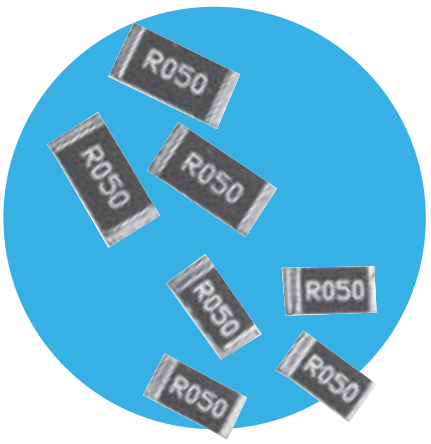
Resistors

Low Value Flat Chip Resistor



LR Series

- Standard 2512, 2010 and 1206 sizes
- Resistance values down to 0.003 ohms
- Leach resistant solder-plated copper wrap-around termination
- AEC-Q200 Qualified
- RoHS compliant and SnPb variants

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

Electrical Data

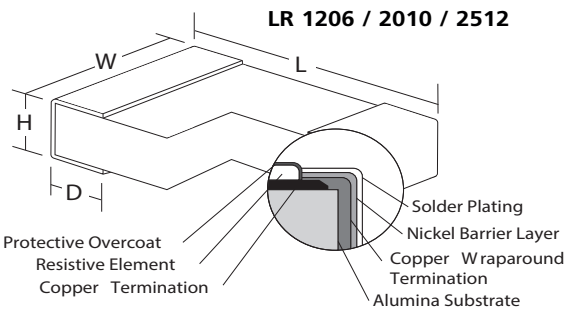
		LR(F)1206	LR(F)2010	LR(F)2512
Power rating @70°C	watts	0.5	1	2
Resistance range[1]	ohms	R003 to 1R0		
Resistance tolerance[1]	%	<R01: 5, ≥R01: 1, 2, 5		
TCR	ppm/°C	≥R05: ±100, R025–R047: <+200, R015-R024: <+300, R01-R014: <+500, <R01: <+900		
Dielectric withstand	volts	200		
Ambient temperature range	°C	-55 to +150		
Values		E24 preferred[2]		
Temperature rise at rated power	°C	40	80	90
Pad / trace area[3]	mm²	30	100	300

Note 1: Contact factory for value – tolerance combinations outside this range. Note 2: Many values = N x R001 and N x R005 up to N=10 are also available. Note 3: Recommended minimum pad & adjacent trace area for each termination for rated dissipation on FR4 PCB

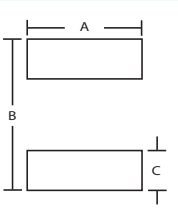
Physical Data

Dimensions (mm)				
Size	L	W	H (max)	D
LR(F)1206	3.20±0.305	1.63±0.20	0.8	0.48±0.25
LR(F)2010	5.23±0.38	2.64±0.25	0.84	0.48±0.25
LR(F)2512	6.50±0.38	3.25±0.25	0.84	0.48±0.25

LR 1206 / 2010 / 2512



Recommended Solder Pad Dimensions (mm)			
	A	B	C
LR(F)1206	2.0	4.0	1.25
LR(F)2010	3.05	6.5	1.5
LR(F)2512	3.7	7.75	1.5



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.

BI Technologies IRC Welwyn

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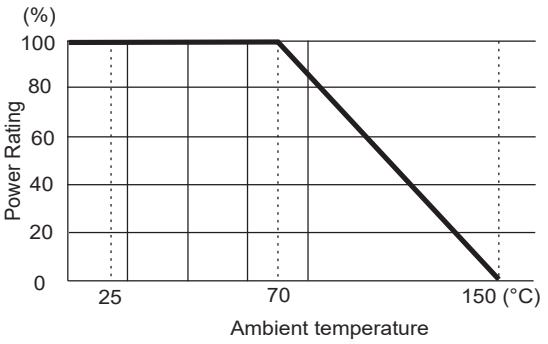
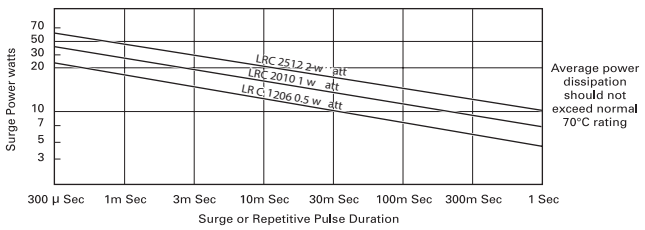
Performance Data

AEC-Q200 Table 7 ref	Test	Method	Max. (add R05)		Typ. (@1R0)
3	High Temp. Exposure	MIL-STD-202 Method 108	ΔR%	0.5	0.2
4	Temperature Cycling	JESD22 Method JA-104	ΔR%	0.25	0.1
6	Moisture Resistance	MIL-STD-202 Method 106	ΔR%	0.5	0.2
7	Biased Humidity	MIL-STD-202 Method 103	ΔR%	0.5	0.2
8	Operational Life (Cyclic Load)	MIL-STD-202 Method 108	ΔR%	1	0.5
14	Vibration	MIL-STD-202 Method 204	ΔR%	0.5	0.05
15	Resistance to Soldering Heat	MIL-STD-202 Method 210	ΔR%	0.25	0.05
16	Thermal Shock	MIL-STD-202 Method 107	ΔR%	0.25	0.1
18	Solderability	J-STD-002	>95% coverage		
21	Board Flex	AEC-Q200-005	ΔR%	0.5	0.2
22	Terminal Strength	AEC-Q200-006	ΔR%	0.25	0.1
	Short Term Overload	6.25 x Pr for 2s	ΔR%	0.5	
	Low Temperature Storage	-65˚C for 100 hours	ΔR%	0.5	
	Leach Resistance	Solder dip at 250˚C	90s minimum		





Note:

1. Although 2010 and 2512 sizes have passed temperature cycling and thermal shock, it is in general not recommended that ceramic chips this large be used on FR4 in a severe temperature cycle environment due to the possibility of solder joint fatigue.

Full AEC-Q200 qualification applies only to ohmic values ≥R01.

Ordering Procedure

This product has two valid part numbers:

European (Welwyn) Part Number: LRF1206-R02FW (1206, 20 milliohms ±1%, Pb-free)

L	R	F	1	2	0	6	-	R	0	2	F	W
1			2					3			4	5

1 Type	2 Size	3 Value	4 Tolerance	5 Termination & Packing	
LR = Conventional orientation (values >R025)	1206	E24 = 3/4 characters R = ohms	F = ±1%	W	Pb-free, standard packing
	2010		G = ±2%	T1	Pb-free, 1000/reel (non-standard)
LRF = Flip-chip orientation (values ≤R025)	2512		J = ±5%	PB	SnPb finish, standard packing
				Standard packing is tape & reel	
				1206 & 2010	3000/reel
				2512	1800/reel

USA (IRC) Part Number: LRC-LRF1206LF-01-R020-F (1206, 20 milliohms ±1%, Pb-free)

L	R	C	-	L	R	F	1	2	0	6	L	F	-	0	1	-	R	0	2	0	-	F
1				2			3				4			5			6					7

1 Family	2 Model	3 Size	4 Termination	5 TCR	6 Value	7 Tolerance	Packing		
LRC	LR = Conventional orientation (values >R025)	1206	Omit for SnPb	01 = standard (±100ppm/°C values ≥R05)	4 characters R = ohms	F = ±1%	Standard packing is tape & reel		
		2010	LF = Pb-free			G = ±2%	Pb-free	All sizes	1000/reel
	LRF = Flip-chip orientation (values ≤R025)	2512				J = ±5%	SnPb	1206 & 2010	3000/reel
								2512	1800/reel