

ITEM P/N	TPMC-0605H-SERIES	TEST INSTRUMENT	HP4284 / CH16502 Equality
PRODUCT	SMD Inductor	TEST FREQUENCY	100 kHz / 1.0V

CUSTOMER :

CUSTOMER P/N :

DESCRIPTION : SMD INDUCTOR

SINKA P/N : TPMC-0605H-SERIES

REVISION NO. : 01

DATE : 2015/12/4

NOTES : STANDARD

DOCUMENTED BY	
APPROVED	Y Imai
CHECKED	Cosby Liu
PREPARED	Wenny Wei

CUSTOMER APPROVAL

company seals

ITEM P/N

TMPC-0605H-SERIES

TEST INSTRUMENT

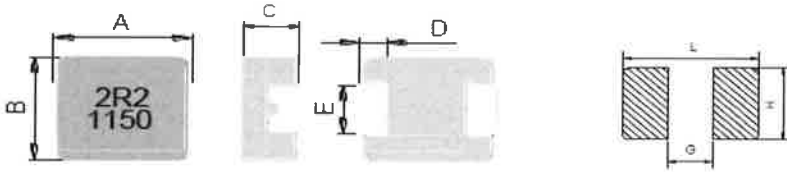
HP4284 / CH16502 Equality

PRODUCT

SMD Inductor

TEST FREQUENCY

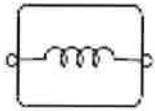
100 kHz / 1.0V

PACKING DIMENSIONS (mm)

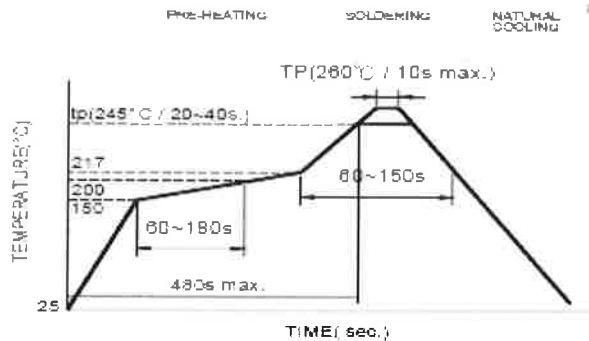
TMPC 0603	Dimensions
A	7.3 ± 0.3
B	6.6 ± 0.3
C	4.8 ± 0.2
D	1.8 ± 0.3
E	3.0 ± 0.3
L	8.4 Typ
G	2.5 Typ
H	3.5 Typ

EXPLANATION OF PART NUMBERS

1	2	3	4	5	6	7	8	9	10	11	12
T	M	P	C	0	6	0	5H	R	4	7	M
Serial Codes				Size			Inductance Code				

CONNECTIONS

- ⊙ Inductor Contents ONE (1) Set(s) of Coil
- ⊙ DC/AC Current Shall Be Introduced By Any One of Two Pads

RECOMMENDED SOLDERING TEMP. GRAPH

Reflow times: 3 times max.

Manual Soldering for rework

Solder Iron Temperature : 350 °Cmax
 Soldering Times : Less than 5sec
 (Manual Soldering is 1 time only)

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ELECTRICAL CHARACTERISTICS

P/N	L0 Inductance $\mu\text{H} \pm 20\%$ @0A	DCR (m Ω)		Heat Rating Current	Saturation Current
		[Typical]	[Max]	Idc (AMP) Typical	Isat (AMP) Typical
TMPC-0605H-R33MG-D	0.33	2.5	3.0	25.0	32.0
TMPC-0605H-R40MG-D	0.40	3.1	3.7	23.0	31.0
TMPC-0605H-R47MG-D	0.47	3.5	3.9	22.0	30.0
TMPC-0605H-R56MG-D	0.56	3.6	4.2	20.0	27.0
TMPC-0605H-R60MG-D	0.60	3.8	4.3	19.0	25.0
TMPC-0605H-R68MG-D	0.68	4.0	4.5	18.0	24.0
TMPC-0605H-R82MG-D	0.82	4.6	4.9	16.5	22.0
TMPC-0605H-1R0MG-D	1.00	6.1	6.5	15.0	20.0
TMPC-0605H-1R2MG-D	1.20	6.7	7.5	14.0	18.0
TMPC-0605H-1R5MG-D	1.50	8.6	9.0	12.0	16.5
TMPC-0605H-1R8MG-D	1.80	9.5	11.0	12.0	15.0
TMPC-0605H-2R2MG-D	2.20	11.2	12.0	10.0	14.0
TMPC-0605H-3R3MG-D	3.30	19	20.9	8.0	12.0
TMPC-0603H-4R7MG-D	4.70	28	30.8	6.5	10.0
TMPC-0605H-5R6MG-D	5.60	43.5	49	6.0	9.0
TMPC-0605H-6R8MG-D	6.80	46	51.5	5.5	8.5
TMPC-0605H-8R2MG-D	8.20	56	63	5.0	8.0
TMPC-0605H-100MG-D	10.0	60	69	4.0	7.5
TMPC-0605H-150MG-D	15.0	81	92	3.5	6.0
TMPC-0605H-220MG-D	22.0	140	170	2.5	5.5
TMPC-0605H-330MG-D	33.0	173	200	2.0	3.5
TMPC-0605H-470MG-D	47.0	290	330	1.9	2.7
TMPC-0605H-560MG-D	56.0	342	396	1.6	2.1
TMPC-0605H-680MG-D	68.0	386	445	1.2	2.0

Note:

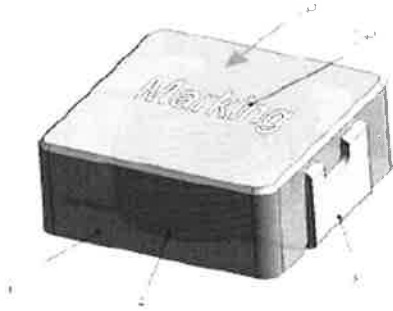
1. Test frequency $\pm 100\text{kHz} / 1.0\text{V}$.
2. All test data referenced to 25°C ambient.
3. Testing Instrument : L: HP4284A, CH11025, CH3302, CH1320, CH1320S LCR METER / Rdc: CH16502, Agilent33420A MICRO OHMMETER.
4. Heat Rated Current (I_{rms}) will cause the coil temperature rise approximately Δt of 40°C (keep 1min.)
5. Saturation Current (I_{sat}) will cause L0 to drop 20% typical (keep quickly).
6. The part temperature (ambient + temp rise) should not exceed 125°C under worst case operating conditions. Circuit design, component, PCB trace size and thickness, airflow and other cooling provisions all affect the part temperature. Part temperature should be verified in the end application.
7. Special inquiries besides the above common used types can be met on your requirement.

Storage Condition

Temperature : 0 ~ 40°C

Humidity : 20~65%RH

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Marking

Marking showed inductance value
 2R2 = Inductance (2.2uH)
 1150 = Date Code
 11 = Years (2011)
 50 = Weeks

Structure

NO	Items	Materials
1	Core	Carbonyl Powder.
2	Wire	Polyester Wire or equivalent.
3	Solder Plating	100% Pb free solder
4	paint	Epoxy resin
5	Ink	Halogen-free ketone

Break Down Ratio

This value is calculate based on MIL-HDBK-217F

Calculated Formuta $\lambda p = \lambda b \times \pi c \times \pi Q \times \pi E$

λp = Supposition of break down ratio λb = Based break down ratio

πc = Based on Structure

πQ = Quality Factor

πE = Environment Factor

Result

$\lambda p = 0.00096$ [pcs/10 h] = 76.8 [pcs/10 h] = 77 FIT

Calcurate Condition

Max motion temperature TCM = 105°C (General Supposition)

Temperature Rising $\Delta T = 35K$ (When flow the rated current)

Max Surroundings Temperature TAM = 50°C (General Supposition)

Hot Spot Temperature THS = 85°C ($\Delta T + T_A$)

→ Based break down ratio $\lambda b = 0.00096$ [pcs/10 h] (TCM , THS , MIL-HDBK-217F)

→ Based on Structure $\pi c = 1.0$ Fix Inductor (MIL-HDBK-217F)

→ Quality Factor $\pi Q = 20$ for public application (MIL-HDBK-217F)

→ Environmental Factor $\pi E = 4.0$ GB grade (MIL-HDBK-217F)

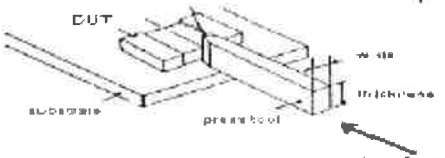
ITEM P/N	TMPC-0605H-SERIES	TEST INSTRUMENT	HP4284 / CH16502 Equality
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Reliability and Test Condition

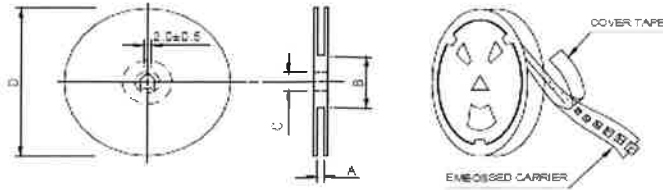
Item	Performance	Test Condition															
Operating temperature	-40~+125°C (including self-temperature rise)																
Storage temperature	-40~+125°C (on board)																
Electrical Performance Test																	
Inductance	Refer to standard electrical characteristics list.	HP4284A, CH11025, CH3302, CH1320, CH1320S LCR Meter.															
DCR		CH16502, Agilent33420A Micro-Ohm Meter															
Saturation Current (Isat)	ΔL ≤ 20% typical	Saturation DC Current (Isat) will cause LQ to drop ΔL (%) (keep quickly)															
Heat Rated Current (Irms)	Approximately ΔT ≤ 40°C	Heat Rated Current (Irms) will cause the coil temperature rise ΔT (°C) without core loss. 1. Applied the allowed DC current (keep 1 min). 2. Temperature measured by digital surface thermometer.															
Reliability Test																	
Life Test	Appearance : No damage Inductance : within 10% of initial value Q : Shall not exceed the specification value RDC : within ±15% of initial value and shall not exceed the specification value	Preconditioning : Run through IR reflow for 2 times (FCUJEDEC J-STD-020C Classification Reflow Profiles) Temperature : 125±2°C (Bead) Temperature : 85±2°C (Inductor) Applied current : rated current Duration : 1000±10 hrs Measured at room temperature after placing for 24±2 hrs															
Load Humidity		Preconditioning : Run through IR reflow for 2 times (FCUJEDEC J-STD-020C Classification Reflow Profiles) Humidity : 95±2% R.H. Temperature : 85°C ±2°C Duration : 1000hrs Min. with 100% rated current Measured at room temperature after placing for 24±2 hrs															
Thermal shock		Preconditioning : Run through IR reflow for 2 times (FCUJEDEC J-STD-020C Classification Reflow Profiles) Condition for 1 cycle Step1 : -40±2°C 30±5min Step2 : 25±2°C 30±5min Step3 : 105±2°C 30±5min Number of cycles : 500 Measured at room temperature after placing for 24±2 hrs															
Vibration		Oscillation Frequency: 10 - 2K - 10KHz for 20 minutes Equipment : Vibration checker Total Amplitude: 1.52mm±10% Testing Time : 12 hours/20 minutes, 12 cycles each of 3 orientations.															
Shock		<table border="1"> <thead> <tr> <th>Type</th> <th>Peak value (g)</th> <th>Normal duration (D) (ms)</th> <th>Wave form</th> <th>Velocity change (m/s²/sec)</th> </tr> </thead> <tbody> <tr> <td>SMD</td> <td>1500</td> <td>0.5</td> <td>Half-sine</td> <td>15.4</td> </tr> <tr> <td>Lead</td> <td>100</td> <td>8</td> <td>Half-sine</td> <td>12.3</td> </tr> </tbody> </table>	Type	Peak value (g)	Normal duration (D) (ms)	Wave form	Velocity change (m/s ² /sec)	SMD	1500	0.5	Half-sine	15.4	Lead	100	8	Half-sine	12.3
Type	Peak value (g)	Normal duration (D) (ms)	Wave form	Velocity change (m/s ² /sec)													
SMD	1500	0.5	Half-sine	15.4													
Lead	100	8	Half-sine	12.3													
Bending		Shall be mounted on a FR2 substrate of the following dimensions: >=0805 40x100x1.2mm <0805 40x100x0.8mm Bending depth: >=0805 1.2mm <0805 0.8mm duration of 10 sec.															

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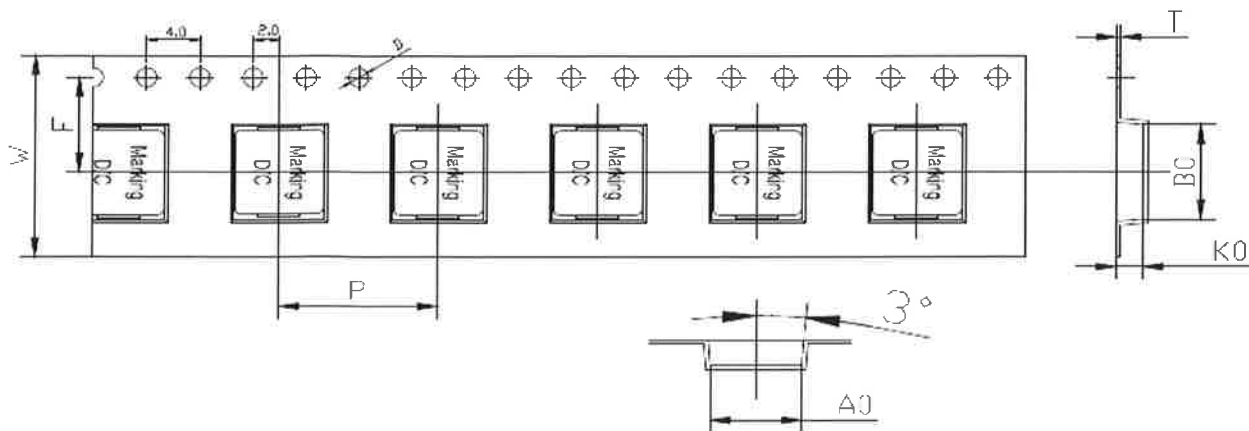
Reliability and Test Condition -2

Item	Performance	Test Method and Remarks						
Solderability	More than 95% of the terminal electrode should be covered with solder.	Preheat: 150(±)50sec. Solder: Sn99.5%+Cu0.5%. Temperature: 245±5(±)°C. Flux for lead free: Rosin: 9.5%. Dip time: 4±1sec. Depth: completely cover the termination						
Resistance to Soldering Heat		Number of heat cycles: 1 <table border="1"> <thead> <tr> <th>Temperature (°C)</th> <th>Time(s)</th> <th>Temperature ramp/immersion and emersion rate</th> </tr> </thead> <tbody> <tr> <td>260 ±5 solder temp.</td> <td>10 ±1</td> <td>25mm/s ±5 mm/s</td> </tr> </tbody> </table>	Temperature (°C)	Time(s)	Temperature ramp/immersion and emersion rate	260 ±5 solder temp.	10 ±1	25mm/s ±5 mm/s
Temperature (°C)	Time(s)	Temperature ramp/immersion and emersion rate						
260 ±5 solder temp.	10 ±1	25mm/s ±5 mm/s						
Terminal Strength	Appearance : No damage. Inductance : within ±0% of initial value Q : Shall not exceed the specification value. RDC : within ±15% of initial value and shall not exceed the specification value	Preconditioning: Run through R ₁ reflow for 2 times. (IPC/JEDEC J-STD-020D Classification Reflow Profiles) With the component mounted on a PCB with the device to be tested, apply a force (>3805.1kg <=3805.3.5kg) to the side of a device being tested. This force shall be applied for 50 ±1 seconds. Also the force shall be applied gradually as not to apply a shock to the component being tested. 						

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PACKING INFORMATION**(1) Reel Dimension**

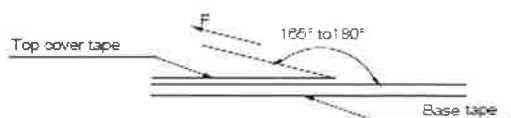
Type	A(mm)	B(mm)	C(mm)	D(mm)
13" x 16mm	18.4±2.0	100±2	13.5±0.2	330

(2) Tape Dimension

Series	Size	Bo(mm)	Ao(mm)	Ko(mm)	P(mm)	W(mm)	F(mm)	t(mm)	D(mm)
TMPC	0605	7.7±0.1	7.0±0.1	5.3±0.1	12.0±0.1	15±0.3	7.5±0.1	0.35±0.05	1.5±0.1

(3) Packaging Quantity

TMPC	0605
Chip / Reel	800
Inner box	1600
Carton	8400

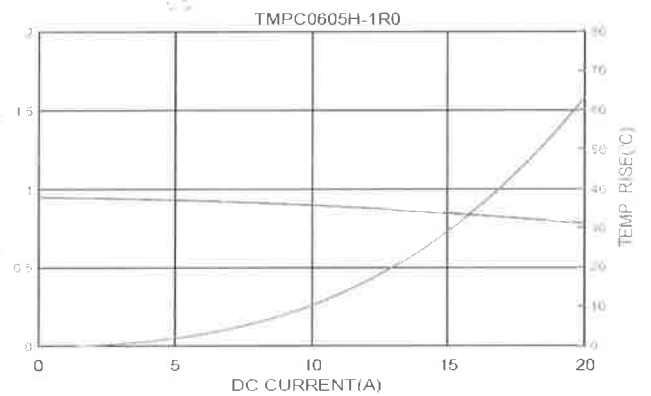
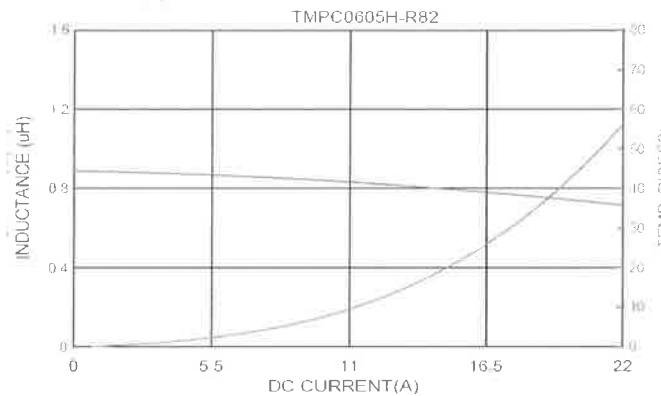
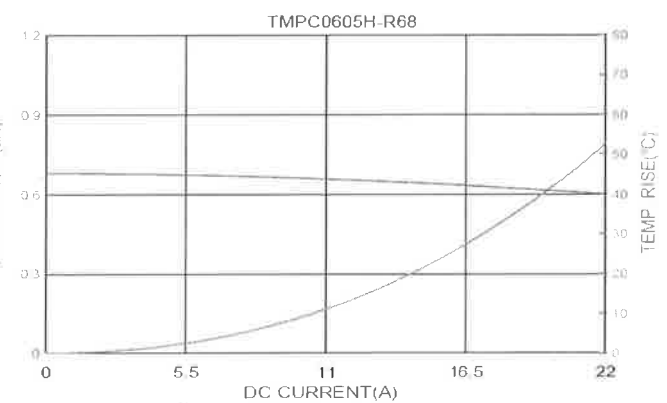
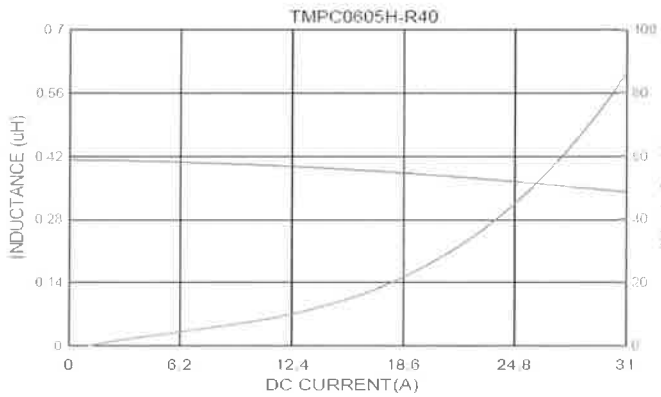
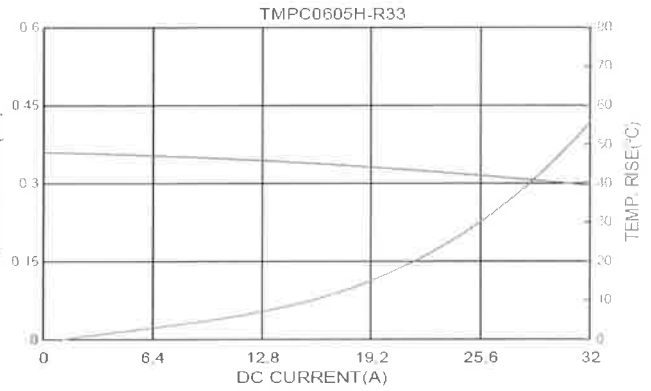
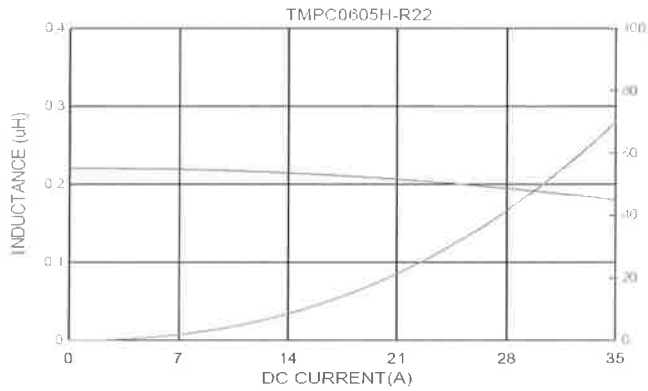
(4) Tearing Off Force

The force for tearing off cover tape is 10 to 130 grams in the arrow direction under the following conditions (referenced ANSI/EIA-481-C-2003 of 4.11 standard).

Room Temp. (C)	Room Humidity (%)	Room atm (hPa)	Tearing Speed mm/min
5~35	45~85	960~1060	300

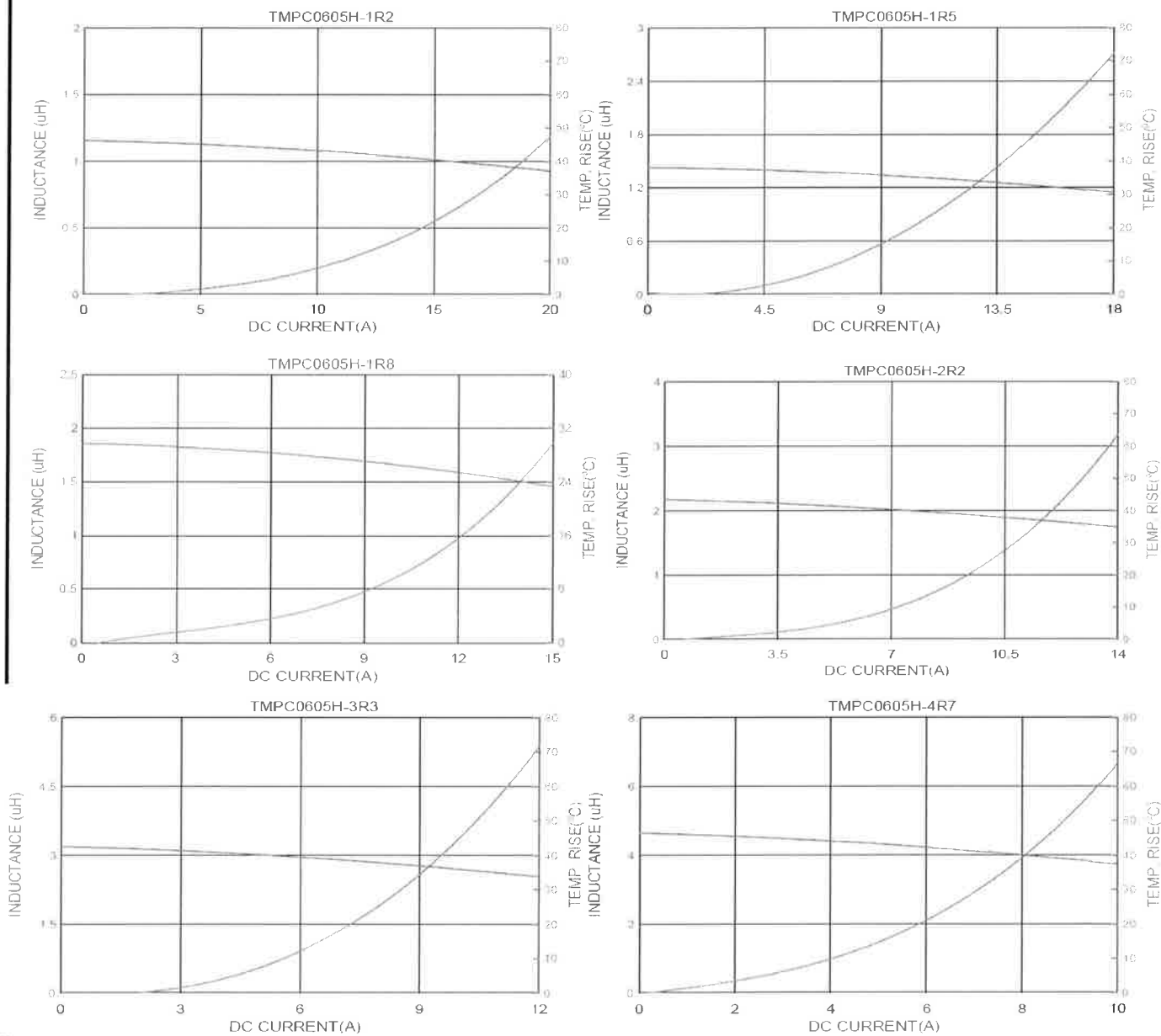
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Typical Performance Curve

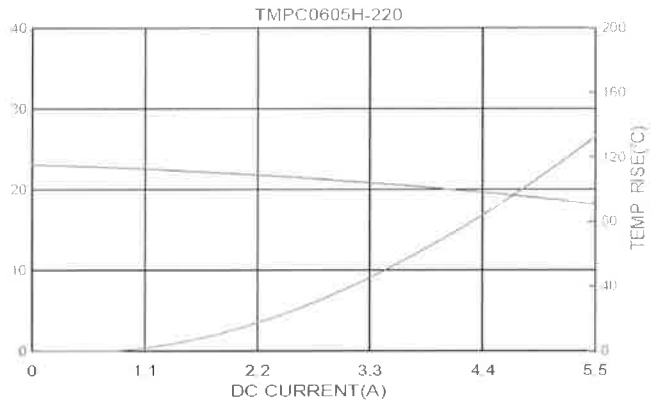
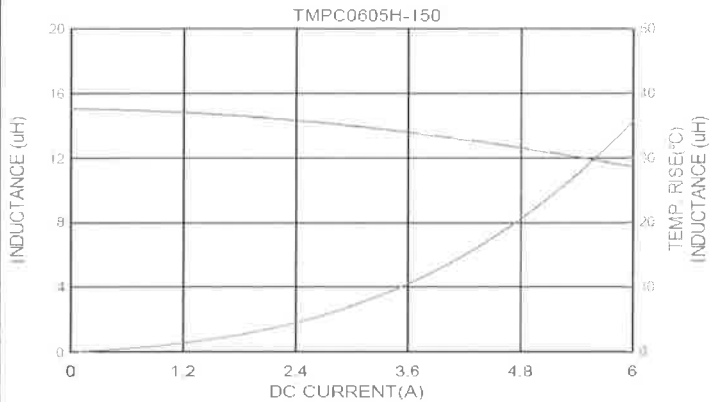
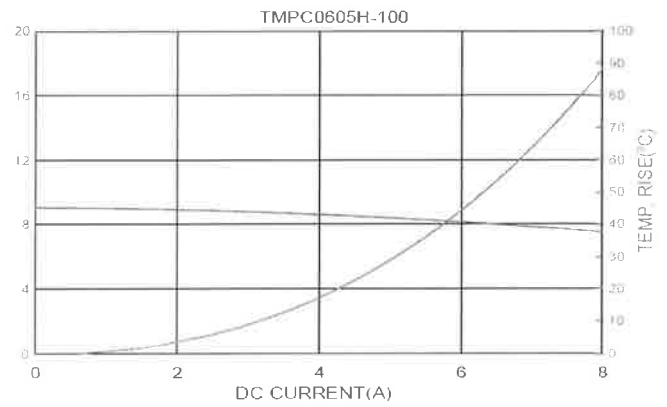
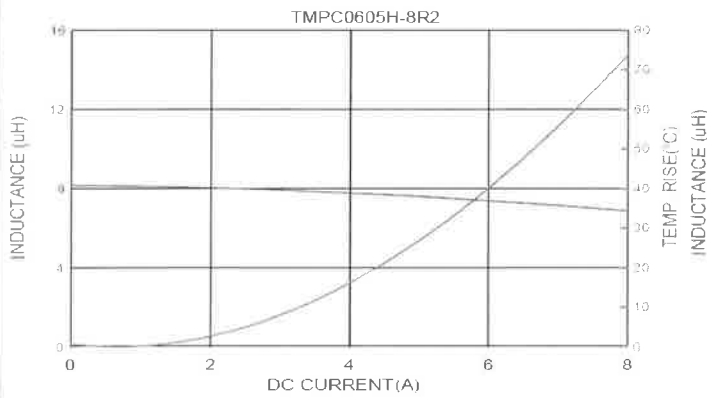
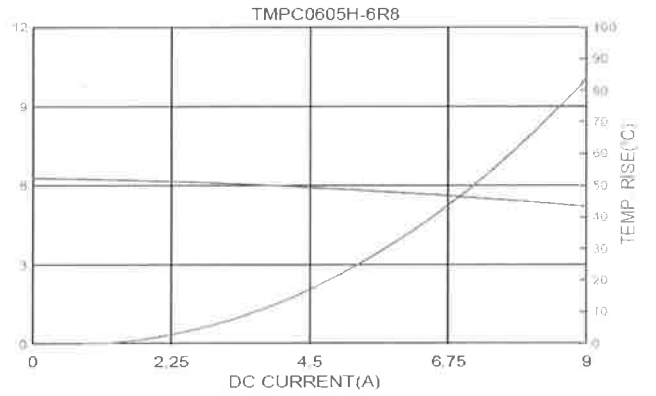
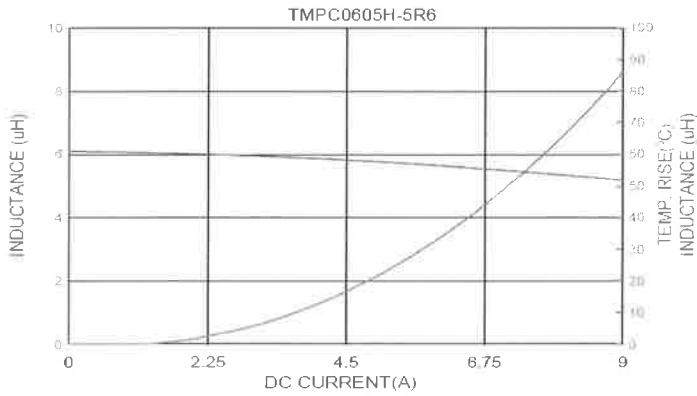


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