

Low Value Current Sense Thin Film Chip Resistors

LCS Series

Features:

- Thin film technology
- Low values down to R05 (50mΩ)
- Precision to $\pm 0.5\%$ & $\pm 50\text{ppm}/^\circ\text{C}$
- Accurate current sensing in electronic systems



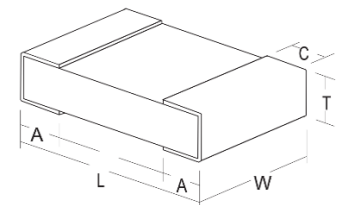
All parts are Pb-free and comply with EU Directive 2011/65/EU amended by (EU) 2015/863 (RoHS3)

Electrical Data

		LCS0603	LCS0805	LCS1206	LCS2010	LCS2512
Power rating at 70°C	W	0.1	0.125	0.25	0.75	1
Resistance range	Ω	R20 – 1R0		R05 – 1R0		
TCR	ppm/°C	R05 – R10: ± 200		R102-R75: ± 100	>R75: ± 50	
Resistance tolerance	%	0.5, 1		\leq R10: 1 >R10: 0.5, 1	0.5, 1	
Standard values		E24 or E96 preferred				
Ambient temperature range	°C	-55 to +155				

Physical Data

Dimensions in mm and weight in mg						
	L	W	T max.	A	C	Wt. nom.
0603	1.6 \pm 0.1	0.8 \pm 0.1	0.55	0.3 \pm 0.2	0.3 \pm 0.2	3
0805	2 \pm 0.15	1.25 \pm 0.15	0.65	0.4 \pm 0.25		6
1206	3.05 \pm 0.15	1.55 \pm 0.15			0.75	0.5 \pm 0.25
2010	5 \pm 0.2	2.45 \pm 0.15	0.6 \pm 0.3	27		
2512	6.35 \pm 0.2	3.15 \pm 0.15		0.55 \pm 0.25		



Construction

A thin-film material is selectively deposited on a 96% alumina substrate together with metallic contacts at each end of the resistor. The unadjusted resistors are heat treated to give the required TCR and stability, then a precisely controlled laser trim process adjusts the resistance value. Protection is applied and wrap-around terminations are added and plated with nickel then tin. Each resistor is measured immediately before packing into tape.

Terminations

LCS has 100% Sn matte plated wrap-around terminations suitable for soldering.

Marking

0603 uses three character marking. Larger sizes are marked with up to four characters, e.g. 1Ω is marked 1R0 and 680mΩ is marked R68.

Performance Data

Test	Method	Maximum
Load life	1000 hours, cyclic load P_r at $T_A = 70^\circ\text{C}$	$\pm\Delta R\%$ 1
Short term overload	6.25 x P_r for 5 s	$\pm\Delta R\%$ 1
Temperature rapid change	100 cycles, -55 to +150°C	$\pm\Delta R\%$ 0.5
Damp heat steady state	1000 hours @ 40°C, 90 - 95%RH	$\pm\Delta R\%$ 0.5
Resistance to solder heat	260 \pm 5°C, 10 \pm 1s	$\pm\Delta R\%$ 0.5
Solderability	245 \pm 5°C, 3s	$\geq 95\%$ coverage
Insulation resistance	100V _{dc} , 60s	$\geq 1\text{G}$

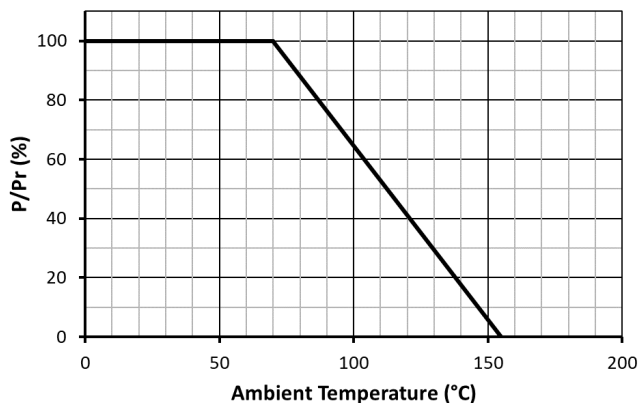
General Note

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

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Temperature Derating



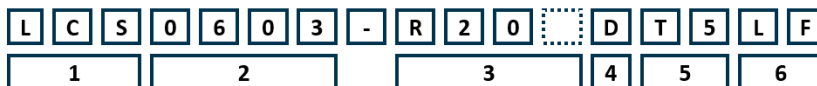
Packaging

LCS resistors are packed in tape which is 8mm wide paper for 0603 to 1206 sizes and 12mm wide plastic for 2010 and 2512 sizes, all on 178mm reels. For full details of tape and reel dimensions see:

<https://www.ttelectronics.com/ttelectronics/media/productfiles/applicationnotes/ps001-packing-of-general-purpose-chip-resistors.pdf>

Ordering Procedure

Example: LCS0603-R20DT5LF (LCS0603, 200mΩ 0.5%, tape packed 5000/reel, Pb-free)



1 Type	2 Size	3 Value	4 Tolerance	5 Packing		6 Termination	
LCS	0603	E24 or E96 3/4 characters R = ohms	D = ±0.5%	T5	0603, 0805, 1206	5000/reel	LF = Pb-free
	0805		F = ±1%	T4	2010, 2512	4000/reel	
	1206						
	2010						
	2512						