

● Features

- I Excellent noise prevention of engine ignition circuit system.
- II High reliability against disconnection.
- III Products meet EU-RoHS requirements.

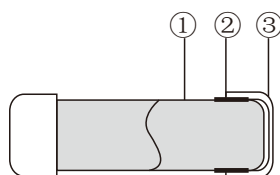
● Reference Standards

IEC 60115-1
JIS C 5201-1

● Precautions for Use

- I .Under the environment where surge like thunders etc. is apt to happen, the resistors used for open circuit, resistors connected directly to input, output or ground, and resistors used for the circuit pulse applied to, may be destructed by surge or pulse. Therefore, the resistors need to be selected after sufficient check on the supposition of the worst condition against possible surge and pulse.
- II .Please design the receiving terminal and the mounting method so that big power is not applied to the resistor when you assemble the resistor. Especially, comparatively weak power might be broken in the condition that the one side of the resistor is fixed. Please do not add the outside power when you assemble the resistor with the one side of the resistor fixed.

● Construction



①	Resistor
②	Inner electrode
③	Electrode cap

● Ordering Information

Example:

HCP	1	M	T	10R0
(1)	(2)	(3)	(4)	(5)
Series Name	Power Rating	Resistance Tolerance	Packaging	Resistance

(1)Type: HCP SERIES

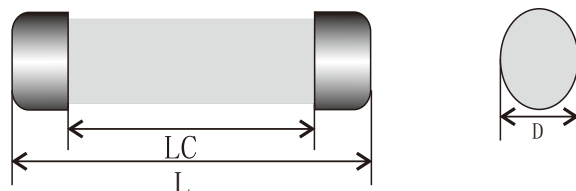
(2)Power Rating: 1/2=0.5W、1=1.0W、2N=1.5W、2NS=1.5W、3=2W

(3)Tolerance: M=±20%

(4)Packaging: B=bulk, T=Tape&Reel

(5)Resistance Value:1KR0=1KΩ、5KR0=5KΩ、15R0=15Ω

● Dimensions



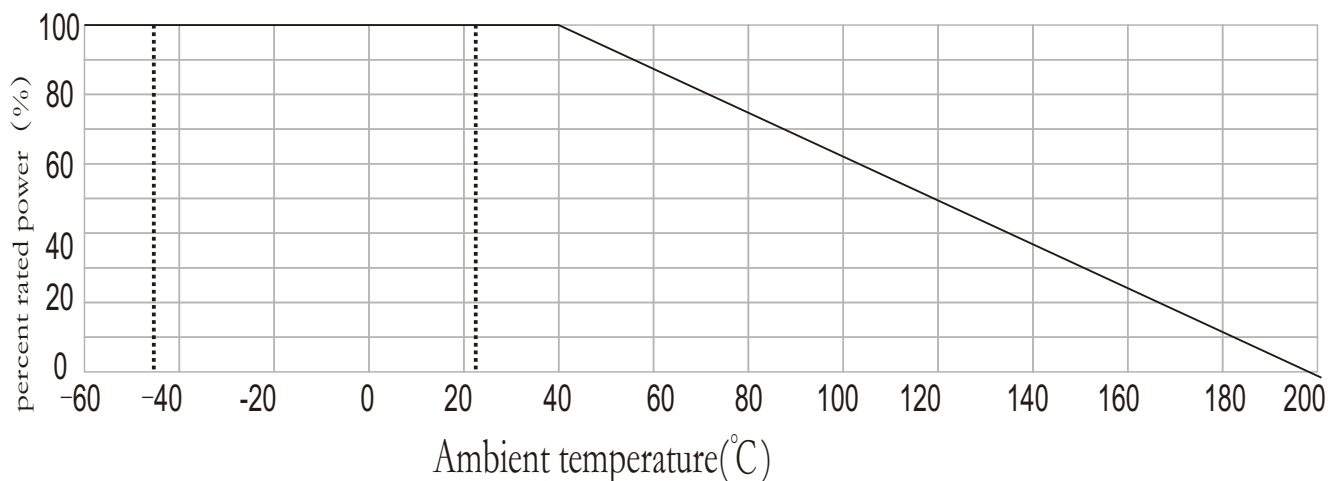
Type	power	Dimensions(mm)			Cap Plating Type
		L	Lc	D	
HCP 1/2	0.5W	10.7 ± 0.5	5.4min	3.50 ± 0.2	Fe (Ni/Cu plating)
HCP 1	1.0W	16.0 ± 0.6	9.6min	4.75 ± 0.3	
HCP 2N	1.5W	18.3 ± 0.6	11.5min	4.75 ± 0.3	
HCP 2NS	1.5W	18.3 ± 0.6	11.5min	4.75 ± 0.3	SUS304
HCP 3	2.0W	18.3 ± 0.6	10.0min	7.20 ± 0.3	Fe (Sn/Cu plating)

● Power And Resistance etc

Type	Power Rating	Nominal Resistance	Max.Working Voltage	Max.Overload Voltage	Rated Ambient Temperature	Operating Temp.Range	T.C.R. (×10 ⁻⁶ /K)	Resistance Tolerance
HCP 1/2	0.5W	1KΩ~15KΩ	86V	215V	+40°C	-40°C ~ +200°C	-1200 ± 300	M: ± 20%
HCP 1	1.0W		122V	305V				
HCP 2N	1.5W		150V	375V				
HCP 2NS	1.5W		150V	375V				
HCP 3	2.0W		173V	432V				

Rated voltage = power rating * resistance value or Max.working voltage, whichever is lower.

● Derating Curve



For resistors operated at an ambient temperature of 40°C or above, a power rating shall be derated in accordance with the above derating curve.

● Performance Reference Standards: IEC60115-1 and JI S5202-1

Test items	Performance Requirements $\Delta R \pm (\% + 0.05\Omega)$		Test Methods			
	Limit	Typical	25°C			
Resistance	Within specified tolerance	1K Ω 2K Ω 1.5K Ω 5K Ω 10K Ω 15K Ω	Resistance		Measuring Voltage	
			1K Ω 5K Ω		10V	
			10K Ω 15K Ω		30V	
T.C.R	-1500ppm/°C \leq TCR \leq -900ppm/°C	~	+25°C / -40°C and +25°C / +125°C			
Voltage coefficient	0 ~ -0.20%/V	~	Rated voltage and rated voltage x 10%			
Overload (short time)	$\leq \Delta R \pm (2\%R + 0.05\Omega)$	0.3	Rated voltage x 2.5 or max overload voltage for 5 seconds, whichever is less.			
Load life at high voltage pulse	$\leq \Delta R \pm (5\%R + 0.5\Omega)$	20~30KV	Continuous 250h high voltage pulse on test circuit (Refer to JIS D5111) HCP1/2, HCP1 : In insulation oil			
Resistor body strength	No mechanical damage	~	Type	Holding distance	Duration	Load
			HCP 1/2	5.0 \pm 0.2mm	10s	98N(10kg)
			HCP 1	9.0 \pm 0.3mm		
			HCP2N	12.3 \pm 0.3mm		
			HCP2NS			
HCP3	490N(50kg)					
Rapid change of temperature	$\leq \Delta R \pm (5\%R + 0.5\Omega)$	5	-55°C (15min)/+155°C (15min) 500 cycles			
Moisture resistance	$\leq \Delta R \pm (5\%R + 0.1\Omega)$	0.9	40°C \pm 2°C, 90%-95%RH, 1000h 1.5h ON/0.5h OFF cycles			
Load life	$\leq \Delta R \pm (5\%R + 0.1\Omega)$	0.7	40°C \pm 2°C, 1000h 1.5h ON/0.5h OFF cycles			
Low temperature exposure	$\leq \Delta R \pm (5\%R + 0.1\Omega)$	0.7	-40°C, 24h			
High temperature exposure	$\leq \Delta R \pm (5\%R + 0.5\Omega)$	2.0	+200°C, 1000h			

The resistance measurement before and after the test should be performed at a difference of $\pm 1^\circ\text{C}$ of room temp.