

## WIRE WOUND RESISTORS CERAMIC ENCASED TYPE

### HCW SERIES POWER TYPE Ceramic Encased Wire Wound Resistors For Pulse Applications

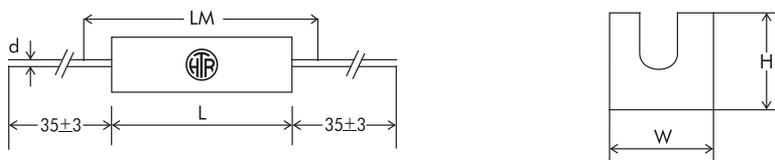
- Very high degree of insulation
- Low temperature on PCB solder joint
  - 1 W to 20 W
  - R05 to 56K
- High power to size ratio in a fireproof package compatible to UL standards.





WIRE WOUND  
RESISTORS  
CERAMIC  
ENCASED  
TYPE  
**HCW**

## PHYSICAL CONFIGURATION



TYPE	POWER RATING at 70°C	DIMENSIONS (mm)					RESISTANCE RANGE		TYPICAL WEIGHT PER PC (gms)
		∅ L ±1.5	W ±1	H ±1	LM ±1mm	d ±0.05	min	max	
CW-1	1W	15.0	7.5	6.5	35	0.8	R05	4K7	1.6
CW-2	2W	17.5	7.5	7.0	40	0.8	R05	7K5	3.2
CW-3	3W	22.0	8.0	8.0	45	0.8	R05	11K	4.4
CW-5	5W	22.0	9.5	9.5	45	0.8	R05	11K	5.5
CW-7	7W	35.0	9.5	9.5	55	0.8	R05	30K	7.5
CW-10	10W	48.0	9.5	9.5	70	0.8	R05	43K	10.0
CW-15	15W at 25°C	48.0	12.5	12.5	70	1.0	R05	43K	17.2
CW-20	20W at 25°C	63.5	12.5	12.5	85	1.0	R05	56K	22.5

◇ A bead of potting compound may be observed at the point where the termination emerges out of the ceramic case.

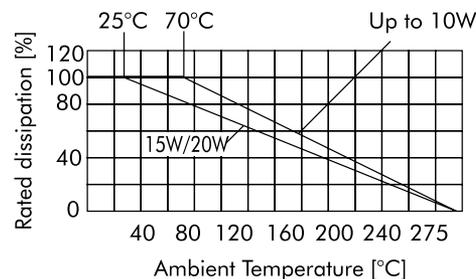
## PULSE TYPE RESISTORS

Resistors for use under pulse conditions as per IEC - 61000 - 4 - 5 available. For further information please refer to "PULSE / SURGE capability of resistors". In case a tailor-made pulse resistor is required, please refer to "Questionnaire of data required" and provide data accordingly.

## NON INDUCTIVE RESISTORS

Non inductive style available with Aryton Perry winding.

## DERATING CURVE



## ELECTRICAL CHARACTERISTICS / DATA

PARAMETER/PERFORMANCE TEST & TEST METHOD	PERFORMANCE REQUIREMENTS
<b>Power Rating</b> (Rated Ambient Temperature)	Upto 10W, full Power dissipation at 70°C and 15W / 20W full power dissipation at 25°C and linearly derated to zero at +275°C (Refer Derating curve above)
<b>Operating Temperature Range</b> (Ambient)	-55°C to +275°C with suitable derating as per derating curve.
<b>Voltage Rating / Limiting Voltage / Max Working Voltage</b>	$V = \sqrt{P \times R}$
<b>Maximum Overload Voltage</b>	Varies depending on resistance value, duration of overload and type of pulse waveform (Contact factory for details)
<b>Resistance Tolerances Available</b> JIS - C - 5202 para 5.1	±10% (K); ±5% (J); ±3% (H); ±2%(G); ±1% (F)

## ELECTRICAL AND ENVIRONMENTAL CHARACTERISTICS

PARAMETER/ PERFORMANCE TEST	TEST METHOD-DETAILS	PERFORMANCE REQUIREMENTS
<b>Short Time Overload</b>	JIS - C - 5202 Para 5.5 Upto 3W - condition A (RV x 2.5 for 5 secs) 5W and above - condition B (voltage corresponding to 10 times power for 5 secs)	$\Delta R \pm [2\% + R05]$
<b>Dielectric Withstanding Voltage / Voltage Proof</b>	JIS - C - 5202 Para 5.7 Condition F (Limiting Voltage x 2 or 500V) breakdown	$\Delta R \pm [0.1\% + R05]$ - No flashover, arcing or insulation
<b>Temperature Co-efficient of Resistance</b>	JIS - C - 5202 Para 5.2	± 30 ppm/°C or 90 ppm/°C [>10R] (depending on wire selected) ± 80 ppm/°C [<10R] ± 200 ppm/°C [<R10]
<b>Insulation Resistance</b>	JIS - C - 5202 Para 5.6 (condition F)	>1000MΩ (Min)



WIRE WOUND  
RESISTORS  
CERAMIC  
ENCASED  
TYPE

**HCW**

## ELECTRICAL AND ENVIRONMENTAL CHARACTERISTICS

PARAMETER/ PERFORMANCE TEST	TEST METHOD-DETAILS	PERFORMANCE REQUIREMENTS
<b>Pulse Overload / Intermittent Overload</b>	JIS - C - 5202 Para 5.8 (Limiting Voltage x 4) 1 sec on / 25 secs off 10,000 cycles $\pm$ 200 cycles	$\Delta R \pm [2\% + R05]$
<b>Endurance - under load with humidity</b>	JIS - C - 5202 Para 7.9 1000 hours at 40°C $\pm$ 2°C, 95% R.H with limiting voltage (1.5 hours on/0.5 hours off)	$\Delta R \pm [\leq 5\% + R05]$
<b>Load Life</b>	JIS - C - 5202 Para 7.10 1000 hours at 70°C with limiting voltage (1.5 hours on/0.5 hours off)	$\Delta R \pm [\leq 3\% + R05]$
<b>Temperature Cycling</b>	JIS - C - 5202 Para 7.4 [Room Temperature $\rightarrow$ -55°C $\rightarrow$ Room Temperature $\rightarrow$ 155°C $\rightarrow$ Room Temperature for 5 cycles]	$\Delta R \pm [2\% + R05]$
<b>Damp Heat (Steady State)</b>	JIS - C - 5202 Para 7.5	$\Delta R \pm [\leq 3\% + R05]$
<b>Solvent Resistance</b>	JIS - C - 5202 Para 6.9 Solvent A - IPA for 60 secs $\pm$ 10 secs	No effect on case filling or marking

## MECHANICAL SPECIFICATIONS

PARAMETER/ PERFORMANCE TEST	TEST METHOD-DETAILS	PERFORMANCE REQUIREMENTS
<b>Pull Test / Robustness of Terminations</b>	Direct Load for 15 secs 2 to 4.5 kgs depending on size	No effect
<b>Solderability</b>	JIS - C - 5202 Para 6.5	$\Delta R \pm [1\% + R05]$ Continuous and satisfactory. (95% Min coverage)

Note : Due to recent technological advances, the ceramic cases used may be steatite ceramic or cordierite ceramic or high alumina ceramic depending on the nature of the application. Hence the ceramic cases may be off-white or variations of brown and variations of grey; colours which are inherent to these ceramic materials.

## ORDERING INFORMATION

Series	type	Packing	Resistance Value	Tolerance
HCW	CW-7 / CW-7*	Bulk CW-7 / CW-7*	10K	K

1. For Non-Inductive type - N CW-7
2. For RoHS Version - CW-7 \*

