



TC3989  
REV3\_20070503

### 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		$^{\circ}C/W$

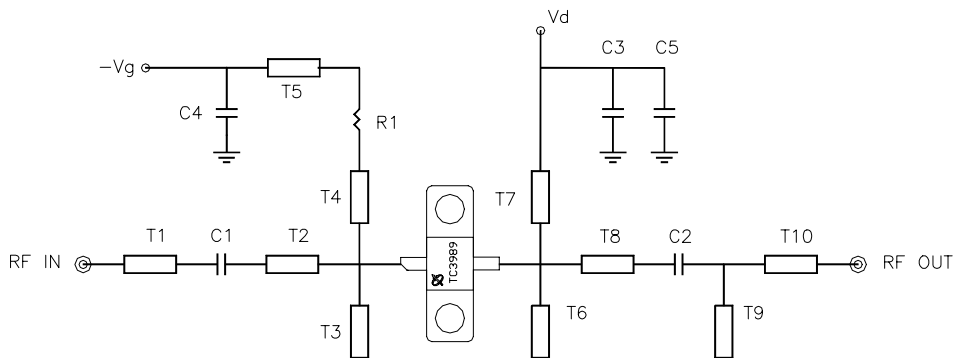
#### ABSOLUTE MAXIMUM RATINGS at 25 °C

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 $^{\circ}C$
$T_{STG}$	Storage Temperature	- 65 $^{\circ}C$ to +175 $^{\circ}C$

\* FET TO BE TESTED IN TRANSCOM FIXTURE.



**TEST CIRCUITS**

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

**EVALUATION BOARD**

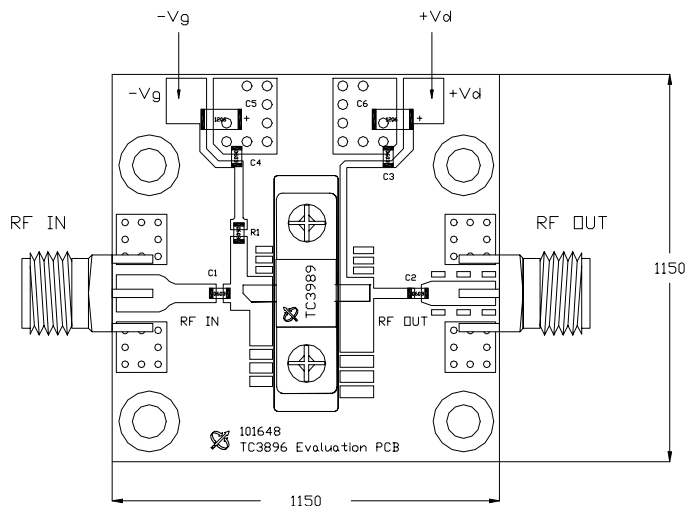
PCB Material: FR4

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](http://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)**
