Technical Data 4430

Effective June 2014
Supersedes November 2011

Coiltronics HCM0503 Series

High current power inductors

Product description

- High current carrying capacity
- Low core losses
- Magnetically shielded, low EMI
- Frequency range up to 1MHz
- Inductance range from 0.20µH to 15µH
- Current range from 2.1A to 22.2A
- 5.5 x 5.3mm footprint surface mount package in a 3mm height
- Powder Iron core material
- Halogen free, lead free, RoHS compliant

Applications

- Voltage Regulator Module (VRM)
- Multi-phase regulators
- Point-of-load modules
- Desktop and server VRMs and EVRDs
- Base station equipment
- Notebook regulators
- Battery power systems
- Graphics cards
- Data networking and storage systems

Environmental data

- Storage temperature range (Component): -55°C to +125°C
- Operating temperature range: -55°C to +125°C (ambient + self-temperature rise)
- Solder reflow temperature: J-STD-020D compliant

Pb HALOGEN HF FREE RoHS

The Coiltronics brand of magnetics (formerly of the Bussmann Division of Cooper Industries) is now part of Eaton's Electrical Group, Electronics Division.

Coiltronics is now part of Eaton
Same great products plus even more.

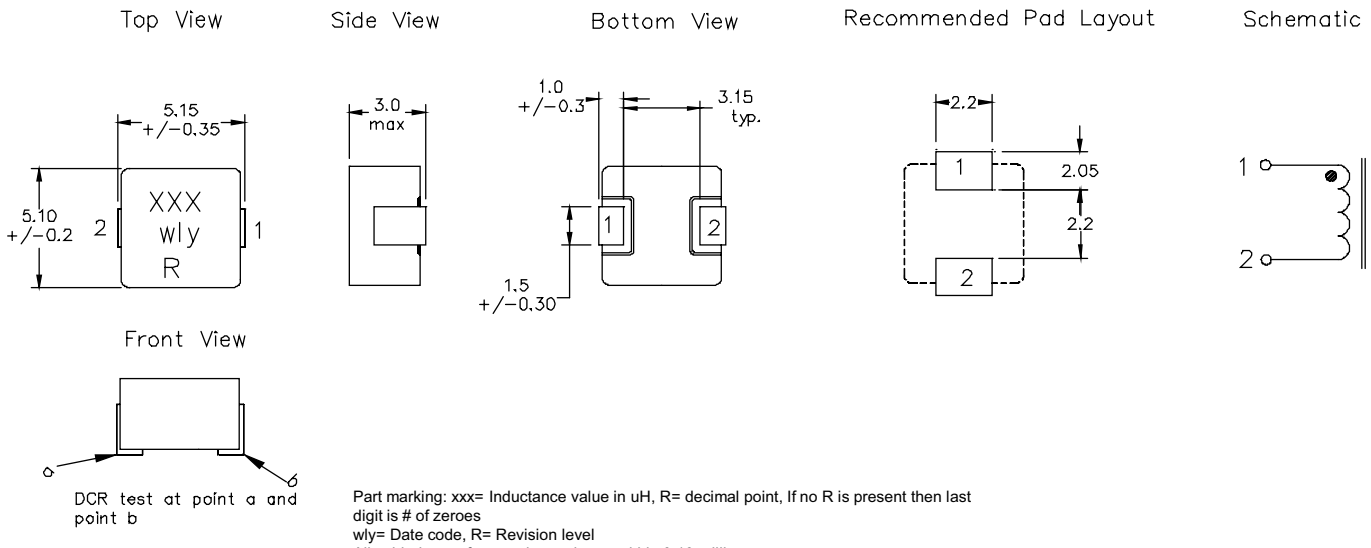
Powering Business Worldwide

Product specifications

Part Number[6]	OCL [1] (µH) ± 20%	FLL min.[2] (µH)	I_{rms} [3] (Amps)	I_{sat} [4] (Amps)	DCR (mΩ) @ 20°C (Typ.)	DCR (mΩ) @ 20°C (Max.)	K-factor[5]
HCM0503-R20-R	0.20	0.128	22.2	21.0	2.10	2.31	1764
HCM0503-R35-R	0.35	0.224	16.6	14.9	3.90	4.29	1259
HCM0503-R47-R	0.47	0.300	12.0	11.5	6.50	7.15	820
HCM0503-R75-R	0.75	0.480	11.3	9.7	8.50	9.35	801
HCM0503-1R0-R	1.00	0.640	10.1	8.5	10.4	11.4	588
HCM0503-1R5-R	1.50	0.960	7.5	7.0	17.1	18.5	393
HCM0503-2R2-R	2.20	1.40	6.8	6.5	22.5	25.0	325
HCM0503-3R3-R	3.30	2.10	5.5	6.0	36.4	40.4	273
HCM0503-4R7-R	4.70	3.00	4.5	5.5	54.0	60.0	226
HCM0503-5R6-R	5.60	3.60	4.3	3.5	63.0	70.6	206
HCM0503-100-R	10.0	6.40	2.8	2.3	122	132	158
HCM0503-150-R	15.0	9.60	2.4	2.1	138	166	127

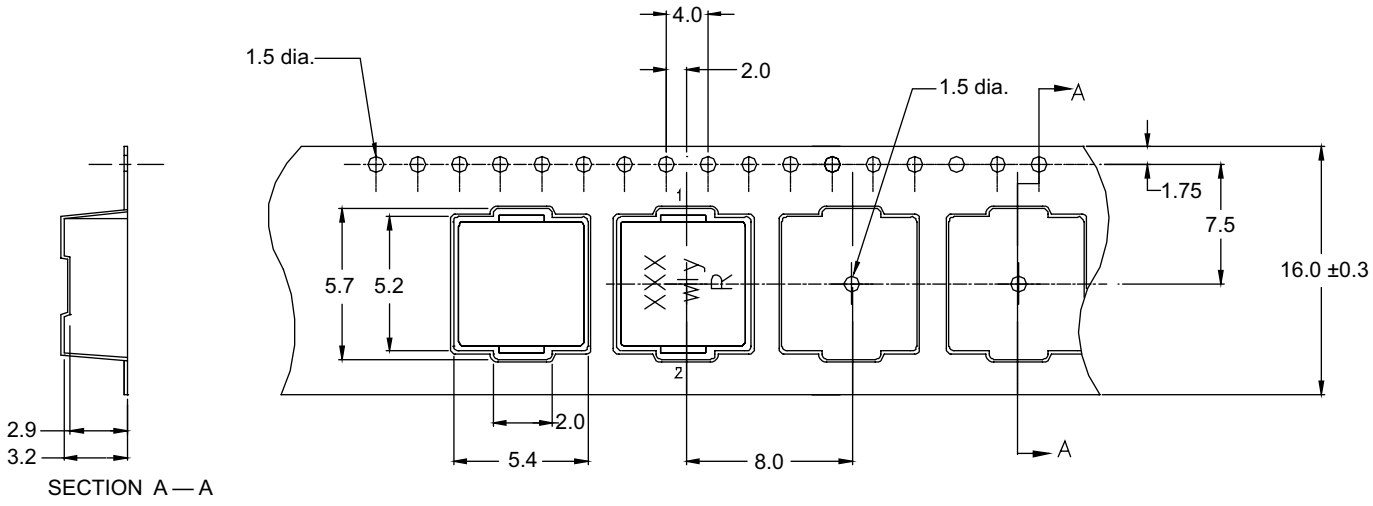
1. Open Circuit Inductance (OCL) Test Parameters: 100kHz, 0.25V_{rms}, 0.0Adc, +25°C.
2. Full Load Inductance (FLL) Test Parameters: 100kHz, 0.25V_{rms}, I_{sat}, @ +25°C.
3. I_{rms}: DC current for an approximate temperature rise of 40°C without core loss. Derating is necessary for AC currents. PCB layout, trace thickness and width, air-flow, and proximity of other heat generating components will affect the temperature rise. It is recommended that the temperature of the part not exceed 125°C under worst case operating conditions verified in the end application.
4. I_{sat}: Peak current for approximately 20% rolloff at +25°C.
5. K-factor: Used to determine B_{p-p} for core loss (see graph). $B_{p-p} = K * L * \Delta I$. B_{p-p}: (Gauss), K: (K-factor from table), L: (Inductance in µH), ΔI (Peak to peak ripple current in amps).
6. Part Number Definition: HCM0503-yyy-R
   - HCM0503 = Product code and size
   - yyy= Inductance value in µH, R = decimal point, if no R is present then third character = number of zeros.
   - "-R" suffix = RoHS compliant

Dimensions - mm



Part marking: xxx= Inductance value in uH, R= decimal point, If no R is present then last digit is # of zeroes
wly= Date code, R= Revision level
All soldering surfaces to be coplanar within 0.10 millimeters
Tolerances are +/- 0.2 millimeters unless stated otherwise
Color: Grey

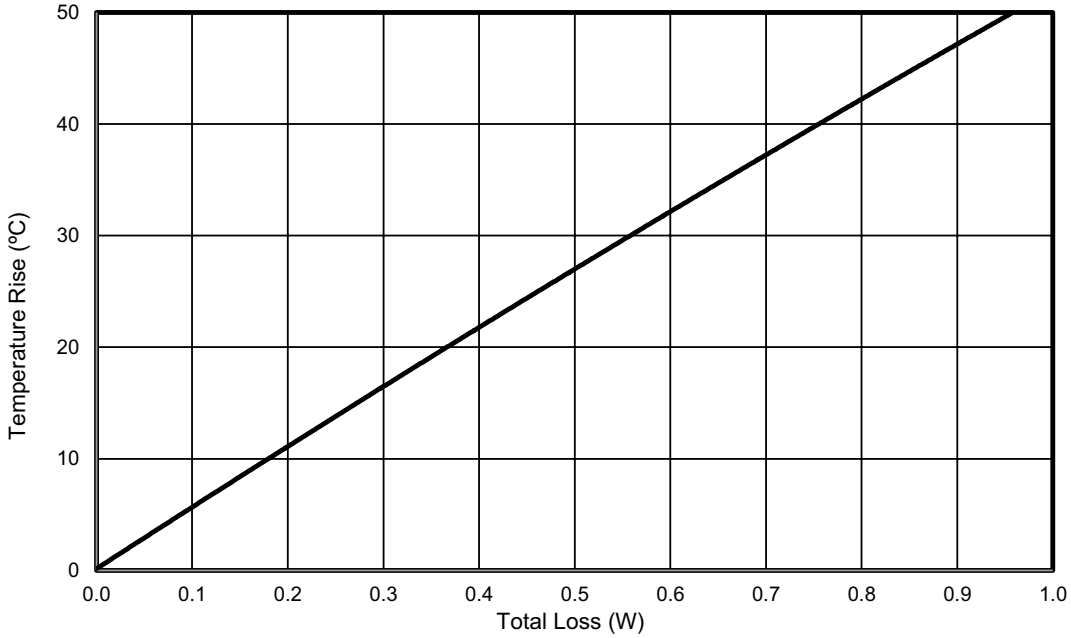
Packaging information - mm



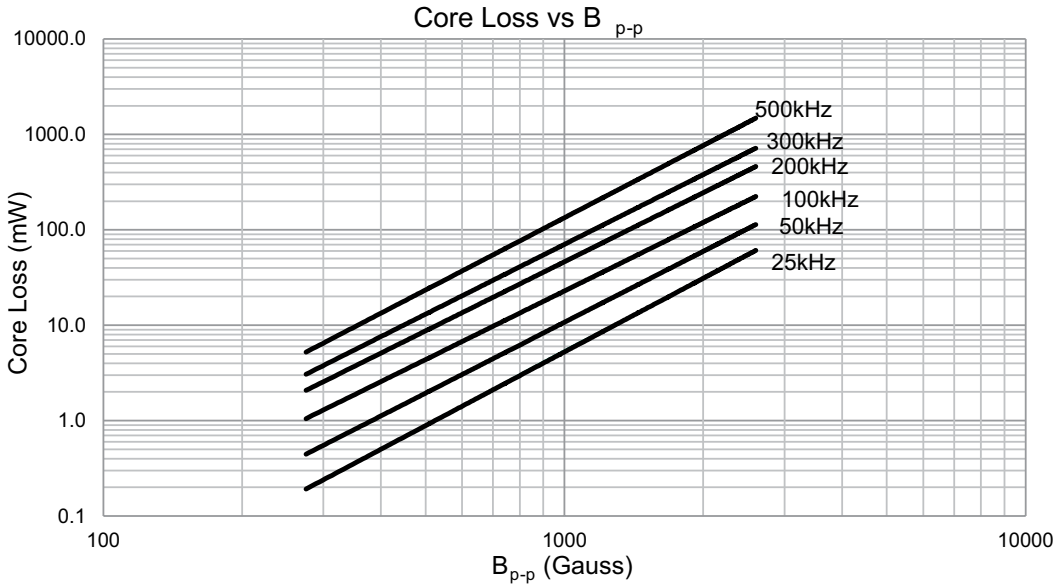
Supplied in tape and reel packaging, 2000 parts per 13” diameter reel.

User direction of feed

Temperature rise vs. total loss

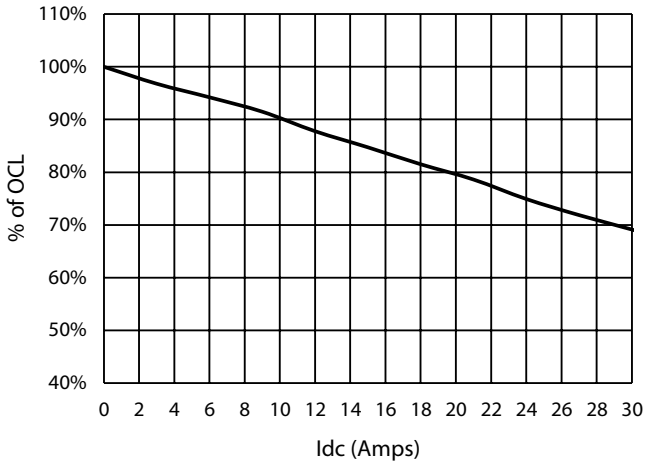


Core loss

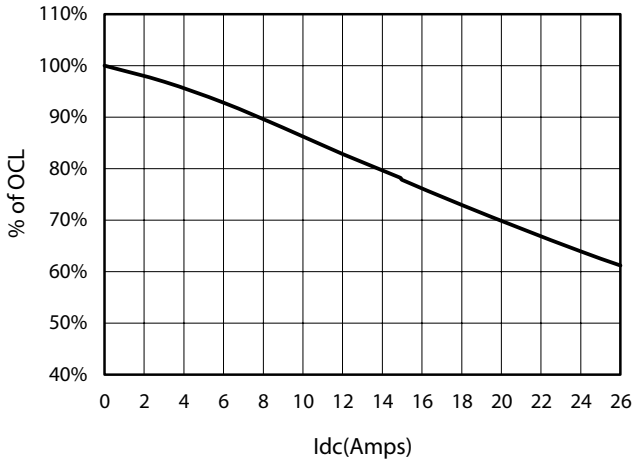


Inductance characteristics

HCM0503-R20-R



HCM0503-R35-R



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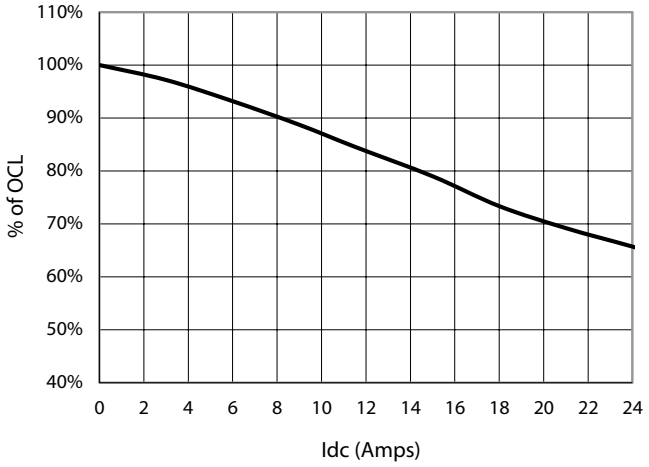

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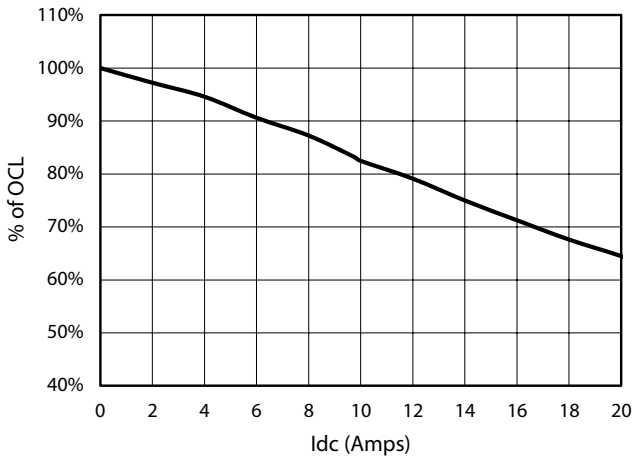

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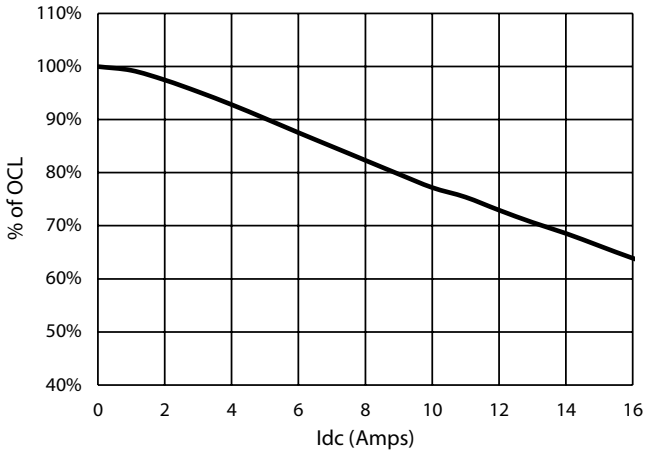
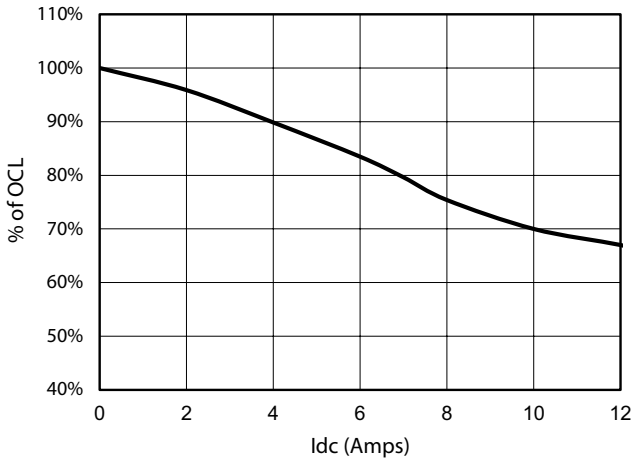
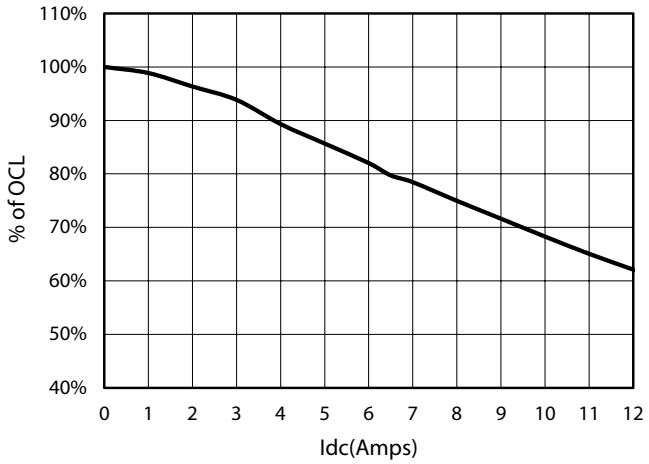


HCM0503-1R5-R



Inductance characteristics

HCM0503-2R2-R



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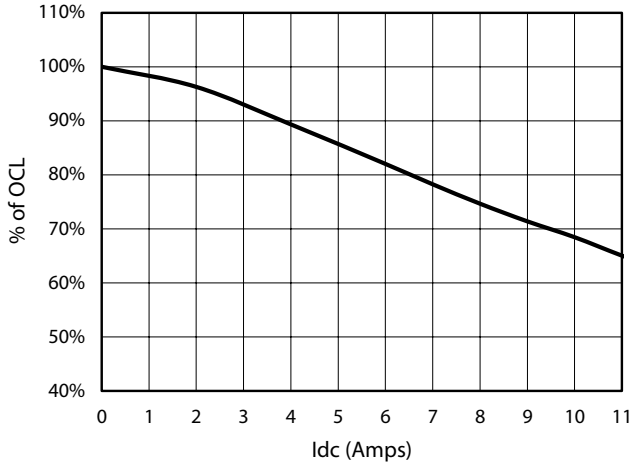
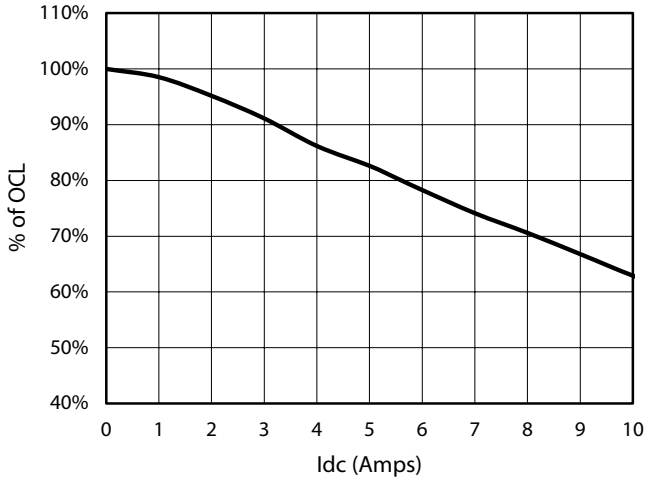
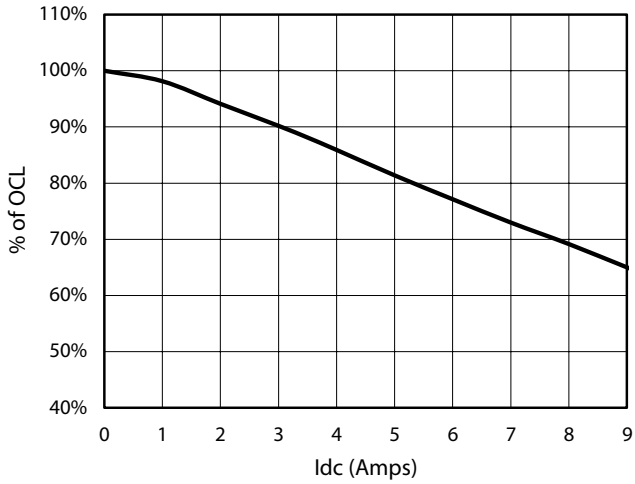


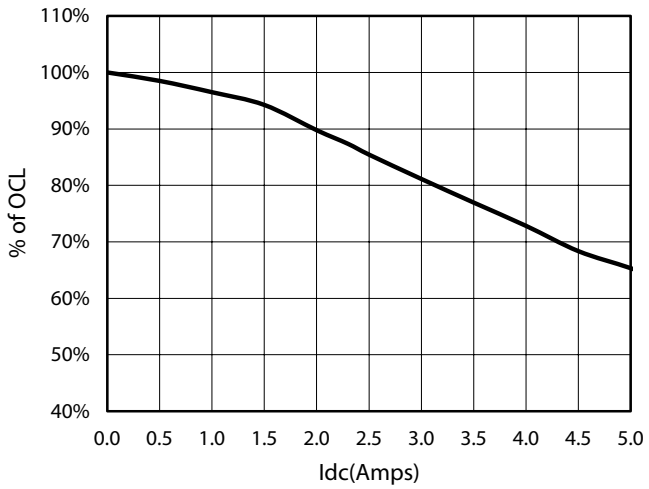
HCM0503-4R7-R



HCM0503-5R6-R



HCM0503-100-R



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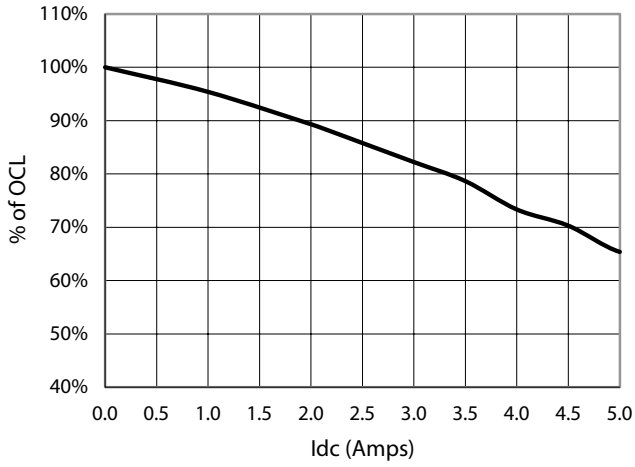

Solder reflow profile

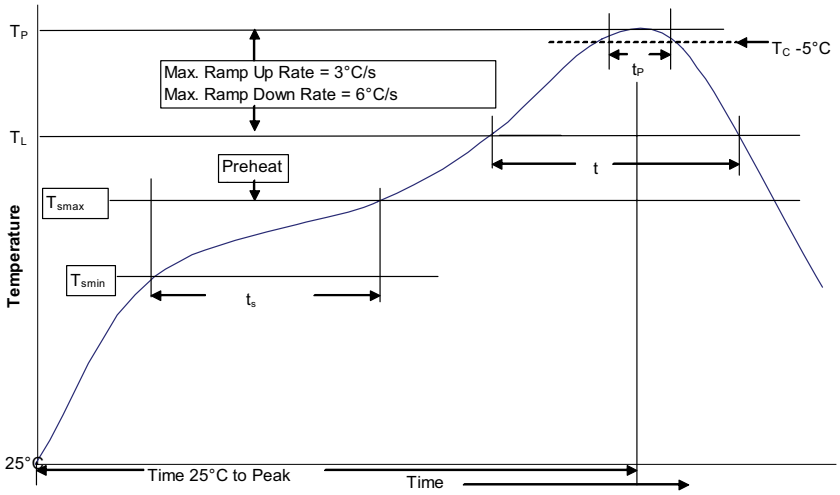

Table 1 - Standard SnPb Solder (T_C)

Package Thickness	Volume mm³ <350	Volume mm³ ≥350
<2.5mm	235°C	220°C
≥2.5mm	220°C	220°C

Table 2 - Lead (Pb) Free Solder (T_C)

Package Thickness	Volume mm³ <350	Volume mm³ 350 - 2000	Volume mm³ >2000
<1.6mm	260°C	260°C	260°C
1.6 – 2.5mm	260°C	250°C	245°C
>2.5mm	250°C	245°C	245°C

Reference JDEC J-STD-020D

Profile Feature		Standard SnPb Solder	Lead (Pb) Free Solder
Preheat and Soak	• Temperature min. (T_{smin})	100°C	150°C
	• Temperature max. (T_{smax})	150°C	200°C
	• Time (T_{smin} to T_{smax}) (t_s)	60-120 Seconds	60-120 Seconds
Average ramp up rate T_{smax} to T_p		3°C/ Second Max.	3°C/ Second Max.
Liquidous temperature (T_L) Time at liquidous (t_L)		183°C 60-150 Seconds	217°C 60-150 Seconds
Peak package body temperature (T_P)*		Table 1	Table 2
Time (t_p)** within 5 °C of the specified classification temperature (T_C)		20 Seconds**	30 Seconds**
Average ramp-down rate (T_p to T_{smax})		6°C/ Second Max.	6°C/ Second Max.
Time 25°C to Peak Temperature		6 Minutes Max.	8 Minutes Max.

* Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.

** Tolerance for time at peak profile temperature (t_p) is defined as a supplier minimum and a user maximum.

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Powering Business Worldwide

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Technical Data 4085

Effective June 2014
Supersedes September, 2010

Coiltronics HCM0703 Series

High current power inductors

Product description

- High current carrying capacity
- Low core losses
- Magnetically shielded, low EMI
- Frequency range up to 5MHz
- Inductance range from 0.15µH to 33µH
- Current range from 1.8A to 52A
- 7.4x7.0mm footprint surface mount package in a 3.0mm height
- Powder iron core material
- Halogen free, lead free, RoHS compliant

Applications

- Voltage Regulator Module (VRM)
- Multi-phase regulators
- Point-of-load modules
- Desktop and server VRMs and EVRDs
- Base station equipment
- Notebook regulators
- Battery power systems
- Graphics cards
- Data networking and storage systems

Environmental data

- Storage temperature range (Component): -55°C to +125°C
- Operating temperature range: -55°C to +125°C (ambient + self-temperature rise)
- Solder reflow temperature: J-STD-020D compliant

Pb HALOGEN HF FREE RoHS

The Coiltronics brand of magnetics (formerly of the Bussmann Division of Cooper Industries) is now part of Eaton's Electrical Group, Electronics Division.

Coiltronics is now part of Eaton
Same great products plus even more.

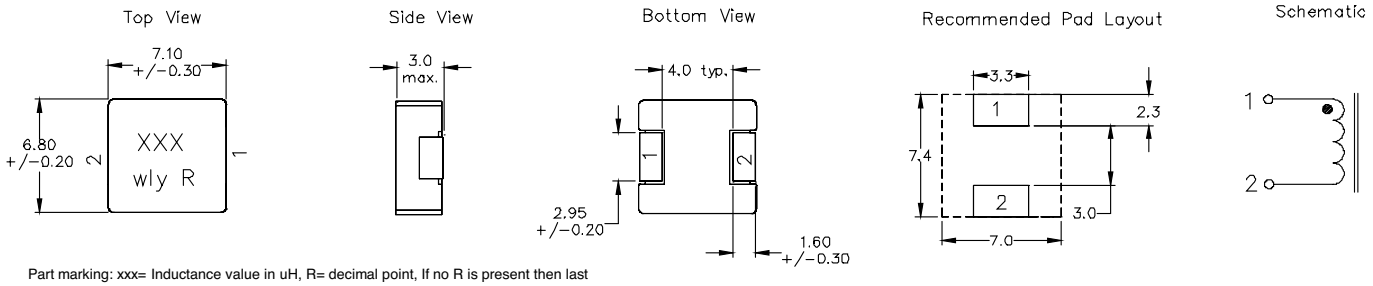
Powering Business Worldwide

Product specifications

Part Number[6]	OCL[1] (µH) ±20%	FLL min.[2] (µH)	I_{rms}[3] (amps)	I_{sat}[4] (amps)	DCR (mΩ) @ 20°C Typical	DCR (mΩ) @ 20°C Maximum	K-factor[5]
HCM0703-R15-R	0.15	0.09	26.0	52.0	1.90	2.50	1044
HCM0703-R22-R	0.22	0.13	23.0	40.0	2.50	2.80	986
HCM0703-R47-R	0.47	0.28	17.5	26.0	4.00	4.20	580
HCM0703-R68-R	0.68	0.41	15.5	25.0	5.00	5.50	455
HCM0703-R82-R	0.82	0.49	13.0	24.0	6.70	8.00	439
HCM0703-1R0-R	1.00	0.60	11.0	22.0	9.00	10.0	374
HCM0703-1R5-R	1.50	0.90	9.00	18.0	14.0	15.0	366
HCM0703-2R2-R	2.20	1.32	8.00	14.0	18.0	20.0	281
HCM0703-3R3-R	3.30	1.98	6.00	13.5	28.0	30.0	252
HCM0703-4R7-R	4.70	2.82	5.50	10.0	37.0	40.0	210
HCM0703-6R8-R	6.80	4.08	4.50	8.00	54.0	60.0	151
HCM0703-8R2-R	8.20	4.92	4.00	7.50	64.0	68.0	142
HCM0703-100-R	10.0	6.00	3.20	7.00	70.5	77.6	132
HCM0703-330-R	33.0	19.8	1.80	2.00	220	242	76

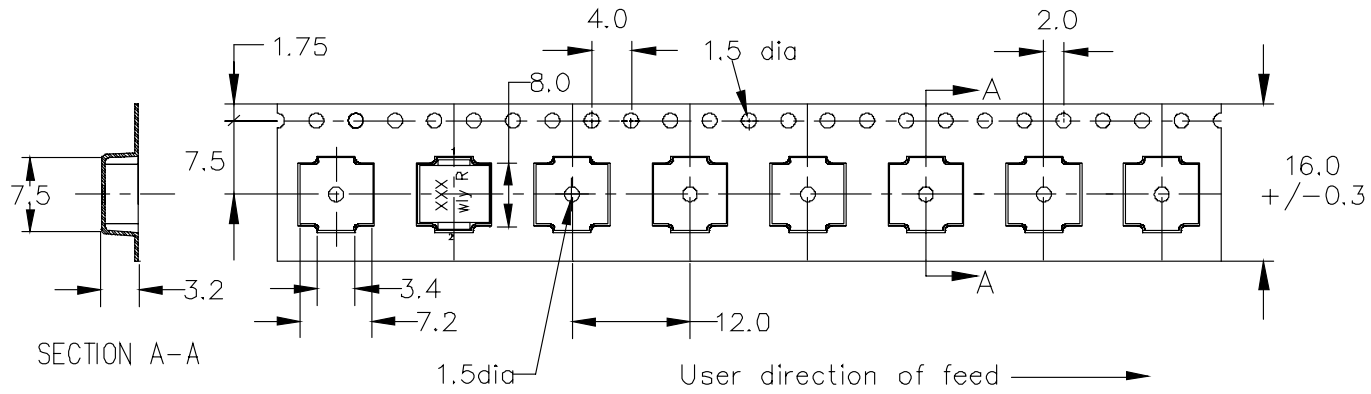
1. Open Circuit Inductance (OCL) Test Parameters: 100kHz, 0.25V_{rms}, 0.0Adc, +25°C.
2. Full Load Inductance (FLL) Test Parameters: 100kHz, 0.25V_{rms}, I_{sat}, @ +25°C.
3. I_{rms}: DC current for an approximate temperature rise of 40°C without core loss. Derating is necessary for AC currents. PCB layout, trace thickness and width, air-flow, and proximity of other heat generating components will affect the temperature rise. It is recommended that the temperature of the part not exceed 125°C under worst case operating conditions verified in the end application.
4. I_{sat}: Peak current for approximately 20% rolloff at +25°C.
5. K-factor: Used to determine B_{p-p} for core loss (see graph). $B_{p-p} = K * L * \Delta I$. B_{p-p}: (Gauss), K: (K-factor from table), L: (Inductance in µH), ΔI (Peak to peak ripple current in amps).
6. Part Number Definition: HCM0703-yyy-R
   - HCM0703 = Product code and size
   - yyy= Inductance value in µH, R = decimal point, if no R is present then third character = number of zeros.
   - "-R" suffix = RoHS compliant

Dimensions - mm



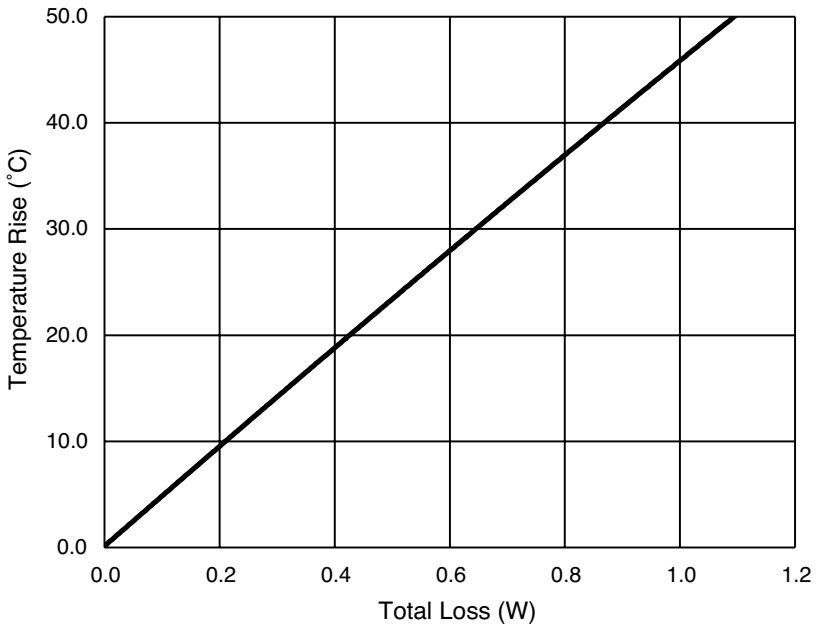
Part marking: xxx= Inductance value in uH, R= decimal point, If no R is present then last digit is # of zeroes
wly= Date code, R= Revision level
All soldering surfaces to be coplanar within 0.10 millimeters
Tolerances are ±0.3 millimeters unless stated otherwise.
Color: Grey

Packaging information - mm

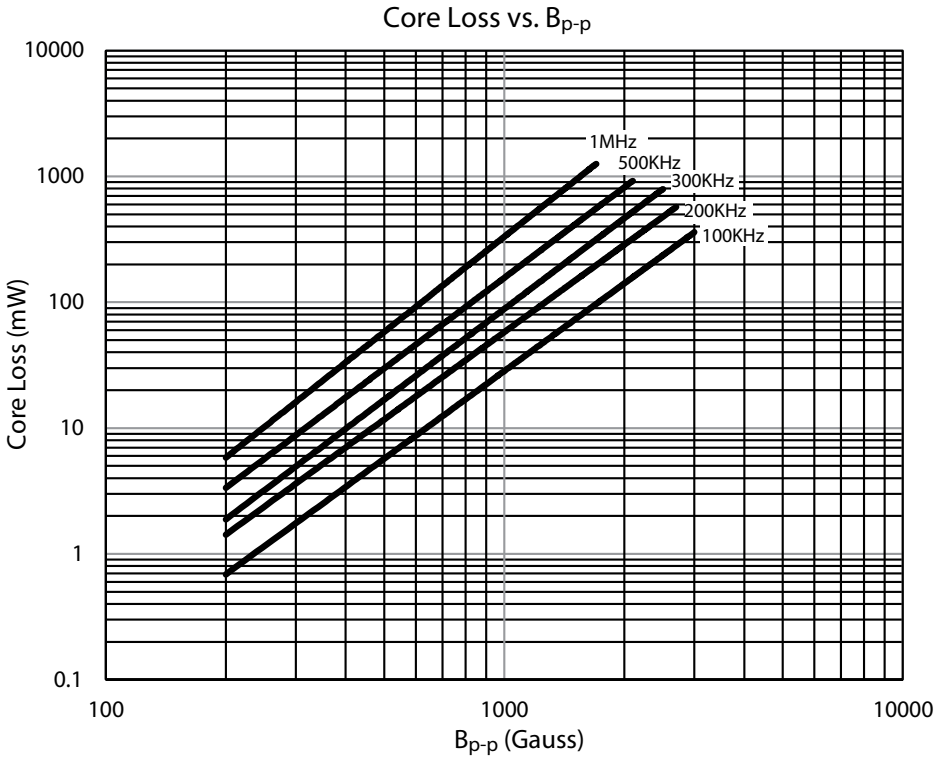


Supplied in tape and reel packaging, 1500 parts per 13" diameter reel.

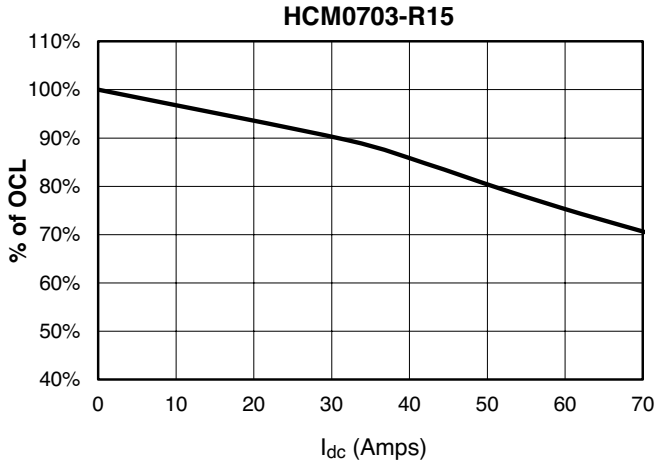
Temperature rise vs. total loss

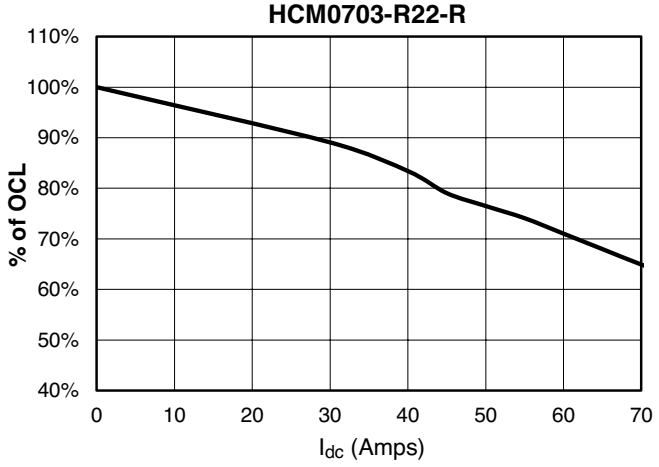


Core loss



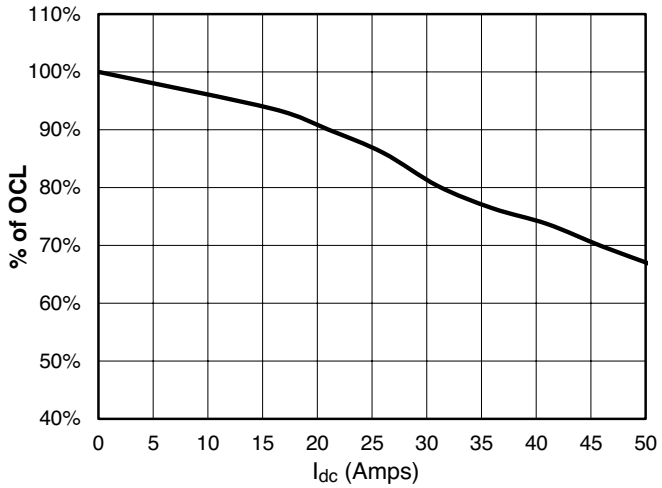
Inductance characteristics



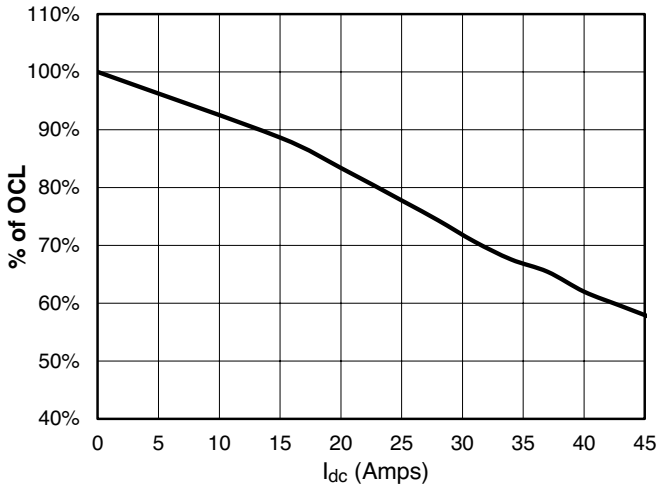


Inductance characteristics

HCM0703-R47-R



HCM0703-R68-R



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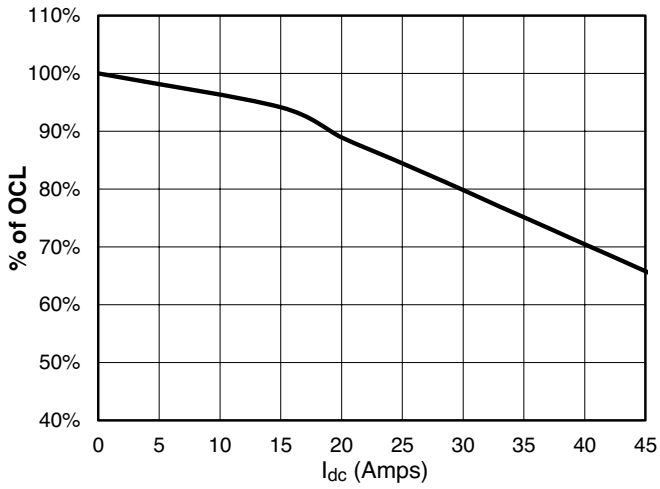
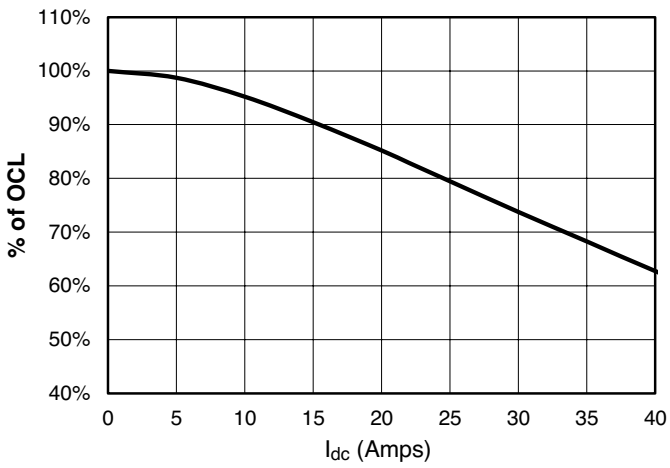


HCM0703-1R0-R



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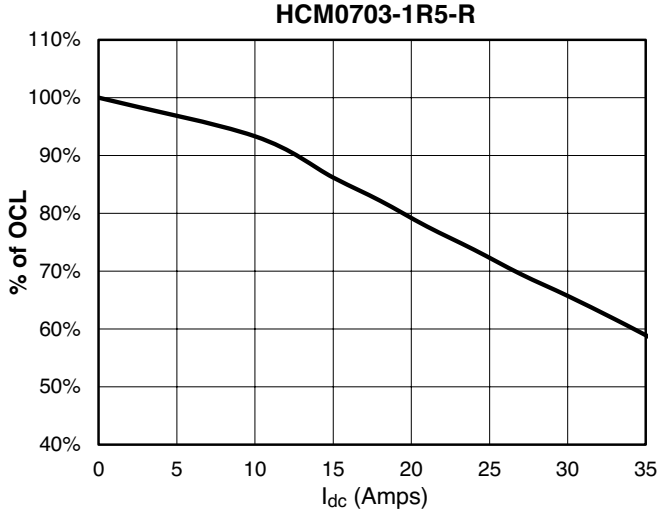

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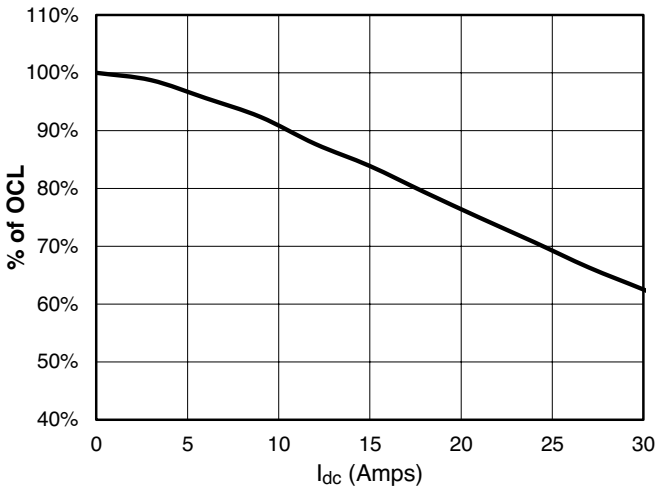
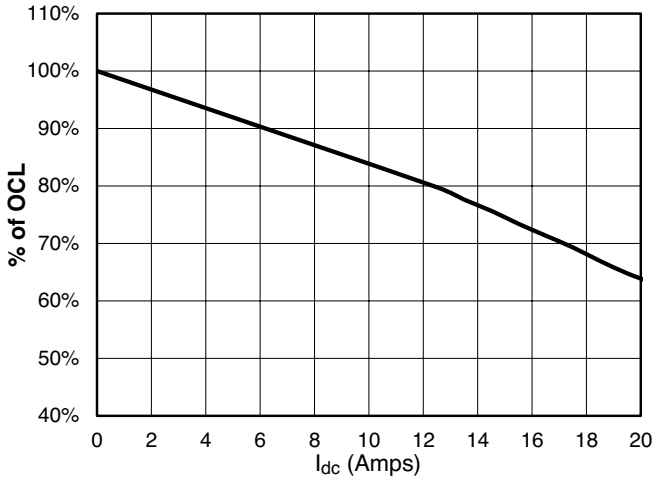
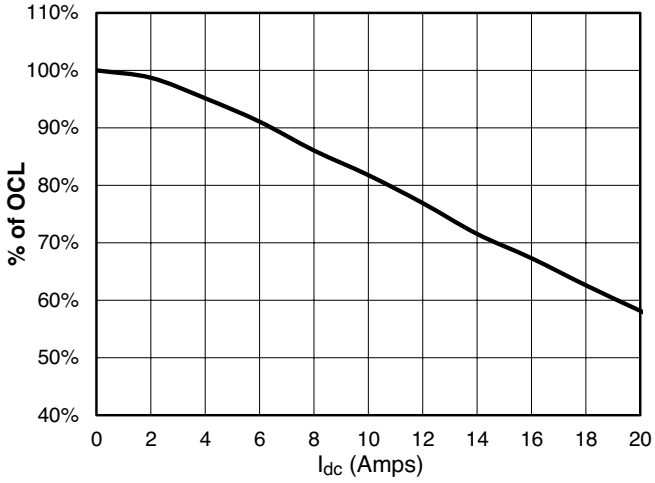


Inductance characteristics

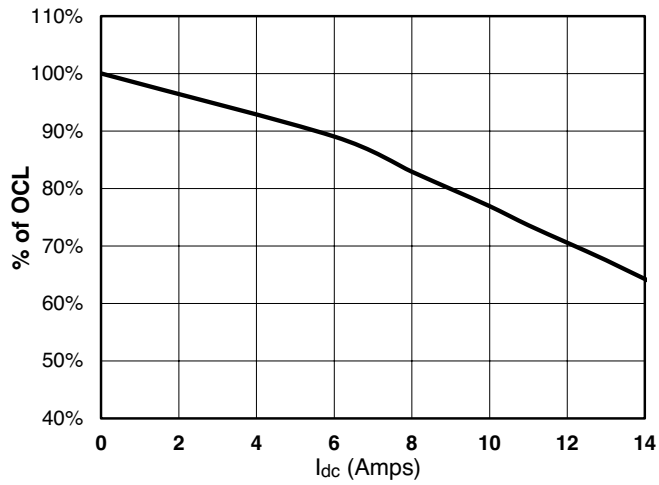
HCM0703-3R3-R



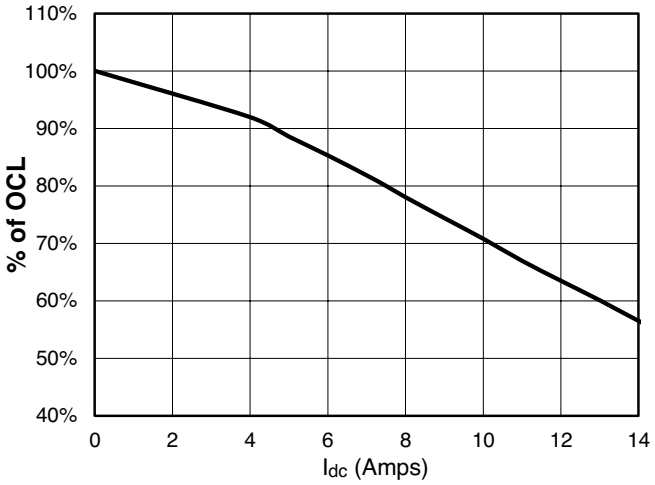
HCM0703-4R7-R



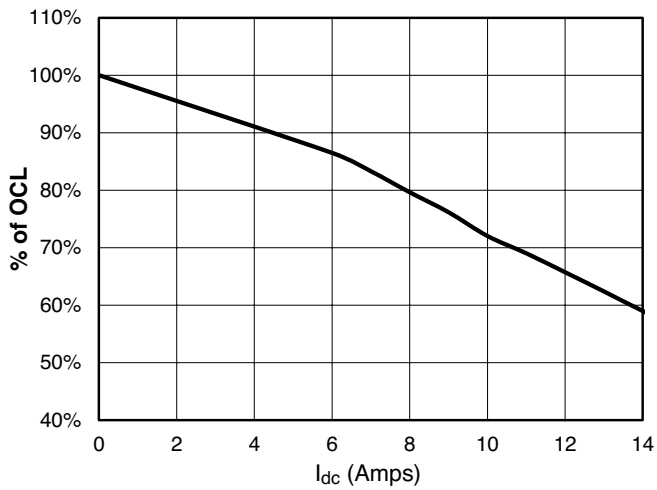
HCM0703-6R8-R



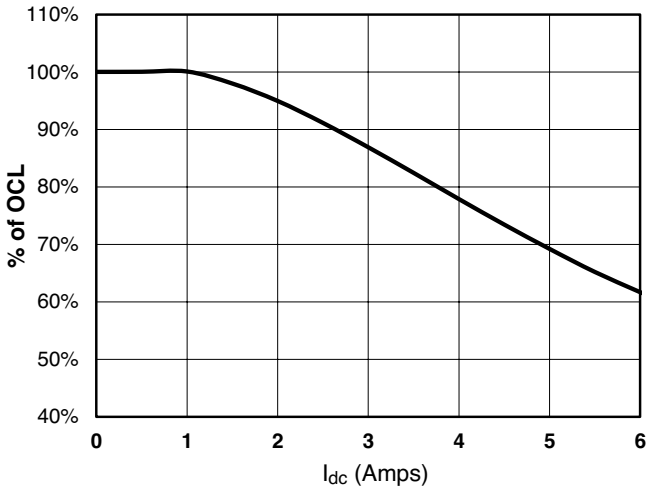
HCM0703-8R2-R



HCM0703-100-R



HCM0703-330-R



Solder reflow profile

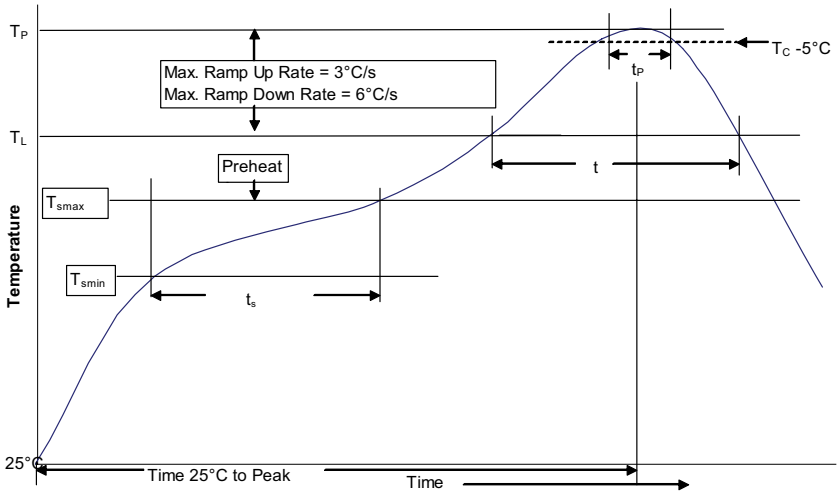


Table 1 - Standard SnPb Solder (T_C)

Package Thickness	Volume mm³ <350	Volume mm³ ≥350
<2.5mm	235°C	220°C
≥2.5mm	220°C	220°C

Table 2 - Lead (Pb) Free Solder (T_C)

Package Thickness	Volume mm³ <350	Volume mm³ 350 - 2000	Volume mm³ >2000
<1.6mm	260°C	260°C	260°C
1.6 – 2.5mm	260°C	250°C	245°C
>2.5mm	250°C	245°C	245°C

Reference JDEC J-STD-020D

Profile Feature		Standard SnPb Solder	Lead (Pb) Free Solder
Preheat and Soak	• Temperature min. (T_{smin})	100°C	150°C
	• Temperature max. (T_{smax})	150°C	200°C
	• Time (T_{smin} to T_{smax}) (t_s)	60-120 Seconds	60-120 Seconds
Average ramp up rate T_{smax} to T_p		3°C/ Second Max.	3°C/ Second Max.
Liquidous temperature (T_L) Time at liquidous (t_L)		183°C 60-150 Seconds	217°C 60-150 Seconds
Peak package body temperature (T_P)*		Table 1	Table 2
Time (t_p)** within 5 °C of the specified classification temperature (T_c)		20 Seconds**	30 Seconds**
Average ramp-down rate (T_p to T_{smax})		6°C/ Second Max.	6°C/ Second Max.
Time 25°C to Peak Temperature		6 Minutes Max.	8 Minutes Max.

* Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.

** Tolerance for time at peak profile temperature (t_p) is defined as a supplier minimum and a user maximum.

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Powering Business Worldwide

Publication No. 4085 — BU-SB14460
June 2014

High Current, High Frequency Power Inductors

HCM1103 Series

Description

- Halogen free, lead free, RoHS compliant
- 125°C maximum total temperature operation
- 11.5 x 10.3 x 3.0mm maximum surface mount package
- Powder Iron core material
- Magnetically shielded, low EMI
- High current carrying capacity, low core losses
- Inductance range from 0.12µH to 22.0µH
- Current range from 3.0 to 75 amps

Applications

- Voltage Regulator Module (VRM)
- Multi-phase regulators
- Point-of-load modules
- Desktop and server VRMs and EVRDs
- Base station equipment
- Notebook regulators
- Battery power systems
- Graphics cards
- Data networking and storage systems

Environmental Data

- Storage temperature range: -55°C to +125 °C
- Operating temperature range: -55°C to +125°C (ambient + self-temperature rise)
- Solder reflow temperature: J-STD-020D compliant

Packaging

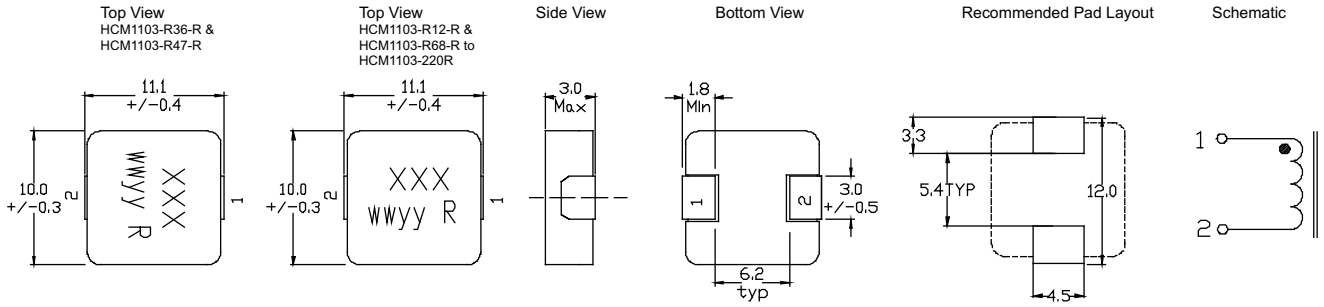
- Supplied in tape-and reel packaging, 1000 parts per 13" diameter reel

Product Specifications

Part Number[6]	OCL[1] ±20% (µH)	FLL min.[2] (µH)	I_{rms}[3] (Amps)	I_{sat}[4] @ 25°C (Amps)	DCR (mΩ) @ 20°C Typical	DCR (mΩ) @ 20°C Maximum	K-Factor[5]
HCM1103-R12-R	0.12	0.07	30	75	0.55	0.61	1200
HCM1103-R36-R	0.36	0.26	23	28	1.10	1.30	711
HCM1103-R47-R	0.47	0.33	20	26	1.50	2.00	515
HCM1103-R68-R	0.68	0.38	21	23	2.90	3.40	510
HCM1103-1R0-R	1.0	0.56	15	21	5.50	6.00	377
HCM1103-2R2-R	2.2	1.2	13	16	8.40	9.00	264
HCM1103-3R3-R	3.3	1.9	9.0	14	14.5	16.0	230
HCM1103-4R7-R	4.7	2.6	7.0	13	20.5	22.5	205
HCM1103-8R2-R	8.2	4.6	5.0	8.5	35.0	38.5	153
HCM1103-100-R	10.0	5.6	5.0	7.5	40.0	44.0	141
HCM1103-150-R	15.0	8.4	4.0	6.0	59.0	65.0	114
HCM1103-220-R	22.0	12.3	3.0	5.0	90.0	99.0	91

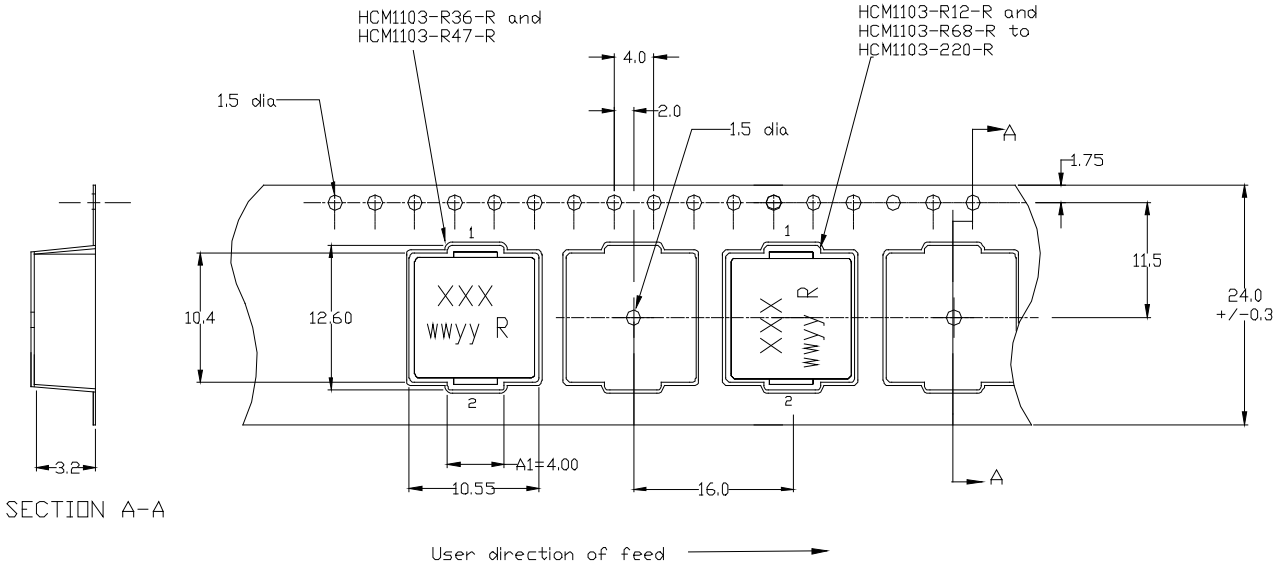
1. Open Circuit Inductance (OCL) Test Parameters: 100kHz, 0.25V_{rms}, 0.0Adc @ 25°C
2. Full Load Inductance (FLL) Test Parameters: 100kHz, 0.25V_{rms}, I_{sat} @ 25°C.
3. I_{rms}: DC current for an approximate temperature rise of 40°C without core loss. Derating is necessary for AC currents. PCB layout, trace thickness and width, air-flow and proximity of other heat generating components will affect the temperature rise. It is recommended that the temperature of the part not exceed 125°C under worst case operating conditions verified in the end application.
4. I_{sat}: Peak current for approximately 30% rolloff at +25°C
5. K-factor: Used to determine B_{p-p} for core loss (see graph). $B_{p-p} = K * L * \Delta I$. B_{p-p}:(Gauss), K: (K-factor from table), L: (Inductance in µH), ΔI (peak-to-peak ripple current in Amps).
6. Part Number Definition: HCM1103-xxx-R
   HCM1103 = Product code and size
   xxx= Inductance value in µH, R = decimal point, if no R is present then third character = number of zeros.
   -R suffix = RoHS compliant

Dimensions - mm



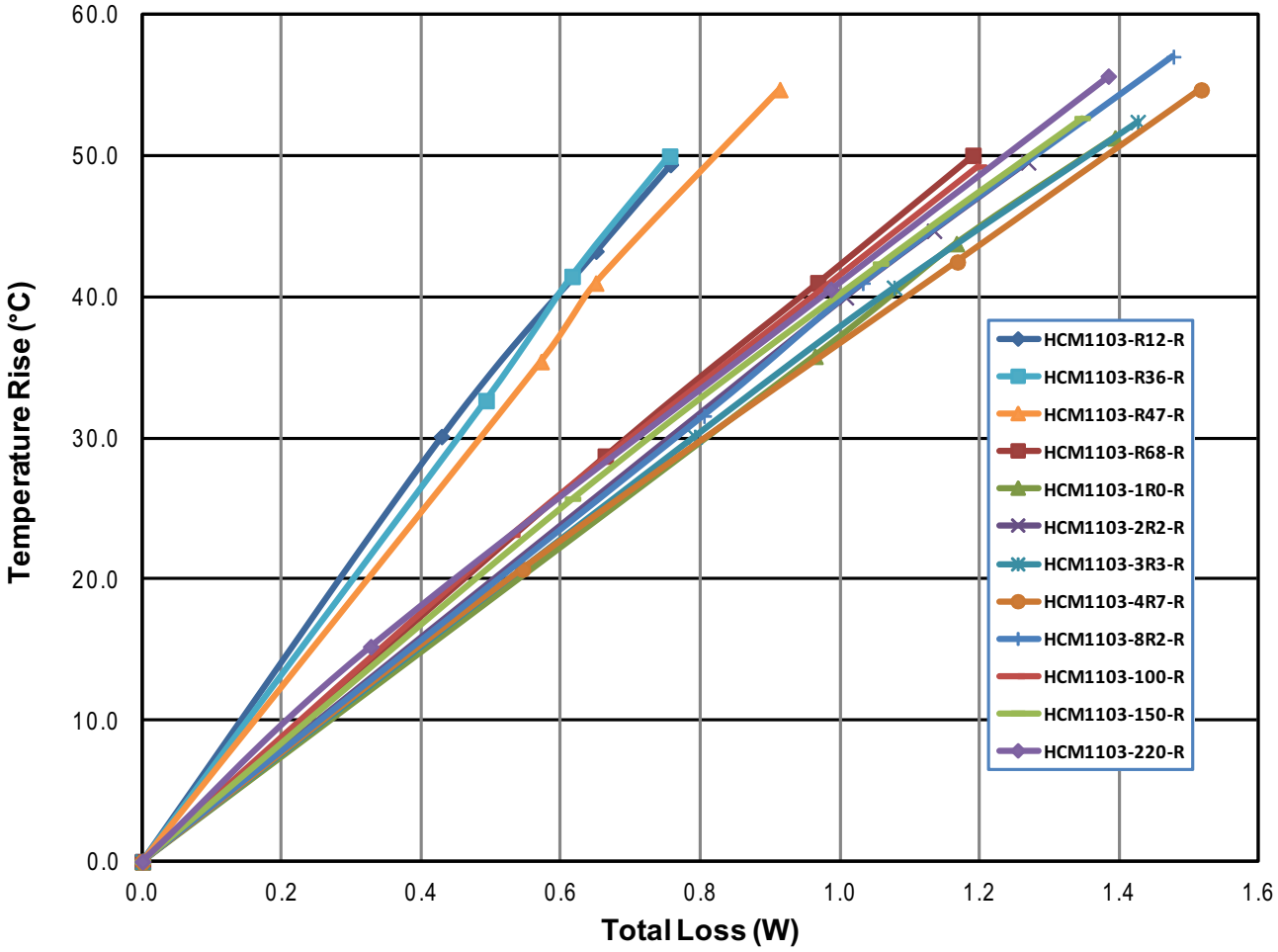
Part Marking: xxx = Inductance value in uH, R = decimal point, if no R is present then third character = # of zeros.
wwyy = (Date code), R = Revision Level
All soldering surfaces to be coplanar within 0.10 millimeters.
Tolerances are ±0.3 millimeters unless stated otherwise.
HCM1103-R36-R and HCM1103-R47-R Color: Black
HCM1103-R12-R and HCM1103-R68-R to HCM1103-220-R Color : Top Grey

Packaging Information - mm



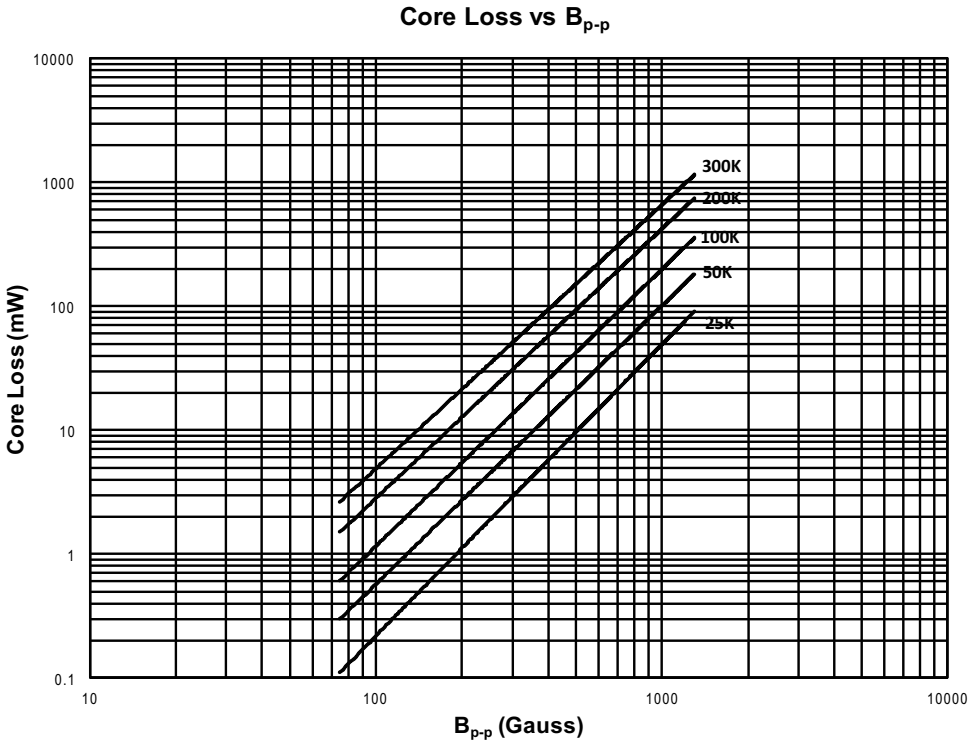
1000 Pieces supplied in tape and reel packaging, on a 13” diameter reel.

Temperature Rise vs. Total Loss

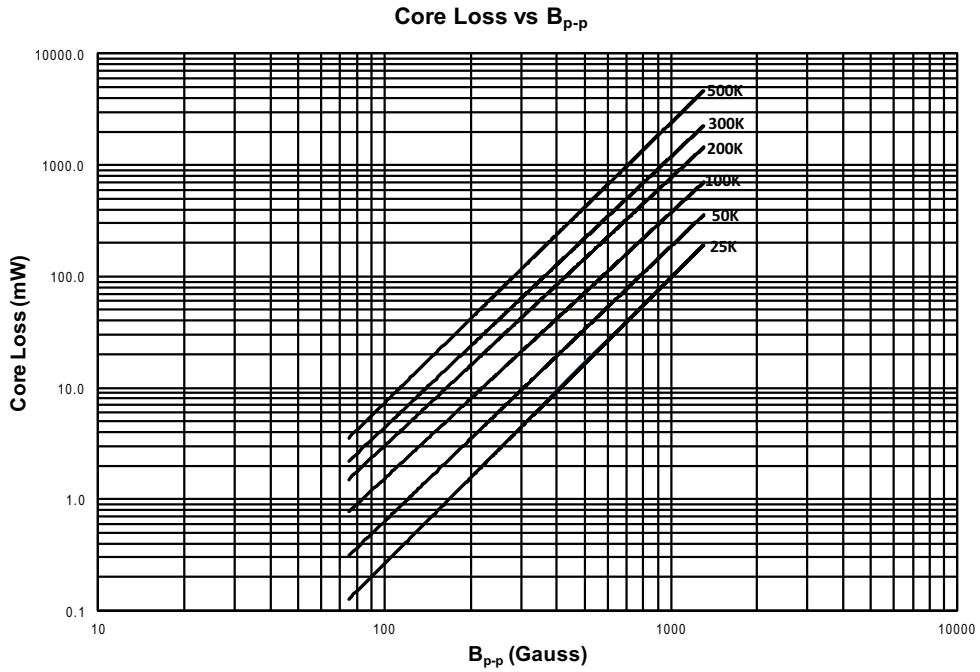


Core Loss

HCM1103-; R36-R and R47-R

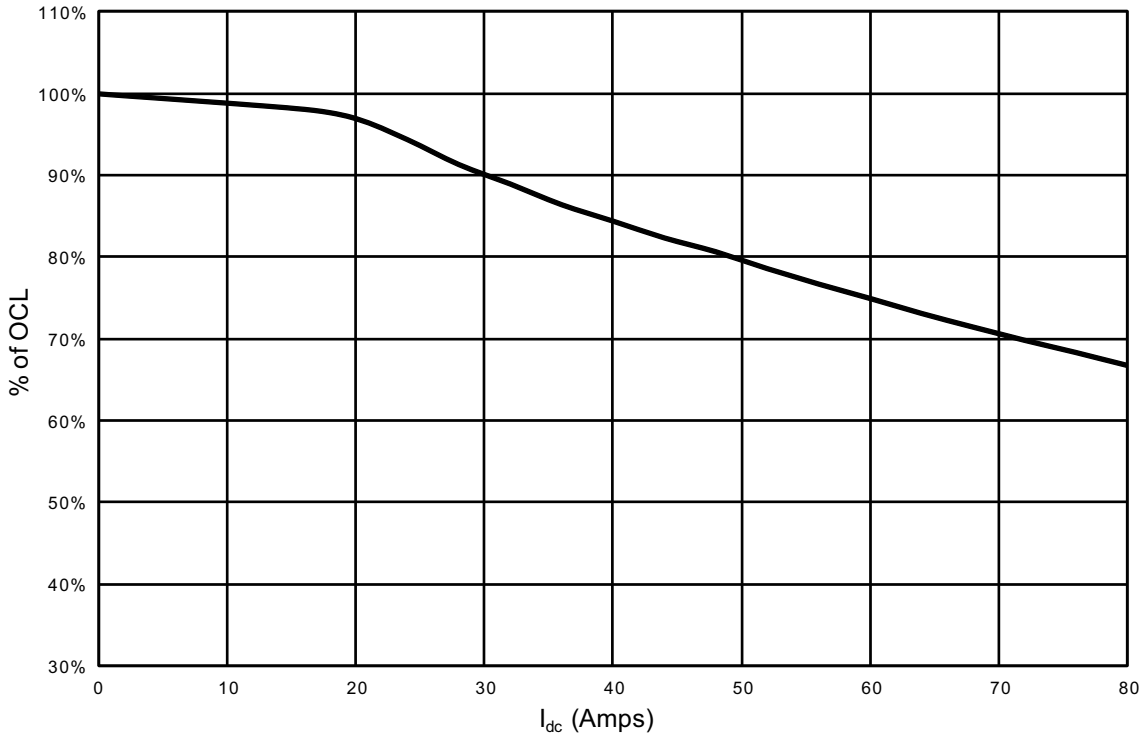


HCM1103-; R12-R, R68-R through 220-R

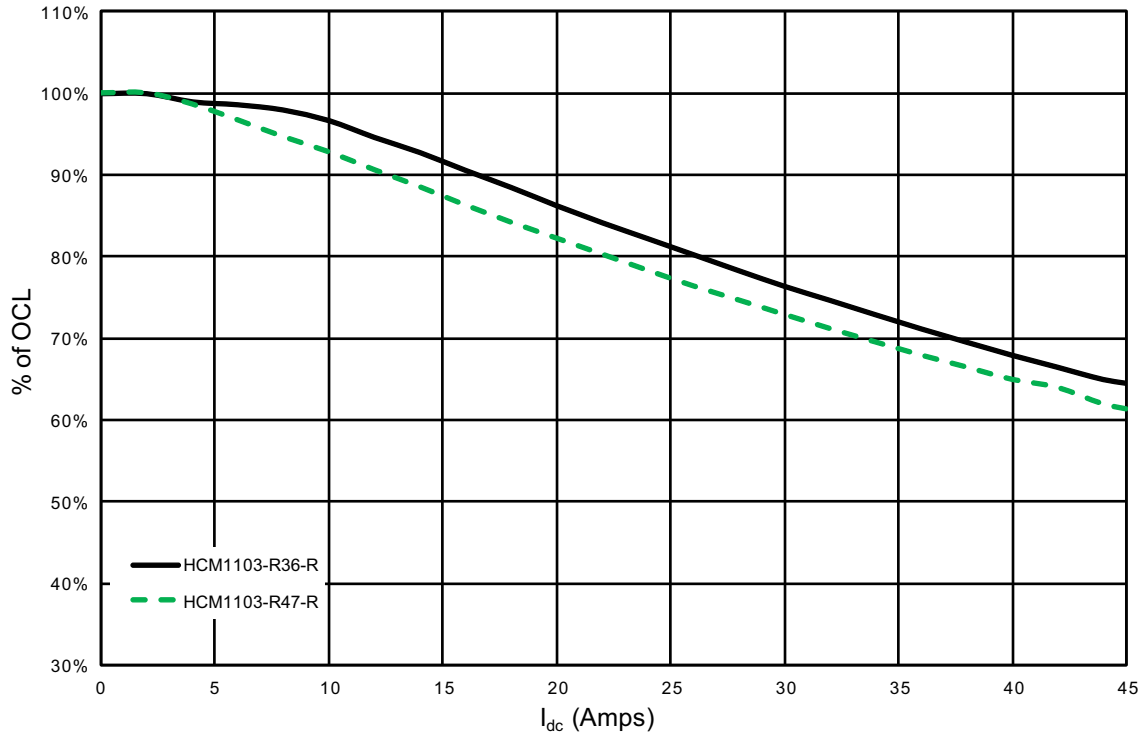


Inductance Characteristics

HCM1103- R12-R

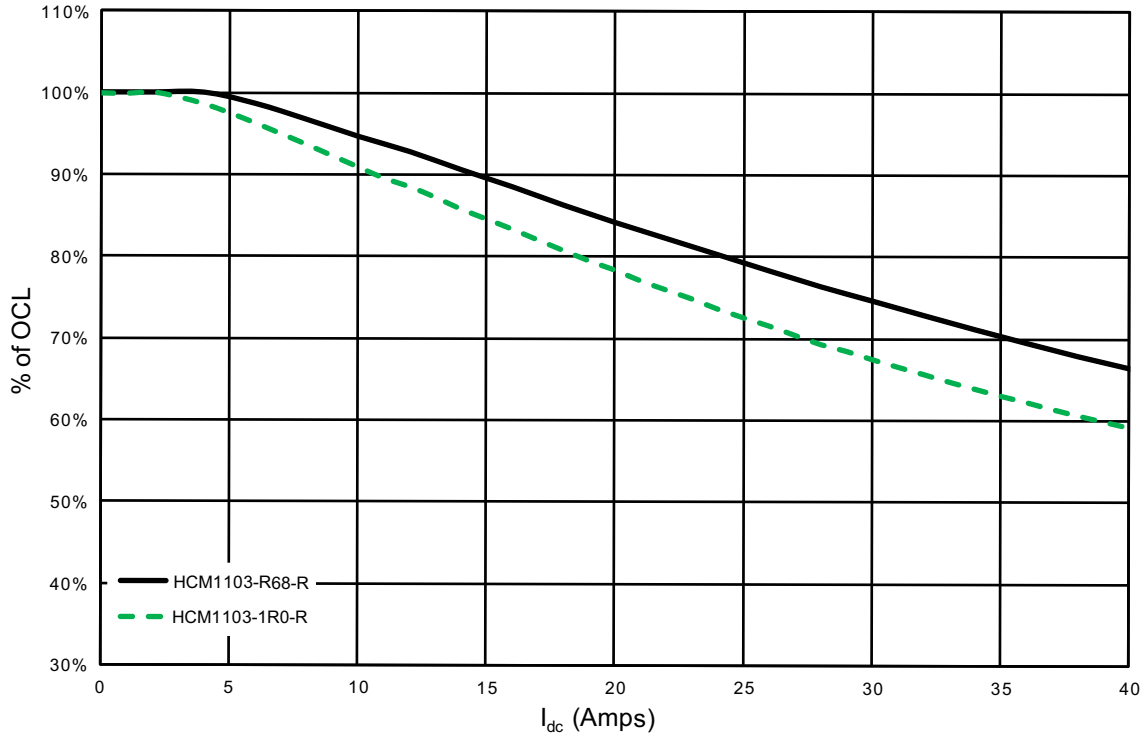


HCM1103-; R36-R, R47-R

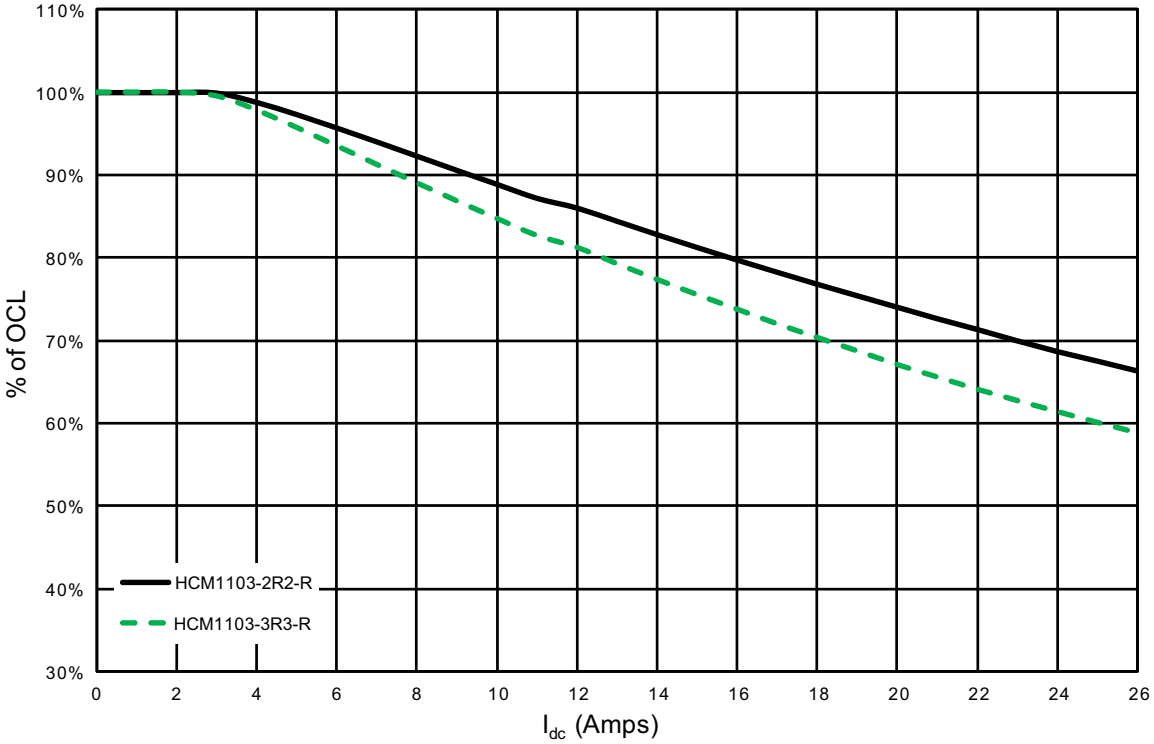


Inductance Characteristics

HCM1103-; R68-R, 1R0-R

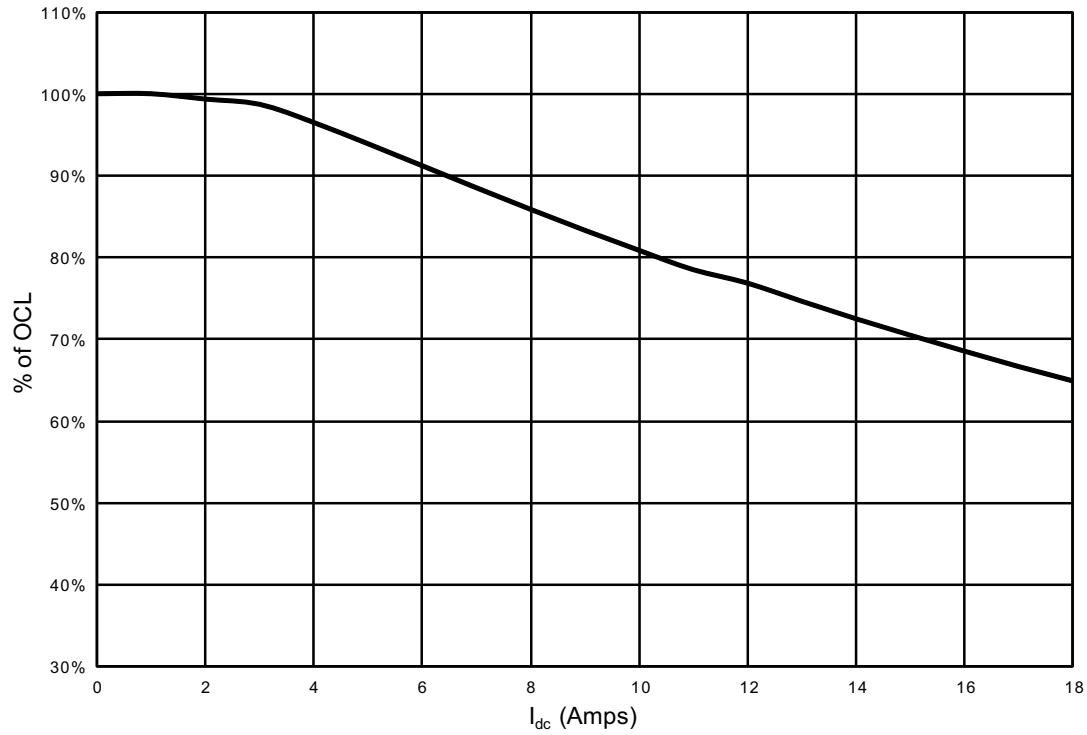


HCM1103-; 2R2-R, 3R3-R

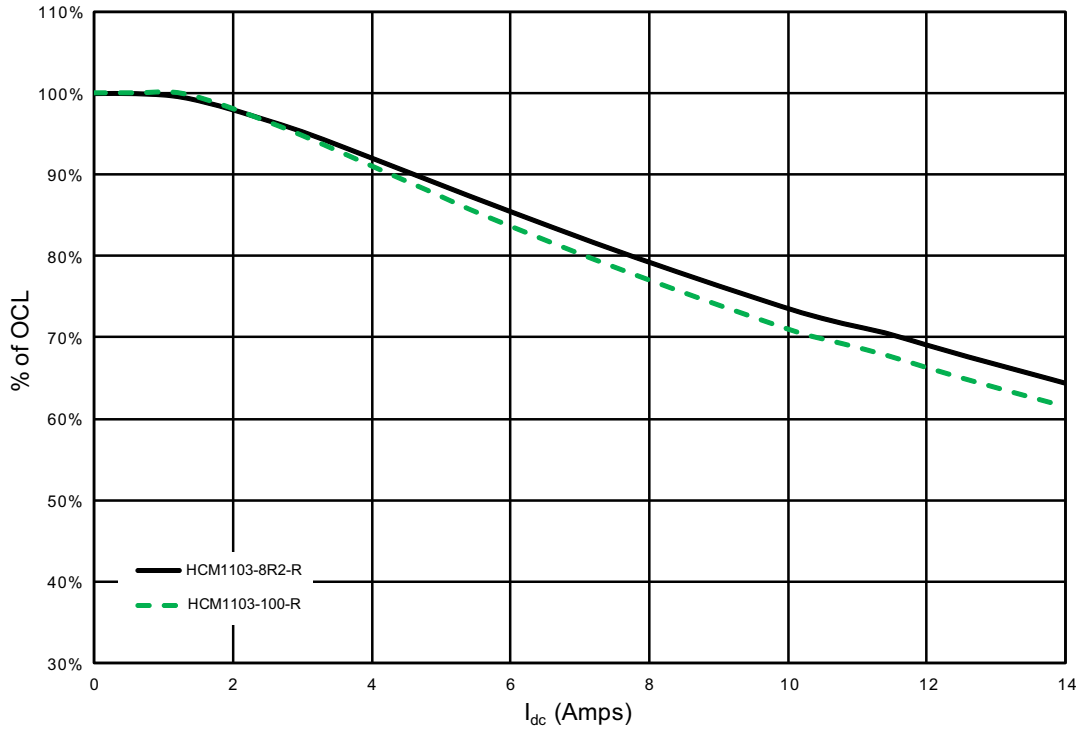


Inductance Characteristics

HCM1103-4R7-R

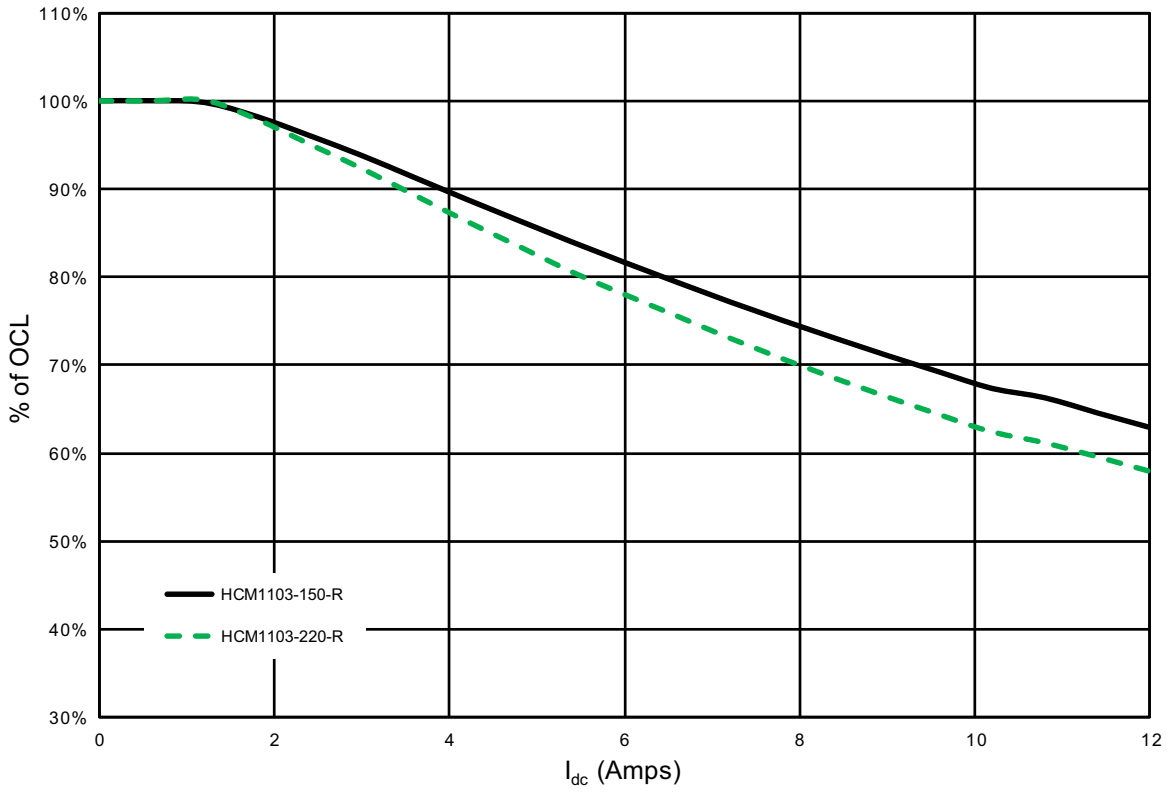


HCM1103-; 8R2-R, 100-R



Inductance Characteristics

HCM1103-;150-R, 220-R



Solder Reflow Profile

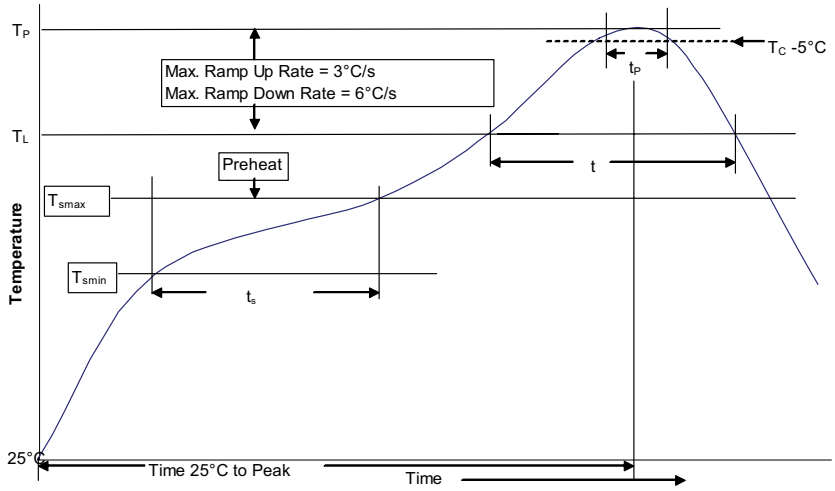


Table 1 - Standard SnPb Solder (T_C)

Package Thickness	Volume mm³ <350	Volume mm³ ≥350
<2.5mm	235°C	220°C
≥2.5mm	220°C	220°C

Table 2 - Lead (Pb) Free Solder (T_C)

Package Thickness	Volume mm³ <350	Volume mm³ 350 - 2000	Volume mm³ >2000
<1.6mm	260°C	260°C	260°C
1.6 – 2.5mm	260°C	250°C	245°C
>2.5mm	250°C	245°C	245°C

Reference JDEC J-STD-020D

Profile Feature		Standard SnPb Solder	Lead (Pb) Free Solder
Preheat and Soak	• Temperature min. (T_{smin})	100°C	150°C
	• Temperature max. (T_{smax})	150°C	200°C
	• Time (T_{smin} to T_{smax}) (t_s)	60-120 Seconds	60-120 Seconds
Average ramp up rate T_{smax} to T_p		3°C/ Second Max.	3°C/ Second Max.
Liquidous temperature (T_L) Time at liquidous (t_L)		183°C 60-150 Seconds	217°C 60-150 Seconds
Peak package body temperature (T_P)*		Table 1	Table 2
Time (t_p)** within 5 °C of the specified classification temperature (T_C)		20 Seconds**	30 Seconds**
Average ramp-down rate (T_p to T_{smax})		6°C/ Second Max.	6°C/ Second Max.
Time 25°C to Peak Temperature		6 Minutes Max.	8 Minutes Max.

* Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.

** Tolerance for time at peak profile temperature (t_p) is defined as a supplier minimum and a user maximum.

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High Current Power Inductors

HCM1104 Series

HALOGEN HF FREE · Pb · RoHS

SMD Device

Description

- Halogen free, lead free, RoHS compliant
- 125°C maximum total operating temperature
- 11.5x 10.3 x 4.0mm maximum surface mount package
- Powder Iron core material
- Magnetically shielded, low EMI
- High current carrying capacity, low core losses
- Inductance range 0.20µH to 10.0µH
- Current range from 7.5 to 45 Amps
- Frequency range up to 5MHz

Applications

- Voltage Regulator Module (VRM)
- Multi-phase regulators
- Point-of-load modules
- Desktop and server VRMs and EVRDs
- Base station equipment
- Notebook regulators
- Battery power systems
- Graphics cards
- Data networking and storage systems

Environmental Data

- Storage temperature range: -55°C to +125°C
- Operating temperature range: -55°C to +125°C (ambient plus self temperature rise)
- Solder reflow temperature: J-STD-020D compliant

Packaging

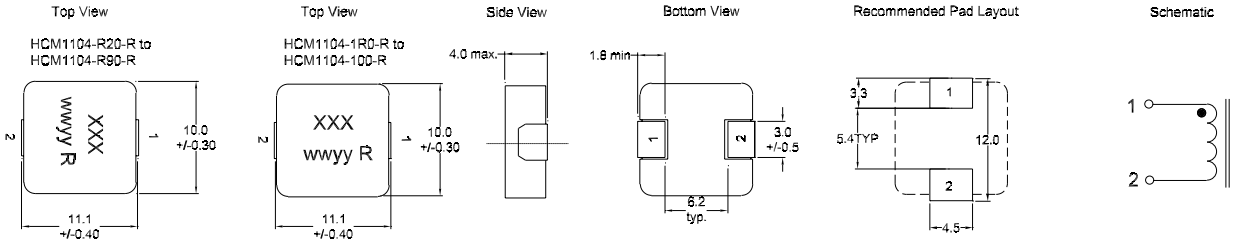
- Supplied in tape and reel packaging, 850 parts per 13" reel

Product Specifications

Part Number[7]	OCL[1] ± 20% (µH)	FLL[2] Min (µH)	I_{rms}[3] (Amps)	I_{sat}[4,5] @25°C (Amps)	DCR (mΩ) @20°C Nominal	DCR (mΩ) @20°C Maximum	K-factor[6]
HCM1104-R20-R	0.20	0.13	32	45	0.63	0.72	411
HCM1104-R36-R	0.36	0.23	30	42	1.04	1.20	269
HCM1104-R45-R	0.45	0.29	29	36	1.07	1.23	219
HCM1104-R56-R	0.56	0.36	25	32	1.56	1.80	230
HCM1104-R90-R	0.90	0.58	22	28	2.17	2.50	236
HCM1104-1R0-R	1.0	0.56	18	28	3.00	3.30	378
HCM1104-1R5-R	1.5	0.84	16	32	3.80	4.20	310
HCM1104-2R2-R	2.2	1.23	12	18	6.00	7.00	253
HCM1104-3R3-R	3.3	1.85	10	16	10.8	11.8	220
HCM1104-4R7-R	4.7	2.63	8.5	15	17.0	20.0	175
HCM1104-100-R	10.0	5.60	7.5	8.5	27.0	30.0	116

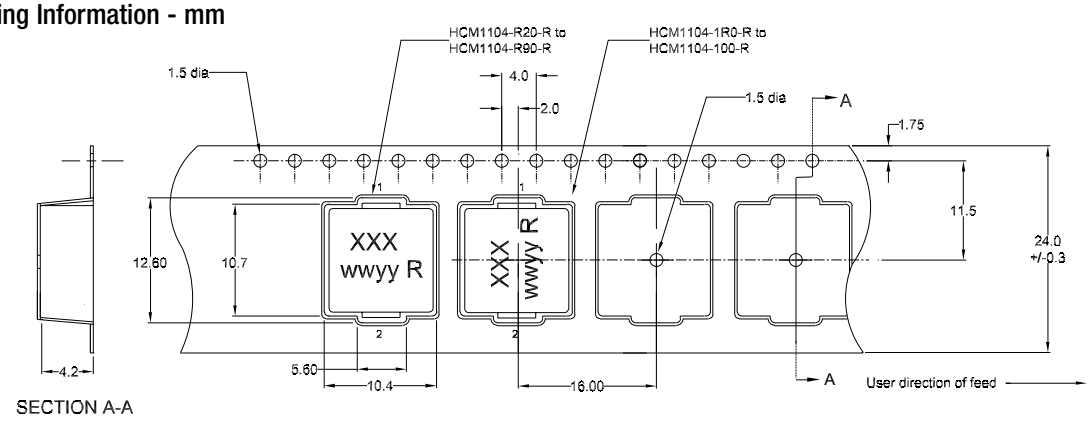
1. Open Circuit Inductance (OCL) Test Parameters: 100kHz, 0.25V_{rms}, 0.0Adc @ 25°C.
2. Full Load Inductance (FLL) Test Parameters: 100kHz, 0.25V_{rms}, I_{sat} @ 25°C.
3. I_{rms}: DC current for an approximate temperature rise of 40°C without core loss. Derating is necessary for AC currents. PCB layout, trace thickness and width, air-flow and proximity of other heat generating components will affect the temperature rise. It is recommended that the temperature of the part not exceed 125°C under worst case operating conditions verified in the end application.
4. I_{sat}: Peak current for approx. 20% rolloff at +25°C - HCM1104-R20-R to HCM1104-R90-R.
5. I_{sat}: Peak current for approx. 30% rolloff at +25°C - HCM1104-1R0-R to HCM 1104-100-R.
6. K-factor: Used to determine B_{p-p} for core loss (see graph). $B_{p-p} = K * L * \Delta I$. B_{p-p}: (Gauss), K: (K-factor from table), L: (Inductance in µH), ΔI (Peak-to-peak ripple current in Amps).
7. Part Number Definition: HCM1104-xxx-R
   - HCM1104 = Product code and size
   - xxx= Inductance value in µH, R = decimal point
   - "-R" suffix = RoHS compliant

Dimensions - mm



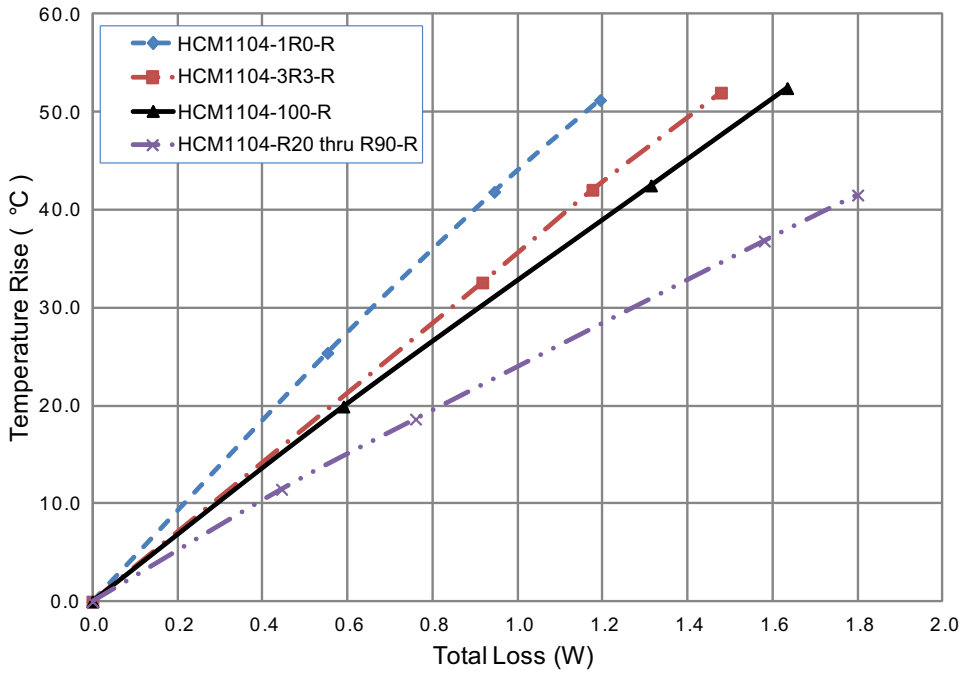
Part marking: xxx = Inductance value in μH, R = decimal point, if no R is present, third character = # of zeros. wwyy = (date Code) R = (Revision Level)
All soldering surfaces to be coplanar within 0.10 millimeters.
Tolerances are ±0.3 millimeters unless stated otherwise.
HCM1104-R20-R to HCM1104-R90-R Color: Black
HCM1104-1R0-R to HCM1104-100-R Color: Grey

Packaging Information - mm

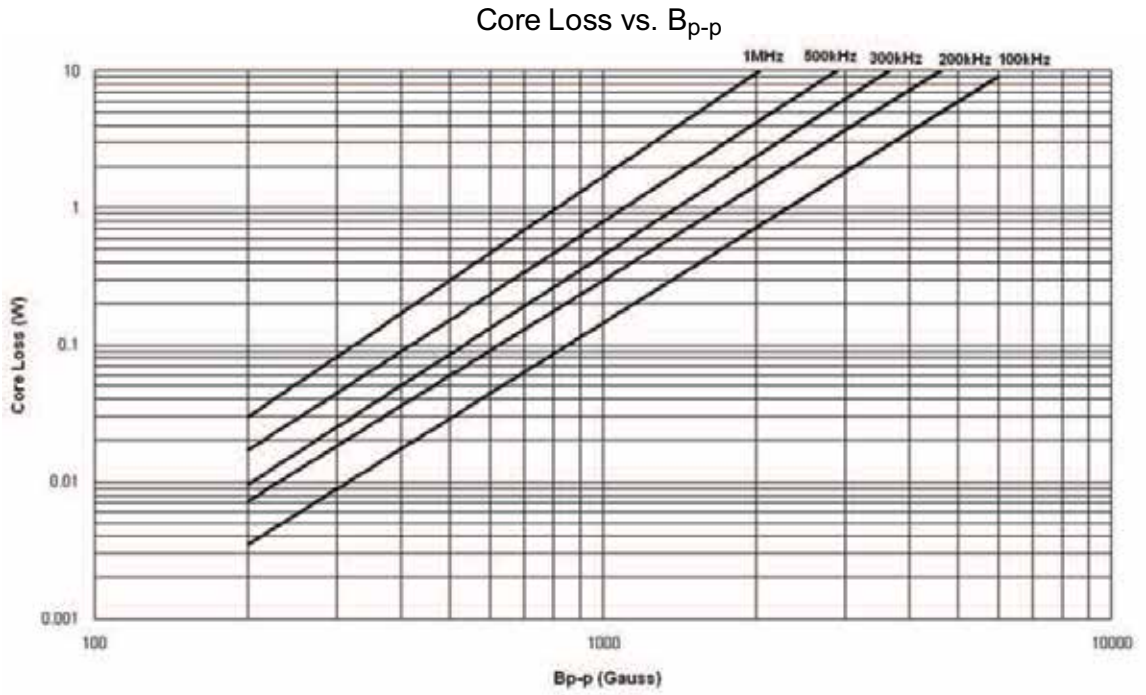


Supplied in tape and reel packaging, 850 parts per 13" diameter reel.

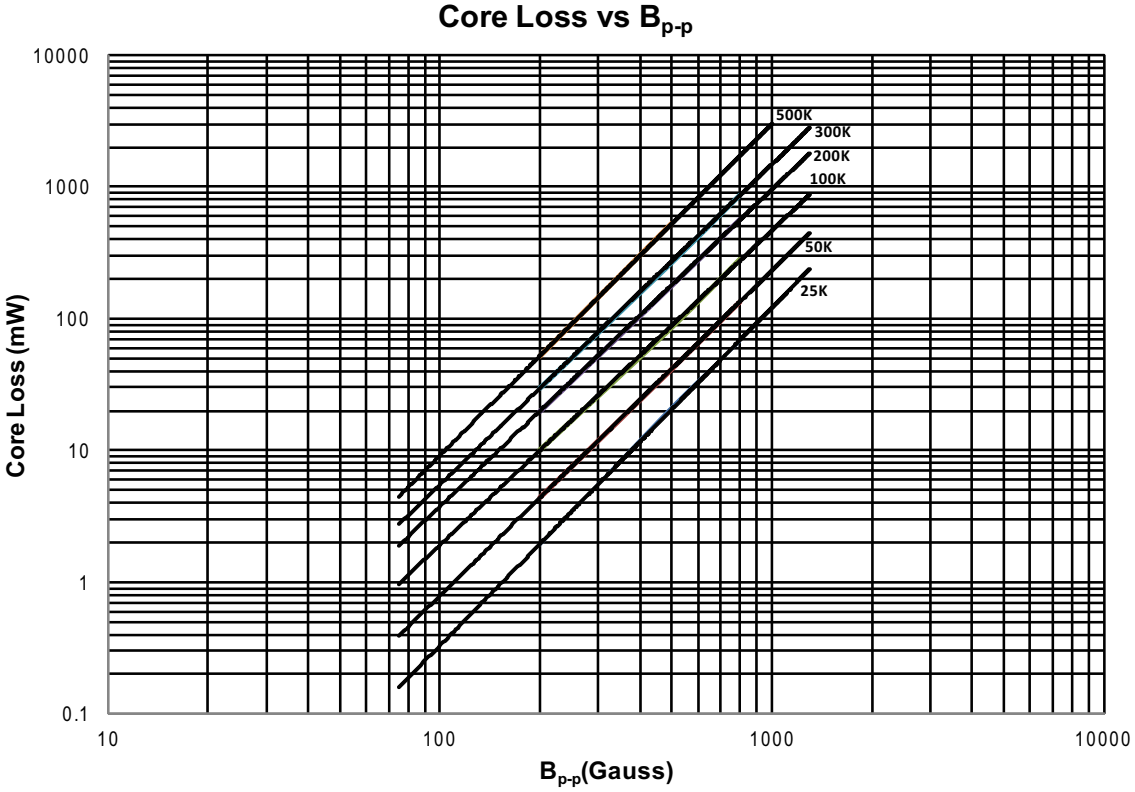
Temperature Rise vs. Total Loss



Core Loss - HCM1104-R20-R Through HCM1104-R90-R

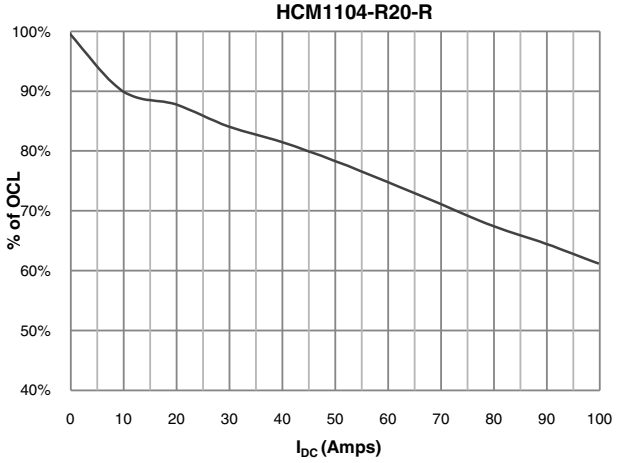


Core Loss - HCM1104-1R0-R Through HCM1104-100-R

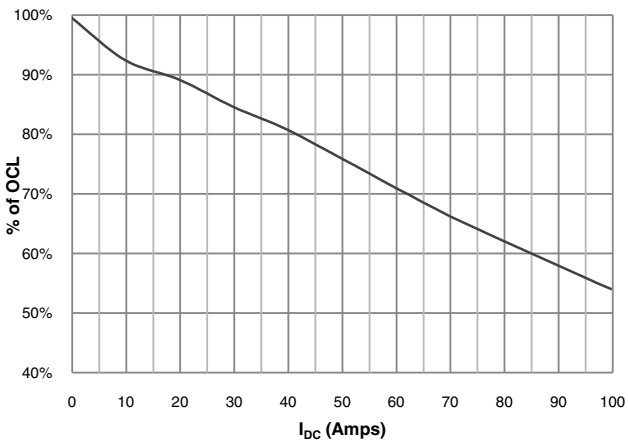


Inductance Characteristics

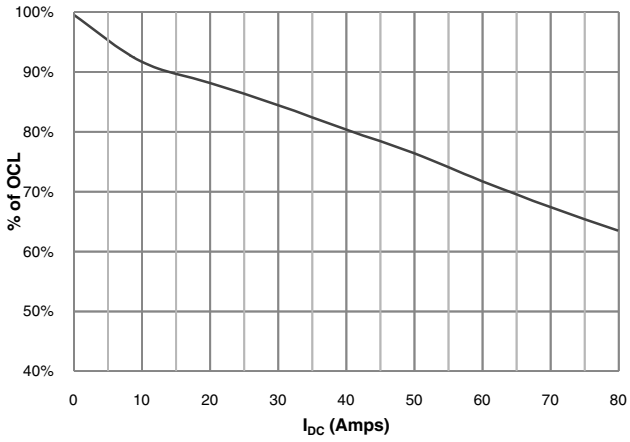
HCM1104-R20-R



HCM1104-R36-R



HCM1104-R45-R



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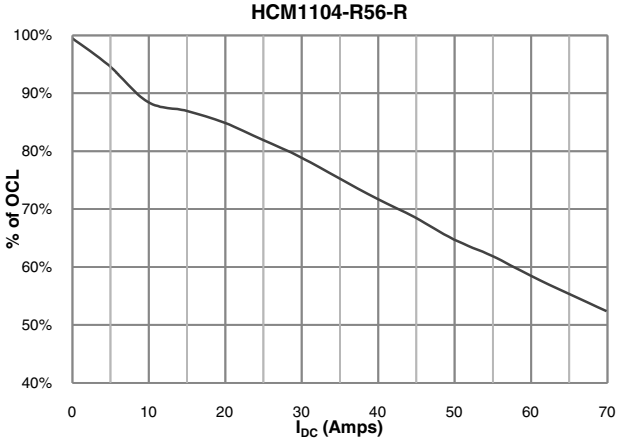
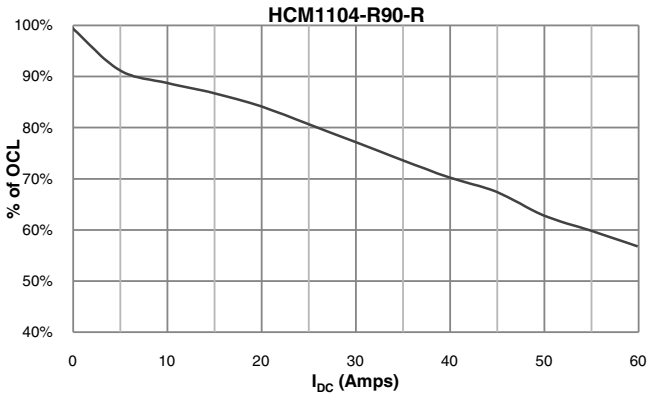
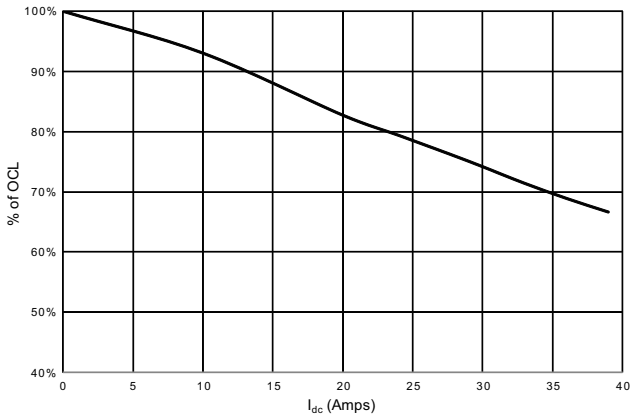


HCM1104-R90-R

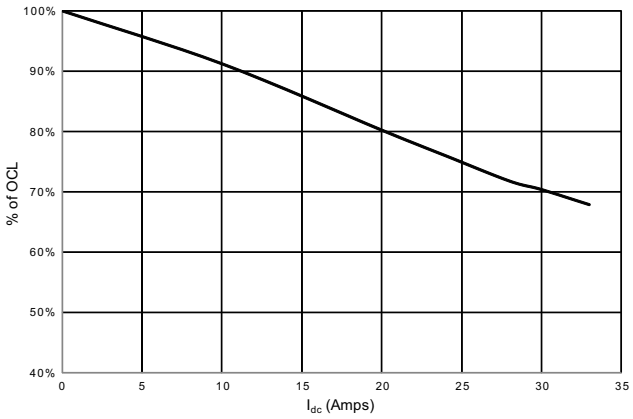


Inductance Characteristics

HCM1104-1R0-R



HCM1104-1R5-R



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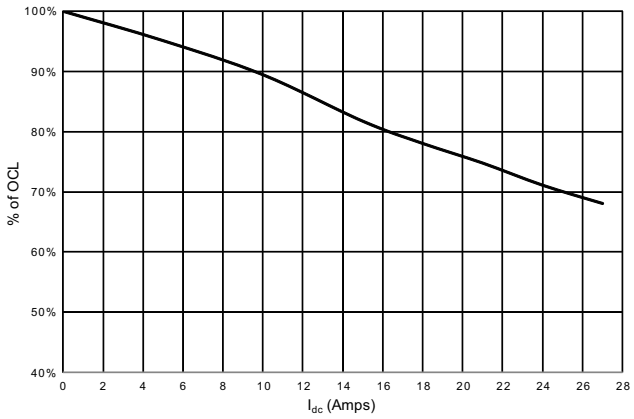
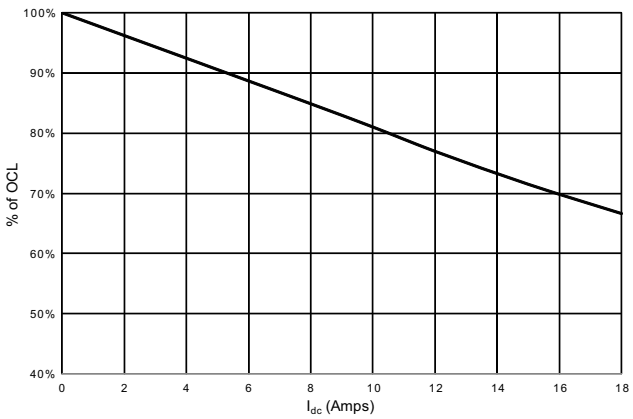


HCM1104-4R7-R



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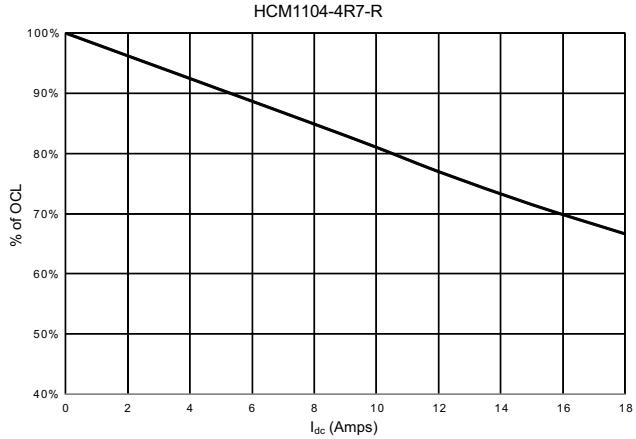
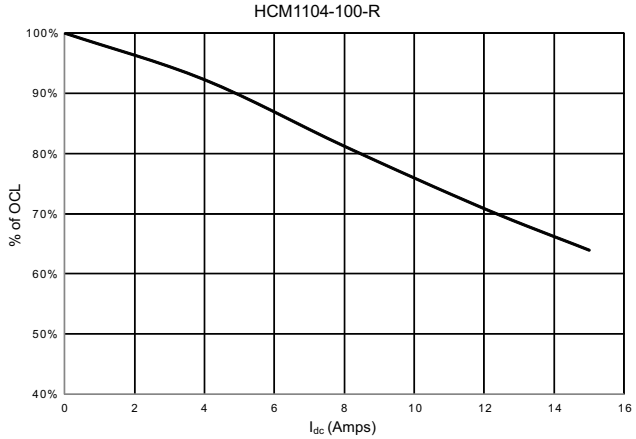


HCM1104-100-R



Solder Reflow Profile

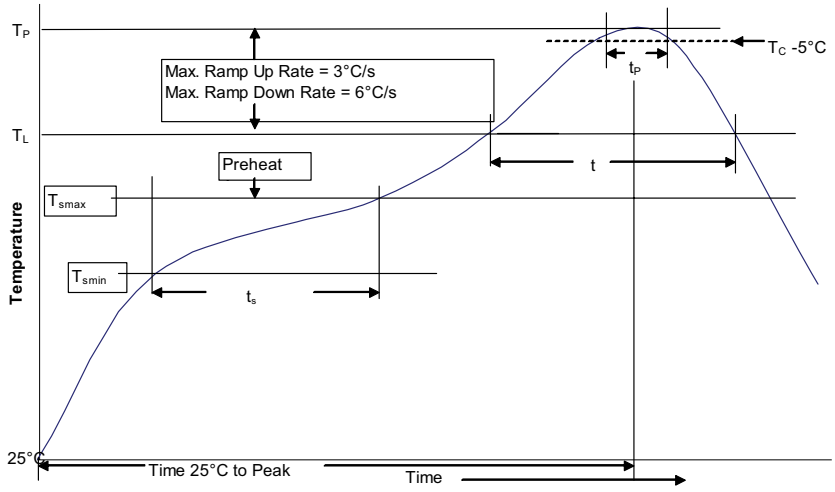


Table 1 - Standard SnPb Solder (T_C)

Package Thickness	Volume mm³ <350	Volume mm³ ≥350
<2.5mm	235°C	220°C
≥2.5mm	220°C	220°C

Table 2 - Lead (Pb) Free Solder (T_C)

Package Thickness	Volume mm³ <350	Volume mm³ 350 - 2000	Volume mm³ >2000
<1.6mm	260°C	260°C	260°C
1.6 – 2.5mm	260°C	250°C	245°C
>2.5mm	250°C	245°C	245°C

Reference JDEC J-STD-020D

Profile Feature		Standard SnPb Solder	Lead (Pb) Free Solder
Preheat and Soak	• Temperature min. (T_{smin})	100°C	150°C
	• Temperature max. (T_{smax})	150°C	200°C
	• Time (T_{smin} to T_{smax}) (t_s)	60-120 Seconds	60-120 Seconds
Average ramp up rate T_{smax} to T_p		3°C/ Second Max.	3°C/ Second Max.
Liquidous temperature (T_L) Time at liquidous (t_L)		183°C 60-150 Seconds	217°C 60-150 Seconds
Peak package body temperature (T_P)*		Table 1	Table 2
Time (t_p)** within 5 °C of the specified classification temperature (T_C)		20 Seconds**	30 Seconds**
Average ramp-down rate (T_p to T_{smax})		6°C/ Second Max.	6°C/ Second Max.
Time 25°C to Peak Temperature		6 Minutes Max.	8 Minutes Max.

* Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.

** Tolerance for time at peak profile temperature (t_p) is defined as a supplier minimum and a user maximum.

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Technical Data 4371

Effective June 2014
Supersedes October 2010

Coiltronics HCM1305 Series

High current power inductors

Product description

- High current carrying capacity
- Low core losses
- Magnetically shielded, low EMI
- Frequency range up to 5MHz
- Inductance range from 0.10 µH to 33µH
- Current range from 5.2A to 118A
- 13.8x12.5mm footprint surface mount package in a 5.0mm height
- Powder iron core material
- Halogen free, lead free, RoHS compliant

Applications

- Voltage Regulator Module (VRM)
- Multi-phase regulators
- Point-of-load modules
- Desktop and server VRMs and EVRDs
- Base station equipment
- Notebook regulators
- Battery power systems
- Graphics cards
- Data networking and storage systems

Environmental data

- Storage temperature range (Component): -55°C to +125°C
- Operating temperature range: -55°C to +125°C (ambient + self-temperature rise)
- Solder reflow temperature: J-STD-020D compliant

Pb HALOGEN HF FREE RoHS

The Coiltronics brand of magnetics (formerly of the Bussmann Division of Cooper Industries) is now part of Eaton's Electrical Group, Electronics Division.

Coiltronics is now part of Eaton
Same great products plus even more.

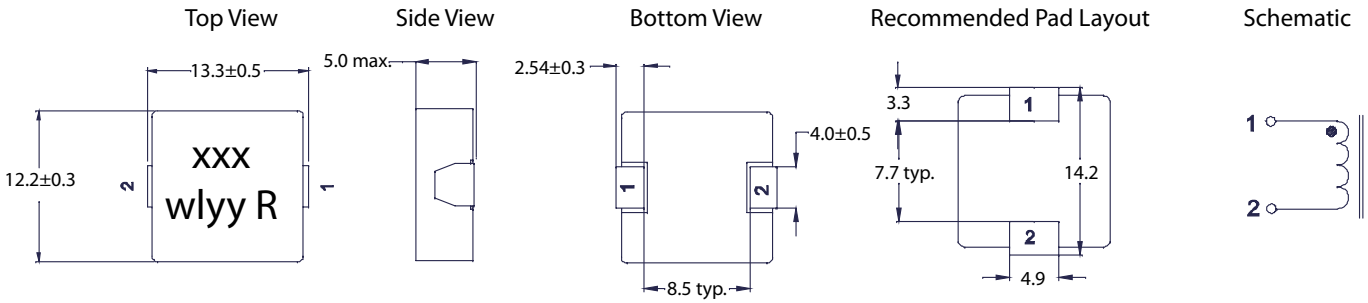
Powering Business Worldwide

Product specifications

Part Number[6]	OCL[1] (µH) ± 20%	FLL[2] Min. (µH)	I_{rms}[3] (amps)	I_{sat}[4] (amps)	DCR (mΩ) @ 20°C ± nominal	DCR (mΩ) @ 20°C maximum	K-factor[5]
HCM1305-R10-R	0.10	0.064	55	118	0.52	0.59	848
HCM1305-R22-R	0.22	0.14	51	110	0.63	0.72	843
HCM1305-R33-R	0.33	0.21	42	80	0.80	0.92	506
HCM1305-R47-R	0.47	0.30	38	65	0.80	0.92	506
HCM1305-R56-R	0.56	0.36	36	55	1.15	1.33	500
HCM1305-R68-R	0.68	0.44	34	54	1.15	1.33	500
HCM1305-R82-R	0.82	0.52	31	53	1.40	1.61	358
HCM1305-1R0-R	1.00	0.64	29	50	2.10	2.42	275
HCM1305-1R5-R	1.50	0.96	23	48	2.75	3.16	225
HCM1305-1R8-R	1.80	1.15	21	40	4.00	4.60	216
HCM1305-2R2-R	2.20	1.41	20	32	4.60	5.29	191
HCM1305-3R3-R	3.30	2.11	15	32	7.70	9.20	170
HCM1305-4R7-R	4.70	3.01	12	27	11.0	12.7	161
HCM1305-5R6-R	5.60	3.58	11.5	22	12.0	13.8	142
HCM1305-6R8-R	6.80	4.35	11	21	13.0	15.0	129
HCM1305-7R8-R	7.80	4.99	10	18.5	16.8	19.4	117
HCM1305-8R2-R	8.20	5.25	9.5	18	17.5	20.1	117
HCM1305-100-R	10.0	6.40	9.0	16	19.0	21.9	90
HCM1305-150-R	15.0	9.60	7.7	13	29.0	33.4	74
HCM1305-220-R	22.0	14.1	6.2	10	45.0	51.8	63
HCM1305-330-R	33.0	21.1	5.2	8	74.5	85.5	48

1. Open Circuit Inductance (OCL) Test Parameters: 100kHz, 0.25V_{rms}, 0.0Adc, +25°C.
2. Full Load Inductance (FLL) Test Parameters: 100kHz, 0.25V_{rms}, I_{sat}, @ +25°C.
3. I_{rms}: DC current for an approximate temperature rise of 40°C without core loss. Derating is necessary for AC currents. PCB layout, trace thickness and width, air-flow, and proximity of other heat generating components will affect the temperature rise. It is recommended that the temperature of the part not exceed 125°C under worst case operating conditions verified in the end application.
4. I_{sat}: Peak current for approximately 20% rolloff at +25°C.
5. K-factor: Used to determine B_{p-p} for core loss (see graph). B_{p-p} = K * L * ΔI. B_{p-p}: (Gauss), K: (K-factor from table), L: (Inductance in µH), ΔI (Peak to peak ripple current in amps).
6. Part Number Definition: HCM1305-yyy-R
   - HCM1305 = Product code and size
   - yyy= Inductance value in µH, R = decimal point, if no R is present then third character = number of zeros.
   - "-R" suffix = RoHS compliant

Dimensions - mm



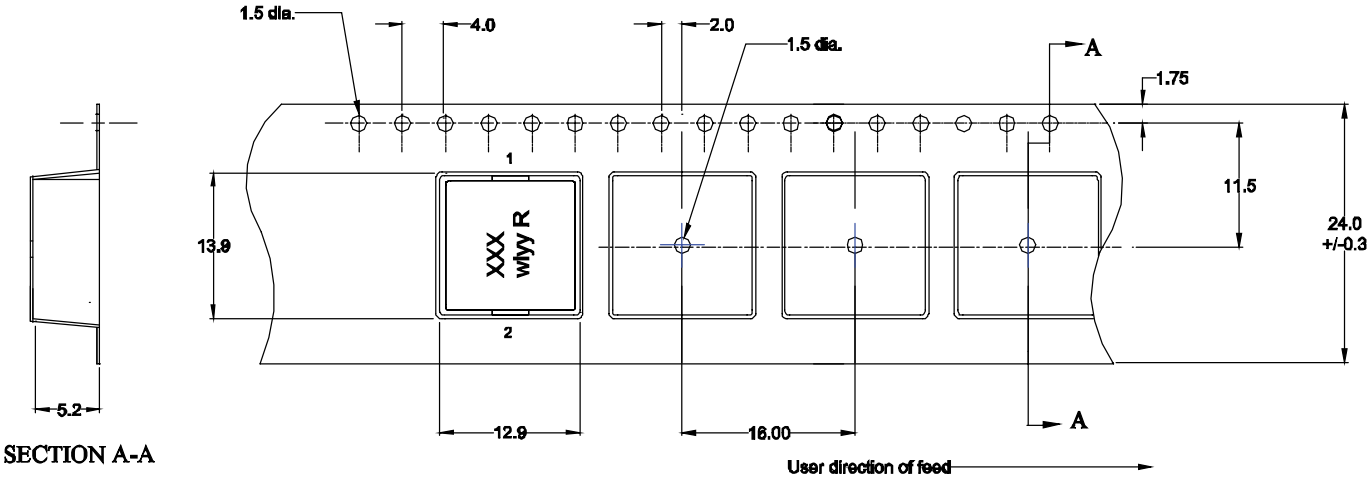
Part Marking: xxx = Inductance value in µH, R = decimal point, if no R is present, third character = number of zeros, wlyy = (Date Code), R = (Revision Level)

All soldering surfaces to be coplanar within 0.10 millimeters.

Tolerances are ±0.3 millimeters unless stated otherwise.

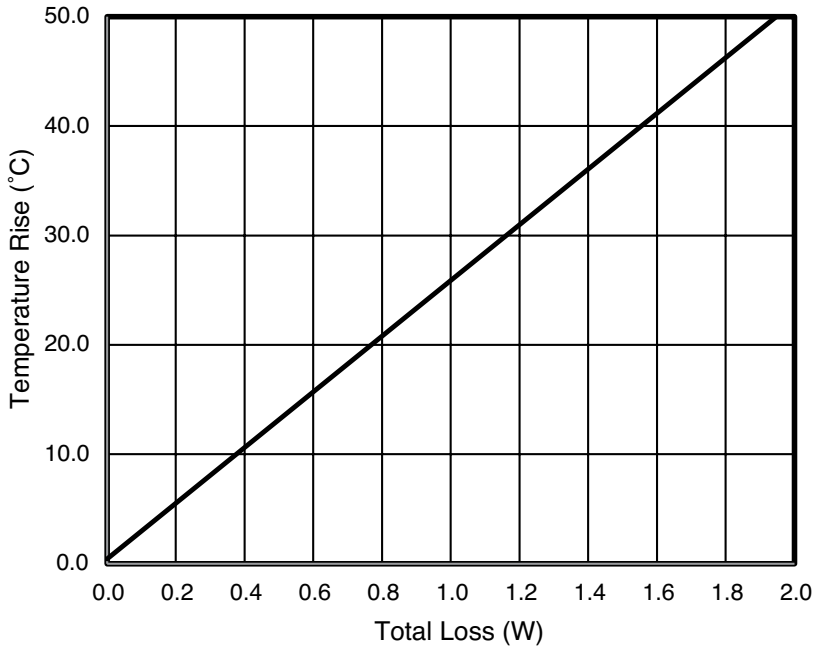
Color: Grey.

Packaging information - mm

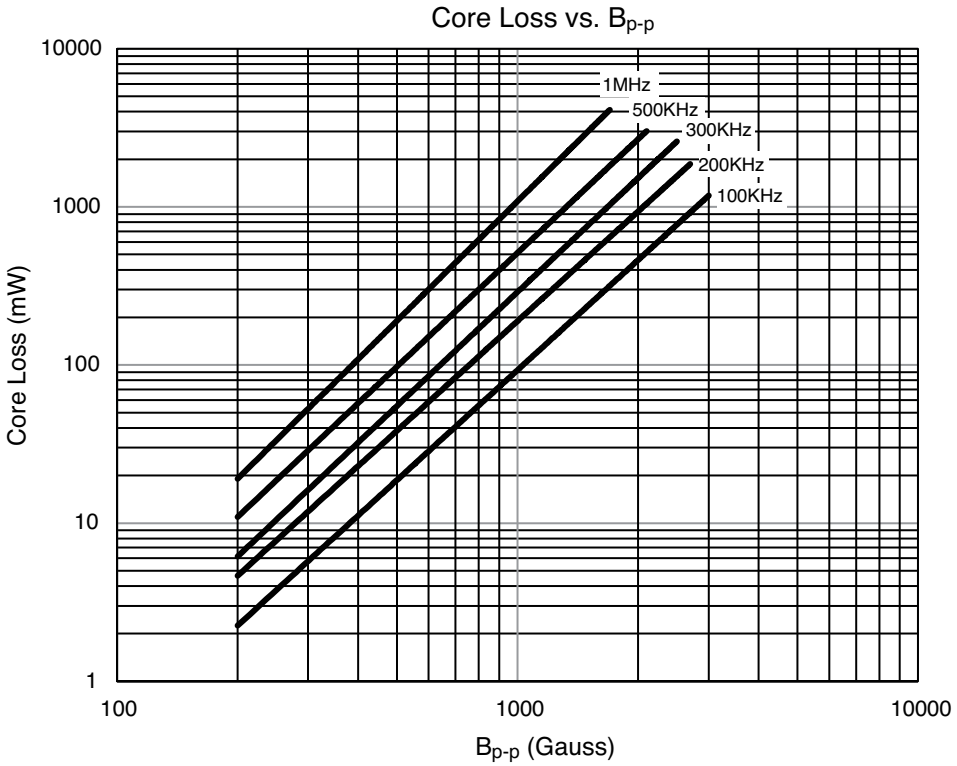


Supplied in tape and reel packaging, 400 parts per 13″ diameter reel.

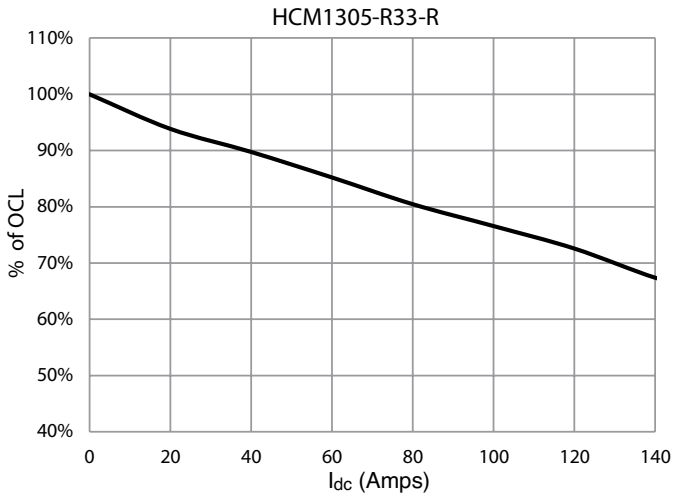
Temperature rise vs. total loss

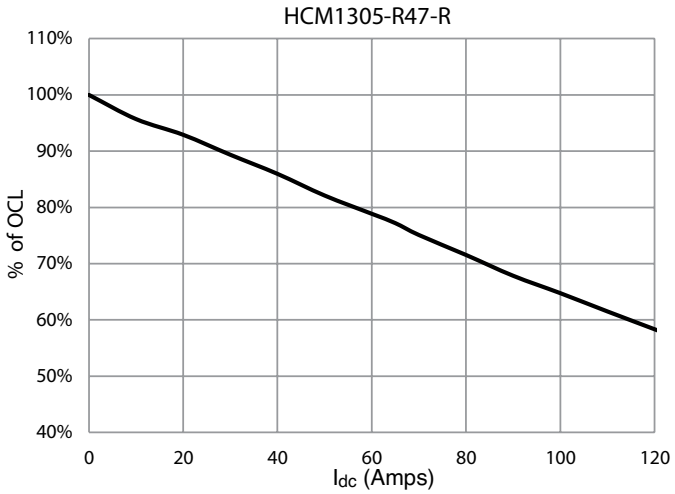


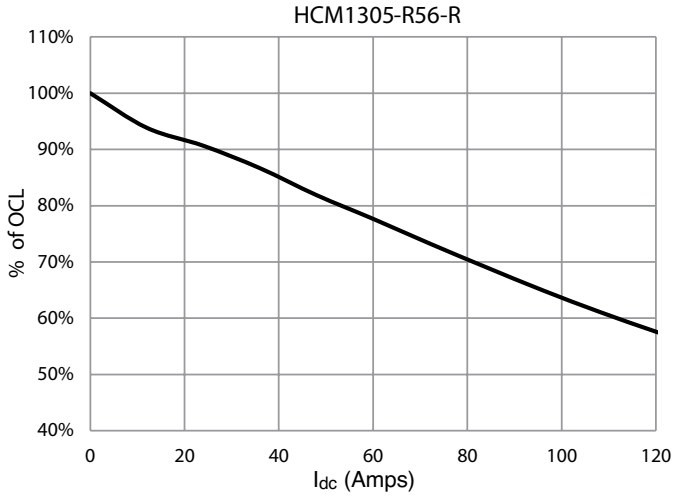
Core loss

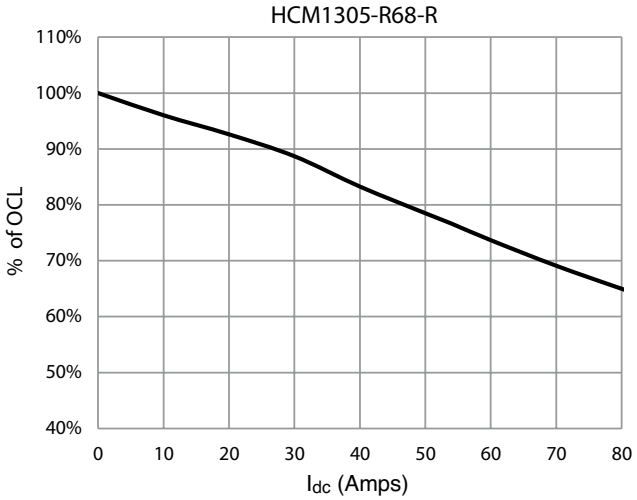


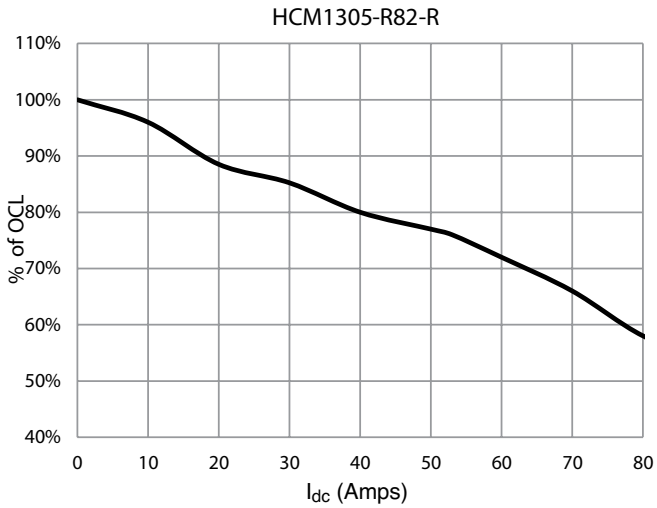
Inductance characteristics

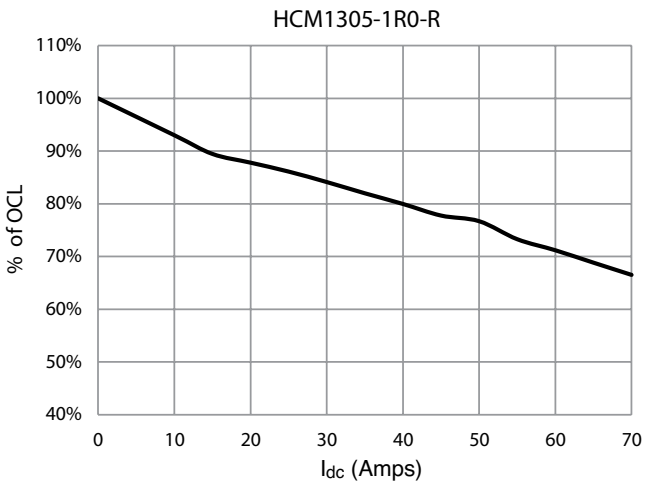




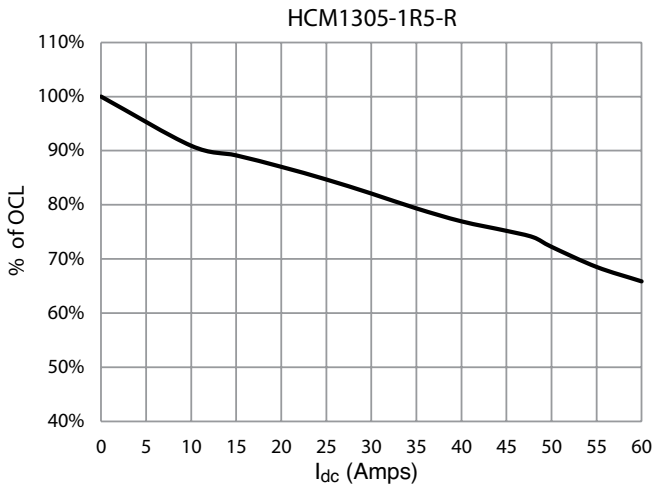


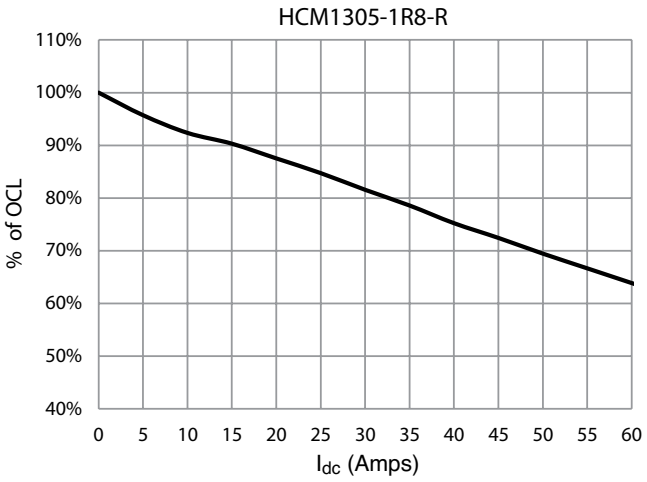


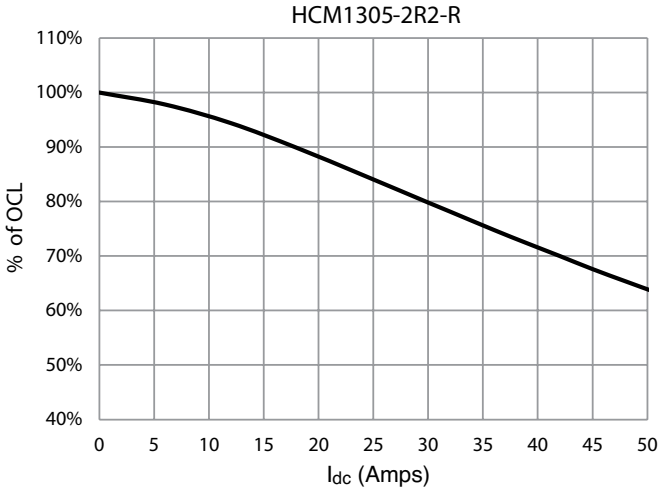


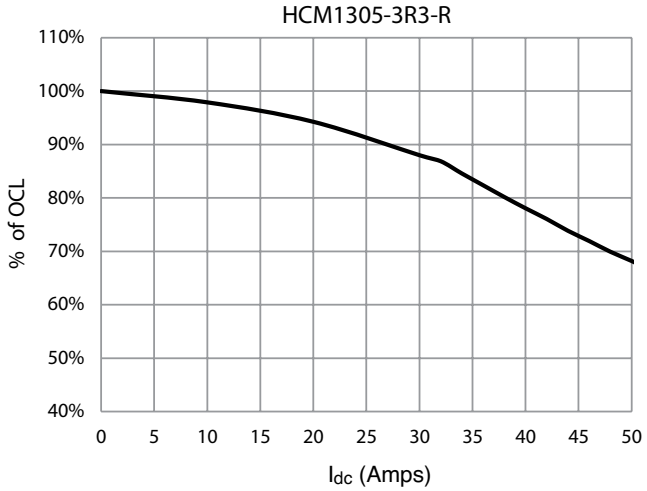


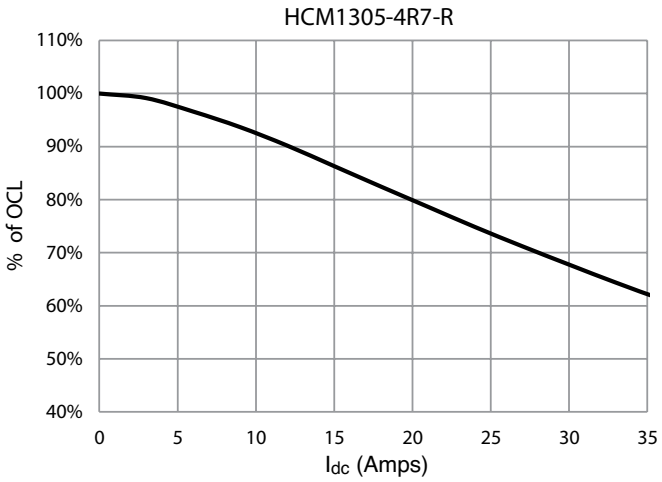
Inductance characteristics

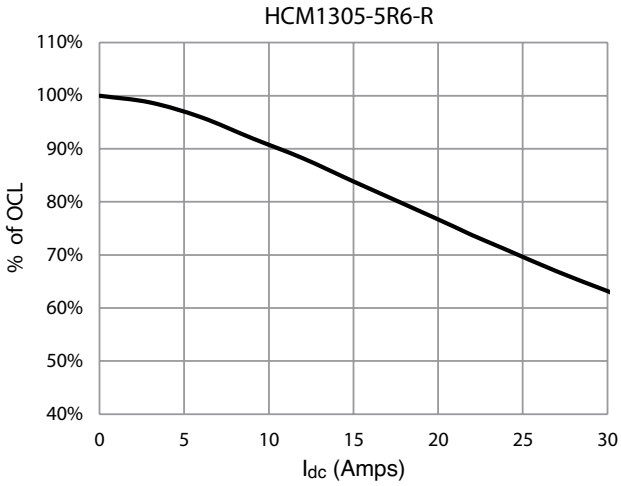




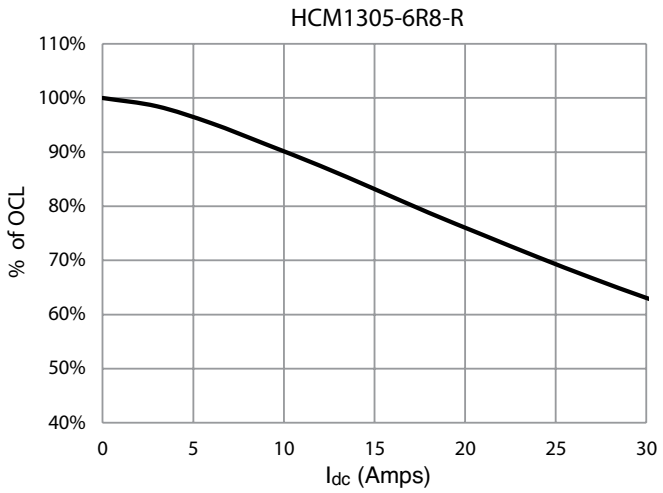


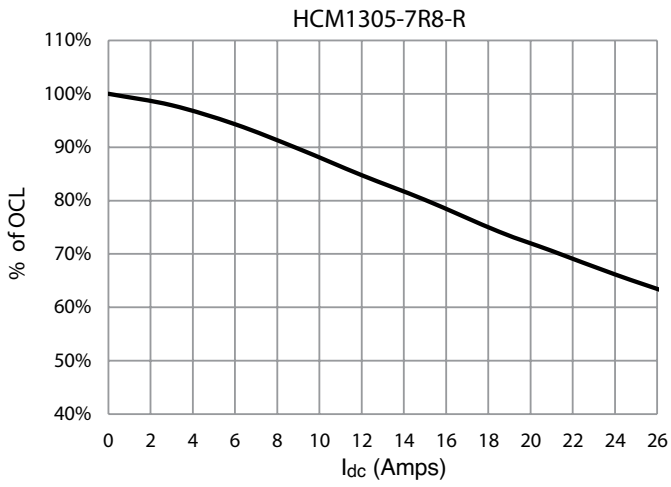


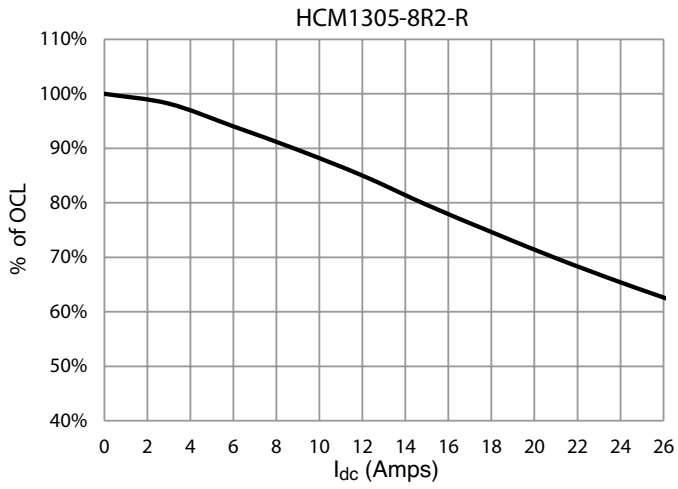


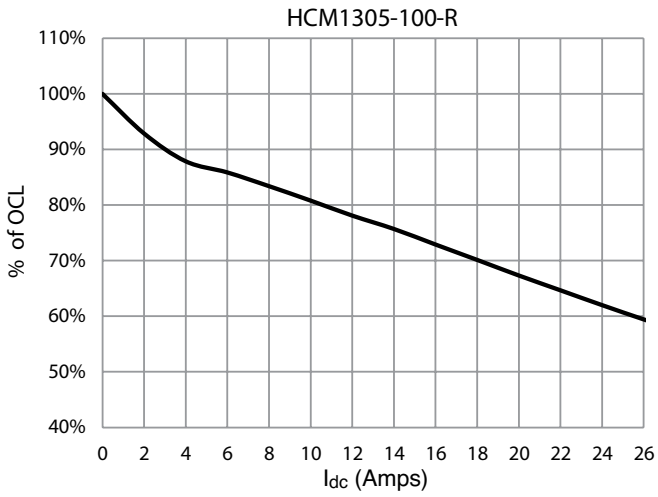


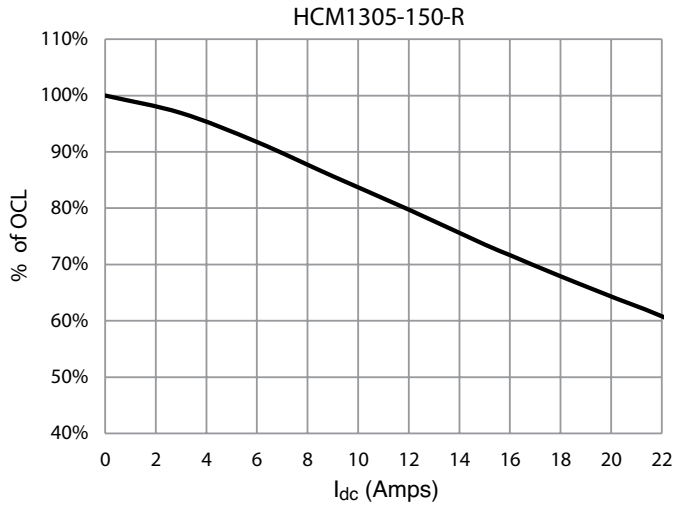
Inductance characteristics

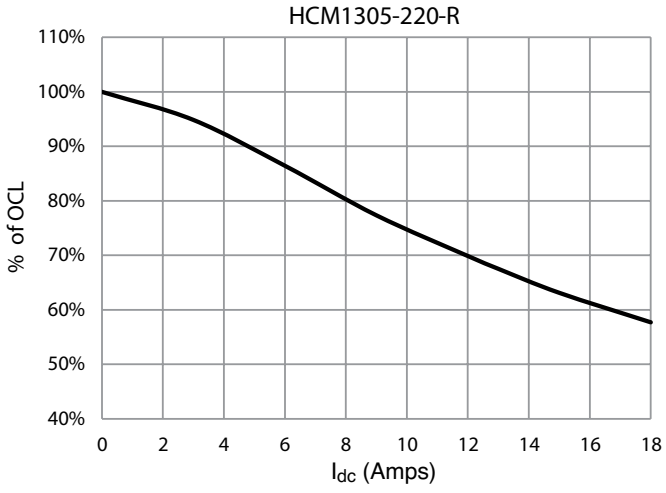




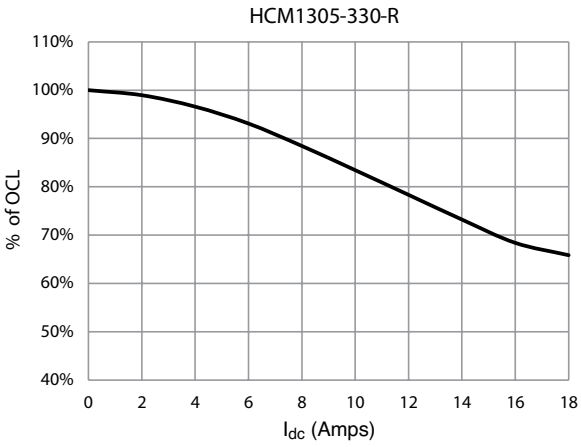








Inductance characteristics



Solder reflow profile

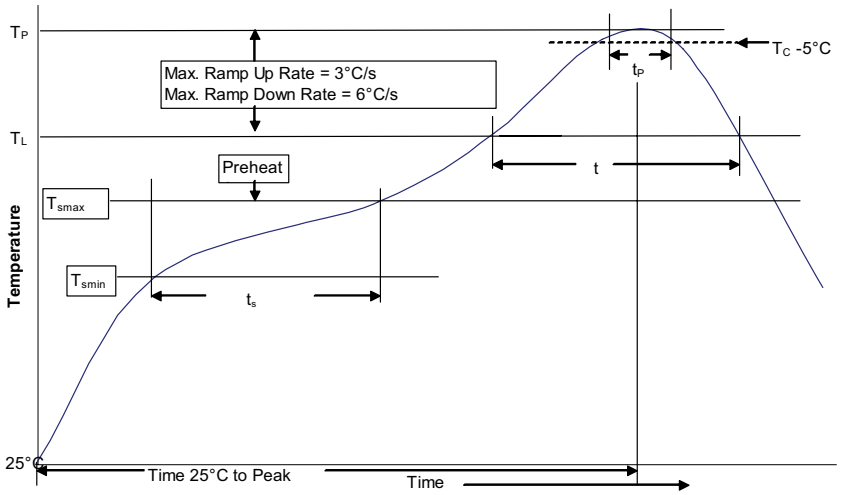


Table 1 - Standard SnPb Solder (T_C)

Package Thickness	Volume mm³ <350	Volume mm³ ≥350
<2.5mm	235°C	220°C
≥2.5mm	220°C	220°C

Table 2 - Lead (Pb) Free Solder (T_C)

Package Thickness	Volume mm³ <350	Volume mm³ 350 - 2000	Volume mm³ >2000
<1.6mm	260°C	260°C	260°C
1.6 – 2.5mm	260°C	250°C	245°C
>2.5mm	250°C	245°C	245°C

Reference JDEC J-STD-020D

Profile Feature		Standard SnPb Solder	Lead (Pb) Free Solder
Preheat and Soak	• Temperature min. (T_{smin})	100°C	150°C
	• Temperature max. (T_{smax})	150°C	200°C
	• Time (T_{smin} to T_{smax}) (t_s)	60-120 Seconds	60-120 Seconds
Average ramp up rate T_{smax} to T_p		3°C/ Second Max.	3°C/ Second Max.
Liquidous temperature (T_L) Time at liquidous (t_L)		183°C 60-150 Seconds	217°C 60-150 Seconds
Peak package body temperature (T_p)*		Table 1	Table 2
Time (t_p)** within 5 °C of the specified classification temperature (T_c)		20 Seconds**	30 Seconds**
Average ramp-down rate (T_p to T_{smax})		6°C/ Second Max.	6°C/ Second Max.
Time 25°C to Peak Temperature		6 Minutes Max.	8 Minutes Max.

* Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.

** Tolerance for time at peak profile temperature (t_p) is defined as a supplier minimum and a user maximum.

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United States
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Technical Data 10295 Effective August 2014

Coiltronics HCM1707 Series

High current power inductors

Product description

- High current carrying capacity
- Magnetically shielded, low EMI
- Frequency range up to 1MHz
- Inductance range from 1.5µH to 68.0µH
- Current range from 5.2 to 40.0 amps
- 17.5x17.2mm footprint surface mount package in a 7.0mm height
- Powder iron core material
- Halogen free, lead free, RoHS compliant

Applications

- Voltage Regulator Module (VRM)
- Multi-phase regulators
- Point-of-load modules
- Desktop and server VRMs and EVRDs
- Data networking and storage systems
- Base station equipment
- Battery power systems

Environmental data

- Storage temperature range (Component): -55°C to +125°C
- Operating temperature range: -55°C to +125°C (ambient + self-temperature rise)
- Solder reflow temperature: J-STD-020D compliant

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The Coiltronics brand of magnetics (formerly of the Bussmann Division of Cooper Industries) is now part of Eaton's Electrical Group, Electronics Division.

Coiltronics is now part of Eaton
Same great products plus even more.

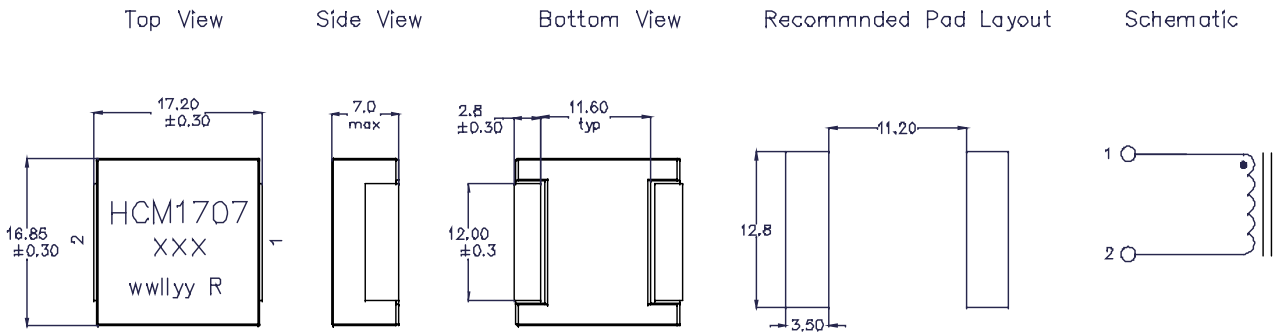
Powering Business Worldwide

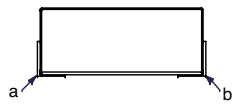
Product specifications

Part Number[6]	OCL[1] ±20% (µH)	FLL min.[2] (µH)	I_{rms}[3] (amps)	I_{sat}[4] (amps)	DCR (mΩ) @ 20°C (typical)	DCR (mΩ) @ 20°C (maximum)	K-factor[5]
HCM1707-1R5-R	1.5	0.96	40	40	1.85	2.15	124
HCM1707-2R2-R	2.2	1.41	37	34	2.15	2.50	103
HCM1707-4R7-R	4.7	3.01	27	24	4.12	4.72	76
HCM1707-6R8-R	6.8	4.35	20	22	6.55	7.55	60
HCM1707-8R2-R	8.2	5.25	16	20	8.10	8.70	55
HCM1707-100-R	10	6.40	14	18	9.30	10	47
HCM1707-150-R	15	9.60	12	13	14.5	15.5	43
HCM1707-220-R	22	14.1	9.5	11	21	23	37
HCM1707-330-R	33	21.1	9.0	10	35	37	28
HCM1707-470-R	47	30.1	6.8	7.5	41	47	25
HCM1707-680-R	68	43.5	5.2	6.5	74	85	20

1. Open Circuit Inductance (OCL) Test Parameters: 100kHz, 0.25V_{rms}, 0.0Adc, +25°C.
2. Full Load Inductance (FLL): Test parameters: 100kHz, 0.25V_{rms}, I_{sat}, +25°C.
3. I_{rms}: DC current for an approximate temperature rise of 40°C without core loss. Derating is necessary for AC currents. PCB layout, trace thickness and width, air-flow, and proximity of other heat generating components will affect the temperature rise. It is recommended that the temperature of the part not exceed +125°C under worst case operating conditions verified in the end application.
4. I_{sat}: Peak current for approximately 20% rolloff at +25°C.
5. K-factor: Used to determine B_{p-p} for core loss (see graph). B_{p-p} = K * L * ΔI. B_{p-p} :(Gauss), K: (K-factor from table), L: (Inductance in µH), ΔI (Peak to peak ripple current in amps).
6. Part Number Definition: HCM1707-yyy-R
   - HCM1707 = Product code and size
   - yyy= Inductance value in uH, R = decimal point, if no R is present then third character = number of zeros.
   - "-R" suffix = RoHS compliant

Dimensions - mm

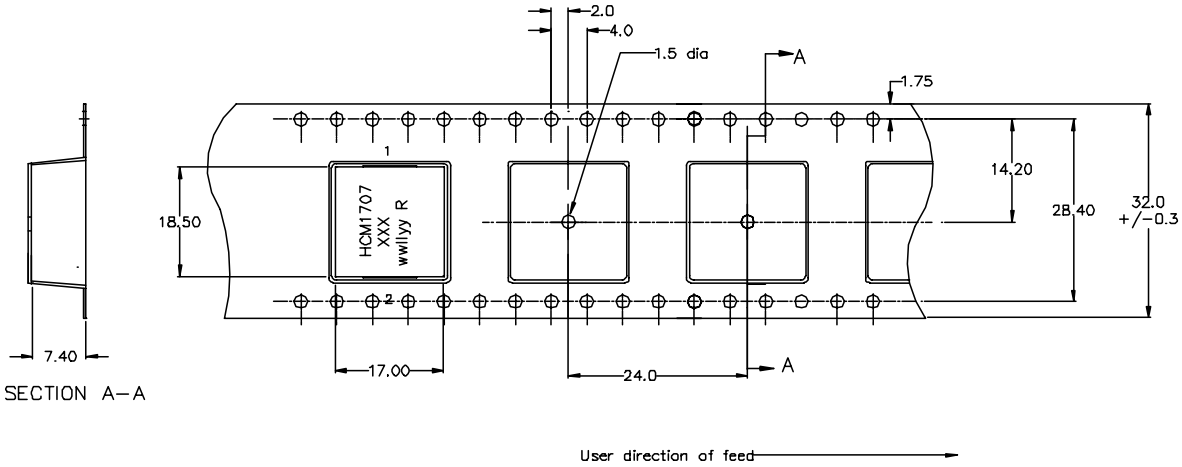




DCR measured between point "a" and point "b"

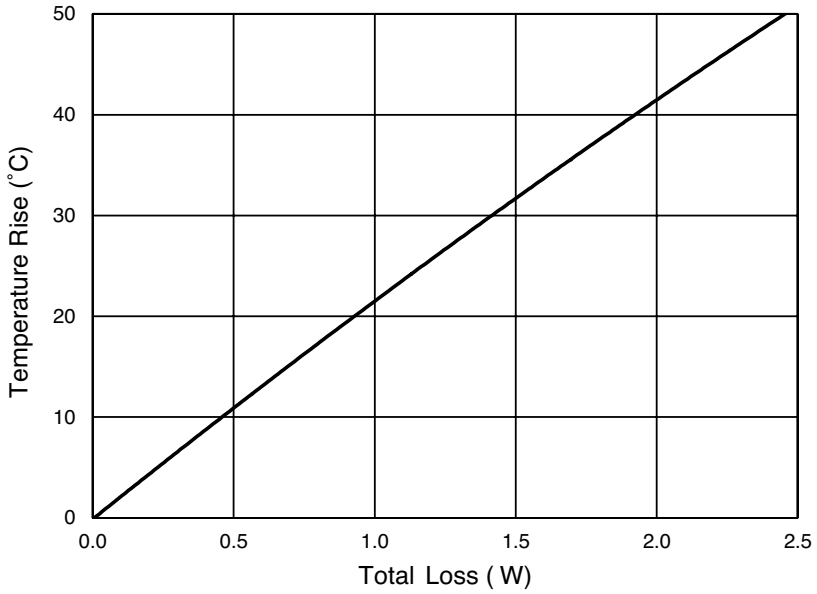
All soldering surfaces coplanar within 0.10 millimeters.
Part marking: HCM1707; XXX = initial inductance in µH, R = decimal point; if no R is present, last digit equals number of zeros.
wwllyy = date code, R = revision level
Color: Grey.

Packaging information - mm

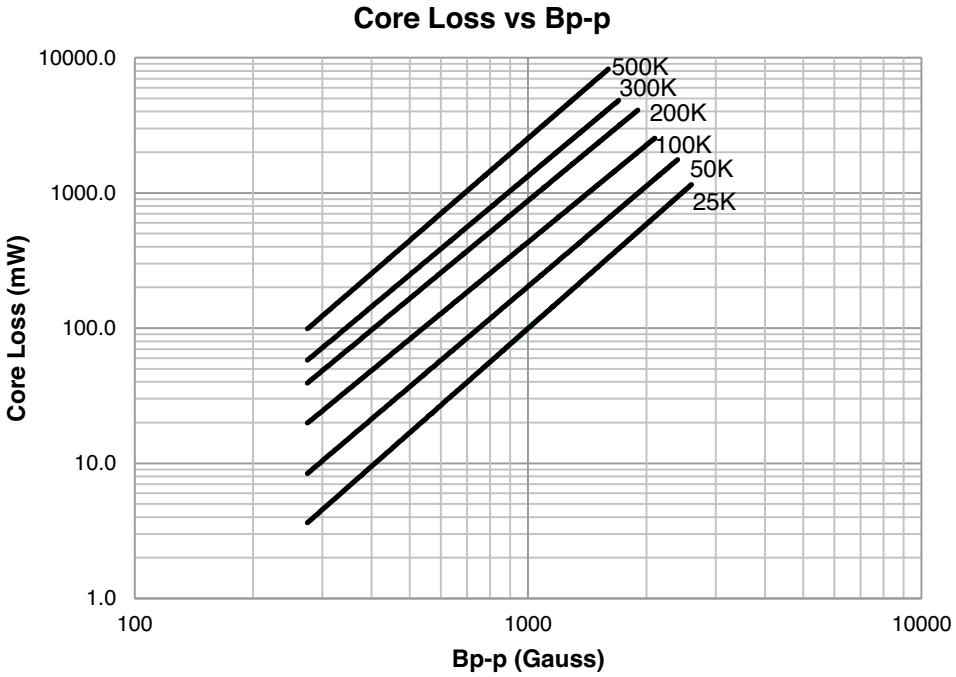


Supplied in tape and reel packaging, 350 parts per 13” diameter reel.

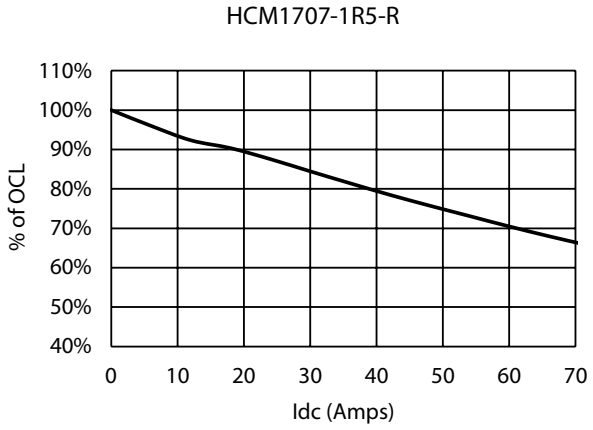
Temperature rise vs. total loss

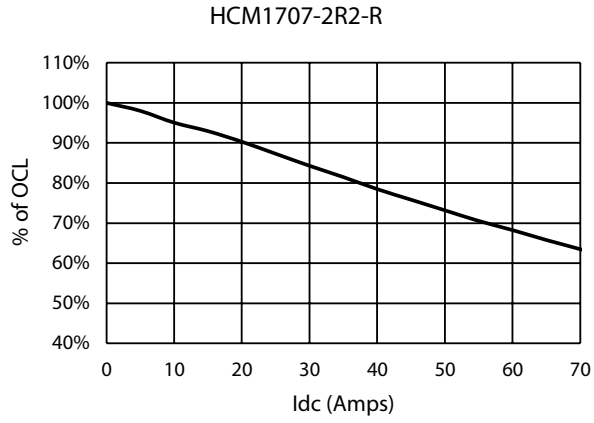


Core loss



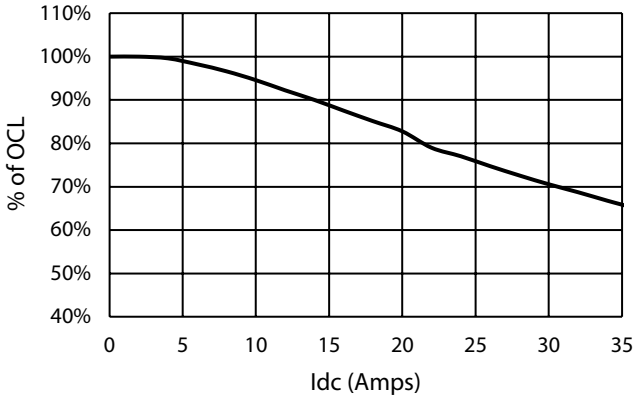
Inductance characteristics



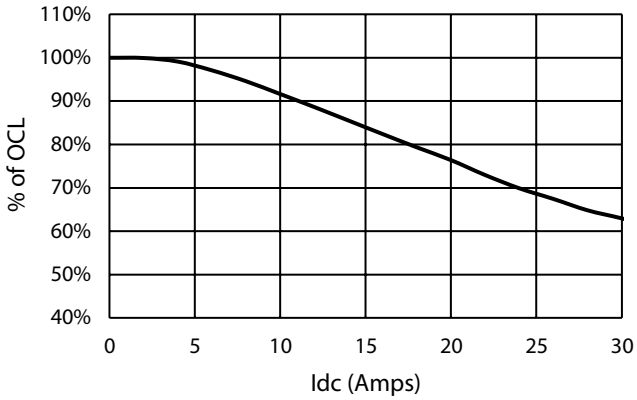


Inductance characteristics

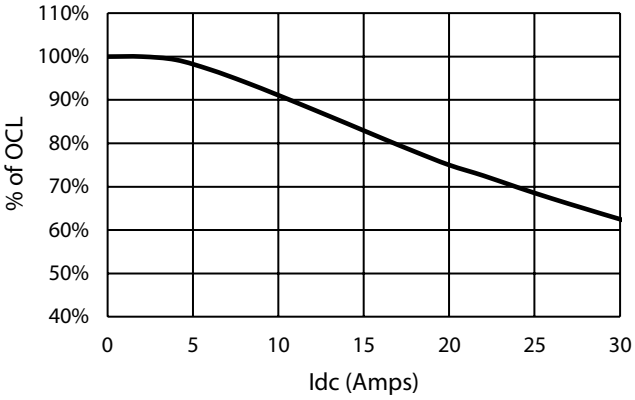
HCM1707-4R7-R



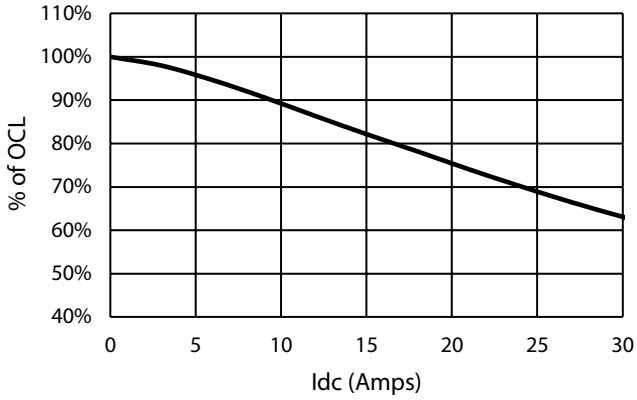
HCM1707-6R8-R



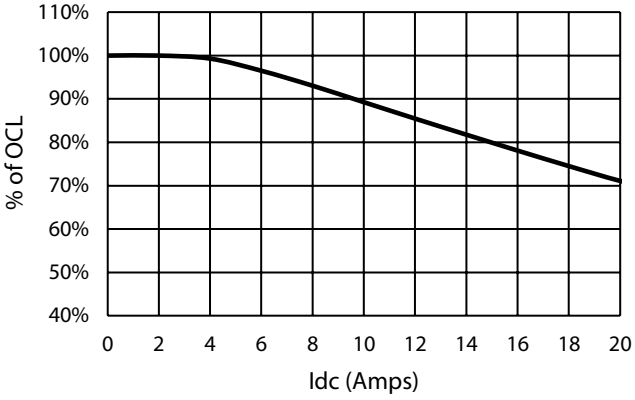
HCM1707-8R2-R



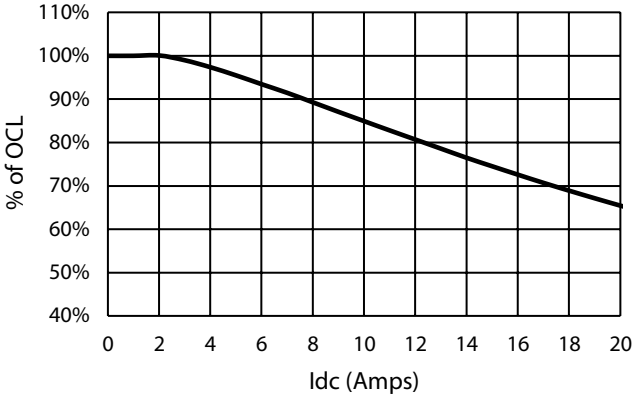
HCM1707-100-R



HCM1707-150-R

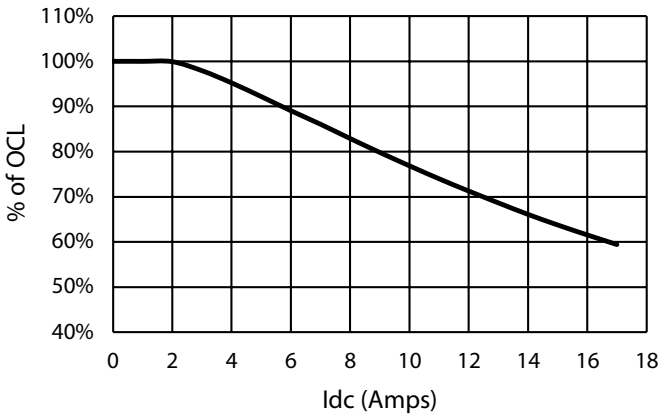


HCM1707-220-R

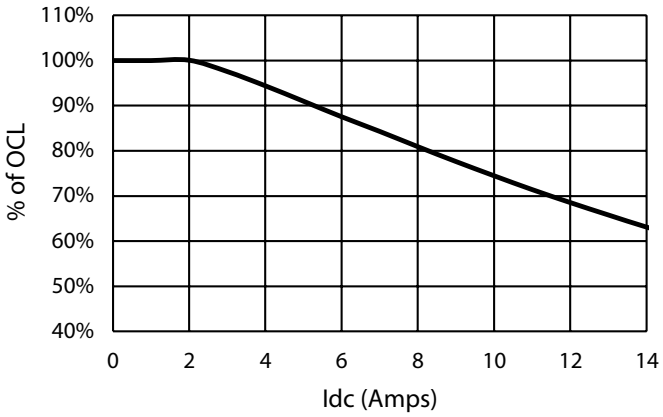


Inductance characteristics

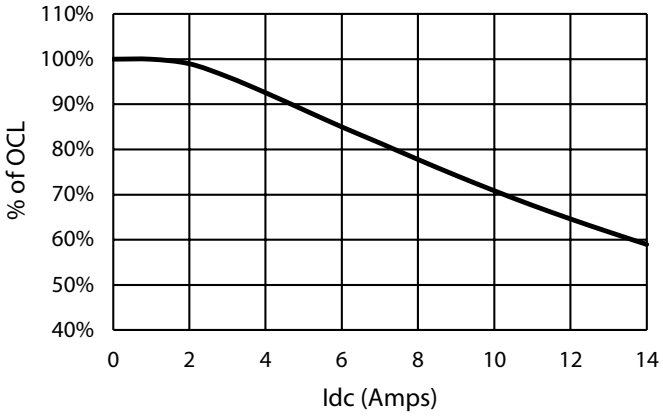
HCM1707-330-R



HCM1707-470-R



HCM1707-680-R



Solder reflow profile

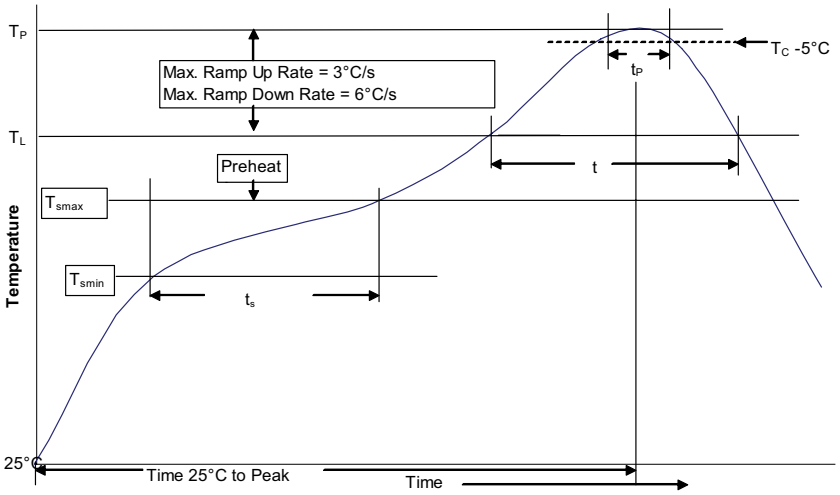


Table 1 - Standard SnPb Solder (T_C)

Package Thickness	Volume mm³ <350	Volume mm³ ≥350
<2.5mm	235°C	220°C
≥2.5mm	220°C	220°C

Table 2 - Lead (Pb) Free Solder (T_C)

Package Thickness	Volume mm³ <350	Volume mm³ 350 - 2000	Volume mm³ >2000
<1.6mm	260°C	260°C	260°C
1.6 – 2.5mm	260°C	250°C	245°C
>2.5mm	250°C	245°C	245°C

Reference JDEC J-STD-020D

Profile Feature		Standard SnPb Solder	Lead (Pb) Free Solder
Preheat and Soak	• Temperature min. (T_{smin})	100°C	150°C
	• Temperature max. (T_{smax})	150°C	200°C
	• Time (T_{smin} to T_{smax}) (t_s)	60-120 Seconds	60-120 Seconds
Average ramp up rate T_{smax} to T_p		3°C/ Second Max.	3°C/ Second Max.
Liquidous temperature (T_L) Time at liquidous (t_L)		183°C 60-150 Seconds	217°C 60-150 Seconds
Peak package body temperature (T_P)*		Table 1	Table 2
Time (t_p)** within 5 °C of the specified classification temperature (T_C)		20 Seconds**	30 Seconds**
Average ramp-down rate (T_p to T_{smax})		6°C/ Second Max.	6°C/ Second Max.
Time 25°C to Peak Temperature		6 Minutes Max.	8 Minutes Max.

* Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.

** Tolerance for time at peak profile temperature (t_p) is defined as a supplier minimum and a user maximum.

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