ICD&C **PRELIMINARY**

POWER INDUCTOR – PRODUCT DATASHEET

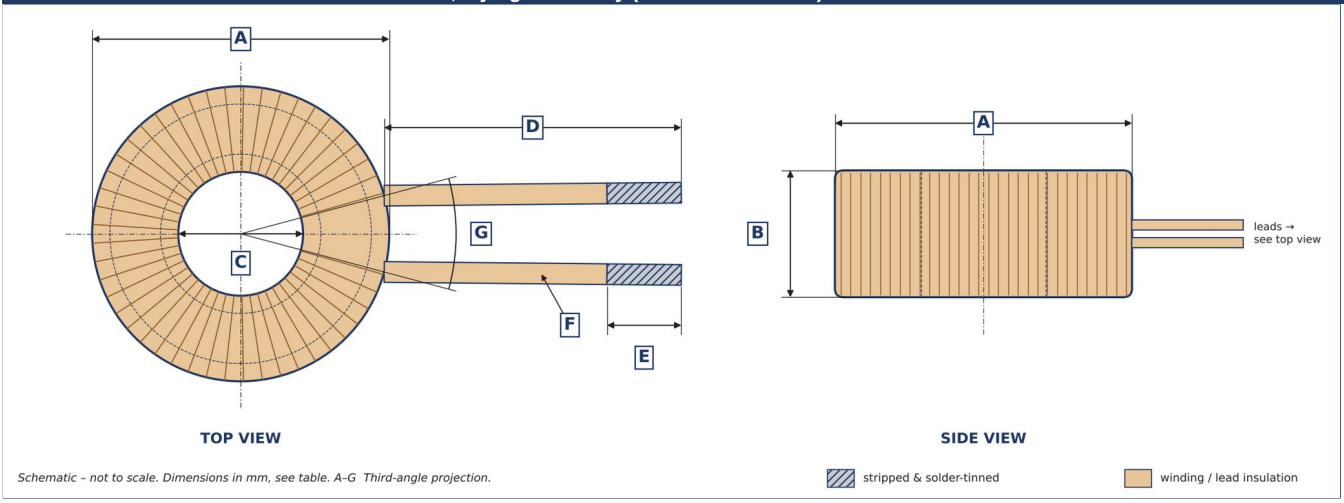
50.0 µH · 55.0 A rms · 91.7 A sat · 20.0 kHz – powder-core toroidal inductor, flying leads

Part number	HPP055-20-500
Revision / date	R1.0 · 2026-11-06
Customer	ICD&C standard series (HPP)
Application	HPP055-20-500 – 50 µH / 55 A rms / 92 A sat – 20 kHz power inductor
Description	Powder-core toroidal power inductor, Litz-wire winding, flying leads

1. ELECTRICAL CHARACTERISTICS

Parameter	Min.	Typ.	Max.	Unit	Conditions
Inductance L0	46.0	50.0	54.0	µH	10 kHz, 1 V, 0 A DC bias (±8 %)
Inductance at rated peak current		45.9		µH	I = 63.3 A (Irms + ½ ripple)
Inductance at saturation current	40.0			µH	I = Isat = 91.7 A DC
Rated current Irms			55.0	A	continuous, Ta ≤ 85 °C, natural convection
Saturation current Isat	91.7			A	L ≥ 80 % of nominal L0
Ripple current ΔI		16.5		A pk-pk	at 20.0 kHz
Operating frequency		20.0		kHz	ripple / switching frequency
DC resistance DCR		4.09		mΩ	4-wire, 25 °C, at winding exit (leads excl.)
Power loss		17.9		W	Irms + ripple, Ta = 50 °C
Temperature rise ΔT		52		K	rated conditions, Ta = 50 °C, still air
Winding (hot-spot) temperature		141	155	°C	rated conditions, Ta = 85 °C
Operating ambient temperature	-40		85	°C	at rated current
Insulation class		F			winding system 155 °C
Dielectric test					Per agreement with customer
Power rating / max. bus voltage		1.7 kW	61 V		at D = 0.5 (buck / boost), ΔI = 16.5 A; P ≈ ½ · Vbus · Irms

2. MECHANICAL – GENERAL ARRANGEMENT, Flying leads only (dimensions in mm)

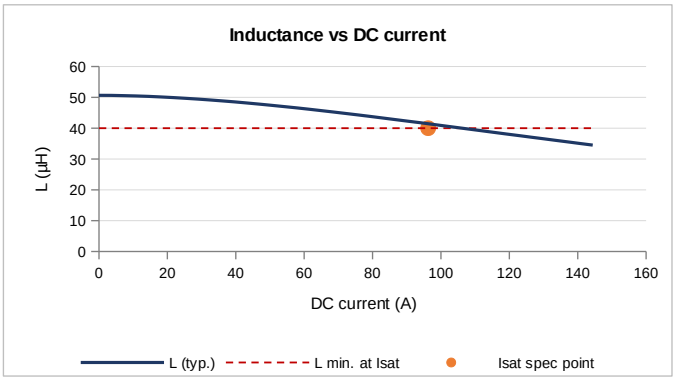


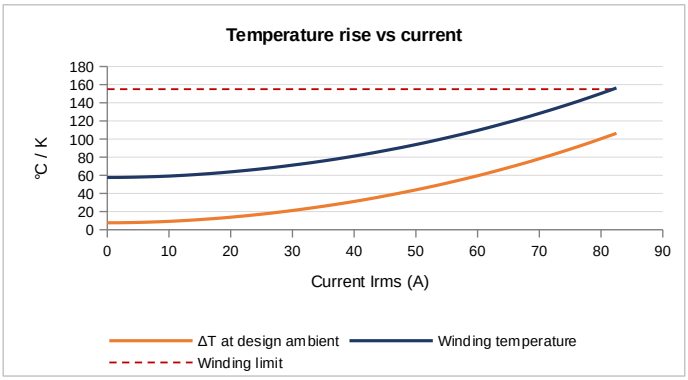
Dimension	Nominal	Min.	Max.	Unit	Note
A – Wound outer Ø	85.3		88	mm	incl. winding
B – Wound height	26.7		29	mm	incl. winding
C – Free inner bore Ø	35.6	33		mm	available for mounting bolt / clamp
D – Lead free length (each)	150	145	155	mm	measured from winding body
E – Strip & tin length	15	13	17	mm	stripped and solder-tinned, no sleeving
F – Lead conductor Ø	4.9			mm	copper Litz wire, reference, over insulation
G – Lead exit angle	30	20	40	°	both leads on the same side
Weight	644			g	approx.

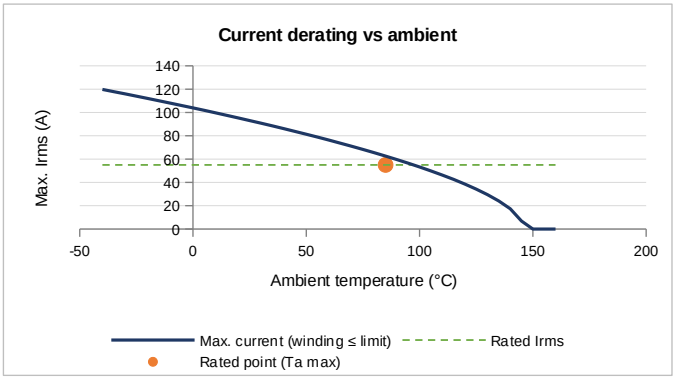
2b. MOUNTING – none (flying leads only)

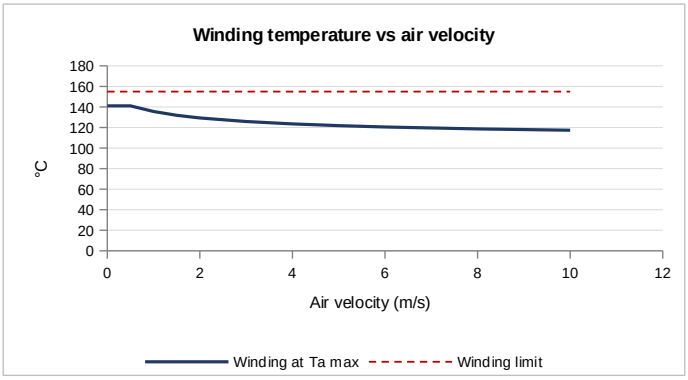
Dimension	Nominal	Min.	Max.	Unit	Note
H – Centre / overall height	–		–	mm	foot underside to toroid axis
J – Bracket height	–			mm	–
K – Plate width	–			mm	
L – Foot / base depth	–			mm	
M – Fixing pitch	–			mm	–
N – Fixing hole / slot	–			mm	–
P – Centre bolt	–				–
Q – Pressure disc Ø	–			mm	–
R – Plate thickness	–			mm	–
S – Slot position	–			mm	–
T – Centring boss / bush Ø	–			mm	–
Mounting notes	No mounting hardware supplied. Fix through bore C with an insulated clamp; do not form a closed metal loop through the bore.				

2c. CHARACTERISTIC CURVES (typical, still air)









3. CONSTRUCTION	
Core	Distributed-gap powder toroid, coated
Winding	Copper Litz wire, insulation class F (155 °C); protective tape over the winding (Polyimide 180 °C)
Terminations	Flying leads, stripped and solder-tinned, no sleeving
Mounting	none
Marking	Label with part number, revision and date code
Compliance	RoHS / REACH – to be confirmed

4. ROUTINE TESTS (100 %)		
Test	**Method**	**Acceptance**
Inductance	LCR meter, 10 kHz, 1 V, 0 A	50.0 µH ± 8 %
DC resistance	4-wire, corrected to 25 °C	record value (typ. 4.09 mΩ)
Dielectric	Per agreement with customer	no breakdown or flashover
Visual & dimensions	GA dimensions A–G	within the limits of section 2

5. DOCUMENT	
Prepared by	ICD&C
Revision / date	R1.0 · 2026-11-06

Typ. = calculated design values for reference; Min./Max. = specified limits. Thermal data for natural convection in still air – actual values depend on mounting and cooling. Status: PRELIMINARY. Subject to change without notice.