
- Preliminary Datasheet -

0.5W Self-Bias and Prematched GaAs Power PHEMTs using SMT package

FEATURES

- Prematched for 5~10 GHz
- 0.5W Typical Output Power at 5~10GHz
- 7dB Typical Linear Power Gain at 10GHz
- High Linearity:
IP3 = 37 dBm Typical at 5~10GHz
- High Power Added Efficiency:
Nominal PAE of 30% at 5~10GHz
- Breakdown Voltage: $BV_{DGO} \geq 15V$
- $W_g = 1.2 \text{ mm}$
- 100 % DC Tested
- Suitable for High Reliability Application
- Lost Cost SMT Ceramic Package

DESCRIPTION

The TC3943 is a self-bias and prematched GaAs PHEMT. It is designed for use in low cost, high volume, and 5~10 GHz 0.5W amplifiers. It provides a typical gain of 7dB and P1dB of 27dBm at 10GHz. The single positive drain bias is 8V and the typical drain-source current is 150mA. 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.

TC3943

ELECTRICAL SPECIFICATIONS ($T_A=25$)

| Symbol | CONDITIONS | MIN | TYP | MAX | UNIT |
|------------|---|-----|-----|-----|-------|
| P_{1dB} | Output Power at 1dB Gain Compression Point, $f = 10GHz$ $V_{DS} = 8V$ | 26 | 27 | | dBm |
| G_L | Linear Power Gain, $f = 10GHz$ $V_{DS} = 8V$ | 6 | 7 | | dB |
| IP3 | Intercept Point of the 3 rd -order Intermodulation, $f = 10GHz$ $V_{DS} = 8V$, $*P_{SCL} = 14$ dBm | | 37 | | dBm |
| PAE | Power Added Efficiency at 1dB Compression Power, $f = 10GHz$ | | 30 | | % |
| I_{DS} | Drain-Source Current at $V_{DS} = 8V$ | | 150 | | mA |
| BV_{DGO} | Drain-Gate Breakdown Voltage at $I_{DGO} = 0.6mA$ | 15 | 18 | | Volts |

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

ABSOLUTE MAXIMUM RATINGS ($T_A=25$ °C)

| Symbol | Parameter | Rating |
|-----------|------------------------|--------------------|
| V_{DS} | Drain-Source Voltage | 10V |
| P_{in} | RF Input Power, CW | 23 dBm |
| P_T | Continuous Dissipation | 1.9 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 | 8V |

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.