

PTB 20051

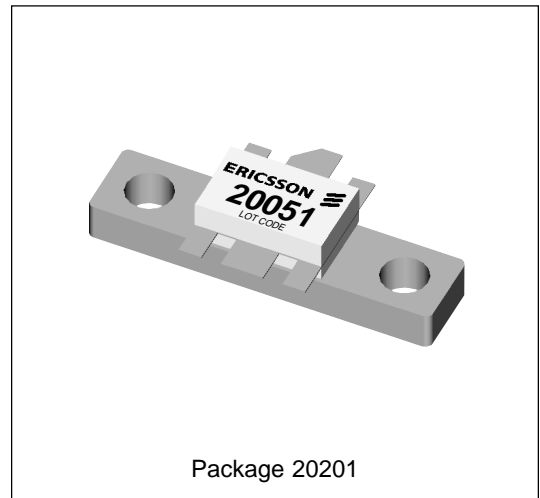
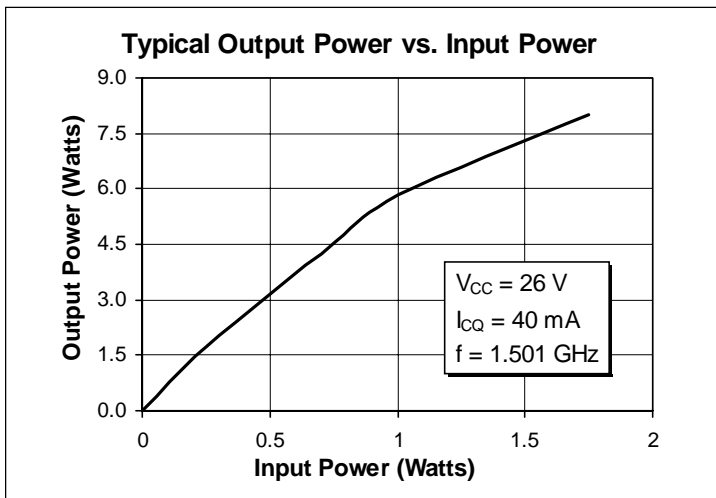
6 Watts, 1.465–1.513 GHz

Cellular Radio RF Power Transistor

Description

The 20051 is a class AB, NPN, common emitter RF power transistor intended for 26 Vdc operation from 1.465 to 1.513 GHz. Rated at 6 watts minimum output power, it may be used for both CW and PEP applications. Ion implantation, nitride surface passivation and gold metallization are used to ensure excellent device reliability. 100% lot traceability is standard.

- 6 Watts, 1.465–1.513 GHz
- Class AB Characteristics
- 35% Collector Efficiency at 4 Watts
- Gold Metallization
- Silicon Nitride Passivated



Maximum Ratings

| Parameter | Symbol | Value | Unit |
|---|-----------------|-------------|------------------------------|
| Collector-Emitter Voltage | V_{CER} | 50 | Vdc |
| Collector-Base Voltage | V_{CBO} | 50 | Vdc |
| Emitter-Base Voltage (collector open) | V_{EBO} | 4.0 | Vdc |
| Collector Current (continuous) | I_C | 0.7 | Adc |
| Total Device Dissipation at $T_{flange} = 25^\circ\text{C}$ Above 25°C derate by | P_D | 28 0.16 | Watts W/ $^\circ\text{C}$ |
| Storage Temperature Range | T_{STG} | -40 to +150 | $^\circ\text{C}$ |
| Thermal Resistance ($T_{flange} = 70^\circ\text{C}$) | $R_{\theta JC}$ | 6.2 | $^\circ\text{C}/\text{W}$ |

Electrical Characteristics (100% Tested)

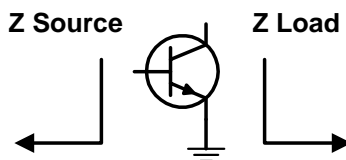
| Characteristic | Conditions | Symbol | Min | Typ | Max | Units |
|--------------------------|---|---------------|-----|-----|-----|-------|
| Breakdown Voltage C to E | $I_B = 0\text{ A}$, $I_C = 10\text{ mA}$, $R_{BE} = 22\ \Omega$ | $V_{(BR)CER}$ | 50 | — | — | Volts |
| Breakdown Voltage C to E | $V_{BE} = 0\text{ V}$, $I_C = 10\text{ mA}$ | $V_{(BR)CES}$ | 50 | — | — | Volts |
| Breakdown Voltage E to B | $I_C = 0\text{ A}$, $I_E = 5\text{ mA}$ | $V_{(BR)EBO}$ | 4 | 5 | — | Volts |
| DC Current Gain | $V_{CE} = 10\text{ V}$, $I_C = 0.7\text{ A}$ | h_{FE} | 20 | 50 | 120 | — |

RF Specifications (100% Tested)

| Characteristic | Symbol | Min | Typ | Max | Units |
|---|----------|-----|-----|-----|-------|
| Gain ($V_{CC} = 26\text{ Vdc}$, $P_{out} = 4\text{ W}$, $I_{CQ} = 40\text{ mA}$, $f = 1.501\text{ GHz}$) | G_{pe} | 8.0 | — | — | dB |
| Power Output at 1 dB Compression ($V_{CC} = 26\text{ Vdc}$, $I_{CQ} = 40\text{ mA}$, $f = 1.501\text{ GHz}$) | P-1dB | 6.5 | — | — | Watts |
| Collector Efficiency ($V_{CC} = 26\text{ Vdc}$, $P_{out} = 4\text{ W}$, $I_{CQ} = 40\text{ mA}$, $f = 1.501\text{ GHz}$) | η_C | 35 | — | — | % |
| Load Mismatch Tolerance ($V_{CC} = 26\text{ Vdc}$, $P_{out} = 4\text{ W}$, $I_{CQ} = 40\text{ mA}$, $f = 1.501\text{ GHz}$ —all phase angles at frequency of test) | Ψ | — | — | 5:1 | — |

Impedance Data (data shown for fixed-tuned broadband circuit)

($V_{CC} = 26\text{ Vdc}$, $P_{out} = 4\text{ W}$, $I_{CQ} = 40\text{ mA}$)



| Frequency | Z Source | | Z Load | |
|-----------|----------|------|--------|------|
| | R | jX | R | jX |
| 1.465 | 10.7 | 11.2 | 11.9 | 21.0 |
| 1.489 | 9.4 | 11.8 | 10.2 | 20.3 |
| 1.513 | 8.1 | 12.8 | 9.7 | 18.3 |