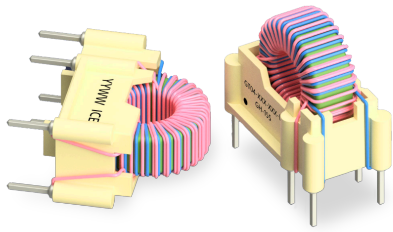


GT04 Series

High-Isolation THT Gate Drive Transformers



- ET products: Up to 378 V- μ s
- Isolation voltage: 4500 V_{AC}
- Creepage/Clearance: Up to 12.2 mm
- Frequency range: 20 kHz to >300 kHz
- Medical grade isolation compliant
- New models meet updated IEC standards (GT04-U)
- Available in UL Class F (155°C) or economical Class B (130°C) versions

APPLICATIONS

- Isolated gate drivers
- DC/DC & AC/DC converters
- Renewable energy systems
- Motor drivers and inverters
- Feedback & signal isolation

CLASS F VERSIONS (155°C) - ELECTRICAL SPECIFICATIONS @ 25°C

Part Number	Turns Ratio (TR)	Drive Inductance ¹ (μ H, Min)	DCR (Drive : Gate1 : Gate2) (Ω , Max)	Leakage Ind (Drive) ² (nH, Max)	ET Product ³ (V- μ s, Max)	SRF (1-6) ⁴ (MHz, Typ)	Interwinding Capacitances ⁵ C _{ww} (pF, Typ)
GT04-111-069-U	1 : 1 : 1	330	0.085 : 0.080 : 0.080	700	69	2.87	8.60 / 8.60
GT04-111-125-U	1 : 1 : 1	1000	0.480 : 0.450 : 0.450	1200	125	1.64	14.80 / 12.90
GT04-111-189-U	1 : 1 : 1	2400	2.000 : 1.900 : 1.900	2500	189	0.93	16.80 / 16.60
GT04-111-251-U	1 : 1 : 1	4200	2.500 : 2.200 : 2.200	3500	251	0.57	16.80 / 16.60
GT04-1X1-069-U	1 : 1.1 : 1.1	280	0.080 : 0.080 : 0.080	600	69	2.94	8.40 / 8.20
GT04-1X1-125-U	1 : 1.1 : 1.1	850	0.400 : 0.400 : 0.400	800	125	1.67	12.40 / 12.30
GT04-1X1-189-U	1 : 1.1 : 1.1	2000	1.800 : 1.800 : 1.800	2500	189	0.98	16.50 / 16.20
GT04-122-075-U	1 : 2.5 : 2.5	60	0.045 : 0.080 : 0.080	400	75	3.25	4.50 / 4.40
GT04-122-125-U	1 : 2.5 : 2.5	160	0.200 : 0.400 : 0.400	400	125	2.12	6.40 / 6.40
GT04-111-063	1 : 1 : 1	247	0.040 : 0.040 : 0.040	200	63	4.30	10.05 / 8.99
GT04-111-126	1 : 1 : 1	990	0.070 : 0.070 : 0.070	400	126	2.10	24.30 / 25.16
GT04-111-189	1 : 1 : 1	2220	0.200 : 0.200 : 0.200	500	189	0.70	39.28 / 37.96
GT04-111-252	1 : 1 : 1	3960	0.500 : 0.500 : 0.500	700	252	0.60	36.37 / 36.54
GT04-111-315	1 : 1 : 1	6180	1.000 : 1.000 : 1.000	800	315	0.40	39.36 / 39.50
GT04-111-378	1 : 1 : 1	8910	2.700 : 2.700 : 2.700	1200	378	0.40	39.51 / 39.34
GT04-122-063	1 : 2.5 : 2.5	39	0.020 : 0.040 : 0.040	150	63	4.50	4.29 / 4.32
GT04-122-126	1 : 2.5 : 2.5	158	0.040 : 0.070 : 0.070	200	126	1.70	9.62 / 9.32
GT04-122-189	1 : 2.5 : 2.5	356	0.100 : 0.200 : 0.200	250	189	1.20	12.94 / 12.91
GT04-122-252	1 : 2.5 : 2.5	634	0.200 : 0.450 : 0.450	300	252	0.60	17.76 / 17.54
GT04-122-315	1 : 2.5 : 2.5	990	0.400 : 0.900 : 0.900	400	315	0.30	21.48 / 21.60
GT04-122-378	1 : 2.5 : 2.5	1420	1.100 : 2.500 : 2.500	500	378	0.40	15.85 / 15.82

CLASS B VERSIONS (130°C) - ELECTRICAL SPECIFICATIONS @ 25°C

GT04-111-063_E	1 : 1 : 1	247	0.070 : 0.040 : 0.040	400	63	3.40	3.13 / 3.12
GT04-111-126_E	1 : 1 : 1	990	0.160 : 0.070 : 0.070	600	126	2.30	9.30 / 9.07
GT04-111-189_E	1 : 1 : 1	2220	0.200 : 0.200 : 0.200	500	189	0.70	16.73 / 16.64
GT04-111-252_E	1 : 1 : 1	3960	0.800 : 0.500 : 0.500	900	252	0.60	12.89 / 13.30
GT04-111-315_E	1 : 1 : 1	6180	1.000 : 1.000 : 1.000	800	315	0.40	21.14 / 21.45

Specifications subject to change without prior notice.

GT04 Series

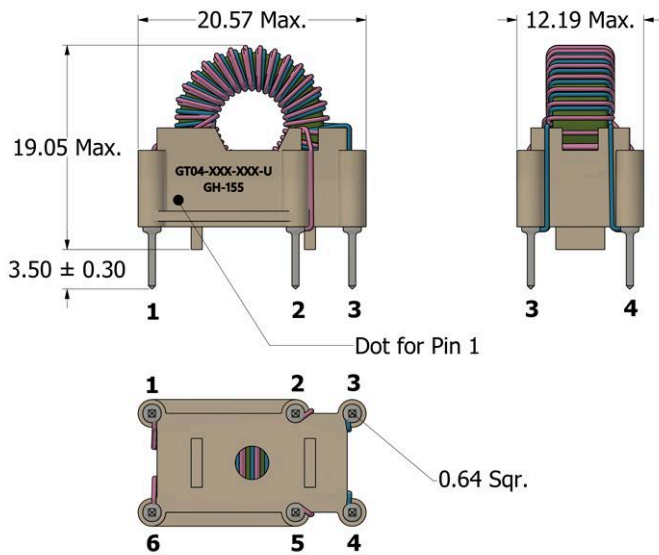
High-Isolation THT Gate Drive Transformers



CLASS B VERSIONS (130°C) - ELECTRICAL SPECIFICATIONS @ 25°C - (Continuation)

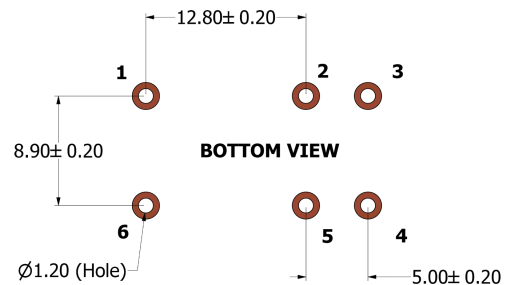
Part Number	Turns Ratio	Primary Turns	Secondary Turns	Primary Inductance (mH)	Secondary Inductance (mH)	Primary Resistance (mΩ)	Secondary Resistance (mΩ)
GT04-111-378-E	1 : 1 : 1	8910	1.200 : 2.700 : 2.700	1500	378	0.30	17.94 / 17.80
GT04-122-063-E	1 : 2.5 : 2.5	39	0.040 : 0.040 : 0.040	400	63	3.60	7.95 / 8.46
GT04-122-126-E	1 : 2.5 : 2.5	158	0.070 : 0.070 : 0.070	400	126	1.60	24.16 / 24.13
GT04-122-189-E	1 : 2.5 : 2.5	356	0.100 : 0.200 : 0.200	250	189	1.10	44.74 / 44.20
GT04-122-252-E	1 : 2.5 : 2.5	634	0.340 : 0.450 : 0.450	600	252	1.00	35.46 / 33.85
GT04-122-315-E	1 : 2.5 : 2.5	990	0.400 : 0.900 : 0.900	400	315	0.60	56.95 / 55.86
GT04-122-378-E	1 : 2.5 : 2.5	1420	0.500 : 2.500 : 2.500	900	378	0.70	45.12 / 45.24

MECHANICAL DRAWING

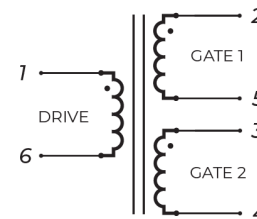


Note: All dimensions are in mm

RECOMMENDED PCB LAYOUT



SCHEMATIC



GENERAL DATA

Operating Temperature ⁶ (Class F)	-40°C to +155°C	Isolation Voltage (Drive-Gates) ⁸ (GT04-U)	4500 V _{AC}
Operating Temperature ⁶ (Class B)	-40°C to +130°C	Isolation Voltage (Gate1-Gate2) ⁸ (GT04-U)	2500 V _{AC}
Storage Temperature ⁷	-20°C to +60°C	Isolation Voltage (Drive-Gates) ⁸ (Non-GT04-U)	4500 V _{DC}
Frequency Range	20 kHz to > 300 kHz	Isolation Voltage (Gate1-Gate2) ⁸ (Non-GT04-U)	1500 V _{DC}

- Drive Inductance:** Tested at 10kHz, 0.1 V_{RMS}
- Leakage Inductance:** Tested at 100kHz, 0.1 V_{RMS}
- ET Product:** The maximum ET is based upon a flux density of 2200 Gauss at 25°C.
 $ET = E_p / 2f$,
 where, E_p = Drive Voltage (V), f = Frequency (Hz)
- SRF values** are for reference only.

- Interwinding Capacitance:** Drive to Gate1 / Drive to Gate2
- Operating Temp.:** The combination of ambient temperature and temperature rise.
- Storage Temp.:** Applies to parts removed from original packaging.
- Hi-Pot Rating:** Tested @ 60Hz, 1mA.
- Suitable for **bipolar** applications only.

COMPLIANCE

Creepage Distance	12.2 mm *	Insulation System	GH-155 *
Clearance Distance	12.2 mm *	Environmental & Safety	REACH, RoHS **
Material Group	CTI II (400V ≤ CTI < 600V)	Flammability Rating	UL-94 V-0

Specifications subject to change without prior notice.

GT04 Series

High-Isolation THT Gate Drive Transformers



Standard		Condition
Designed to comply with ***	IEC 61558-1	For a working voltage up to 1000 V_{RMS} for Basic Insulation and 867 V_{RMS} for Reinforced Insulation ; with Creepage & Clearance of 12.2 mm, Overvoltage Category II, Pollution Degree 2, and Material Group II.
	IEC 62368-1	For a working voltage up to 1760 V_{RMS} (1.96 kV_{PEAK}) for Basic Insulation and 867 V_{RMS} (1.68 kV_{PEAK}) for Reinforced Insulation ; with Creepage & Clearance of 12.2 mm, Overvoltage Category II, Pollution Degree 2, and Material Group II.

NOTE:

- * This specification applies exclusively to GT04-U models. Non-GT04-U models have a creepage and clearance distance of 6.8 mm.
- ** Applicable to non-GT04-U models. REACH compliance for GT04-U models shall be determined.
- *** Non-GT04-U models are not compliant with IEC 61558-1 or IEC 62368-1. Operations above 750 V_{PEAK} may require partial discharge testing. [Contact ICE](#) for more information.

RELIABILITY TESTING	
ICE Reliability Standard ; Dry Heat Test, Low Temp Test, Damp Heat Test, High Temp Operational Life, Thermal Shock, Solderability, and Resistance to Soldering Heat	Passed All Tests

WAVE SOLDERING PROFILE (Lead-Free)	
Max. Preheat Ramp Rate	1 - 4 °C/sec
Max. Preheat Temp. (T2)	80 -140 °C
Bottom Side Contact Time	< 9 sec
Cooling Rate	< 6 °C/sec
Time from T1 to T2	60 - 180 sec
Ambient Temperature (T1)	25 - 40 °C
Peak Wave Temp. (T3)	270 ± 5°C

PACKAGING		COMPONENT LIBRARY	
Pieces/Tray	120	AutoCAD 3D Model	SPICE Parameters
Tray/Box	10	LTSpice	PSpice
Pieces/Box	1200	Altium	Cadence
		EagleCAD	

PCB Washing	See ICE Washability Information .
Application Note	See Applying Gate Drive Transformers in Push-Pull Topology
Series Page	See https://www.icecomponents.com/product/gt04-series/

For questions or additional information, [contact ICE Components](#).

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