CSKA

Automotive grade current sense resistor Kelvin- metal shunt



Product features

- AEC-Q200
- Resistance value from 0.3 mΩ to 4.0 mΩ
- Low thermal EMF
- Low TCR
- 1216 (3138 metric) to 4026 (10167 metric) package
- Moisture sensitivity level (MSL): 1

Applications

- Automotive lighting
- Server
- Battery management
- Hot swap controllers
- Body control modules
- DC/DC converters
- Switched-mode power supplies (SMPS)
- DC Motor control
- IoT devices
- Electric water pump
- Active braking

Environmental compliance

Pb HALOGEN HF FREE RoHS

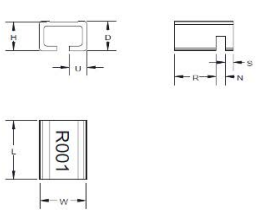
Table 1. Part numbering

CSKA 1216 4 F R0003 F C

Family name	CSKA
Size EIA	1216, 2726, 4026
Number of pins	4
Terminal style	F = Inner fold terminal G = Gullwing terminal
Resistance	R0003 = 0.3 mOhm, R0030 = 3 mOhm
Resistance tolerance	F = 1%
Material code	C = CuMnSn M = MnCu K = Karma

Powering Business Worldwide

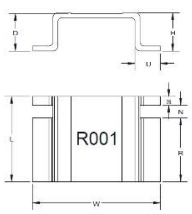
Mechanical parameters- mm



CSKA1216

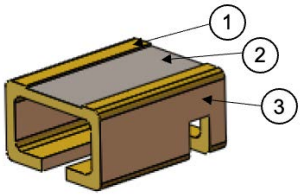


CSKA2726



CSKA4026

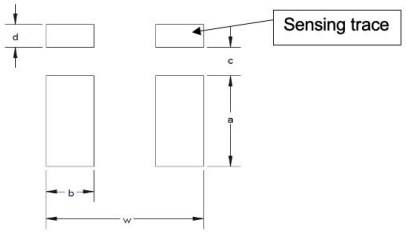
Construction



Number	Materials
1	Copper electrode
2	CuMnSn/ MnCu/ Karma
3	Copper electrode

Family	Size code	W	L	R	H	S	U	N	D
CSKA1216	1216 (3138 metric)	3.10 +0/-0.35	3.81 ± 0.30	2.70 ± 0.10	1.90 +0/-0.35	0.50 ± 0.10	1.15 ± 0.20	0.60 ± 0.15	2.60 maximum
CSKA2726	2726 (6966 metric)	6.90 ± 0.20	6.60 ± 0.20	4.90 ± 0.20	3.00 ± 0.20	0.70 ± 0.10	2.00 ± 0.20	1.00 ± 0.15	4.20 maximum
CSKA4026	4026 (10167 metric)	10.10 ± 0.20	6.70 ± 0.20	5.00 ± 0.20	3.00 ± 0.20	0.70 ± 0.10	2.00 ± 0.20	1.00 ± 0.15	4.20 maximum

Recommended PCB layout



Family	a	b	c	d	w
CSKA1216	2.95	1.5	0.5	0.7	3.6
CSKA2726	5.6	2.9	0.8	0.9	7.8
CSKA4026	5.6	2.45	0.8	0.9	10.4

Part marking

Part marking	Resistance (mΩ)
0L30	0.3
0L50	0.5
R001	1
R002	2
R003	3
R004	4

Electrical specifications

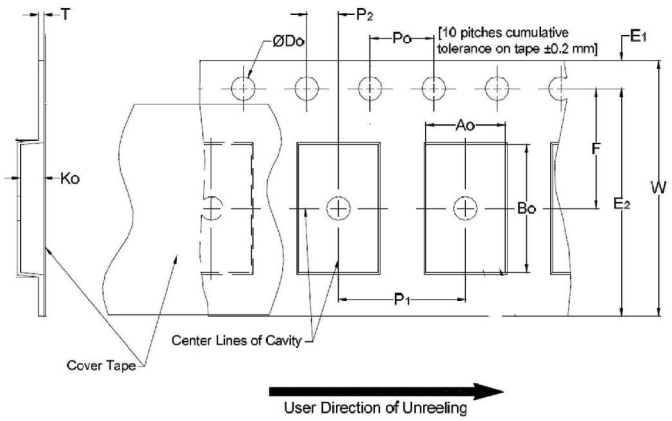
Part number	Size	Power rating @ +125 °C (W)	Resistance[2] (mΩ)	Resistance tolerance	Material	TCR[1] (ppm/°C)	Operating temperature
CSKA12164FR0003FC	1216 (3138 metric)	5	0.3	±1%	CuMnSn	± 100	-55 °C to +170 °C
CSKA12164FR0005FC	1216 (3138 metric)	5	0.5	±1%	CuMnSn	± 100	-55 °C to +170 °C
CSKA12164FR0010FM	1216 (3138 metric)	3	1	±1%	MnCu	± 100	-55 °C to +170 °C
CSKA12164FR0020FK	1216 (3138 metric)	3	2	±1%	Karma	± 100	-55 °C to +170 °C
CSKA12164FR0030FK	1216 (3138 metric)	3	3	±1%	Karma	± 100	-55 °C to +170 °C
CSKA27264FR0003FC	2726 (6966 metric)	12	0.3	±1%	CuMnSn	± 125	-55 °C to +170 °C
CSKA27264FR0005FM	2726 (6966 metric)	7	0.5	±1%	MnCu	± 125	-55 °C to +170 °C
CSKA27264FR0010FM	2726 (6966 metric)	7	1	±1%	MnCu	± 125	-55 °C to +170 °C
CSKA27264FR0020FK	2726 (6966 metric)	5	2	±1%	Karma	± 75	-55 °C to +170 °C
CSKA27264FR0030FK	2726 (6966 metric)	5	3	±1%	Karma	± 75	-55 °C to +170 °C
CSKA27264FR0040FK	2726 (6966 metric)	5	4	±1%	Karma	± 75	-55 °C to +170 °C
CSKA40264GR0003FC	4026 (10167 metric)	12	0.3	±1%	CuMnSn	± 75	-55 °C to +170 °C
CSKA40264GR0005FM	4026 (10167 metric)	7	0.5	±1%	MnCu	± 75	-55 °C to +170 °C
CSKA40264GR0010FM	4026 (10167 metric)	7	1	±1%	MnCu	± 75	-55 °C to +170 °C
CSKA40264GR0020FK	4026 (10167 metric)	5	2	±1%	Karma	± 75	-55 °C to +170 °C
CSKA40264GR0030FK	4026 (10167 metric)	5	3	±1%	Karma	± 75	-55 °C to +170 °C
CSKA40264GR0040FK	4026 (10167 metric)	5	4	±1%	Karma	± 75	-55 °C to +170 °C

1. Temperature coefficient of resistance (TCR) parameters: +25 °C to +125 °C
2. Resistance should be measured at +23 °C ±5 °C in accordance with the recommended land pattern.

Packaging information- mm
Supplied in tape and reel

CSKA1216 on a 7.0" diameter reel, CSKA2726, 4026 on a 13" diameter reel diameter reel tape and reel

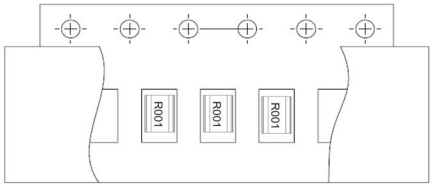
Tape carrier and dimensions



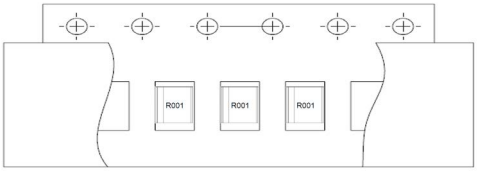
Dimension	CSKA1216	CSKA2726	CSKA4026
W	12.00 ± 0.30	16.00 ± 0.30	24.00 ± 0.30
F	5.50 ± 0.10	7.50 ± 0.10	11.50 ± 0.10
E1	1.7 5 ±0.10	1.75 ± 0.10	1.75 ± 0.10
E2	NA	NA	NA
P0	4.00 ± 0.10	4.00 ± 0.10	4.00 ± 0.10
P1	8.00 ± 0.10	12.00 ± 0.10	12.00 ± 0.10
P2	2.00 ± 0.05	2.00 ± 0.05	2.00 ± 0.05
ØD0	1.50 ± 0.10	1.50 ± 0.10	1.50 ± 0.10
A0	3.40 ± 0.20	7.40 ± 0.20	7.00 ± 0.20
B0	4.20 ± 0.20	7.10 ± 0.20	10.51 ± 0.20
K0	2.30 ± 0.10	3.60 ± 0.10	4.51 ± 0.10
T	0.30 ± 0.10	0.40 ± 0.10	0.40 ± 0.10

Packing orientation

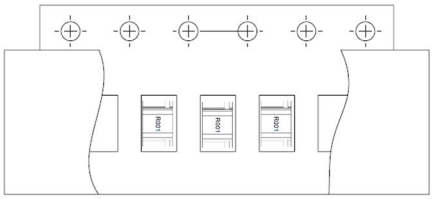
CSKA1216



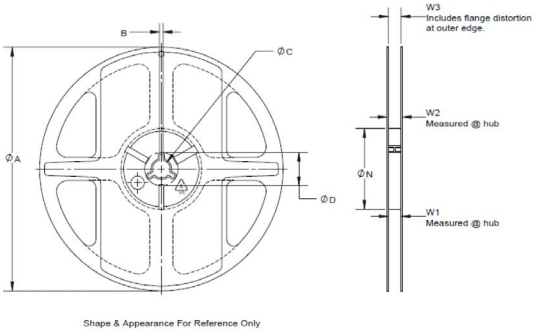
CSKA2726



CSKA4026



Reel dimensions

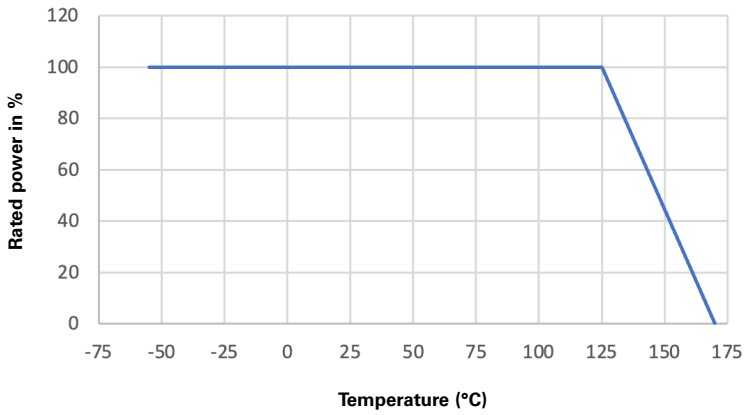


Size	A	B	C	D	N	W1	W2	W3
CSKA1216	178 ± 2.0	2.0 ± 0.5	13.3 ± 1.0	20.2 minimum	58 ± 0.5	12.8 ± 0.5	18.4 maximum	NA
CSKA2726	330 ± 2.0	2.0 ± 0.5	13.3 ± 1.0	20.2 minimum	100 ± 1.0	16.5 ± 0.5	22.4 maximum	NA
CSKA4026	330 ± 2.0	2.0 ± 0.5	13.3 ± 1.0	20.2 minimum	100 ± 1.0	24.5 ± 0.5	30.4 maximum	NA

General specifications

Temperature coefficient of resistance: MIL-STD-202, Method 304, TCR =(R-R0)/R0(T2-T1)*106. Test temperature: T1=+25 °C, T2=+125 °C
Short time overload: IEC60115-1 4.13, 5 X rated power for 5 s
High temperature storage: MIL-STD202 Method 108, 1000 hours, +170 °C, unpowered
Temperature cycling: JESD22 Method JA-104, 1000 Cycles, -55 °C (15 minutes), +150 °C (15 minutes)
Biased humidity: MIL-STD-202 Method 103, 1000 hours, +85 °C/85% RH, 10% bias
Operational life: MIL-STD-202 Method 108, 1000 hours, +125 °C ±2 °C at rated power, 1.5 hours on, 0.5 hours off.
Resistance to solvents: MIL-STD-202 Method 215, Immersed in three solvents after 3 to 3.5 minutes immersion, brush wipe 10 times, a total of 3 times, washing with washing and cleaning agent, room temperature on the surface of the ventilation drying.
Mechanical shock: MIL-STD-202 Method 213, 100 g's. 6 ms, 5 pulses
Vibration: MIL-STD-202 Method 204, 10 Hz to 2000 Hz, 5 g's for 20 min., 12 cycles each of 3 orientations
Resistance to soldering heat: MIL-STD-202 Method 210, Immerse the specimens in and eutectic solder at +260 ± 5 °C for 10 ± 1 s
ESD: AEC-Q200-002 or ISO/DIS 10605, 25 kV
Solderability: J-STD-002, solder bath at 245 ± 5 °C, Dipping time: 3 ± 0.3 seconds, > 95% area covered with tin
Board flex (bending): AEC-Q200-005, Bending amplitude 2 mm for 60 s
Terminal strength: AEC-Q200-006, Force of 17.7 N for 60 seconds

Temperature derating curve



Rated current & voltage

The rated Current and Voltage are calculated by the following formula:

$I=\sqrt{P \div R}$

$V=\sqrt{P \times R}$

I: Rated current (A)

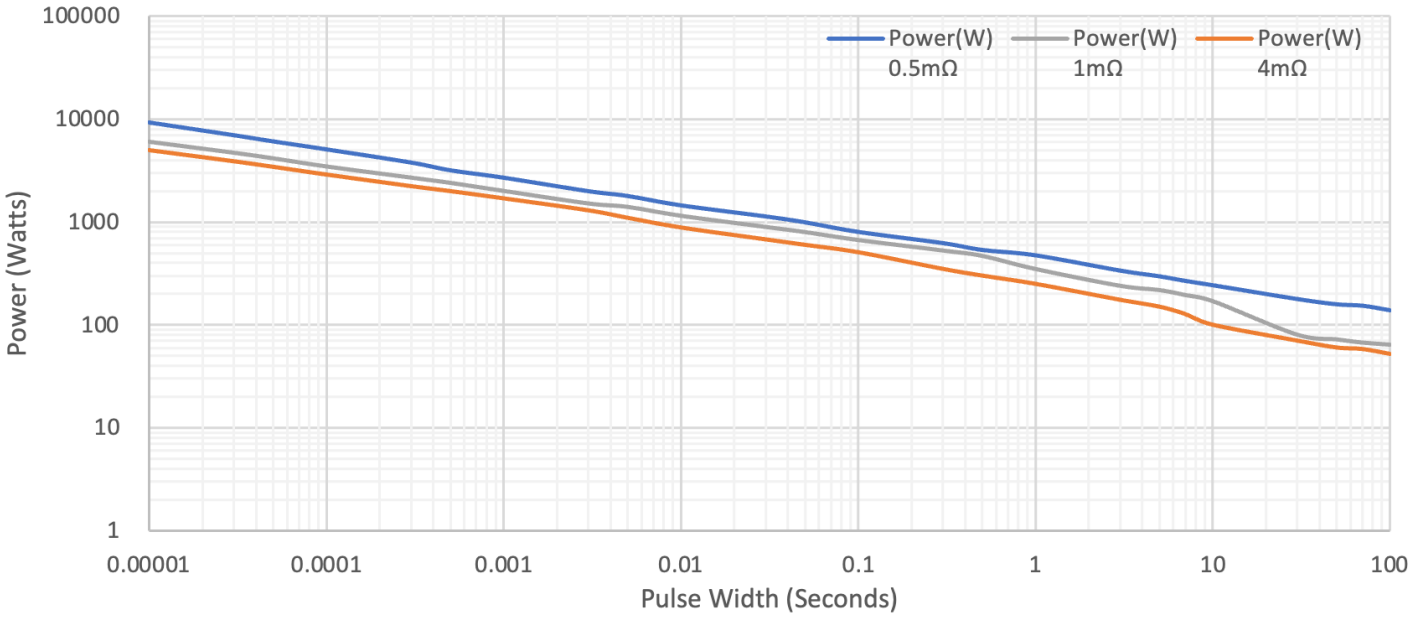
V: Rated voltage (V)

P: Rated power (W)

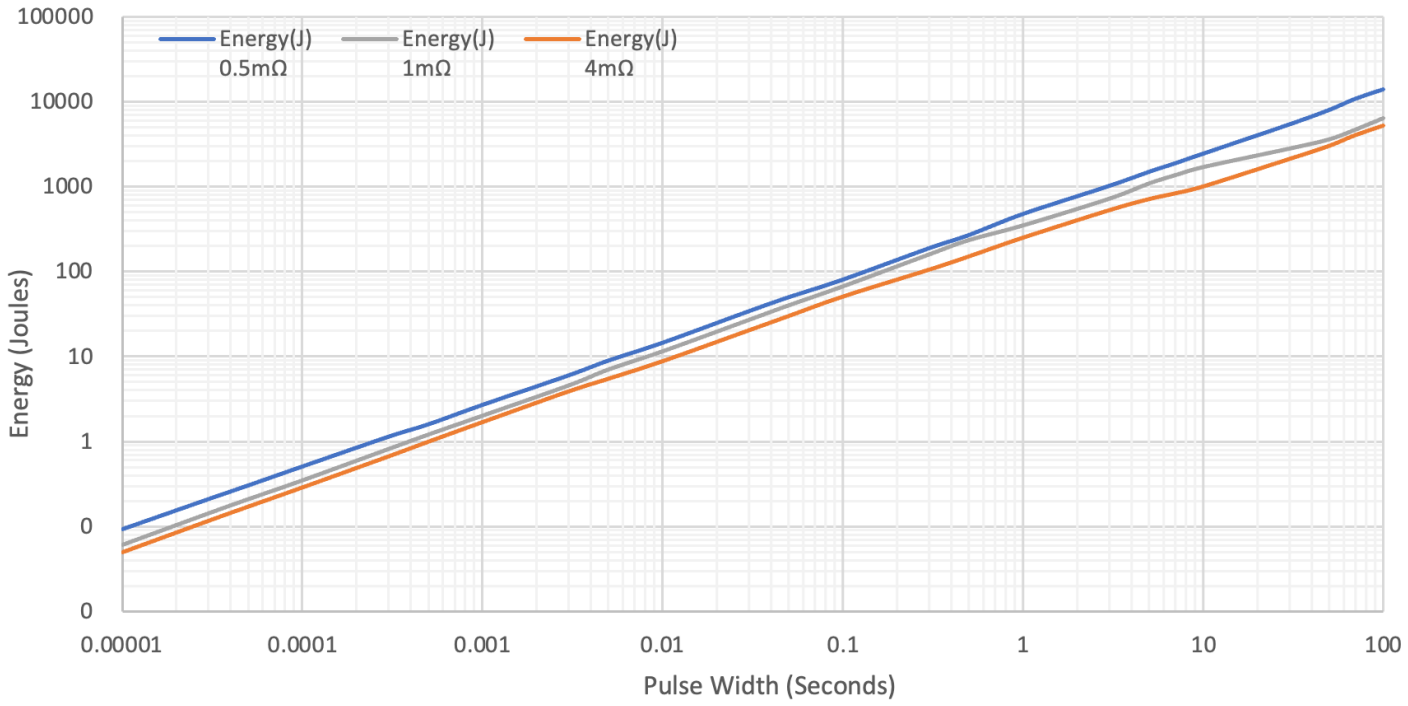
R: Resistance value (Ω)

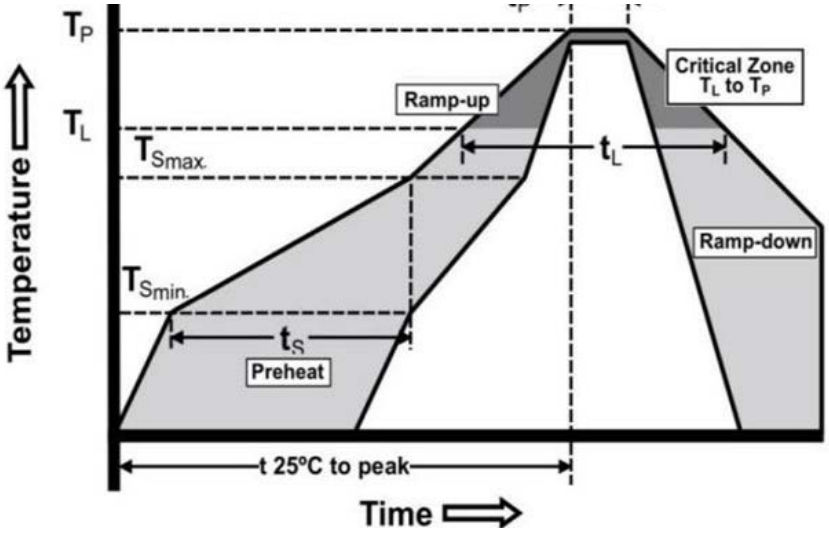
Curves

Maximum pulse power



Maximum pulse energy





Profile feature		Lead (Pb) free solder
Preheat and soak	• Temperature min. (T_{smin})	150 °C
	• Temperature max. (T_{smax})	200 °C
	• Time (T_{smin} to T_{smax}) (t_s)	60-120 seconds
Ramp up rate T_{smax} to T_p		3 °C/ second max.
Melting tin time (tL)		20 s - 30 s
Peak package body temperature (T_P)*		260 °C
Time (t_p)* within 5 °C of the specified classification temperature (T_c)		5 seconds
Ramp-down rate (T_p to T_L)		6 °C/ second max.
Time 25 °C to peak temperature		8 minutes max.

Manual solder

+350 °C ±10 °C , 5 seconds maximum (by soldering iron), generally manual, hand soldering is not recommended

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Eaton
Electronics Division
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com/electronics

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