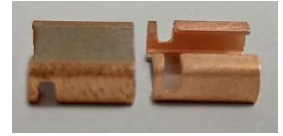


Features:

- Up to 12W permanent power
- Inherent low inductance
- Elevated resistive element for lower thermal stress on PCB
- High temperature capability with operation up to 170°C
- High pulse capability
- RoHS compliant, REACH compliant, lead free, and halogen free
- AEC-Q200 compliant



Electrical Specifications				
Type/Code	Power Rating (W) @ 100°C	Power Rating (W) @ 70°C	TCR (ppm/°C)	Ohmic Range (Ω) and Tolerance
				1% and 5%
HCSK1216	5	9	± 50	0.0005
	3	7		0.001
HCSK2725	5	12	± 50	0.0002
		9		0.0005
		7		0.001
	3	6		0.002
		5		0.003
	2	4		0.004
HCSK4026	5	12	± 50	0.0002
		9		0.0005
	4	8		0.0007
		7		0.001
	3	5		0.003

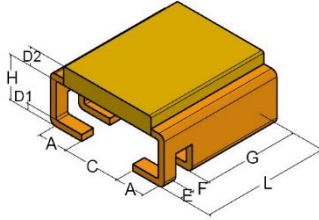
Mechanical Specifications – 1216						
Type/Code	L	B	C	H	E	Unit
HCSK1216	0.150 ± 0.012	0.118 ± 0.006	0.037 ± 0.006	0.071 ± 0.004	0.020 ± 0.004	inches
	3.81 ± 0.30	3.00 ± 0.15	0.95 ± 0.15	1.80 ± 0.10	0.50 ± 0.10	mm
	F	G	A ^(*)	D1	Unit	
	0.024 ± 0.006	0.106 ± 0.004	0.041	0.012 ± 0.004	inches	
	0.60 ± 0.15	2.70 ± 0.10	1.05	0.30 ± 0.10	mm	

(*) Reference only.

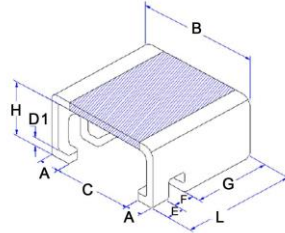
Product photo shown above is typical. Actual components may vary depending on resistive element and amount of trim adjustment required to meet desired resistance value.

Mechanical Specifications – 2725

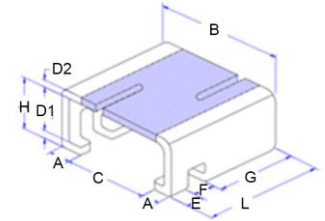
0.0002Ω



0.0005Ω – 0.003Ω

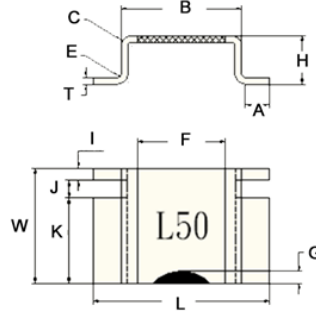


0.004Ω/0.005Ω



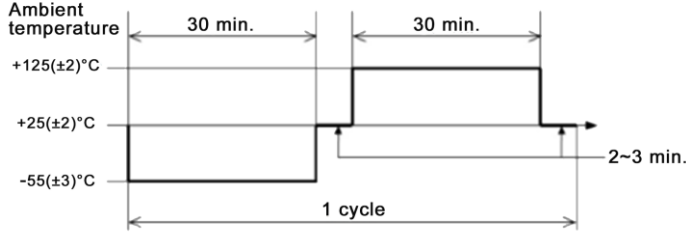
Type/Code	L	B	C (Ref.)	H	E	Unit
HCSK2725 (0.0002)	0.260 ± 0.010 6.60 ± 0.25	0.272 ± 0.014 6.90 ± 0.35	0.122 3.10	0.094 ± 0.008 2.40 ± 0.20	0.028 ± 0.008 0.70 ± 0.20	inches mm
HCSK2725 (0.0005)	0.260 ± 0.010 6.60 ± 0.25	0.272 ± 0.006 6.90 ± 0.15	0.122 3.10	0.094 ± 0.008 2.40 ± 0.20	0.028 ± 0.008 0.70 ± 0.20	inches mm
HCSK2725 (0.001)	0.260 ± 0.010 6.60 ± 0.25	0.272 ± 0.006 6.90 ± 0.15	0.122 3.10	0.094 ± 0.008 2.40 ± 0.20	0.028 ± 0.008 0.70 ± 0.20	inches mm
HCSK2725 (0.002)	0.260 ± 0.010 6.60 ± 0.25	0.272 ± 0.006 6.90 ± 0.15	0.122 3.10	0.094 ± 0.008 2.40 ± 0.20	0.028 ± 0.008 0.70 ± 0.20	inches mm
HCSK2725 (0.003)	0.260 ± 0.010 6.60 ± 0.25	0.272 ± 0.006 6.90 ± 0.15	0.122 3.10	0.094 ± 0.008 2.40 ± 0.20	0.028 ± 0.008 0.70 ± 0.20	inches mm
HCSK2725 (0.004)	0.260 ± 0.010 6.60 ± 0.25	0.272 ± 0.006 6.90 ± 0.15	0.122 3.10	0.094 ± 0.008 2.40 ± 0.20	0.028 ± 0.008 0.70 ± 0.20	inches mm
HCSK2725 (0.005)	0.260 ± 0.010 6.60 ± 0.25	0.272 ± 0.006 6.90 ± 0.15	0.122 3.10	0.094 ± 0.008 2.40 ± 0.20	0.028 ± 0.008 0.70 ± 0.20	inches mm
Type/Code	F	G (Ref.)	A	D1	D2 (Ref.)	Unit
HCSK2725 (0.0002)	0.039 ± 0.008 1.00 ± 0.20	0.193 4.90	0.075 ± 0.008 1.90 ± 0.20	0.020 ± 0.004 0.50 ± 0.10	0.055 ± 0.004 1.40 ± 0.10	inches mm
HCSK2725 (0.0005)	0.039 ± 0.008 1.00 ± 0.20	0.193 4.90	0.075 ± 0.008 1.90 ± 0.20	0.016 ± 0.004 0.40 ± 0.10	0.018 ± 0.004 0.45 ± 0.10	inches mm
HCSK2725 (0.001)	0.039 ± 0.008 1.00 ± 0.20	0.193 4.90	0.075 ± 0.008 1.90 ± 0.20	0.016 ± 0.004 0.40 ± 0.10	0.014 ± 0.004 0.35 ± 0.10	inches mm
HCSK2725 (0.002)	0.039 ± 0.008 1.00 ± 0.20	0.193 4.90	0.075 ± 0.008 1.90 ± 0.20	0.016 ± 0.004 0.40 ± 0.10	0.016 ± 0.004 0.40 ± 0.10	inches mm
HCSK2725 (0.003)	0.039 ± 0.008 1.00 ± 0.20	0.193 4.90	0.075 ± 0.008 1.90 ± 0.20	0.016 ± 0.004 0.40 ± 0.10	0.014 ± 0.004 0.35 ± 0.10	inches mm
HCSK2725 (0.004)	0.039 ± 0.008 1.00 ± 0.20	0.193 4.90	0.075 ± 0.008 1.90 ± 0.20	0.016 ± 0.004 0.40 ± 0.10	0.014 ± 0.004 0.35 ± 0.10	inches mm
HCSK2725 (0.005)	0.039 ± 0.008 1.00 ± 0.20	0.193 4.90	0.075 ± 0.008 1.90 ± 0.20	0.016 ± 0.004 0.40 ± 0.10	0.014 ± 0.004 0.35 ± 0.10	inches mm

Mechanical Specifications – 4026



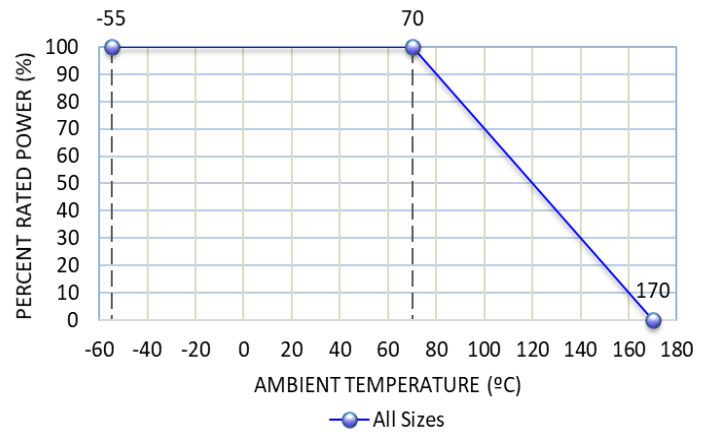
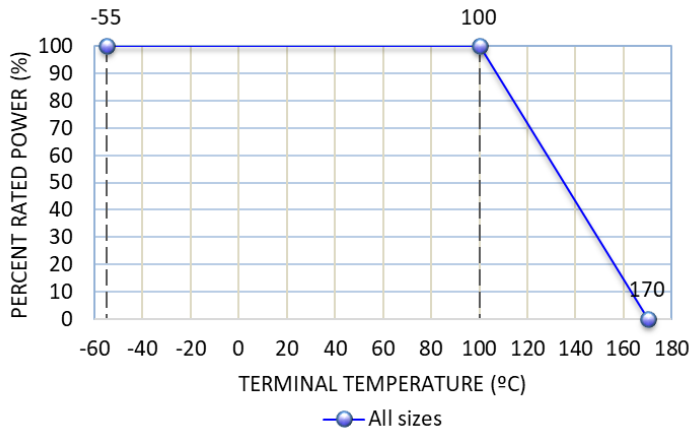
Type/Code	A	B	C	E	H	T	F	Unit
HCSK4026 (0.0002 Ω)	0.055 ± 0.008	0.272	0.024	0.008	0.148 ± 0.008	0.017 ± 0.004	0.197	inches
HCSK4026 (except 0.0002 Ω)					3.75 ± 0.20			5.00
Type/Code	G (max.)	I	J	K	L	W		Unit
HCSK4026 (all Ω values)	0.028	0.028	0.039	0.193	0.398 ± 0.006	0.260 ± 0.008		inches
	0.70	0.70	1.00	4.90	10.10 ± 0.15	6.60 ± 0.20		mm

Environmental Performance Characteristics

Test	Test Method	Test Specification	Test Condition
Temperature Coefficient of Resistance (TCR) (1216, 4026)	JIS-C5202-5.2	Refer to Electrical Specifications	20°C/+125°C $TCR (ppm/°C) = \frac{\Delta R}{R \times \Delta t} \times 10^6$
Temperature Coefficient of Resistance (TCR) (2725)	JIS-C5202-5.2	Refer to Electrical Specifications	25°C/+125°C $TCR (ppm/°C) = \frac{\Delta R}{R \times \Delta t} \times 10^6$
Moisture Resistance	MIL-STD-202, Method 106	ΔR: ± 1%	The specimens shall be placed in a chamber and subjected to a relative humidity of 90 ~ 98% and a temperature of 25°C/65°C, 10 cycles.
High Temperature Exposure	JIS-C5202-7.2	ΔR: ± 1%	For the HCSK1216 & HCSK4026: The part (mounted on board) is exposed in the heat chamber, 125°C for 1000 hours.
			For the HCSK2725: The part (mounted on board) is exposed in the heat chamber, 170°C for 1000 hours.
Load Life	JIS-C5202-7.10	ΔR: ± 1%	Apply rated power for 1000 hours with 1.5 hours ON and 0.5 hour OFF.
Rapid Change of Temperature	JIS-C5202-7.4	Δ R: ± 1%	The part (mounted on board) is exposed, -55 ± 3°C (30 minutes)/+125 ± 2°C (30 minutes) for 5 cycles. The following conditions shown in the figure below. 

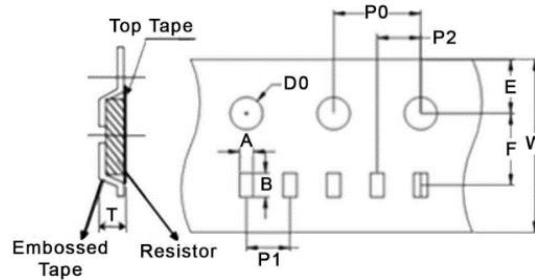
Note: The terminal electron temperature of component should be below 100°C.
Storage Conditions: Temperature of 22 ~ 28°C. Humidity: 40 ~ 75%.
Operating Temperature Range is - 55°C to + 170°C

Power Derating Curve:



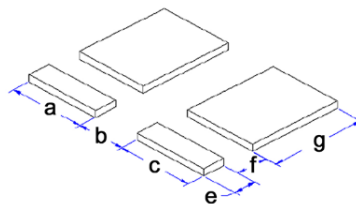
Performance Characteristics			
Test	Test Method	Test Specification	Test Condition
Bending Strength	JIS-C5202-6.1	$\Delta R: \pm 1\%$	<p>Mount the part to test 90 mm (L) * 40 mm (W) FR4 printed circuit board substrate. Apply pressure in direction of arrow unit band width reaches 2 mm (+0.2 / -0 mm) illustrated in the figure below and hold for 10 ± 1 seconds.</p> <p>Unit: mm</p> <p>Position before bend</p> <p>Jig</p> <p>20</p> <p>1.6</p> <p>Amount of bend</p> <p>Testing printed circuit board</p>
Solderability	JIS-C5202-6.11	Solder shall cover 95% or more of the electrode area.	<p>The part shall be immersed into the flux specified in the solder bath 235°C ± 5°C for 2 seconds ± 0.5 seconds. It shall be immersed to a point 10 mm from its root. (Sn96.5/Ag3.0/Cu0.5)</p> <p>Molten solder</p> <p>Specimen SMD</p> <p>h</p> <p>H</p> <p>H</p> <p>h = 10 mm</p> <p>H = 10 mm min.</p>

Taping Specifications



Type/Code	A	B	E	F	W	Unit
HCSK1216	0.130 ± 0.004 3.30 ± 0.10	0.165 ± 0.004 4.20 ± 0.10	0.104 ± 0.004 2.64 ± 0.10	0.217 ± 0.004 5.50 ± 0.10	0.472 ± 0.008 12.00 ± 0.20	inches mm
	P0	P1	P2	D0	T	Unit
	0.157 ± 0.004 4.00 ± 0.10	0.315 ± 0.004 8.00 ± 0.10	0.079 ± 0.002 2.00 ± 0.05	0.059 ± 0.004 1.50 ± 0.10	0.083 ± 0.004 2.10 ± 0.10	inches mm
Type/Code	A	B	E	F	W	Unit
HCSK2725 (0.0002Ω only)	0.276 ± 0.004 7.00 ± 0.10	0.276 ± 0.004 7.00 ± 0.10	0.069 ± 0.004 1.75 ± 0.10	0.295 ± 0.004 7.50 ± 0.10	0.630 ± 0.008 16.00 ± 0.20	inches mm
	P0	P1	P2	D0	T	Unit
	0.157 ± 0.004 4.00 ± 0.10	0.472 ± 0.004 12.00 ± 0.10	0.079 ± 0.004 2.00 ± 0.10	0.059 ± 0.004 1.50 ± 0.10	0.165 ± 0.004 4.20 ± 0.10	inches mm
Type/Code	A	B	E	F	W	Unit
HCSK2725 (except for 0.0002Ω)	0.276 ± 0.004 7.00 ± 0.10	0.276 ± 0.004 7.00 ± 0.10	0.069 ± 0.004 1.75 ± 0.10	0.295 ± 0.004 7.50 ± 0.10	0.630 ± 0.008 16.00 ± 0.20	inches mm
	P0	P1	P2	D0	T	Unit
	0.157 ± 0.004 4.00 ± 0.10	0.472 ± 0.004 12.00 ± 0.10	0.079 ± 0.004 2.00 ± 0.10	0.059 ± 0.004 1.50 ± 0.10	0.122 ± 0.004 3.10 ± 0.10	inches mm
Type/Code	A	B	E	F	W	Unit
HCSK4026 (all Ω values)	0.272 ± 0.004 6.90 ± 0.10	0.409 ± 0.004 10.40 ± 0.10	0.069 ± 0.004 1.75 ± 0.10	0.453 ± 0.004 11.50 ± 0.10	0.945 ± 0.012 24.00 ± 0.30	inches mm
	P0	P1	P2	D0	T	Unit
HCSK4026 (0.0002 Ω)	0.157 ± 0.004	0.472 ± 0.004	0.079 ± 0.004	0.059 ± 0.004	0.165 ± 0.004 4.20 ± 0.10	inches mm
	HCSK4026 (except 0.0002 Ω)	4.00 ± 0.10	12.00 ± 0.10	2.00 ± 0.10	1.50 ± 0.10	0.126 ± 0.004 3.20 ± 0.10

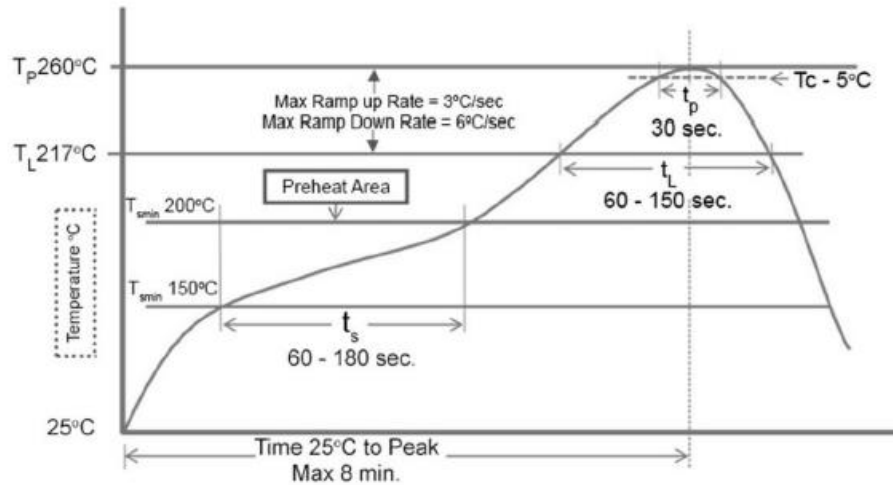
Recommended Pad Layouts



Type/Code	a	b	c	e	f	g	Unit
HCSK1216	0.059 ± 0.004 1.50 ± 0.10	0.024 ± 0.004 0.60 ± 0.10	0.059 ± 0.004 1.50 ± 0.10	0.028 ± 0.004 0.70 ± 0.10	0.020 ± 0.004 0.50 ± 0.10	0.116 ± 0.004 2.95 ± 0.10	inches mm
	HCSK2725	0.114 ± 0.008 2.90 ± 0.20	0.079 ± 0.008 2.00 ± 0.20	0.114 ± 0.008 2.90 ± 0.20	0.035 ± 0.004 0.90 ± 0.10	0.039 ± 0.004 1.00 ± 0.10	0.220 ± 0.008 5.60 ± 0.20
HCSK4026		0.063 ± 0.008 1.60 ± 0.20	0.272 ± 0.008 6.90 ± 0.20	0.063 ± 0.008 1.60 ± 0.20	0.028 ± 0.004 0.70 ± 0.10	0.039 ± 0.004 1.00 ± 0.10	0.193 ± 0.008 4.90 ± 0.20

Soldering Recommendations:

- Peak reflow temperatures and durations
 - IR Reflow Peak = 260°C max for 10 seconds
 - Not suitable for wave soldering
- Recommended IR reflow profile:



RoHS Compliance

Stackpole Electronics has joined the worldwide effort to reduce the amount of lead in electronic components and to meet the various regulatory requirements now prevalent, such as the European Union’s directive regarding “Restrictions on Hazardous Substances” (RoHS 3). As part of this ongoing program, we periodically update this document with the status regarding the availability of our compliant components. All our standard part numbers are compliant to EU Directive 2011/65/EU of the European Parliament as amended by Directive (EU) 2015/863/EU as regards the list of restricted substances.

RoHS Compliance Status						
Standard Product Series	Description	Package / Termination Type	Standard Series RoHS Compliant	Lead-Free Termination Composition	Lead-Free Mfg. Effective Date (Std Product Series)	Lead-Free Effective Date Code (YY/WW)
HCSK	Kelvin Termination Metal Alloy Shunt Resistor	SMD	YES	100% Copper	Always	Always

“Conflict Metals” Commitment

We at Stackpole Electronics, Inc. are joined with our industry in opposing the use of metals mined in the “conflict region” of the eastern Democratic Republic of the Congo (DRC) in our products. Recognizing that the supply chain for metals used in the electronics industry is very complex, we work closely with our own suppliers to verify to the extent possible that the materials and products we supply do not contain metals sourced from this conflict region. As such, we are in compliance with the requirements of Dodd-Frank Act regarding Conflict Minerals.

Compliance to “REACH”

We certify that all passive components supplied by Stackpole Electronics, Inc. are SVHC (Substances of Very High Concern) free and compliant with the requirements of EU Directive 1907/2006/EC, “The Registration, Evaluation, Authorization and Restriction of Chemicals”, otherwise referred to as REACH. Contact us for complete list of REACH Substance Candidate List.

Environmental Policy

It is the policy of Stackpole Electronics, Inc. (SEI) to protect the environment in all localities in which we operate. We continually strive to improve our effect on the environment. We observe all applicable laws and regulations regarding the protection of our environment and all requests related to the environment to which we have agreed. We are committed to the prevention of all forms of pollution.

How to Order

