

MGV High Current Molded SMT Power Inductors MGV0402 Series

FEATURES AND APPLICATIONS

Laird MGV series high current power inductors improve performance, reliability and power efficiency. A lower profile benefits consumer electronics and telecom design. Products feature extremely low DCR with greater efficiency and enable a large current in a small size. Inductors are of magnetic shielding and molded construction and perform in operating temperatures ranging from -40 C to 125 C including self-heating rise in temperature.

FEATURES

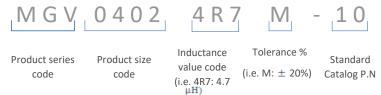
- · Magnetic shielded structure
- Low DCR and high efficiency
- Low profile and miniaturization
- High reliability

APPLICATIONS

- DC-DC Converter and Power Suppliers
- LCD TV'S and Gaming Console
- Tablet, Notebooks, Servers and Printers
- Networking and Data storage
- GPS, Set-top-box and Base stations
- Smart meters and Medical instruments



PART NUMBER EXPLANATION



Note: Automotive grade parts are also available, a specific P.N will be assigned upon request. Please contact laird local sales for details.

ELECTRICAL SPECIFICATIONS

- Tolerance: M: ±20% or N: ±30%
- Inductance tested at 100KHz, 1.0V
- Heat Rated Current (Irms) is defined based on temperature rise approximate 40°C without core loss (ambient temperature 25±5°C)
- Saturation Current (Isat) is the DC current at which the inductance drops off approximately 30% from its value without current. (ambient temperature 25±5°C)
- Operating temperature range: -40°C~+125°C (including self-heating temperature rise)
- Storage temperature range (packaging conditions): -10°C~+40°C and RH 60%(MAX.)

Note: Heat Rated Current (Irms) is tested on a typical PCB and apply a constant current in still air.

The temperature rise is dependent on the application system condition including PCB PAD pattern, trace width and thickness and adjacent components etc. It's suggested to verify the temperature rise of the component under the real operation application conditions.



Molded SMT Power Inductors

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SPECIF	FICATIO	N						
.MECHA	NICAL & DI	IMENSI	ONS				(UN	IT: mn
					I	Α	4.50	±0.50
1						В	4.10	±0.30
						С	2.00	±0.40
A	001		+-	+ -	+ +	D	2.00	±0.40
						E	0.76	±0.30
					E	L	5.2	0 ref
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PART N	UMBER NO	MENCI	_ATOR:					
MGV	0402	100	М -	1X	D: Inductance Tolerance. (M=±20% ,N=	±30%)	
Α	В	С	D	Ε	E: "X"=0:Standard catalog	part number		
A: Pro	oduct Series.				"X"=1-9:Controlled custo	mized part o	r differe	ent
B: Se	ries number, p	art size			performance than st	td catalog par	rt. And "	5-9" is
C: Inc	ductance code				for automotive grade	э.		
B.EQUIVA	LENT CIRC	CUIT:						
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Molded SMT Power Inductors

				www.laird.com	MGV0402 Seri	es Rev: A		
SPECIFICATION								
PART NUMBER	INDUCTANCE (uH)	Irms(A) Typ.	Isat(A) Typ.	DCR(mΩ) Typ	DCR(mΩ) Max	REMARK		
MGV0402R10N-10	0.10±30%	12.0	35.0	3.2	4.0			
MGV0402R22N-10	0.22±30%	13.0	24.0	6.6	7.3			
MGV0402R47M-10	0.47±20%	8.0	12.0	11.2	14.0			
MGV0402R56M-10	0.56±20%	7.3	10.0	13.5	16.0			
MGV0402R68M-10	0.68±20%	7.0	10.0	16.0	19.0			
MGV04021R0M-10	1.00±20%	5.0	8.5	23.0	27.0			
MGV04021R2M-10	1.20±20%	4.8	7.8	25.0	30.0			
MGV04021R5M-10	1.50±20%	4.5	7.0	34.8	42.0			
MGV04022R2M-10	2.20±20%	4.0	6.0	51.0	61.0			
MGV04023R3M-10	3.30±20%	3.5	4.0	69.0	76.0			
MGV04024R7M-10	4.70±20%	2.6	3.5	95.0	105.0			
MGV04026R8M-10	6.80±20%	2.1	2.8	150.0	172.0			
MGV0402100M-10	10.0±20%	1.8	2.3	215.0	243.0			
MGV0402150M-10	15.0±20%	1.5	1.9	325.0	374.0			
MGV0402220M-10	22.0±20%	1.2	1.4	470.0	500.0			
GENERAL SPECI	FICATION:	1						
Inductance tested at 100KHz, 0.25V								
Heat Rated Curre	nt (Irms) is defined	based on tem	perature rise	approximate 40°	C without core lo	SS		
(ambient tempera	ature 25±5°C)							
Saturation Currer	nt (Isat) is the DC cu	rrent at which	the inductar	ice drops off app	roximately 30% fi	rom		
its value without	current. (ambient t	temperature 2	!5±5°C)					
Operating tempe	rature range: -40°C	~+125°C (inclu	ıding self-hea	ting temperature	rise)			
Storage temperat	ture range (packagi	ng conditions)	: -10°C~+40°C	and RH 60%(MA	XX.)			

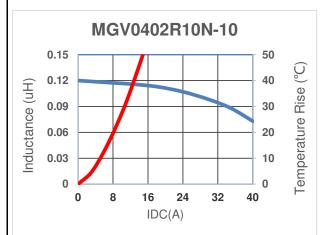


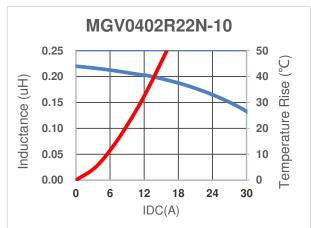
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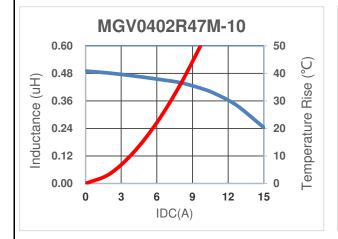
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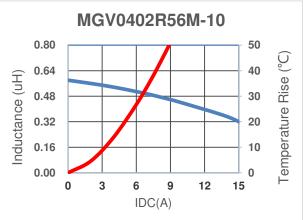
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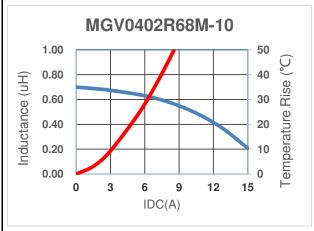
Characteristics Curve













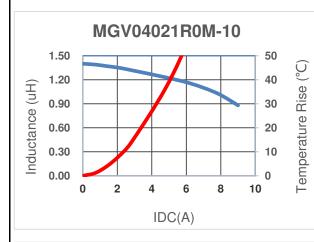


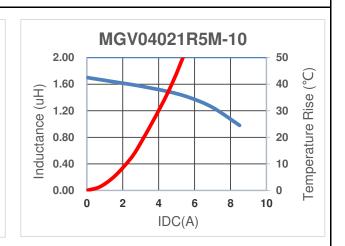
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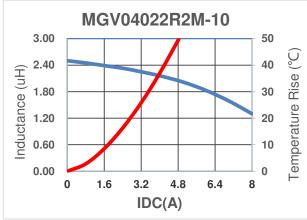
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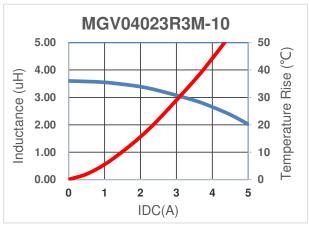
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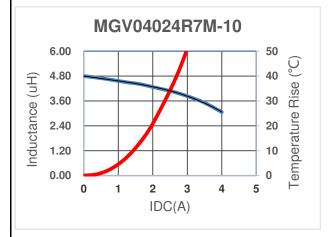
Characteristics Curve

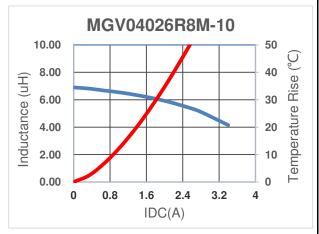












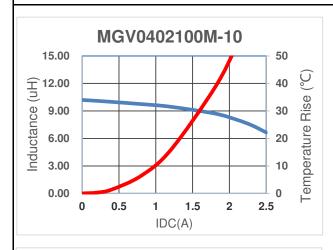


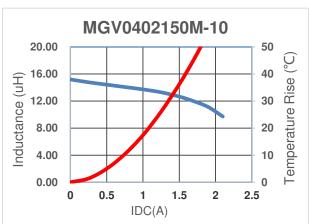
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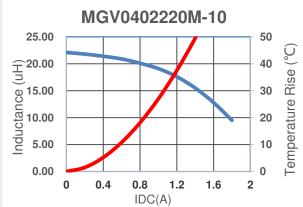
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SPECIFICATION

Characteristics Curve









Molded SMT Power Inductors

www.laird.com MGV0402 Series Recommended Soldering Conditions For Lead-Free Application Figure 1 . Re-flow Soldering RECOMMENDED SOLDERING CONDITIONS preheating soldering cooling 255°C MAX:255°C TEMPERATURE 1200°C 240°C 190°C 20~40sec. Gradual Cooling 90±30sec∤ TIME(SEC.) Reflow times: 3 times max Figure 2 . Hand Soldering PRE-HEATING SOLDERING NATURAL COOLING 280 230 TEMPERATURE C Over 1 min. Gradual Cooling Within 3 sec. Hand solder times: 1 time max



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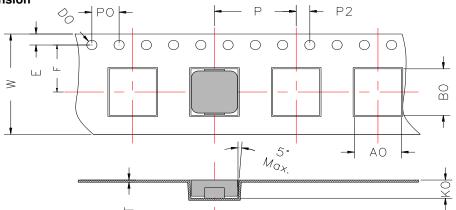
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SMD covice/Concument								
SMD series(Consumer) Item Reference Additional Requirements								
Operating temperature range	-55°C ~ +125°C (Including self-temperature rise)	, additional rioquilonismo						
Storage temperature and humidity range	-10 $^\circ$ C to +40 $^\circ$ C , 60% RH Max							
High Temperature Exposure (Storage)	MIL-STD-202 Method 108	85±2℃, 168+24hours						
Temperature Cycling	JESD22 Method JA-104	-40°C →+85, transforming interval:20s, 100cycles						
Operational Life	nal Life MIL-PRF-2 85±°C, 168+24hours Apply maximum rated voltage and current according p							
External Visual	MIL-STD-883 Method 2009	Inspect device construction, marking and workmanship. Electrical Test not required.						
Physical Dimension	JESD22 Method JB-100	Verify physical dimensions to the applicable device detail specification. Note: User(s) and Suppliers spec. Electrical Test not required						
Vibration	MIL-STD-202 Method 204	10~55Hz,1.5mm, 2 hours in each 3mutually perpendicular directions (total of 6 hours)						
Resistance to Soldering Heat	MIL-STD-202 Method 210	1. Max. 260±5°C,10±1s, 2 times 2.Solder Composition: Sn/3Ag/0.5Cu						
Solderability	J-STD-002	245±5 [°] C, 5±1sec, Solder: Sn/3.0Ag/0.5Cu						
Electrical Characterization	Print Spec	Parametrically test per lot and sample size requirements, summary to show Min, Max, Mean and Standard deviation at room as well as Min and Max Operating temperatures						
Board Flex	AEC-Q200-005	2mm,30±1s						
Terminal Strength(SMD)	AEC-Q200-006	10N, 5S, X,Y direct						



Molded SMT Power Inductors

www.laird.com MGV0402 Series Rev: A **PACKAGING Reel Dimension** A(mm) B(mm) C(mm) D(mm) Type 12.4+2/-0 100 ± 2 13+0.5/-0.2 330 13'x12 Ω **Tape Dimension** 1 PO F

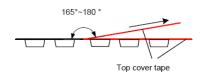


W	Е	F	Р	A0	В0	P2	P0	K0	t	D0
12.0±0.3	1.75±0.1	5.50±0.1	8.0±0.1	4.4±0.1	5.0±0.1	2.0±0.1	4.0±0.1	2.3±0.1	0.35±0.05	1.5Ref.

Packaging Quantity

P/N	Chip/Reel	Inner Box	Outer Box
MGV0402	3000pcs	6000pcs	12000pcs
Size	Э	-	-

Peeling Off Force



The force peeling off cove tape is 10 to 100 grams							
in the arrow direction under the following conditions							
Room Temp							
(°C) Humidity (hPa) Speed							
5~35 45~85 860~1060 300							

Storage Conditions

- 1. Temperature and humidity conditions: -10-+40°C and 60% RH.
- 2. Recommended products should be used within 12 month from the time of manufacturing.
- 3. The packaging material should be kept where no chloring or sulfur exists in the air.
- 4. Allowable stacking condition of Packaging box: max height 1.5m or 5 boxes stacking