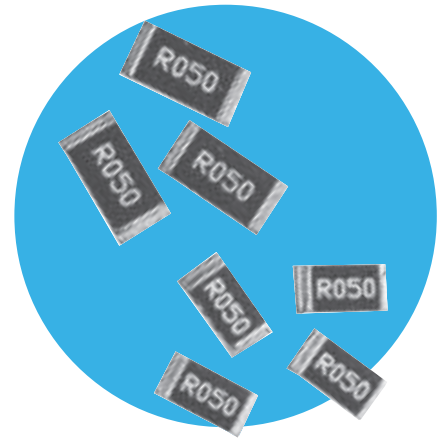


## Low Value Flat Chip Resistor

### 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 <sup>1</sup>	ohms	R003 to 1R0		
Resistance tolerance <sup>1</sup>	%	<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 <sup>2</sup>		
Temperature rise at rated power	°C	40	80	90
Pad / trace area <sup>3</sup>	mm <sup>2</sup>	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

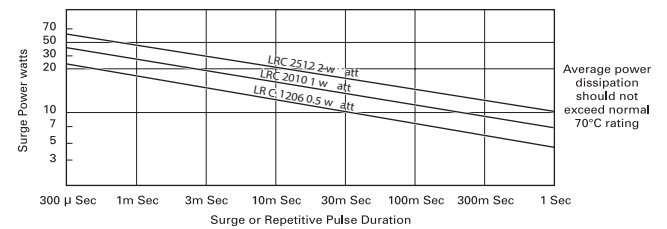
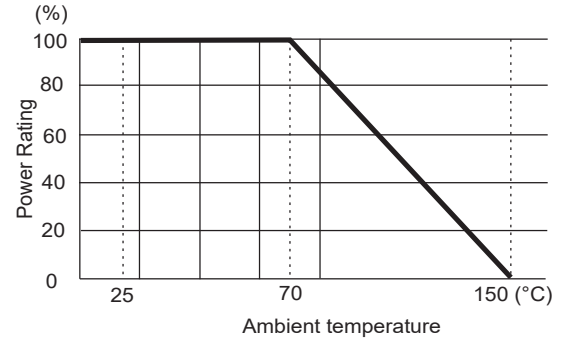
### General Note

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### LR Series

## Performance Data

AEC-Q200 Table 7		Method	Max. (add R05)		Typ. (@1R0)
ref	Test		$\Delta R\%$	Failure Rate	
3	High Temp. Exposure	MIL-STD-202 Method 108	$\Delta R\%$	0.5	0.2
4	Temperature Cycling	JESD22 Method JA-104	$\Delta R\%$	0.25	0.1
6	Moisture Resistance	MIL-STD-202 Method 106	$\Delta R\%$	0.5	0.2
7	Biased Humidity	MIL-STD-202 Method 103	$\Delta R\%$	0.5	0.2
8	Operational Life (Cyclic Load)	MIL-STD-202 Method 108	$\Delta R\%$	1	0.5
14	Vibration	MIL-STD-202 Method 204	$\Delta R\%$	0.5	0.05
15	Resistance to Soldering Heat	MIL-STD-202 Method 210	$\Delta R\%$	0.25	0.05
16	Thermal Shock	MIL-STD-202 Method 107	$\Delta R\%$	0.25	0.1
18	Solderability	J-STD-002	>95% coverage		
21	Board Flex	AEC-Q200-005	$\Delta R\%$	0.5	0.2
22	Terminal Strength	AEC-Q200-006	$\Delta R\%$	0.25	0.1
Short Term Overload		6.25 x Pr for 2s	$\Delta R\%$	0.5	
Low Temperature Storage		-65°C for 100 hours	$\Delta R\%$	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  $\geq R01$ .

## Ordering Procedure

This product has two valid part numbers:

**European (Welwyn) Part Number: LRF1206-R02FW** (1206, 20 milliohms  $\pm 1\%$ , Pb-free)

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

1	2	3	4	5	
Type	Size	Value	Tolerance	Termination & Packing	
LR = Conventional orientation (values $>R025$ )	1206 2010	E24 = 3/4 characters R = ohms	F = $\pm 1\%$ G = $\pm 2\%$ J = $\pm 5\%$	W	Pb-free, standard packing
LRF = Flip-chip orientation (values $\leq R025$ )	2512			T1	Pb-free, 1000/reel (non-standard)
				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  $\pm 1\%$ , 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	2	3	4	5	6	7	Packing		
Family	Model	Size	Termination	TCR	Value	Tolerance			
LRC	LR = Conventional orientation (values $>R025$ )	1206 2010	Omit for SnPb LF = Pb-free	01 = standard ( $\pm 100\text{ppm}/^\circ\text{C}$ values $\geq R05$ )	4 characters R = ohms	F = $\pm 1\%$ G = $\pm 2\%$ J = $\pm 5\%$	Standard packing is tape & reel		
	LRF = Flip-chip orientation (values $\leq R025$ )	2512					Pb-free	All sizes	1000/reel
							SnPb	1206 & 2010	3000/reel
								2512	1800/reel

### General Note

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