CURRENT-VIEWING RESISTORS

TYPE ISM

Current-viewing-resistors Series ISM allow precise measurement of peak value and waveform of fast rise time current pulses. They excel by high bandwidth, low rise time and high accuracy of resistance value. Below their upper frequency limit (-3 dB), the current-viewing-resistors ISM behave like pure dc resistors with frequency-independent resistance value. Because of their double coaxial design current-viewing-resistors ISM are not susceptible to noise and electromagnetic interference.

Maximum RMS current is determined by dissipation, max. peak-current by the impulse-load integral $\int i^2(t)dt$. Upon loading with the max. impulse-load integral the resistor requires a recovery time during which it can cool down to ambient temperature. Since the stored thermal energy is almost exclusively dissipated by conduction through the current leads, the recovery time can not be specified in general. It must be determined, considering the heat conduction properties of the current leads of a particular application.

ISM CURRENT-VIEWING RESISTORS

Type	Current rating peak / rms		Nominal resistance	Power	Impulse-load integral	Rise-time	Band-width 1)	Size	Diameter/ Length	Weight
ISM 3P/200	3 kA	8 A	200 mΩ*	13 W	1300 A²s	7 ns	50 MHz	A1	35/430 mm	1.0 kg
ISM 3P/100	3 kA	10 A	100 mΩ	10 W	1300 A^2s	1.8 ns	200 MHz	A1	35/487 mm	1.3 kg
ISM 5P/50	5 kA	10 A	50 mΩ	5 W	1300 A^2s	1.8 ns	200 MHz	A	50/236 mm	1.5 kg
ISM 5P/20	5 kA	20 A	20 mΩ	8 W	8000 A^2s	1.8 ns	200 MHz	A	50/236 mm	1.5 kg
ISM 5P/10	5 kA	30 A	10 mΩ	9 W	20000 A^2s	1.8 ns	200 MHz	A	50/203 mm	1.4 kg
ISM 5P/5	5 kA	40 A	5 mΩ	8 W	80000 A^2s	7 ns	50 MHz	A	50/203 mm	1.4 kg
ISM 50/10	20 kA	50 A	10 mΩ	25 W	50000 A^2s	1.8 ns	200 MHz	B	65/296 mm	2.5 kg
ISM 50/5	20 kA	60 A	5 mΩ	18 W	50000 A^2s	1.8 ns	200 MHz	B	65/204 mm	2.1 kg
ISM 50/2	20 kA	70 A	2 mΩ	10 W	50000 A^2s	1.8 ns	200 MHz	B	65/149 mm	1.7 kg
ISM 100	40 kA	120 A	1.0 mΩ	14.4 W	50000 A^2s	1.8 ns	200 MHz	B	65/128 mm	1.5 kg
ISM 200	40 kA	220 A	0.25 mΩ	12.0 W	$2*10^5$ A^2s	7.0 ns	50 MHz	B	65/118 mm	1.5 kg
ISM 250	100 kA	250 A	1.0 mΩ	62.5 W	$5.6*10^5A^2s$	1.8 ns	200 MHz	D	200/160 mm	9.0 kg
ISM 300	100 kA	300 A	1.0 mΩ	90.0 W	$1.3*10^7A^2s$	175 ns	2.0 MHz	C	130/417 mm	8.5 kg
ISM 350	100 kA	360 A	0.5 mΩ	64.8 W	$5.6*10^5A^2s$	1.8 ns	200 MHz	D	200/160 mm	9.0 kg
ISM 500	100 kA	500 A	0.25 mΩ	62.5 W	$2.2*10^6A^2s$	7.0 ns	50 MHz	D	200/160 mm	9.0 kg
ISM 800	100 kA	800 A	0.10 mΩ	64.0 W	$1.4*10^7A^2s$	44 ns	8.0 MHz	D	200/160 mm	9.0 kg
ISM 1000	100 kA	1000 A	0.10 mΩ	100 W	$3.6*10^7A^2s$	110 ns	3.0 MHz	D	200/160 mm	9.0 kg
ISM 1200	100 kA	1200 A	0.05 mΩ	72 W	$9.0*10^6A^2s$	28 ns	12.5 MHz	D	200/160 mm	9.0 kg
ISM 1600	100 kA	1600 A	25 µΩ	64 W	$5.6*10^7A^2s$	175 ns	2.0 MHz	D	200/160 mm	9.0 kg

Nominal resistance at 20°C, Resistance tolerance: ±1%, T_k = ± 50 ppm/K, * T_k = ± 100 ppm/K
Impulse-load integral $\int i^2dt$ is based on temperature rise of 100K. Voltage pickup: BNC
1) theoretical value

ISM CURRENT-VIEWING RESISTORS, Special Types

Type	Peak current	Nominal resistance	Impulse-load integral	Rise-time	Band-width 1)	Size/ Cooling	Diameter/ Length	Weight
ISM 3P/ 2	5 kA	2.0 mΩ	$9.0 * 10^6$ A^2s	175 ns	2.0 MHz	-	100/688 mm	15 kg
ISM 20P/ 1	20 kA	1.0 mΩ	$9.0 * 10^6$ A^2s	28 ns	12.5 MHz	D	200/363 mm	16.5 kg
ISM 50P/ 0.4	50 kA	0.4 mΩ	$5.6 * 10^7$ A^2s	175 ns	2.0 MHz	D	200/363 mm	18 kg
ISM 10P/ 0.2	10 kA	0.2 mΩ	$1.0 * 10^8$ A^2s	700 ns	500 kHz	-	160/267 mm	17 kg
ISM 30P/0.02	30 kA	20 µΩ	$9.0 * 10^8$ A^2s	3.5 µs	100 kHz	-	214/203 mm	28 kg
ISM 60P/0.01	60 kA	10 µΩ	$3.6 * 10^9$ A^2s	11.3 µs	31 kHz	-	214/203 mm	30 kg
ISM 60P/0.02	60 kA	20 µΩ	$3.6 * 10^9$ A^2s	17.5 µs	20 kHz	- / ≈	180/250 mm	35 kg
ISM 120P/0.005	120 kA	5 µΩ	$1.5 * 10^{10}$ A^2s	11.3 µs	31 kHz	-	280/370 mm	70 kg
ISM 150P/0.020	150 kA	20 µΩ	$3.6 * 10^9$ A^2s	4.4 µs	80 kHz	-	280/370 mm	70 kg
ISM 200P/0.005	200 kA	5 µΩ	$1.1 * 10^{10}$ A^2s	25 µs	14 kHz	- / ≈	272/385 mm	78 kg
ISM 250P/0.010	250 kA	10 µΩ	$3.0 * 10^9$ A^2s	2.8 µs	125 kHz	- / ≈	280/381 mm	70 kg
ISM 300P/0.005	300 kA	5 µΩ	$2.0 * 10^{10}$ A^2s	45 µs	7.8 kHz	- / ≈	272/381 mm	75 kg
ISM 800P/0.001	800 kA	1 µΩ	$3.2 * 10^{10}$ A^2s	45 µs	7.8 kHz	- / ≈	338/475 mm	145 kg

≈ Water cooling

Special Types of ISM Current-viewing resistors are designed for special applications
and are manufactured on special request.
Please specify all technical parameters as mentioned in the table above when inquiring special types.
For high rms loading and lower bandwidth requirements current-viewing resistors of type WSM are recommended.

1) theoretical value