

## 5.8 GHz 37dBm Prematched FETs

### FEATURES

- 37 dBm Typical Power at 5.8 GHz
- High Associated Gain: Ga = 9 dB Typical at 5.8 GHz
- High Linearity: IP3 = 46 dBm Typical at 5.8 GHz
- High Power Added Efficiency: PAE = 40 % Typical at 5.8 GHz
- Suitable for High Reliability Application
- Lg = 0.6 μm, Wg = 12 mm
- 100 % DC and RF Tested
- Flange Ceramic Package

### PHOTO ENLARGEMENT



### DESCRIPTION

The TC3989 is a 37 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

$V_D=10\text{ V}$ ,  $I_D=1100\text{ mA}$ ,  $f=5.8\text{ GHz}$

Parameter	Conditions	MIN	TYP	MAX	UNIT
$P_{-1}$ *			37		dBm
$G_a$ *			9		dB
IP3	$P_{out}=23\text{ dBm}$		46		dBm
PAE	@ $P_{-1}$		40		%
$I_{DSS}$	$V_{DS}=2\text{ V}$ , $V_{GS}=0\text{ V}$		3		A
$g_m$	$V_{DS}=2\text{ V}$ , $V_{GS}=0\text{ V}$		2000		mS
$V_P$	$V_{DS}=2\text{ V}$ , $I_D=24\text{ mA}$		-1.7		Volts
$BV_{DGO}$	$I_{DGO}=6\text{ mA}$	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	20 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.



**Evaluation Board Parts List**

Part Type	Reference Designator	Description	Manufacturer	Part Number
Chip Resistor	Rg1	(0603)12Ω±5%		
Chip Resistor	Rg2	(0603)1KΩ±5%		
Chip Resistor	Rg3	(0603)0Ω±5%		
Chip Resistor	Rg4	(0603)510Ω±5%		
Chip Resistor	Rg5	(0603)100Ω±5%		
PNP	Q1	FMMT2907A(SOT-23)		
SMT Trimmer Potentiometers	VR1	(3.0*3.0mm)1KΩ		
Chip Cap	Ci1	(0603)3.5PF±0.25PF	Murata	GRM39COG3R5C50V
Chip Cap	Cd1, Co4	(0603)1000PF±10%	Murata	GRM39X7R102K50V
Chip Cap	Cd2, Co5	(0603)0.1μF±20%	Murata	GRM39Y5V104Z25V
Chip Cap	Cd3, Co6	(1206)10μF±20%	Murata	GRM42-6Y5V106Z25V (GRM31CF5E106ZA01L)
Chip Cap	Co1, Co3	(0805)0.3PF±0.1PF	ATC	ATC 600F 0R3BT (0.3pF±0.1pF 250WVDC)
Chip Cap	Co2	(0603)4.7PF±0.25PF	Murata	GRM39COG4R7C50V

**FLANGE PACKAGE OUTLINE (in mm)**
