

## Overview

The KEMET MPLCG metal composite inductors are ideal for use in DC to DC switching power supplies. The MPLCG's small size makes it ideal for applications with tight space requirements. The combination of composite core material and round wire allows these inductors to be used in applications with high switching frequencies and where efficiency is important.

## Applications

- Switching DC-DC power supplies
- Notebook computers
- Tablets
- Embedded computer systems
- Servers and storage
- HDTVs

## Benefits

- Metal composite powder
- Operating temperature up to +125°C
- High inductance
- Low DCR
- Low profile 3 mm maximum
- Low core loss
- Low acoustic noise



## Part Number System

MPLCG	0530	L	R22
Series	Size Code	Inductor	Inductance Code $\mu\text{H}$
MPLCG	0530 0630		R = decimal point Examples: R22 = 0.22 $\mu\text{H}$ 1R0 = 1.0 $\mu\text{H}$

## Performance Characteristics

Item	Performance Characteristics
Operating Temperature	-40°C to +125°C (including self-temperature rise)
Rated Inductance Range	0.22 – 4.70 µH at 100 kHz, 1 mA
Inductance Tolerance	±20%
Rated DC Resistance Range	2.7 – 74.0 mΩ maximum
Rated Current Range	4.5 – 14.1 A

**Table 1 – Ratings & Part Number Reference**

Part Number	Inductance (µH) at 100 kHz, 1 mA	Inductance Tolerance	DC Resistance (mΩ) Maximum	Rated Current (A)	
				Irms <sup>1</sup> (Ref.)	Isat <sup>2</sup> (Ref.)
MPLCG0530LR22	0.22	±20%	3.7	14.1	10.2
MPLCG0530LR33	0.33	±20%	7.3	10.3	8.9
MPLCG0530LR47	0.47	±20%	8.4	9.5	8.9
MPLCG0530LR68	0.68	±20%	11.6	7.9	6.8
MPLCG0530L1R0	1.00	±20%	14.6	7.4	5.6
MPLCG0530L1R5	1.50	±20%	21.7	5.9	5.6
MPLCG0530L2R2	2.20	±20%	36.4	4.5	5.0
<b>MPLCG0530L3R3*</b>	<b>3.30</b>	<b>±20%</b>	<b>58.0</b>	<b>3.6</b>	<b>3.1</b>
<b>MPLCG0530L4R7*</b>	<b>4.70</b>	<b>±20%</b>	<b>74.0</b>	<b>3.1</b>	<b>3.0</b>
<b>MPLCG0630LR22*</b>	<b>0.22</b>	<b>±20%</b>	<b>2.7</b>	<b>21.4</b>	<b>17.9</b>
<b>MPLCG0630LR33*</b>	<b>0.33</b>	<b>±20%</b>	<b>4.3</b>	<b>16.9</b>	<b>17.3</b>
MPLCG0630LR47	0.47	±20%	5.0	15.8	15.6
<b>MPLCG0630LR68*</b>	<b>0.68</b>	<b>±20%</b>	<b>6.0</b>	<b>14.2</b>	<b>12.6</b>
<b>MPLCG0630LR82*</b>	<b>0.82</b>	<b>±20%</b>	<b>7.0</b>	<b>13.1</b>	<b>11.8</b>
MPLCG0630L1R0	1.00	±20%	9.0	11.9	11.3
MPLCG0630L1R5	1.50	±20%	15.0	9.9	8.3
MPLCG0630L2R2	2.20	±20%	19.0	8.2	7.8
MPLCG0630L3R3	3.30	±20%	30.0	6.5	6.3
MPLCG0630L4R7	4.70	±20%	41.0	5.5	5.4

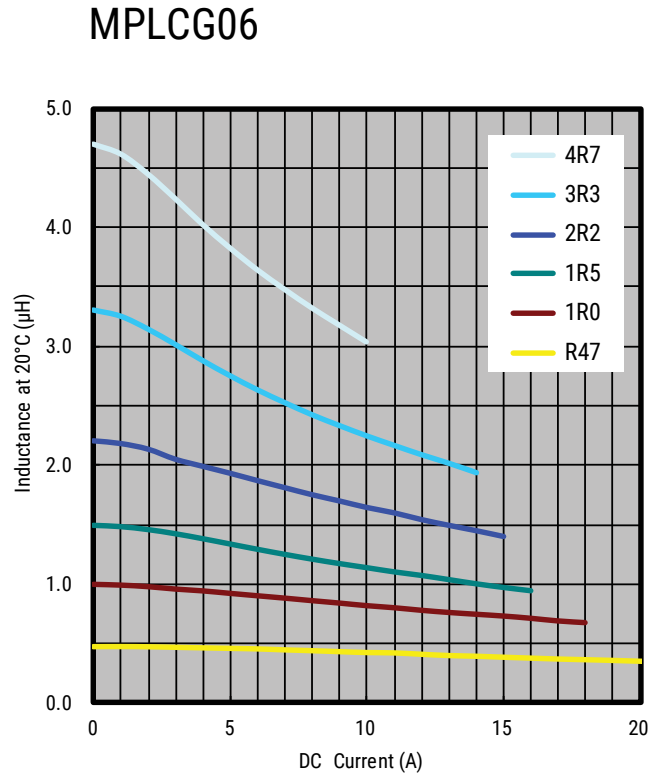
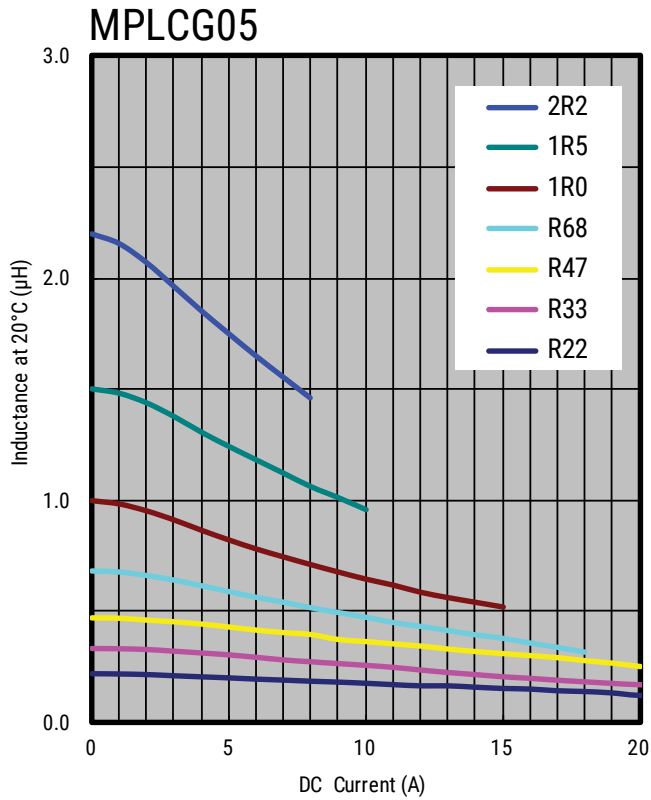
<sup>1</sup> T = 40 K rise at rated current

<sup>2</sup> Inductance drop 20% at rated current

All electrical characteristics data is referenced to 20°C.

\* This part is not for new design.

## DC-Superposed Characteristics

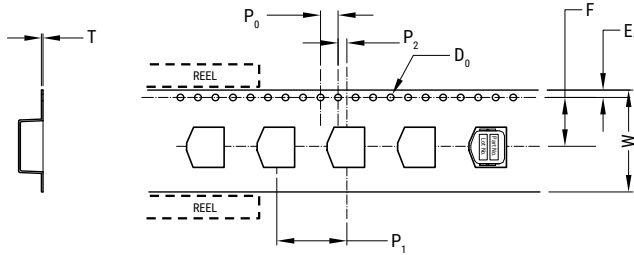


## Dimensions

Case Size	Dimensions (mm)	Land Pattern (mm)
MPLCG0530		
MPLCG0630		

## Taping Specification

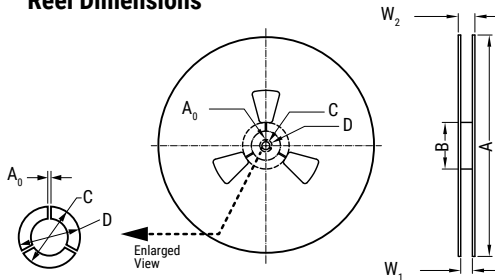
### Dimensions of Indented Square Hole Plastic Tape



Case Size	Reel Quantity		Dimensions (mm)								
			W	F	E <sub>1</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>0</sub>	∅D <sub>0</sub>	T	
MPLCG0530	3,500	Tolerance	±0.3	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.05	±0.05
		Nominal	12.0	5.5	1.75	8.0	2.0	4.0	1.55	0.4	
MPLCG0630	2,000	Tolerance	±0.3	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.05	±0.05
		Nominal	16.0	7.5	1.75	12.0	2.0	4.0	1.55	0.4	

## Reel Specifications

### Reel Dimensions



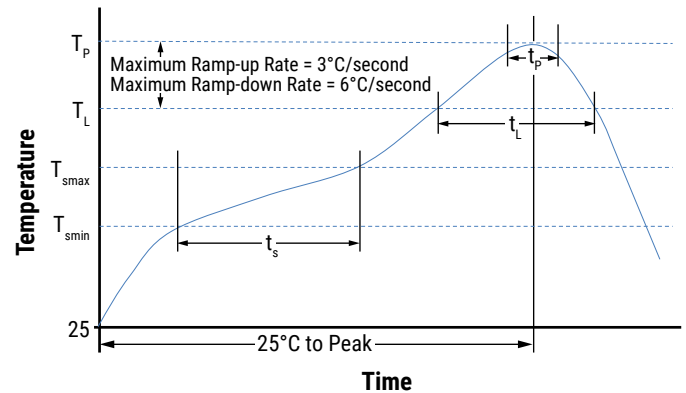
Case Size		Dimensions (mm)						
		A	B	C	D	A <sub>0</sub>	W <sub>1</sub>	W <sub>2</sub>
MPLCG0530	Tolerance	±5.0	±10.0	±1.0	±0.8	±0.5	±1.5	±2.0
	Nominal	∅380	∅95	∅13.5	∅21.0	2.0	14.5	18.5
MPLCG0630	Tolerance	±5.0	±10.0	±1.0	±0.8	±0.5	±1.0	±1.5
	Nominal	∅380	∅95	∅13.5	∅21.0	2.0	18.0	21.6

## Soldering Process

### Recommended Reflow Soldering Profile

Reference ICP/JEDEC J-STD-020E

Profile Feature	Pb-Free Assembly
<b>Preheat/Soak</b>	
Temperature Minimum ( $T_{smin}$ )	150°C
Temperature Maximum ( $T_{smax}$ )	200°C
Time ( $t_s$ ) from $T_{smin}$ to $T_{smax}$	60 – 120 seconds
Ramp-up Rate ( $T_L$ to $T_p$ )	3°C/second maximum
Liquidous Temperature ( $T_L$ )	217°C
Time Above Liquidous ( $t_L$ )	60 – 150 seconds
Peak Temperature ( $T_p$ )	250°C
Time within 5°C of Maximum Peak Temperature ( $t_p$ )	30 seconds maximum
Ramp-down Rate ( $T_p$ to $T_L$ )	6°C/second maximum
Time 25°C to Peak Temperature	8 minutes maximum



## Handling Precautions

Inductors should be stored in normal working environments. While the inductors themselves are quite robust in other environments, solderability will be degraded by exposure to high temperatures, high humidity, corrosive atmospheres, and long term storage.

KEMET recommends that maximum storage temperature not exceed 40°C and maximum storage humidity not exceed 70% relative humidity. Atmospheres should be free of chlorine and sulfur bearing compounds. Temperature fluctuations should be minimized to avoid condensation on the parts. For optimized solderability, inductors' stock should be used promptly, preferably within six months of receipt.

## Export Control

### For customers in Japan

For products which are controlled items subject to the "Foreign Exchange and Foreign Trade Law" of Japan, the export license specified by the law is required for export.

### For customers outside Japan

Inductors should not be used or sold for use in the development, production, stockpiling or utilization of any conventional weapons or mass-destruction weapons (nuclear, chemical, biological weapons or missiles), or any other weapons.

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Although all product-related warnings, cautions and notes must be observed, the customer should not assume that all safety measures are indicated or that other measures may not be required.

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