Injection Transformer

1 Introduction

The TBJT04 injection transformer may be used for applications such MIL-STD-461 (CS101, CS106, CS109), DO 160 (section 16, section 18), ISO 11452-10, SAE J1113-2 and various automotive manufacturer specific standards. Furthermore, it may be used to measure the input impedance of AC - and DC - power supplies using the Voltage / Current method.
It provides galvanic isolation between the swept signal source on the primary side and the secondary side which is in series with the EUT supply line.

Picture 1: TBJT04 injection transformer

2 Safety

Warning: Electrical Shock Hazard

- **The test equipment must be used by trained laboratory technicians (electricians) only. There is a risk of death or serious injury, as the equipment may be part of a setup operated with AC or DC supply voltages >60 V.**
- **Always establish Earth connection first and disconnect Earth connection last. Ensure that the setup is physically and electrically separated from any supply voltage, before connecting the primary and secondary cables. After connecting the wires to the secondary connectors, attach the supplied protection covers.**
- **Unless you are absolutely certain that no supply voltage is supplied, do not touch the transformer terminals.**
- **Do not use the test equipment if you have an electronic medical device such as a pacemaker, and do not enter the test area while the test equipment is operating. Electronic medical devices may malfunction or fail, potentially resulting in death or serious injury.**

Picture 2: protection covers attached to the secondary terminals

Injection Transformer

3 Specification

Compliance:	RoHS
Turns ratio, primary to secondary:	2:1
Impedance ratio, primary to secondary:	4:1
Typical secondary (load) impedance:	≥ 0.5 Ω
Characterized freq. range:	10 Hz to 250 kHz
3 dB frequency range:	10 Hz – 60 kHz typ.
Insertion loss (S21):	0.6 – 10 dB dB typ.
Nominal input power, primary:	250 W max.
Primary inductance, unloaded:	3.2 mH
Secondary inductance, unloaded:	0.8 mH
AC / DC nominal current, secondary:	50A max.
AC / DC saturation current, secondary:	> 60 A
Max. voltage rating:	250V AC/DC
Isolation test:	1500 V DC, primary to secondary Primary to case Earth, secondary to case Earth
Primary connectors:	4mm safety socket,
Secondary connectors:	M8 screw terminals
Operating temp. range:	0°C – 40°C
Enclosure dimensions:	W 215 mm x H 160 mm x L 350 mm
Weight:	16 kg

4 Frequency response

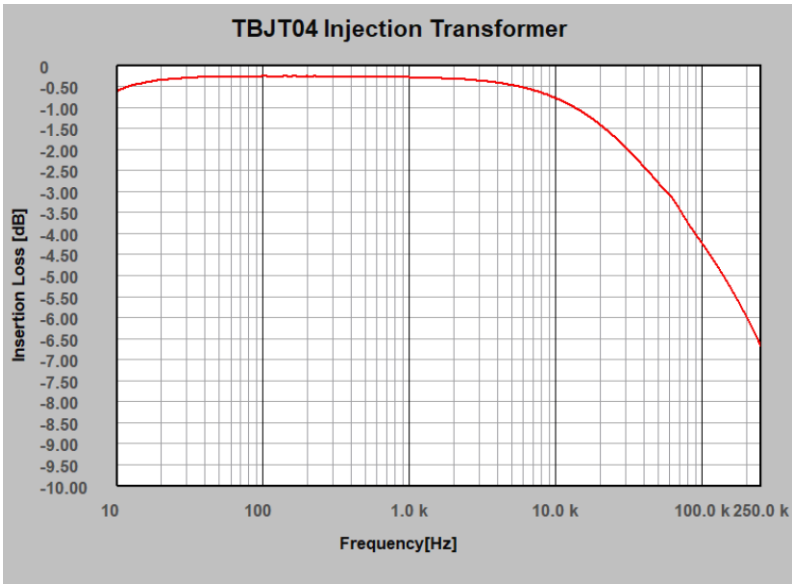

Figure 1: typical insertion loss, 10 Hz – 250 kHz

Injection Transformer

Frequency [Hz]	Insertion Loss [dB]	Frequency [Hz]	Insertion Loss [dB]
1	-9,67	2500	-0,35
2.5	-4,22	5000	-0,48
5	-1,60	7500	-0,63
7.5	-0,90	10000	-0,79
10	-0,62	25000	-1,70
20	-0,36	50000	-2,81
30	-0,30	75000	-3,61
50	-0,28	100000	-4,25
75	-0,27	125000	-4,75
100	-0,27	150000	-5,20
250	-0,28	175000	-5,60
500	-0,28	200000	-5,98
750	-0,28	225000	-6,33
1000	-0,29	250000	-6,68

Table 1: typical insertion loss, 1 Hz – 250 kHz

5 Ordering Information

Part Number	Description
TBJT04	1 Hz – 250 kHz injection transformer

6 History

Version	Date	Author	Changes
V 1.0	29.6.2026	Mayerhofer	Creation

TekBox Digital Solutions Vietnam Pte. Ltd. www.tekbox.com
Factory 4, F4, Lot I-3B-1, Saigon Hi-Tech Park, Tan Phu Ward, District 9, Ho Chi Minh City, Vietnam