

2W Self-Bias and Prematched GaAs Power PHEMTs using SMT package

FEATURES

- Prematched for 5~8 GHz
- 2W Typical Output Power at 5~8GHz
- 7.5dB Typical Linear Power Gain at 8GHz
- High Linearity: IP3 = 43 dBm Typical at 5~8GHz
- High Power Added Efficiency: Nominal PAE of 35% at 5~8GHz
- Breakdown Voltage: $BV_{DGO} \geq 18V$
- $W_g = 5.0$ mm
- 100 % DC Tested
- Suitable for High Reliability Application
- Lost Cost SMT Ceramic Package

DESCRIPTION

The TC3963 is a self-bias and prematched GaAs PHEMT. It is designed for use in low cost, high volume, and 5~8 GHz 2W amplifiers. It provides a typical gain of 7.5dB and P1dB of 33dBm at 8GHz. The single positive drain bias is 10V and the typical drain-source current is 600mA. The device is packaged in copper based ceramic 10 pins SMT packages. The copper based carrier of the package allows direct soldering of the device to the PCB.

ELECTRICAL SPECIFICATIONS ($T_A=25$)

Symbol	CONDITIONS	MIN	TYP	MAX	UNIT
P_{1dB}	Output Power at 1dB Gain Compression Point, $f = 8GHz$, $V_{DS} = 10V$	32	33		dBm
G_L	Linear Power Gain, $f = 8GHz$, $V_{DS} = 10V$	6.5	7.5		dB
IP3	Intercept Point of the 3 rd -order Intermodulation, $f = 8GHz$, $V_{DS} = 10V$, $*P_{SCL} = 20$ dBm		43		dBm
PAE	Power Added Efficiency at 1dB Compression Power, $f = 8GHz$		35		%
I_{DS}	Drain-Source Current at $V_{DS} = 10V$		600		mA
BV_{DGO}	Drain-Gate Breakdown Voltage at $I_{DGO} = 1.2mA$	18	20		Volts

Note: * P_{SCL} : Output Power of Single Carrier Level.

TC3963

ABSOLUTE MAXIMUM RATINGS (T_A=25 °C)

Symbol	Parameter	Rating
V _{DS}	Drain-Source Voltage	12 V
P _{in}	RF Input Power, CW	29 dBm
P _T	Continuous Dissipation	7.7 W
T _{CH}	Channel Temperature	175 °C
T _{STG}	Storage Temperature	- 65 °C to +175 °C

RECOMMENDED OPERATING CONDITION

Symbol	Parameter	Rating
V _{DS}	Drain to Source Voltage	10V

HANDLING PRECAUTIONS:

The user must operate in a clean, dry environment. Electrostatic Discharge (ESD) precautions should be observed at all stages of storage, handling, assembly, and testing. The static discharge must be less than 300V.

EVALUATION BOARD

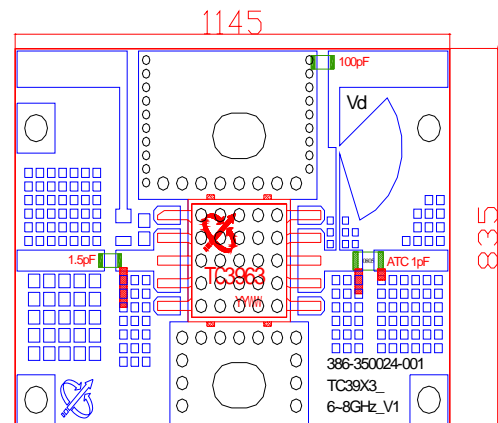
DXF file of the PCB can be downloaded from our web-site at www.transcominc.com.tw

PCB Material: RO4003

ER = 3.38

Thickness = 20 mil

Unit: mil



EVALUATION BOARD PARTS LIST

Qt'y	Description	Reference Designator	Manufacturer	Inventory ID
1	Chip CAP (0603) 1.5 PF ± 0.25 PF		Murata	GRM39COG1R5C50V
1	Chip CAP (0603) 100 PF ± 5%		Murata	GRM39X7R101K50V
1	Chip CAP (0805) 1 PF ± 0.1 PF		ATC	ATC 600F 1R0BT (1pF ± 0.1pF 250WVDC)