

# Low Value Current Sense Thin Film Chip Resistors

## LCS Series

- Thin film technology
- Low values down to R10 (100mΩ)
- Precision to  $\pm 0.5\%$  &  $\pm 50$  ppm/ $^{\circ}\text{C}$
- Accurate current sensing in electronic systems
- Anti-sulfur construction



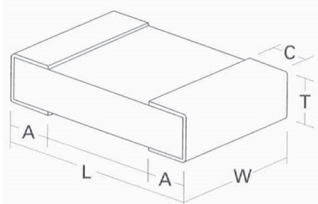
 All Pb-free parts comply with EU Directive 2011/65/EU (RoHS2)

## Electrical Data

		LCS0603	LCS0805	LCS1206	LCS2010	LCS2512
Power rating at 70°C	watts	0.1	0.125	0.25	0.5	1.0
Resistance range	ohms	R20-1R0		R10-1R0		
Limiting element voltage	volts	50	100	150		
TCR	ppm/ $^{\circ}\text{C}$	<R30: $\pm 100$ $\geq$ R30: $\pm 50$				
Resistance tolerance	%	0.5, 1, 5				
Standard values		E24 or E96 preferred				
Ambient temperature range	$^{\circ}\text{C}$	-55 to +155				

## Physical Data

Dimensions in mm & weight in g						
Type	L	W	T max	A	C	Wt. nom
LCS0603	1.60 $\pm$ 0.2	0.80 $\pm$ 0.2	0.55	0.30 $\pm$ 0.2	0.30 $\pm$ 0.2	0.006
LCS0805	2.00 $\pm$ 0.2	1.25 $\pm$ 0.2	0.65	0.40 $\pm$ 0.25		0.009
LCS1206	3.05 $\pm$ 0.15	1.55 $\pm$ 0.15		0.35 $\pm$ 0.25	0.42 $\pm$ 0.2	0.020
LCS2010	4.9 $\pm$ 0.2	2.4 $\pm$ 0.2		0.50 $\pm$ 0.25	0.60 $\pm$ 0.3	0.036
LCS2512	6.3 $\pm$ 0.2	3.1 $\pm$ 0.2				0.055



Wrap-around terminations  
(3 faces)

### 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

Standard is 100% Sn matte plated wrap-around terminations suitable for soldering. SnPb 60/40 plated terminations are also available.

### Marking

0603 & 0805 sizes are unmarked. Larger sizes are marked with up to four characters, e.g. 1Ω is marked 1R0 and 680mΩ is marked R68.

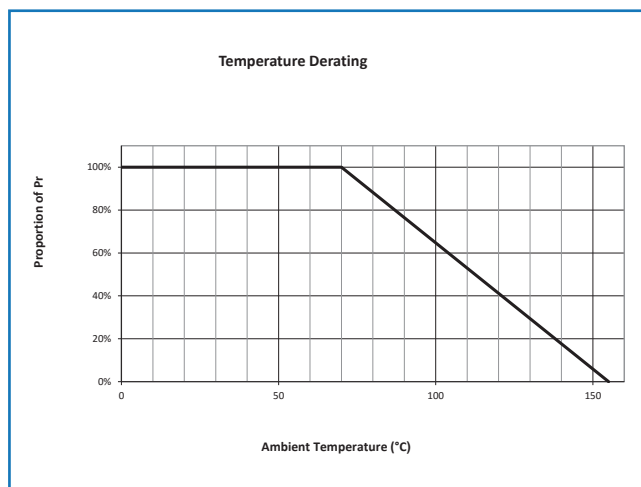
### General Note

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.

LCS Series

## Performance Data

		Maximum (+0.005Ω)
Load at rated power (1000hrs cyclic load at 70°C)	±ΔR%	1
De-rating from rated power at 70°C		See Graph
Short term overload (6.25 x rated power for 5s)	±ΔR%	1
Temperature rapid change (-55 / +150°C, 100 cycles)	±ΔR%	0.5
Damp heat steady state	±ΔR%	0.5
Resistance to solder heat (260°C for 10s)	±ΔR%	0.5
High temperature operation	±ΔR%	0.5
Insulation resistance	MΩ	>1000

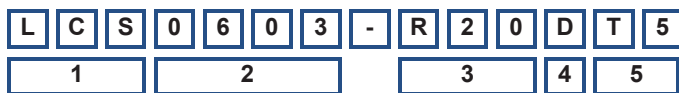


## Packaging

The standard packing for LCS parts is on 8mm wide plastic carrier tape for 0603 to 1206 sizes and 12mm wide plastic carrier tape for 2010 and 2512 sizes. All sizes are wound on 7" (178mm) reels as per IEC 286-3.

## Ordering Procedure

**Example:** LCS0603-R20DT5 (LCS0603, 200mΩ 0.5%, Pb-free, tape packed 5000/reel)



1	2	3	4	5			
Series	Size	Value	Tolerance	Termination & Packing			
LCS	0603	R=ohms	D=±0.5%	T5	0603	Pb-free, 5000/reel	Standard
	0805		F=±1%	T3	0805, 1206, 2010	Pb-free, 3000/reel	
	1206		J=±5%	T18	2512	Pb-free, 1800/reel	
	2010			PB	SnPb terminations (pack quantities are as for Pb-free)		
	2512						

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