

5.8 GHz 35.5 dBm Prematched FETs

FEATURES

- 35.5 dBm Typical Power at 5.8 GHz
- High Associated Gain: $G_a = 8$ dB Typical at 5.8 GHz
- High Linearity: $IP_3 = 46$ dBm Typical at 5.8 GHz
- High Power Added Efficiency: $PAE \geq 28\%$ for Class A Operation
- Suitable for High Reliability Application
- $L_g = 0.6 \mu m$, $W_g = 12 mm$
- 100 % DC and RF Tested
- Flange Ceramic Package

PHOTO ENLARGEMENT



DESCRIPTION

The TC3989 is a 35.5 dBm partially prematched power FET assembled in a flange ceramic package. It requires simple matching networks to achieve high gain and high linearity for 5.8 GHz applications. All devices are 100 % DC and RF tested to assure consistent quality.

ELECTRICAL SPECIFICATIONS

$V_D = 10 V$, $I_D = 1100 mA$, $f = 5.8 GHz$

Parameter	Conditions	MIN	TYP	MAX	UNIT
P_{-1}^*		35	35.5		dBm
G_a^*		7	8		dB
IP_3	$P_{out} = 23 dBm$		46		dBm
PAE	@ P_{-1}		28		%
I_{DSS}	$V_{DS} = 2 V$, $V_{GS} = 0 V$		3		A
g_m	$V_{DS} = 2 V$, $V_{GS} = 0 V$		2000		mS
V_P	$V_{DS} = 2 V$, $I_D = 24 mA$		-1.7		Volts
BV_{DGO}	$I_{DGO} = 6 mA$	18	22		Volts
R_{th}			2.5		°C/W

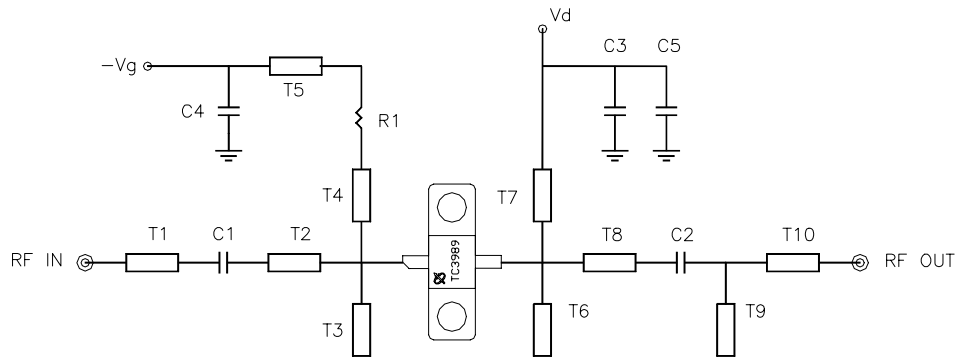
ABSOLUTE MAXIMUM RATINGS at 25 °C

Symbol	Parameter	Rating
V_{DS}	Drain-Source Voltage	12 V
V_{GS}	Gate-Source Voltage	-5 V
I_D	Drain Current	3 A
P_T	Continuous Dissipation	12 W
P_{in}	Input Power, CW	33 dBm
T_{CH}	Channel Temperature	175 °C
T_{STG}	Storage Temperature	- 65 °C to +175 °C

* FET TO BE TESTED IN TRANSCOM FIXTURE.

TEST CIRCUITS

Evaluation Board Schematic ($V_D = 10\text{ V}$, $I_D = 1100\text{ mA}$)



EVALUATION BOARD

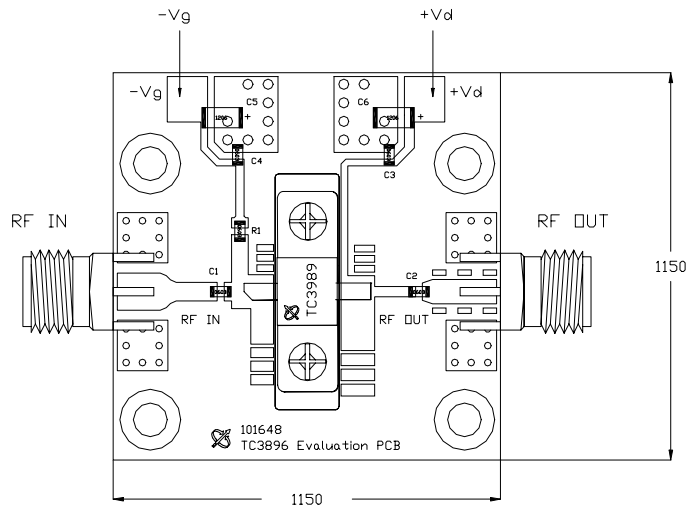
PCB Material: FR4

ER = 4.6

Thickness = 31 mil

Unit: mil

* DXF file of the PCB can be
 downloaded from our web-site at
www.transcominc.com.tw



Evaluation Board Parts List

Part Type	Reference Designator	Description	Manufacturer	Part Number
Capacitor	C1,C2	3.5 pF (0603)	Murata	GRM39C0G3R5C50V
Capacitor	C3,C4	1000 pF (0603)	Murata	GRM39C0G102J50V
Capacitor	C5,C6	10 uF (B CASE)	HITACHI	
Resistor	R1	10 ohm (0603)		

FLANGE PACKAGE OUTLINE (in mm)
