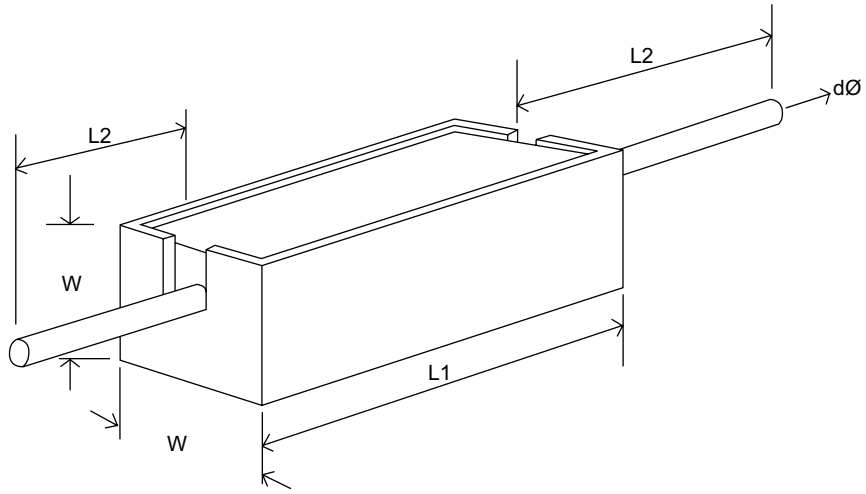
MQA - Cement Metal Oxide Film Resistors (Axial)

Quality • Reliability
Cost-Down via Technology



DIMENSIONS

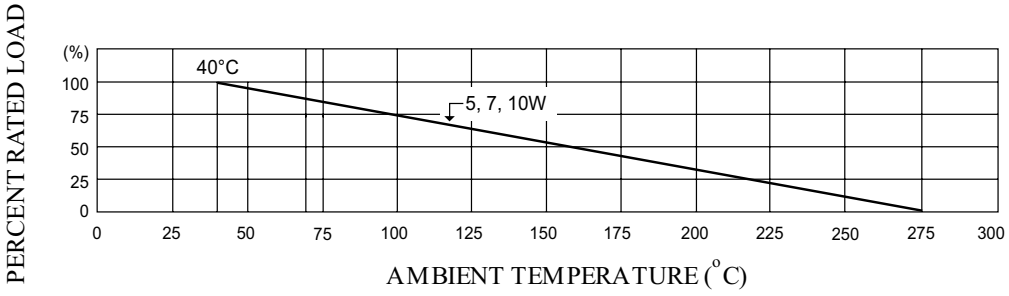
Type	d ø (mm) Min.	L1 (mm) Value	L2 (mm) Min.	W (mm) Max.
MQA5	0.8	23.0	30.0	10.4
MQA7	0.8	36.0	30.0	10.4
MQA10	0.8	48.5	30.0	10.4

GENERAL SPECIFICATIONS

Type	Power Rating	Max. Working Voltage	Max. Overload Voltage	Resistance Range		Resistance Tolerance
				MIN.	MAX.	
MQA5	5W	500V	1000V	220R	150K	±5%
MQA7	7W	600V	1200V	1K1	150K	±5%
MQA10	10W	600V	1200V	1K1	180K	±5%

Special value available on request.

POWER DERATING CURVE



MQA - Cement Metal Oxide Film Resistors (Axial)

TECHNICAL SPECIFICATIONS

Characteristics	Limits
Dielectric Withstanding Voltage, VAC or DC	1000
Temperature Coefficient, PPM / °C	±350
Operating Temperature Range, °C	-55~+275
Insulation Resistance, MΩ	10^4

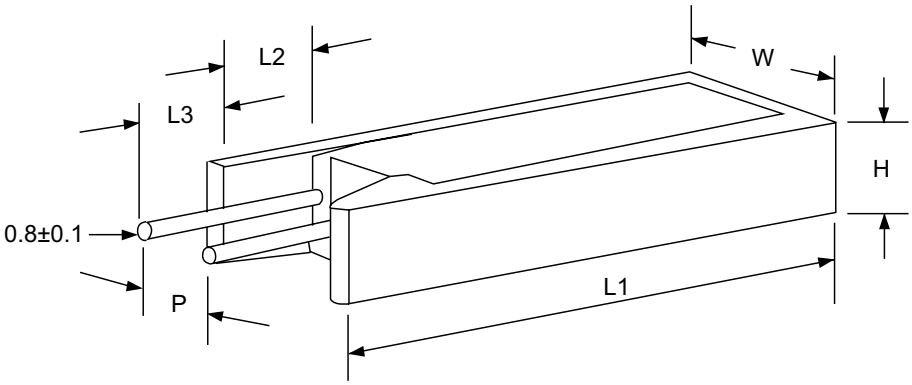
PERFORMANCE SPECIFICATIONS

Tests Characteristics	Test Conditions	Limits
Short Time Over Load	**IEC 60115-1 4.13** 5 seconds 2.5x rated voltage (not over max. overload voltage)	±2%
Load Life In Humidity	**IEC 60115-1 4.24** 56 days at 40°C and 93% relative humidity	±5%
Load Life 1,000 hours	**IEC 60115-1 4.25.1** Rated load 1.5 hours ON, 0.5 hours OFF, at 70°C	±5%
Resistance To Soldering Heat	**IEC 60115-1 4.18** 10 seconds at 260°C solder bath temperature	±2%
Solderability	**MIL-STD-202 Method 208** Solder area covered after 230±5°C/5±0.5 seconds w/flux applied	90%
Vibration	**IEC 60115 4.22** Six hours in each parallel and axial direction w/ a simple harmonic motion having an amplitude of 0.75mm and 10 to 500 Hz.	±1%
Thermal Endurance	**IEC 60115-1 4.25.3** 1000 hours at 155°C without load	±1%
Thermal Shock	**IEC 60115-1 4.19** -55°C 30minutes, +155°C 30minutes, 5 cycles	±2%

ORDERING INFORMATION

Type	Tolerance	Resistance Value	Packaging	Special Request (Optional)
MQA10	J (5%)	100K	B (BULK)	LV (Low value)

MQM- Cement Metal Oxide Film Resistors (M-Type Radial)



DIMENSIONS

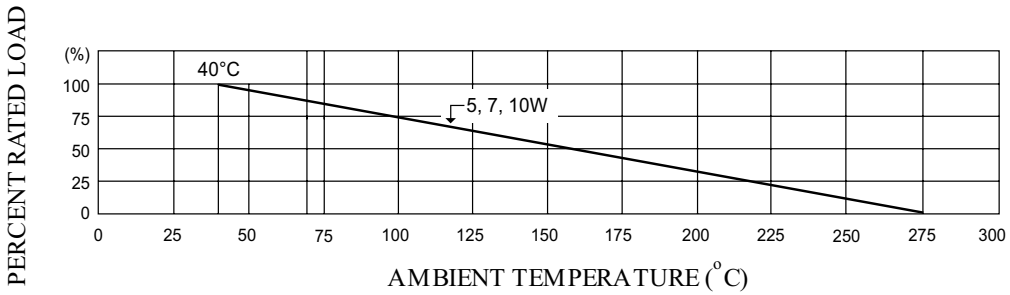
Type	H (mm)	L1 (mm)	L2 (mm)	W (mm)	P (mm)	W (mm)
	Max.	Max.	±0.3	Min.	±0.3	Max.
MQM5	9.5	26.5	3.0	6.0	4.6	13.0
MQM7	9.5	40.0	3.0	6.0	4.6	13.0
MQM10	9.5	52.0	3.0	6.0	4.6	13.0

GENERAL SPECIFICATIONS

Type	Power Rating	Max. Working Voltage	Max. Overload Voltage	Resistance Range		Resistance Tolerance
				MIN.	MAX.	
MQM5	5W	500V	1000V	220R	150K	±5%
MQM7	7W	600V	1200V	1K1	150K	±5%
MQM10	10W	600V	1200V	1K1	180K	±5%

Special value available on request.

POWER DERATING CURVE



MQM- Cement Metal Oxide Film Resistors (M-Type Radial)

TECHNICAL SPECIFICATIONS

Characteristics	Limits
Dielectric Withstanding Voltage, VAC or DC	1000
Temperature Coefficient, PPM / °C	±300
Operating Temperature Range, °C	-55~+275
Insulation Resistance, MΩ	10^4

PERFORMANCE SPECIFICATIONS

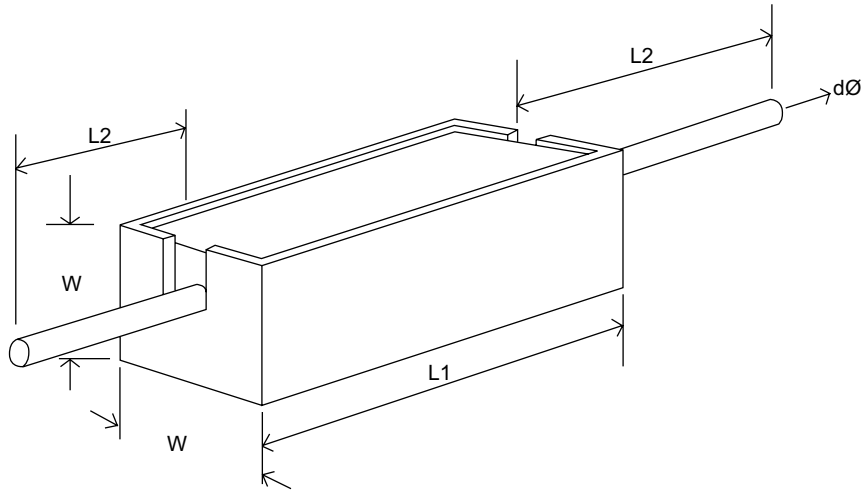
Tests Characteristics	Test Conditions	Limits
Short Time Over Load	**IEC 60115-1 4.13** 5 seconds 2.5x rated voltage (not over max. overload voltage)	±2%
Load Life In Humidity	**IEC 60115-1 4.24** 56 days at 40°C and 93% relative humidity	±5%
Load Life 1,000 hours	**IEC 60115-1 4.25.1** Rated load 1.5 hours ON, 0.5 hours OFF, at 70°C	±5%
Resistance To Soldering Heat	**IEC 60115-1 4.18** 10 seconds at 260°C solder bath temperature	±2%
Solderability	**MIL-STD-202 Method 208** Solder area covered after 230±5°C/5±0.5 seconds w/ flux applied	90%
Vibration	**IEC 60115 4.22** Six hours in each parallel and axial direction w/ a simple harmonic motion having an amplitude of 0.75mm and 10 to 500 Hz.	±1%
Thermal Endurance	**IEC 60115-1 4.25.3** 1000 hours at 155°C without load	±1%
Thermal Shock	**IEC 60115-1 4.19** -55°C 30minutes, +155°C 30minutes, 5 cycles	±2%

ORDERING INFORMATION

Type	Tolerance	Resistance Value	Packaging	Special Request (Optional)
MQM5	J (5%)	100K	B (BULK)	LV (Low value)

WQA - Cement Wirewound Resistor Axial

Quality • Reliability
Cost-Down via Technology



DIMENSIONS

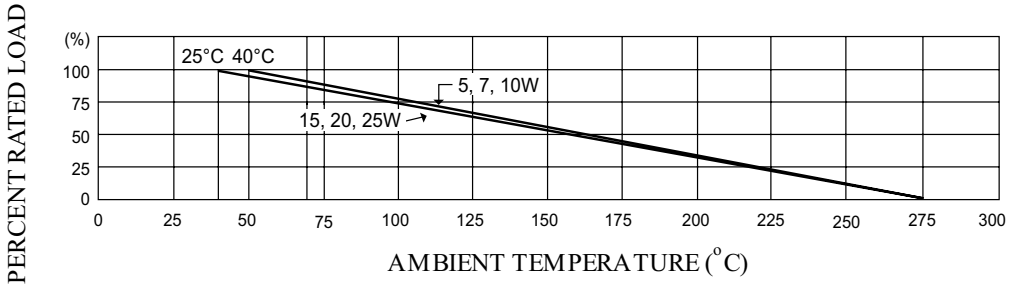
Type	d ø (mm) Min.	L1 (mm) Max.	L2 (mm) Min.	W (mm) Max.
WQA5	0.8	23.0	30.0	10.4
WQA7	0.8	36.0	30.0	10.4
WQA10	0.8	48.5	30.0	10.4
WQA15	1.0	49.2	30.0	13.5
WQA20	1.0	61.0	30.0	14.5
WQA25	1.0	61.0	30.0	14.5

GENERAL SPECIFICATIONS

Type	Power Rating	Max. Working Voltage	Max. Overload Voltage	Resistance Range		Resistance Tolerance
				MIN.	MAX.	
WQA5	5W	350V	700V	0.1R	200R	±5%
WQA7	7W	500V	1000V	0.1R	1K	±5%
WQA10	10W	750V	1500V	0.1R	1K	±5%
WQA15	15W	1000V	2000V	1R	5K	±5%
WQA20	20W	1000V	2000V	1R	5K	±5%
WQA25	25W	1000V	2000V	1R	5K	±5%

Special value available on request.

POWER DERATING CURVE



WQA - Cement Wirewound Resistor Axial

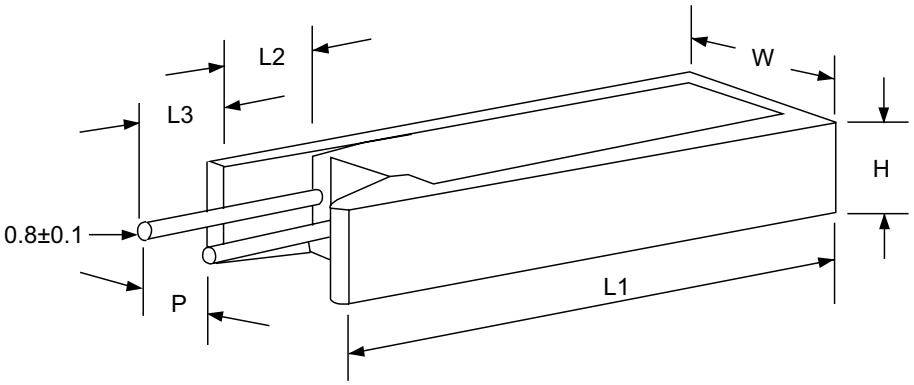
TECHNICAL SPECIFICATIONS

Characteristics	Limits
Dielectric Withstanding Voltage, VAC or DC	1000
Temperature Coefficient, PPM / °C	±250
Operating Temperature Range, °C	-55~+275
Insulation Resistance, MΩ	10^4

PERFORMANCE SPECIFICATIONS

Test Characteristics	Test Conditions	Limits
Short Time Over Load	**IEC 60115-1 4.13** 5 seconds 2.5x rated voltage (not over max. overload voltage)	±2%
Load Life In Humidity	**IEC 60115-1 4.24** 56 days at 40°C and 93% relative humidity	±5%
Load Life 1,000 hours	**IEC 60115-1 4.25.1** Rated load 1.5 hours ON, 0.5 hours OFF, at 70°C	±5%
Resistance To Soldering Heat	**IEC 60115-1 4.18** 10 seconds at 260°C solder bath temperature	±2%
Solderability	**MIL-STD-202 Method 208** Solder area covered after 230±5°C/5±0.5 seconds w/flux applied	90%
Vibration	**IEC 60115 4.22** Six hours in each parallel and axial direction w/ a simple harmonic motion having an amplitude of 0.75mm and 10 to 500 Hz.	±1%
Thermal Endurance	**IEC 60115-1 4.25.3** 1000 hours at 155°C without load	±1%
Thermal Shock	**IEC 60115-1 4.19** -55°C 30minutes, +155°C 30minutes, 5 cycles	±2%

WQM - Cement Wirewound Resistor M-Type Radial



DIMENSIONS

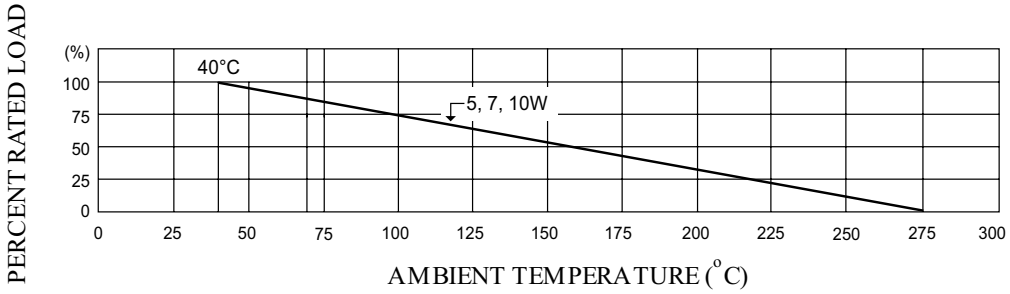
Type	H (mm)	L1 (mm)	L2 (mm)	L3 (mm)	W (mm)	P (mm)	W (mm)
	Max.	Max.	±0.3	Min.	Min.	±0.3	Max.
WQM5	9.5	26.5	3.0	6.0	6.0	4.6	13.0
WQM7	9.5	40.0	3.0	6.0	6.0	4.6	13.0
WQM10	9.5	52.0	3.0	6.0	6.0	4.6	13.0

GENERAL SPECIFICATIONS

Type	Power Rating	Max. Working Voltage	Max. Overload Voltage	Resistance Range		Resistance Tolerance
				MIN.	MAX.	
WQM5	5W	350V	700V	0.1R	200R	±5%
WQM7	7W	500V	1000V	0.1R	1K	±5%
WQM10	10W	750V	1500V	0.1R	1K	±5%

Special value available on request.

POWER DERATING CURVE



WQM - Cement Wirewound Resistor M-Type Radial

TECHNICAL SPECIFICATIONS

Characteristics	Limits
Dielectric Withstanding Voltage, VAC or DC	1000
Temperature Coefficient, PPM / °C	±250
Operating Temperature Range, °C	-55~+275
Insulation Resistance, MΩ	10^4

PERFORMANCE SPECIFICATIONS

Test Characteristics	Test Conditions	Limits
Short Time Over Load	**IEC 60115-1 4.13** 5 seconds 2.5x rated voltage (not over max. overload voltage)	±2%
Load Life In Humidity	**IEC 60115-1 4.24** 56 days at 40°C and 93% relative humidity	±5%
Load Life 1,000 hours	**IEC 60115-1 4.25.1** Rated load 1.5 hours ON, 0.5 hours OFF, at 70°C	±5%
Resistance To Soldering Heat	**IEC 60115-1 4.18** 10 seconds at 260°C solder bath temperature	±2%
Solderability	**MIL-STD-202 Method 208** Solder area covered after 230±5°C/5±0.5 seconds w/flux applied	90% min.
Vibration	**IEC 60115 4.22** Six hours in each parallel and axial direction w/a simple harmonic motion having an amplitude of 0.75mm and 10 to 500 Hz.	±1%
Thermal Endurance	**IEC 60115-1 4.25.3** 1000 hours at 155°C without load	±1%
Thermal Shock	**IEC 60115-1 4.19** -55°C 30minutes, +155°C 30minutes, 5 cycles	±2%