

METAL STRIP CURRENT SENSING RESISTORS HCS SERIES

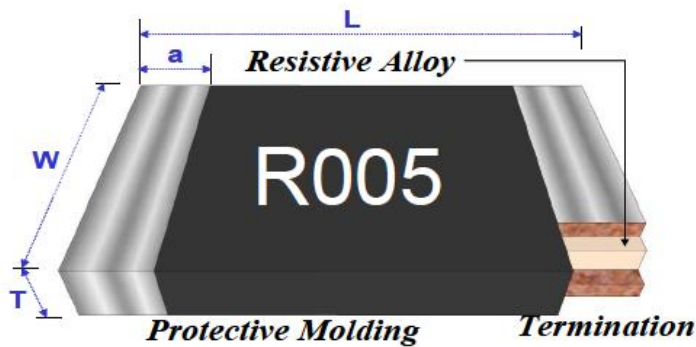
Features

- High power rating and low TCR
- Low resistance and high precision tolerance (1%)
- Inductance less than 1.0nH
- Excellent reliability and suitable cost
- Suitable for lead free soldering

Applications

- Battery pack
- SMPS, M/B, NB
- Power amplifier
- Test Equipment
- Electronic equipment

Configuration



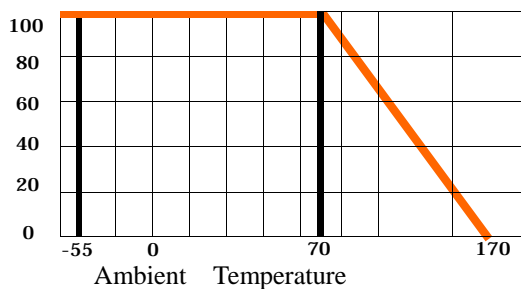
TYPE	1.Protective Coating	2.Resistive Element	3.Terminal	4.Outer Terminal
HCS	Resin	Alloy Metal	Copper	Tin Plating

Dimensions

Type	L	W	T	a
HCS0805 5m~20m	2.00+/-0.15	1.20+/-0.15	0.45+/-0.15	0.325+/-0.20
HCS1206 5m~25m	3.20+/-0.20	1.65+/-0.20	0.60+/-0.20	0.60+/-0.20
HCS2512 3m~50m	6.20+/-0.20	3.20+/-0.20	0.60+/-0.20	0.80+/-0.20
HCS5931 2m,3m,5m	15.0+/-0.20	7.80+/-0.20	0.70+/-0.20	3.50+/-0.20

(unit:mm)

Power Derating Curve



Maximum dissipation in percentage of rated power as a function of the ambient temperature for 0805,1206,,2512, 5931

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Rating

Rating Type	Power Rating at 70°C (W)	Max Working Voltage	Max Overload Voltage	Resistance Tolerance (%)	Temperature coefficient of Resistance (ppm/°C)	Resistance Range (mΩ)
HCS0805	1/4W	71mV	158mV	±1%,±5%	±100	5,10,20
	1/2W(H.P.)	100mV	224mV			
HCS1206	1/2W	112mV	250mV	±1%,±2%,±5%	±70	3,4,5,6,9,10,15,20,25
		112mV	250mV		±50	5,10,15,15.5,18,20,25,30
	1W(H.P.)	158mV	354mV		±70	3,4,5,6,9,10,15,20,25
		173mV	387mV		±50	5,10,15,15.5,18,20,25,30
HCS2512	1W	158mV	354mV	±1%,±2%,±5%	±100	3
		158mV	354mV		±70	1,2,2.5,3,4,5,10,15,20,25
		469mV	1049mV		±50	3,4,5,6,7,8,9,10,12,15,20,22,25,30,33,35,40,50,60,70,75,80,100,200,220
	2W(H.P.)	224mV	500mV		±100	3
		224mV	500mV		±70	1,2,2.5,3,4,5,10,15,20,25
		663mV	1483mV		±50	3,4,5,6,7,8,9,10,12,15,20,22,25,30,33,35,40,50,60,70,75,80,100,200,220
HCS5931	5W	158mV	354mV	±1%,±5%	±100	2,3
					±70	5

Note: Power testing with total solder-pad and trace size of 300mm²

$E = \sqrt{P \cdot R}$, E : Working Voltage(V) , P : Rated Power (W) , R : Resistance Value(Ω)

Part Numbering

HCS	2512	F	K	H	-	R001
Type	Size	Tolerance	Packing	Watt		R Value
	0805		K(plastic)-4Kpcs	---		
	1206	F : ±1%	(for 2512)	Omit-Standard		4 digits
	2512	G : ±2%	P(paper)-4Kpcs	H-High Power		R001=1mΩ
	5931	J : ±5%	(for0805, 1206)			R020=20mΩ
			Q(plastic)-3Kpcs (for 5931)			

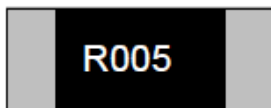
GENERAL SPECIFICATION

Resistance Marking

4 Digits Marking to identify the resistance

Size 1206, 2512, 5931

Size 0805



R001 = 1 mΩ

R020 = 20mΩ



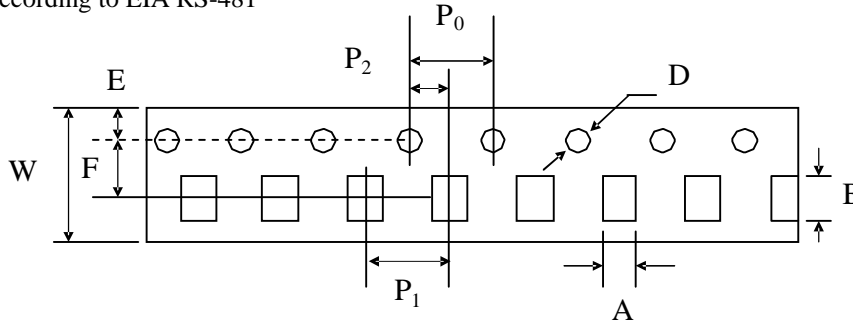
No Marking

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GENERAL SPECIFICATION

■ Tape And Reel Package

• Taping specs are according to EIA RS-481

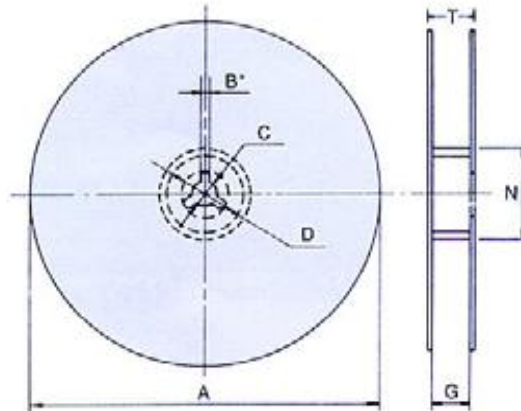


Accumulated dimensional tolerance $40 \pm 0.2 \text{mm}$

Size	A	B	W	F	E	P1	P2	P0	D
0805	1.65 ± 0.20	2.40 ± 0.20	8.00 ± 0.30	3.50 ± 0.05	1.75 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	4.00 ± 0.10	1.50 ± 0.10
1206	2.00 ± 0.20	3.60 ± 0.20	8.00 ± 0.30	3.50 ± 0.05	1.75 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	4.00 ± 0.10	1.50 ± 0.10
2512	3.50 ± 0.20	6.70 ± 0.20	12.00 ± 0.30	5.50 ± 0.05	1.75 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	4.00 ± 0.10	1.50 ± 0.10
5931	8.20 ± 0.10	15.4 ± 0.10	24.00 ± 0.30	11.5 ± 0.10	1.75 ± 0.10	12.0 ± 0.10	2 ± 0.10	4 ± 0.10	1.50 ± 0.10

(unit: mm)

n Reel Package



Size	Packaging Q'ty	A	N	C	D	B	G	T
0805	4kpcs/Reel	178.0 ± 2.0	60.0 ± 0.5	13.0 ± 0.5	20(Min.)	2.0 ± 0.5	10.0 ± 1.5	14.9max.
1206	4kpcs/Reel	178.0 ± 2.0	60.0 ± 0.5	13.0 ± 0.5	20(Min.)	2.0 ± 0.5	10.0 ± 1.5	14.9max.
2512	4kpcs/Reel	178.0 ± 2.0	60.0 ± 0.5	13.0 ± 0.5	20(Min.)	2.0 ± 0.5	13.8 ± 1.5	16.7max.
5931	3kpcs/Reel	330.0 ± 2.0	99.5 ± 0.5	13.0 ± 0.5	20(Min.)	2.0 ± 0.5	24.0 ± 1.0	28.6max.

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GENERAL SPECIFICATION

■ HPL < 1Ω Specification And Test Methods

ITEM	SPECIFICATION	TEST METHOD
DC Resistance	F : ±1% . J : ±5%	IEC 60115-1 4.5/ JIS C 5202 5.1 Measure the resistance Value.
Short Time Overload	$\Delta R \leq \pm(1\% \pm 0.1m\Omega)$	IEC 60115-1 4.13/ JIS C 5202 5.5 5 × Rated power for 5 seconds
Solderability	Over 95% of termination must be covered with (Sn+Ag+Cu)	IEC 60115-1 4.17 / JIS C 5202 6.5 After immersing flux, dip in the 235±2°C molten solder bath for 2±0.5 sec.
Resistance to solder Heat	$\Delta R \leq \pm(1\% \pm 0.1m\Omega)$ No mechanical damage	IEC 60115-1 4.18 / JIS C 5202 6.4 With 260±5°C for 10±1sec.
Load Life Humidity	$\Delta R \leq \pm(1\% \pm 0.5m\Omega)$	40±2°C with relative humidity 90% ~ 95% D.C. rated voltage for 1.5 hours ON 30 minutes OFF. Cycle repeated 1000 hours.
Temperature Coefficient of Resistance (TCR)	Refer to Rating Table	IEC 60115-1 4.8.4.2 / JIS C5202 5.2 T1 T2 Test temperature : 25°C ~ -55°C 25°C ~ +155°C $TCR(ppm/^\circ C) = (R2 - R1) / R1 \times 1 / (T2 - T1) \times 10^6$
Load Life	$\Delta R \leq \pm(1\% \pm 0.5m\Omega)$	IEC 60115-1 4.25.1 / JIS C 5202 7.10 Rated voltage for 1.5hours for followed by a pause 0.5 hour at 70±2°C. Cycle repeated 1000 hours
Temperature Cycle	$\Delta R \leq \pm(1\% \pm 0.5m\Omega)$ No mechanical damage	IEC 60115-1 4.19 / JIS C 5202 7.4 Repeat 5 cycles as follows -55°C (30min.) + 25°C (2~3min.) + 155°C (30min.) + 25°C (2~3min.)
Insulation Resistance	Between termination and coating must be over 1000MΩ	IEC 60115-1 4.6.1.1 / JIS C 5202 5.6 Test voltage : 100±15V
Bending strength	$\Delta R \leq \pm(1\% \pm 0.5m\Omega)$ No mechanical damage	IEC 60115-1 4.33 Resistance change after bended on the 90mm PCB. Bending :2mm