

CSR0805FTR250 Datasheet

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DiGi Electronics Part Number	CSR0805FTR250-DG
Manufacturer	Stackpole Electronics Inc
Manufacturer Product Number	CSR0805FTR250
Description	RES 0.25 OHM 1% 1/4W 0805
Detailed Description	250 mOhms ±1% 0.25W, 1/4W Chip Resistor 0805 (2012 Metric) Current Sense Thick Film

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Purchase and inquiry

Manufacturer Product Number:

CSR0805FTR250

Series:

CSR

Resistance:

250 mOhms

Power (Watts):

0.25W, 1/4W

Features:

Current Sense

Operating Temperature:

-55°C ~ 155°C

Supplier Device Package:

0805

Height - Seated (Max):

0.026" (0.65mm)

Failure Rate:

-

Manufacturer:

Stackpole Electronics Inc

Product Status:

Active

Tolerance:

±1%

Composition:

Thick Film

Temperature Coefficient:

±200ppm/°C

Package / Case:

0805 (2012 Metric)

Size / Dimension:

0.079" L x 0.049" W (2.00mm x 1.25mm)

Number of Terminations:

2

Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8533.21.0030

Moisture Sensitivity Level (MSL):

1 (Unlimited)

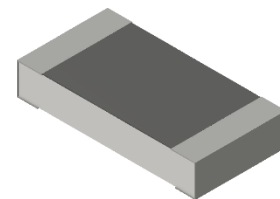
ECCN:

EAR99

CSR / CSRN Series

Thick Film Current Sensing Resistor

Stackpole Electronics, Inc.
Resistive Product Solutions



Features:

- 0201 to 1225 sizes available
- Power ratings to 3 W
- Available in E24 and other common values
- E96 and other values may be available upon request
- RoHS compliant, REACH compliant, lead free and halogen free

Electrical Specifications

Type/Code	Power Rating (W) @ 70°C	TCR (ppm/°C)	Ohmic Range (Ω) and Tolerance
			1%, 2%, 5%
CSR0201	0.05	± 1000	0.1 - 0.13
		± 600	0.15 - 0.5
		± 300	0.51 - 1
CSR0402	0.125	± 200 ⁽¹⁾	0.05 - 1
CSR0603	0.125	± 300 ⁽³⁾	0.02 - 0.3
		± 200 ⁽²⁾	0.33 - 1
CSR0603-HP	0.2	± 400	0.051 - 0.1
		± 300	0.11 - 0.5
		± 200	0.51 - 1
CSR0805	0.25	± 200 ⁽³⁾	0.02 - 1
CSR0805-HP	0.5	± 400	0.051 - 0.1
		± 300	0.102 - 0.5
		± 200	0.51 - 1
CSR1206	0.5	± 100 ⁽²⁾	0.01 - 1
CSR1210	0.5	± 600	0.01 - 0.02
		± 400	0.022 - 0.051
		± 300	0.056 - 0.091
		± 200	0.1 - 1
CSR1210-HP	0.75	± 600	0.01 - 0.02
		± 400	0.022 - 0.05
		± 300	0.051 - 0.091
		± 200	0.1 - 1
CSR2010	1	± 200 ⁽³⁾	0.01 - 1
CSRN2010	1	± 200	0.01 - 1
CSR2512	2	± 200 ⁽³⁾	0.01 - 1
CSRN2512 ^(*)	2	± 200	0.01 - 1
CSR1225	3	± 300	0.003 - 0.004
		± 200	0.005 - 0.02
		± 150	0.022 - 0.03
		± 100	0.033 - 7.5

* AEC-Q200 Compliant

(1) Contact Stackpole for TCR below 500m Ω

(2) Contact Stackpole for TCR below 150m Ω

(3) Contact Stackpole for TCR below 100m Ω

Mechanical Specifications



Type/Code	Typical Unit Weight (mg)	L Body Length	W Body Width	T Body Height	D1 Top Termination	D2 Bottom Termination	Unit
CSR0201	0.18	0.024 ± 0.001 0.60 ± 0.03	0.012 ± 0.001 0.30 ± 0.03	0.009 ± 0.002 0.23 ± 0.05	0.005 ± 0.002 0.12 ± 0.05	0.006 ± 0.002 0.15 ± 0.05	inches mm
CSR0402	0.7	0.039 ± 0.002 1.00 ± 0.05	0.020 ± 0.002 0.50 ± 0.05	0.013 ± 0.004 0.32 ± 0.10	0.010 ± 0.004 0.25 ± 0.10	0.008 ± 0.004 0.20 ± 0.10	inches mm
CSR0603	2.0	0.063 ± 0.004 1.60 ± 0.10	0.031 ± 0.004 0.80 ± 0.10	0.018 ± 0.004 0.45 ± 0.10	0.012 ± 0.008 0.30 ± 0.20	0.012 ± 0.008 0.30 ± 0.20	inches mm
CSR0805 CSR0805-HP	4.6	0.079 ± 0.006 2.00 ± 0.15	0.049 ± 0.006 1.25 ± 0.15	0.022 ± 0.004 0.55 ± 0.10	0.012 ± 0.008 0.30 ± 0.20	0.016 ± 0.010 0.40 ± 0.25	inches mm
CSR1206	8.7	0.120 ± 0.006 3.05 ± 0.15	0.061 ± 0.006 1.55 ± 0.15	0.022 ± 0.004 0.55 ± 0.10	0.020 ± 0.012 0.50 ± 0.30	0.016 ± 0.010 0.40 ± 0.25	inches mm
CSR1210	16.0	0.122 ± 0.004 3.10 ± 0.10	0.102 ± 0.006 2.60 ± 0.15	0.022 ± 0.004 0.55 ± 0.10	0.020 ± 0.012 0.50 ± 0.30	0.020 ± 0.010 0.50 ± 0.25	inches mm
CSR2010	27.0	0.197 ± 0.008 5.00 ± 0.20	0.096 ± 0.006 2.45 ± 0.15	0.024 ± 0.006 0.60 ± 0.15	0.024 ± 0.012 0.60 ± 0.30	0.067 ± 0.010 1.70 ± 0.25	inches mm
CSRN2010	23.7	0.197 ± 0.004 5.00 ± 0.10	0.098 ± 0.006 2.50 ± 0.15	0.024 ± 0.006 0.60 ± 0.15	0.024 ± 0.012 0.60 ± 0.30	0.020 ± 0.010 0.50 ± 0.25	inches mm
CSR2512	53.6	0.250 ± 0.004 6.35 ± 0.10	0.122 ± 0.006 3.10 ± 0.15	0.024 ± 0.004 0.60 ± 0.10	0.024 ± 0.012 0.60 ± 0.30	0.083 ± 0.004 2.10 ± 0.10	inches mm
CSRN2512	40.0	0.250 ± 0.004 6.35 ± 0.10	0.122 ± 0.006 3.10 ± 0.15	0.024 ± 0.004 0.60 ± 0.10	0.024 ± 0.012 0.60 ± 0.30	0.022 ± 0.010 0.55 ± 0.25	inches mm

Mechanical Specifications - Four Terminals



Type/Code	Typical Unit Weight (mg)	L	W	T	D1	D2	F	Unit
CSR1225	64.9	0.126 ± 0.006 3.20 ± 0.15	0.254 ± 0.006 6.45 ± 0.15	0.035 ± 0.006 0.90 ± 0.15	0.024 ± 0.012 0.60 ± 0.30	0.031 ± 0.010 0.80 ± 0.25	0.090 ± 0.005 2.29 ± 0.13	inches mm

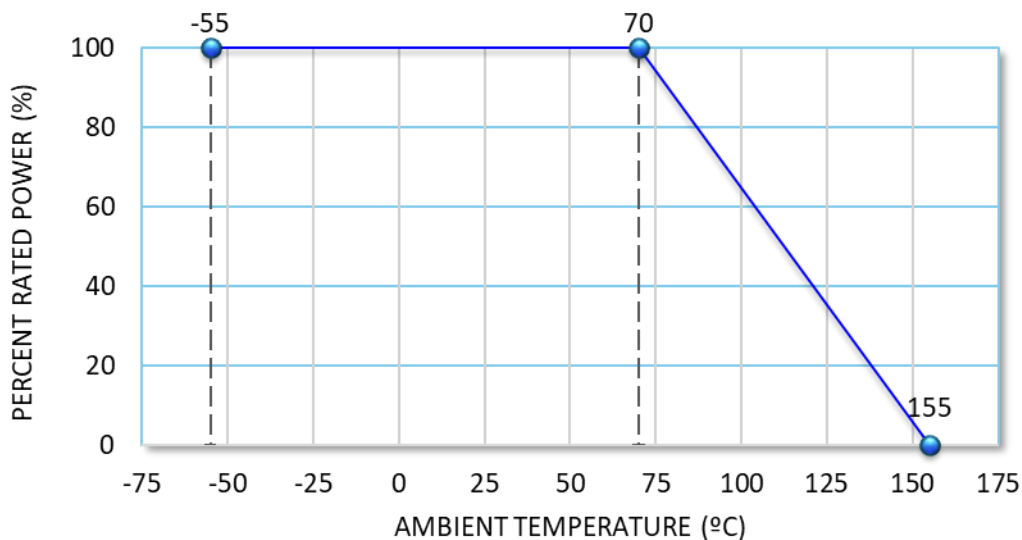
Performance Characteristics				
Test	Test Method	Test Specification	Typical	Test Condition
Temperature Coefficient of Resistance (TCR)	JIS-C-5201-1 4.8 IEC-60115-1 4.8	As per specification	Pass	At 25°C/-55°C and 25°C/+125°C, 25°C is the reference temperature.
Short Time Overload	JIS-C-5201-1 4.13 IEC 60115-1 4.13	±(1% + 0.05Ω)	Pass	RCWV*2.5 or Max. Overload Voltage whichever is lower for 5 seconds
Insulation Resistance	JIS-C-5201-1 4.6 IEC-60115-1 4.6	≥ 10G	Pass	Max. Overload voltage for 1 minute
Endurance	JIS-C-5201-1 4.25 IEC-60115-1 4.25.1	0201~0603 ±(1% + 0.05Ω) 0805~2512 ±(2% + 0.05Ω)	Pass	70 ± 2°C, RCWV for 1000 hours with 1.5 hours "ON" and 0.5 hour "OFF"
Damp Heat with Load	JIS-C-5201-1 4.24 IEC-60115-1 4.24	0201~0603 ±(0.5% + 0.05Ω) 0805~2512 ±(1% + 0.05Ω)	Pass	40 ± 2°C, 90~95% R.H., RCWV for 1000 hours with 1.5 hours "ON" and 0.5 hour "OFF"
Dry Heat	JIS-C-5201-1 4.23 IEC-60115-1 4.23.2	0201~0603 ±(0.5% + 0.05Ω) 0805~2512 ±(2% + 0.05Ω)	Pass	at 155°C for 1000 hours
Bending Strength	JIS-C-5201-1 4.33 IEC-60115-1 4.33	±(1% + 0.05Ω)	Pass	Bending once for 60 seconds with 3 mm Sizes 2010 and 2512: 2 mm
Solderability	JIS-C-5201-1 4.17 IEC-60115-1 4.17	95% min. coverage	Pass	245 ± 5°C for 3 seconds
Resistance to Soldering Heat	JIS-C-5201-1 4.18 IEC-60115-1 4.18	±(0.5% + 0.05Ω)	Pass	260 ± 5°C for 10 seconds
Voltage Proof	JIS-C-5201-1 4.7 IEC-60115-1 4.7	No breakdown or flashover	Pass	1.42 times Max. Operating Voltage for 1 minute. 0201: 50 V; 0402: 100 V; 0603: 150 V; 0805: 300 V 1206/1210/2010/1225: 400 V 2512: 500 V
Leaching	JIS-C-5201-1 4.18 IEC-60068-2-58 8.2.1	Individual leaching area ≤ 5% Total leaching area ≤ 10%	Pass	260 ±5°C for 30 seconds
Rapid Change of Temperature	JIS-C-5201-1 4.19 IEC-60115-1 4.19	±(0.5% + 0.05Ω)	Pass	-55°C (30 minutes)/+125°C (30 minutes, 5 cycles)

Operating temperature range is -55 to +155°C

RCWV (Rated Continuous Working Voltage) = √(P*R) or Max. Operating Voltage whichever is lower.

Recommended storage temperature is 15 to 28°C. Humidity < 80% R.H.

Power Derating Curve:



CSR / CSRN Series
Thick Film Current Sensing Resistor

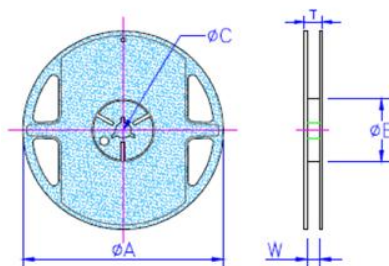
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Resistive Product Solutions

Recommended Pad Layout



Type/Code	a	b	c	Unit
CSR0201	0.010 0.25	0.012 0.30	0.016 ± 0.008 0.40 ± 0.20	inches mm
CSR0402	0.020 0.50	0.020 0.50	0.024 ± 0.008 0.60 ± 0.20	inches mm
CSR0603	0.031 0.80	0.039 1.00	0.035 ± 0.008 0.90 ± 0.20	inches mm
CSR0805	0.039 1.00	0.039 1.00	0.053 ± 0.008 1.35 ± 0.20	inches mm
CSR1206	0.079 2.00	0.045 1.15	0.067 ± 0.008 1.70 ± 0.20	inches mm
CSR1210	0.079 2.00	0.045 1.15	0.098 ± 0.008 2.50 ± 0.20	inches mm
CSR2010	0.055 1.40	0.094 2.40	0.110 ± 0.008 2.80 ± 0.20	inches mm
CSRN2010	0.142 3.60	0.055 1.40	0.098 ± 0.008 2.50 ± 0.20	inches mm
CSR2512	0.039 1.00	0.140 3.55	0.126 ± 0.008 3.20 ± 0.20	inches mm
CSRN2512	0.193 4.90	0.063 1.60	0.126 ± 0.008 3.20 ± 0.20	inches mm
CSR1225	0.047 1.20	0.079 2.00	0.276 ± 0.008 7.00 ± 0.20	inches mm

Reel Specifications



Type/Code	A	B	C	W	T	Unit
0201	7.008 ± 0.039 178.00 ± 1.00	2.362 ± 0.039 60.00 ± 1.00	0.531 ± 0.028 13.50 ± 0.70	0.374 ± 0.004 9.50 ± 0.10	0.453 ± 0.039 11.50 ± 1.00	inches mm
0402	7.008 ± 0.039 178.00 ± 1.00	2.362 ± 0.039 60.00 ± 1.00	0.531 ± 0.028 13.50 ± 0.70	0.374 ± 0.004 9.50 ± 0.10	0.453 ± 0.039 11.50 ± 1.00	inches mm
0603	7.008 ± 0.039 178.00 ± 1.00	2.362 ± 0.039 60.00 ± 1.00	0.531 ± 0.028 13.50 ± 0.70	0.374 ± 0.004 9.50 ± 0.10	0.453 ± 0.039 11.50 ± 1.00	inches mm
0805	7.008 ± 0.039 178.00 ± 1.00	2.362 ± 0.039 60.00 ± 1.00	0.531 ± 0.028 13.50 ± 0.70	0.374 ± 0.004 9.50 ± 0.10	0.453 ± 0.039 11.50 ± 1.00	inches mm
1206	7.008 ± 0.039 178.00 ± 1.00	2.362 ± 0.039 60.00 ± 1.00	0.531 ± 0.028 13.50 ± 0.70	0.374 ± 0.004 9.50 ± 0.10	0.453 ± 0.039 11.50 ± 1.00	inches mm
1210	7.008 ± 0.039 178.00 ± 1.00	2.362 ± 0.039 60.00 ± 1.00	0.531 ± 0.028 13.50 ± 0.70	0.374 ± 0.004 9.50 ± 0.10	0.453 ± 0.039 11.50 ± 1.00	inches mm
2010	7.008 ± 0.039 178.00 ± 1.00	2.362 ± 0.039 60.00 ± 1.00	0.531 ± 0.028 13.50 ± 0.70	0.531 ± 0.039 13.50 ± 1.00	0.610 ± 0.039 15.50 ± 1.00	inches mm
2512	7.008 ± 0.039 178.00 ± 1.00	2.362 ± 0.039 60.00 ± 1.00	0.531 ± 0.028 13.50 ± 0.70	0.531 ± 0.039 13.50 ± 1.00	0.610 ± 0.039 15.50 ± 1.00	inches mm
1225	7.008 ± 0.039 178.00 ± 1.00	2.362 ± 0.039 60.00 ± 1.00	0.531 ± 0.028 13.50 ± 0.70	0.531 ± 0.039 13.50 ± 1.00	0.610 ± 0.039 15.50 ± 1.00	inches mm

Packaging Specifications - Paper Tape



Size	A	B	W	E	F	Unit
0201	0.015 ± 0.002 0.38 ± 0.05	0.027 ± 0.002 0.68 ± 0.05	0.315 ± 0.004 8.00 ± 0.10	0.069 ± 0.002 1.75 ± 0.05	0.138 ± 0.002 3.50 ± 0.05	inches mm
0402	0.026 ± 0.004 0.65 ± 0.10	0.045 ± 0.004 1.15 ± 0.10	0.315 ± 0.008 8.00 ± 0.20	0.069 ± 0.004 1.75 ± 0.10	0.138 ± 0.002 3.50 ± 0.05	inches mm
0603	0.043 ± 0.004 1.10 ± 0.10	0.075 ± 0.004 1.90 ± 0.10	0.315 ± 0.008 8.00 ± 0.20	0.069 ± 0.004 1.75 ± 0.10	0.138 ± 0.002 3.50 ± 0.05	inches mm
0805	0.063 ± 0.004 1.60 ± 0.10	0.094 ± 0.008 2.40 ± 0.20	0.315 ± 0.008 8.00 ± 0.20	0.069 ± 0.004 1.75 ± 0.10	0.138 ± 0.002 3.50 ± 0.05	inches mm
1206	0.075 ± 0.004 1.90 ± 0.10	0.138 ± 0.008 3.50 ± 0.20	0.315 ± 0.008 8.00 ± 0.20	0.069 ± 0.004 1.75 ± 0.10	0.138 ± 0.002 3.50 ± 0.05	inches mm
1210	0.114 ± 0.004 2.90 ± 0.10	0.138 ± 0.008 3.50 ± 0.20	0.315 ± 0.008 8.00 ± 0.20	0.069 ± 0.004 1.75 ± 0.10	0.138 ± 0.002 3.50 ± 0.05	inches mm
Size	P0	P1	P2	D0	T	Unit
0201	0.157 ± 0.004 4.00 ± 0.10	0.079 ± 0.002 2.00 ± 0.05	0.079 ± 0.004 2.00 ± 0.10	0.059 +0.004/-0 1.50 +0.10/-0	0.017 ± 0.008 0.42 ± 0.20	inches mm
0402	0.157 ± 0.004 4.00 ± 0.10	0.079 ± 0.002 2.00 ± 0.05	0.079 ± 0.002 2.00 ± 0.05	0.059 +0.004/-0 1.50 +0.10/-0	0.018 ± 0.004 0.45 ± 0.10	inches mm
0603	0.157 ± 0.004 4.00 ± 0.10	0.157 ± 0.002 4.00 ± 0.05	0.079 ± 0.002 2.00 ± 0.05	0.059 +0.004/-0 1.50 +0.10/-0	0.028 ± 0.004 0.70 ± 0.10	inches mm
0805	0.157 ± 0.004 4.00 ± 0.10	0.157 ± 0.002 4.00 ± 0.05	0.079 ± 0.002 2.00 ± 0.05	0.059 +0.004/-0 1.50 +0.10/-0	0.033 ± 0.004 0.85 ± 0.10	inches mm
1206	0.157 ± 0.004 4.00 ± 0.10	0.157 ± 0.002 4.00 ± 0.05	0.079 ± 0.002 2.00 ± 0.05	0.059 +0.004/-0 1.50 +0.10/-0	0.033 ± 0.004 0.85 ± 0.10	inches mm
1210	0.157 ± 0.004 4.00 ± 0.10	0.157 ± 0.002 4.00 ± 0.05	0.079 ± 0.002 2.00 ± 0.05	0.059 +0.004/-0 1.50 +0.10/-0	0.033 ± 0.004 0.85 ± 0.10	inches mm

Packaging Specifications - Plastic Tape



Size	A	B	W	E	F	Unit
2010	0.110 ± 0.004 2.80 ± 0.10	0.217 ± 0.004 5.50 ± 0.10	0.472 ± 0.012 12.00 ± 0.30	0.069 ± 0.004 1.75 ± 0.10	0.217 ± 0.002 5.50 ± 0.05	inches mm
2512	0.133 ± 0.004 3.38 ± 0.10	0.263 ± 0.004 6.68 ± 0.10	0.472 ± 0.012 12.00 ± 0.30	0.069 ± 0.004 1.75 ± 0.10	0.217 ± 0.004 5.50 ± 0.10	inches mm
1225	0.133 ± 0.004 3.38 ± 0.10	0.263 ± 0.004 6.68 ± 0.10	0.472 ± 0.012 12.00 ± 0.30	0.069 ± 0.004 1.75 ± 0.10	0.217 ± 0.004 5.50 ± 0.10	inches mm
Size	P0	P1	P2	D0	T	Unit
2010	0.157 ± 0.002 4.00 ± 0.05	0.157 ± 0.004 4.00 ± 0.10	0.079 ± 0.002 2.00 ± 0.05	0.059 +0.004/-0 1.50 +0.10, -0	0.039 ± 0.008 1.00 ± 0.20	inches mm
2512	0.157 ± 0.004 4.00 ± 0.10	0.157 ± 0.004 4.00 ± 0.10	0.079 ± 0.002 2.00 ± 0.05	0.061 +0.002/-0 1.55 +0.05, -0	0.057 ± 0.008 1.45 ± 0.20	inches mm
1225	0.157 ± 0.004 4.00 ± 0.10	0.157 ± 0.004 4.00 ± 0.10	0.079 ± 0.002 2.00 ± 0.05	0.061 +0.002/-0 1.55 +0.05, -0	0.057 ± 0.008 1.45 ± 0.20	inches mm

Marking Instructions

0201 and 0402 sizes are not marked.

0603 size has three-character marking with examples shown in the table below.

- 1% and 5% marking is the same
- E96 values are only available in 1% tolerance
- If the value has two significant digits, the marking is "R" plus the two significant digits (e.g. R10 = 100 mΩ)
- If the value has three significant digits, the marking is the three significant digits underlined (e.g. 047 = 47 mΩ)

0805 and larger sizes have four-character marking for both 1% and 5% tolerances.

Size	Ohmic Value					
	5 mΩ	20 mΩ	25 mΩ	100 mΩ	221 mΩ	250 mΩ
0201/0402	No marking					
0603 1%	NA	R02	<u>025</u>	R10	<u>221</u>	R25
0603 5%	NA	R02	<u>025</u>	R10	NA	R25
0805 and larger 1%	R005	R020	R025	R100	R221	R250
0805 and larger 5%	R005	R020	R025	R100	NA	R250

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