000	N/A	N/A
JGX/250A	24	1,300,000	28	1,500,000	32	1,700,000	36	1,800,000	40	2,100,000	44	2,300,000
JGH CL/250A	26	1,300,000	31	1,400,000	34	1,500,000	40	1,700,000	45	1,900,000	48	2,000,000

Figure 28. 600V Peak Let-Through (I<sub>p</sub>) and Clearing (I<sup>2</sup>t) Values for Series G High-Performance Breakers

Frame/Max. Amperes (UL)	Maximum Available Fault Current					
	35 kA		50 kA		65 kA	
	I <sub>p</sub> (kA)	I <sup>2</sup> T (A <sup>2</sup> sec)	I <sub>p</sub> (kA)	I <sup>2</sup> T (A <sup>2</sup> sec)	I <sub>p</sub> (kA)	I <sup>2</sup> T (A <sup>2</sup> sec)
JGC/250A	25	1,900,000	N/A	N/A	N/A	N/A
JGU/250A	25	1,900,000	30	2,300,000	N/A	N/A
JGX/250A	25	1,900,000	30	2,300,000	N/A	N/A
JGH CL/250A	29	1,600,000	34	1,800,000	37	1,900,000

Figure 29. 690V Peak Let-Through (I<sub>p</sub>) and Clearing (I<sup>2</sup>t) Values for Series G High-Performance Breakers

Frame/Max. Amperes (IEC)	Maximum Available Fault Current					
	18 kA		50 kA		70 kA	
	I <sub>p</sub> (kA)	I <sup>2</sup> T (A <sup>2</sup> sec)	I <sub>p</sub> (kA)	I <sup>2</sup> T (A <sup>2</sup> sec)	I <sub>p</sub> (kA)	I <sup>2</sup> T (A <sup>2</sup> sec)
JGH CL/250A	23	1,600,000	38	2,500,000	43	3,200,000

Notes: All values are typical.

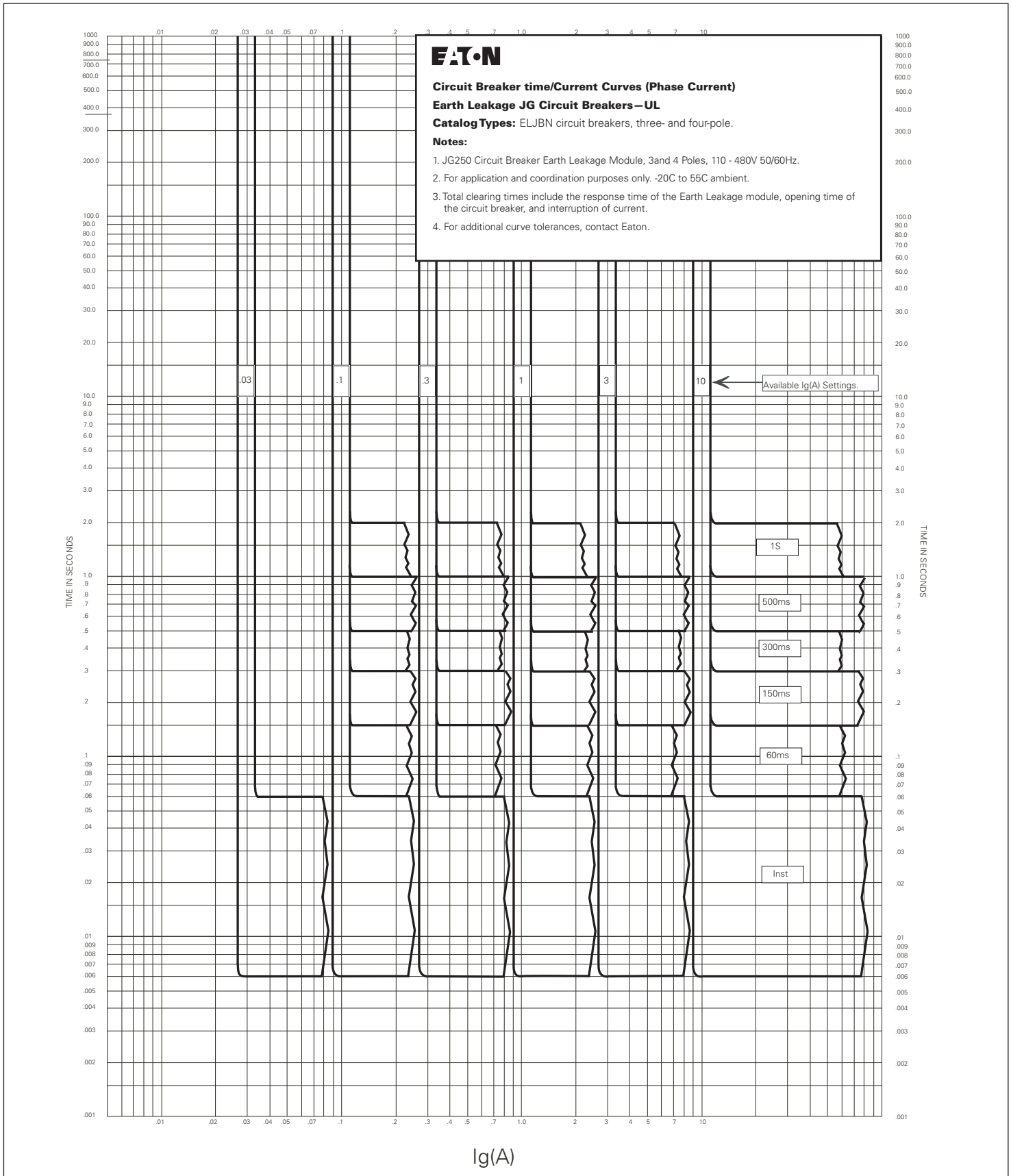


Figure 16. UL JG Circuit Breaker Earth Leakage Module, Three- and Four-Pole, 110-480V - Curve Number TC01204004E, March 2003

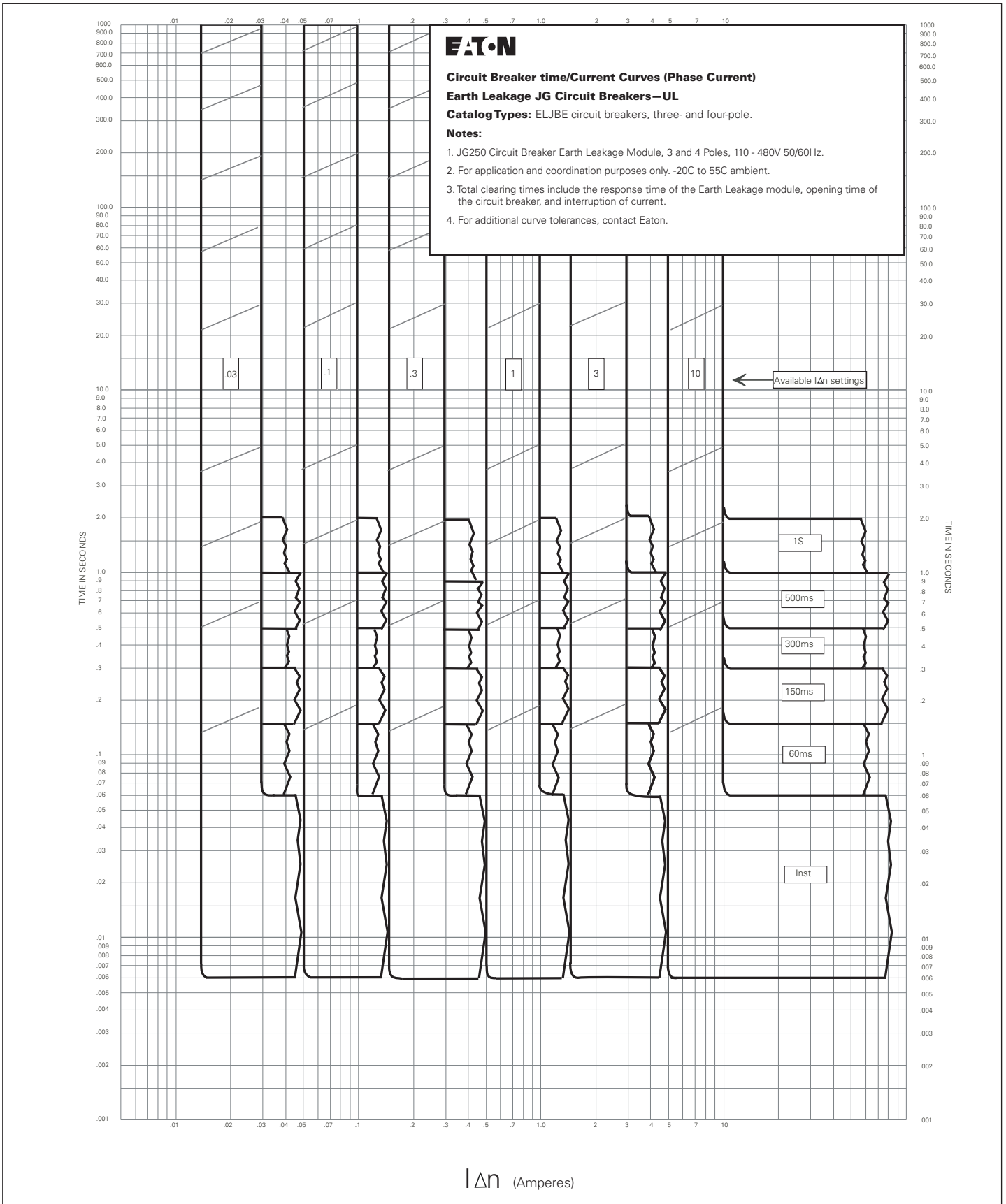


Figure 17. IEC JG Circuit Breaker Earth Leakage Module, Three- and Four-Pole, 110-480V - Curve Number TC01205001E, March 2003

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