

Overview

The KEMET MPCV metal composite inductors are ideal for use in DC to DC switching power supplies for automotive applications. The combination of composite core material and flat wire allows these inductors to be used in applications with high current loads and where efficiency is important.

Applications

Automotive ECU applications, such as:

- LED headlights
- Meter cluster panels
- Head-up displays (HUD)
- Electric water pumps (EWP)
- Electric oil pumps (EOP)
- Electric power steering (EPS)

Benefits

- Metal composite powder
- Operating temperature up to +155°C
- High current
- Low DCR
- Low acoustic noise
- Low magnetic flux leakage
- AEC-Q200 qualified



Part Number System

MPCV	1060	L	1R5
Series	Size Code	Inductor	Inductance Code μH
MPCV	1060 1260		R = decimal point Examples: R68 = 0.68 μH 1R5 = 1.50 μH

Performance Characteristics

Item	Performance Characteristics
Operating Temperature	-55°C to +155°C (including self-temperature rise)
Rated Inductance Range	0.68 – 1.50 μ H at 100 kHz, 1 mA
Inductance Tolerance	\pm 20%
Rated DC Resistance Range	1.4 – 2.5 m Ω
DC Resistance Tolerance	\pm 10%
Rated Current Range	22 – 32 A

Table 1 – Ratings & Part Number Reference

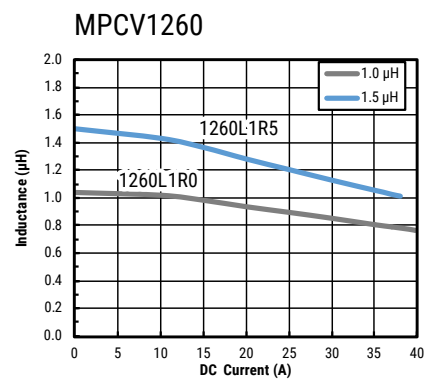
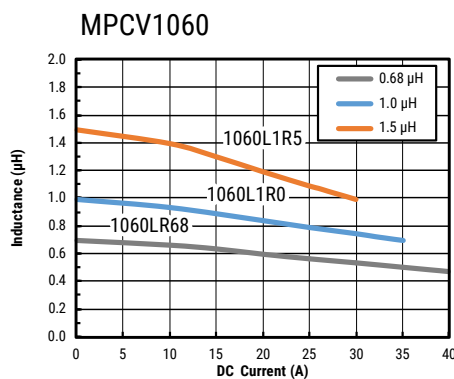
Part Number	Inductance (μ H) at 100 kHz, 1 mA	Inductance Tolerance	DC Resistance (m Ω) \pm 10%	Rated Current (A)	
				I _{rms} ¹ (Reference)	I _{sat} ² (Reference)
MPCV1060LR68	0.68	\pm 20%	1.40	32	38
MPCV1060L1R0	1.00	\pm 20%	1.70	26	35
MPCV1060L1R5	1.50	\pm 20%	2.50	22	27
MPCV1260L1R0	1.00	\pm 20%	1.50	32	42
MPCV1260L1R5	1.50	\pm 20%	2.35	28	35

¹ T = 40 K rise at rated current

² Inductance drop 20% at rated current

All electrical characteristics data is referenced to 25°C.

DC-Superposed Characteristics

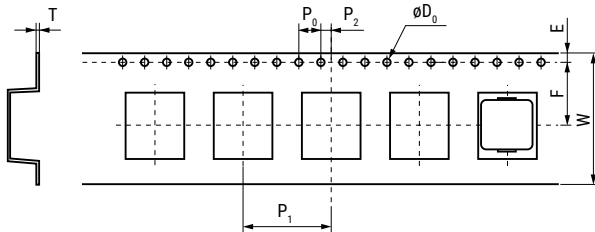


Dimensions

Case Size	Dimensions (mm)	Land Pattern (mm)
MPCV1060	<p>Technical drawing of MPCV1060 inductor showing top, side, and end views. Dimensions: 12.0 maximum (top width), 6.0 maximum (side width), (2.1) (end width), 10.0 ±0.3 (height), and 3.0 ±0.5 (bottom thickness).</p>	<p>Land pattern diagram for MPCV1060 showing a 3.6mm wide pad with 3.3mm spacing and 5.9mm center-to-center distance.</p>
MPCV1260	<p>Technical drawing of MPCV1260 inductor showing top, side, and end views. Dimensions: 14.5 maximum (top width), 6.0 maximum (side width), (2.2) (end width), 12.5 ±0.3 (height), and 3.0 ±0.5 (bottom thickness).</p>	<p>Land pattern diagram for MPCV1260 showing a 3.6mm wide pad with 3.4mm spacing and 8.6mm center-to-center distance.</p>

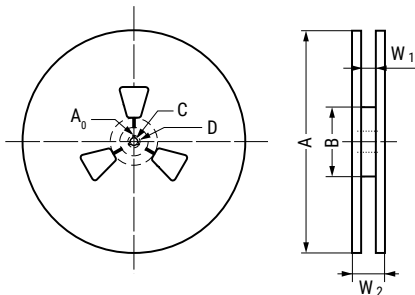
Taping Specification

Dimensions of Indented Square Hole Plastic Tape



Case Size	Reel Quantity		Dimensions (mm)								
			W	F	E	P ₁	P ₂	P ₀	øD ₀	T	
MPCV1060	500	Tolerance	±0.30	±0.10	±0.10	±0.10	±0.10	±0.10	±0.10	±0.05	±0.05
		Nominal	24.00	11.50	1.75	24.00	2.00	4.00	1.55	0.40	
MPCV1260	300	Tolerance	±0.30	±0.10	±0.10	±0.10	±0.10	±0.10	±0.10	±0.05	±0.05
		Nominal	24.00	11.50	1.75	24.00	2.00	4.00	1.55	0.40	

Reel Specifications



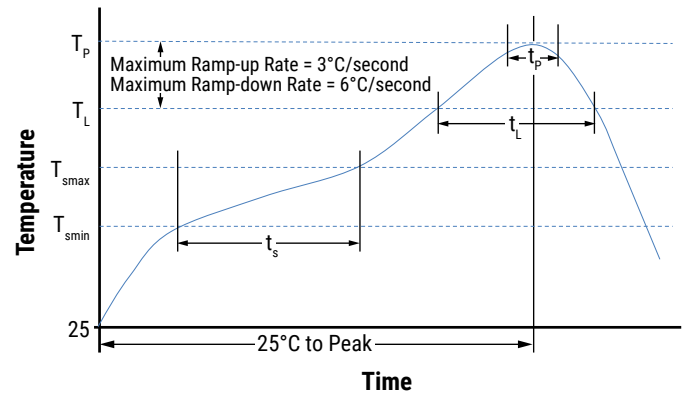
Case Size		Dimensions (mm)						
		A	B	C	D	A ₀	W ₁	W ₂
MPCV1060	Tolerance	±2.0	±2.0	±0.5	±0.8	±0.5		
	Nominal	ø380	ø80	ø13.0	ø21.0	2.3	25.4	29.4
MPCV1260	Tolerance	±3.0	±1.0	±0.5	±0.8	±0.5		
	Nominal	ø330	ø100	ø13.0	ø21.5	2.6	25.0	29.0

Soldering Process

Recommended Reflow Soldering Profile

Reference ICP/JEDEC J-STD-020E

Profile Feature	Pb-Free Assembly
Preheat/Soak	
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)	245°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, exposure to high temperatures, high humidity, corrosive atmospheres, and long-term storage degrades solderability.

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-bearing and sulfur-bearing compounds. Temperature fluctuations should be minimized to avoid condensation on the parts.

For optimized solderability, inductor stock should be used promptly, preferably within six months of receipt.

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