

# PTB 20162

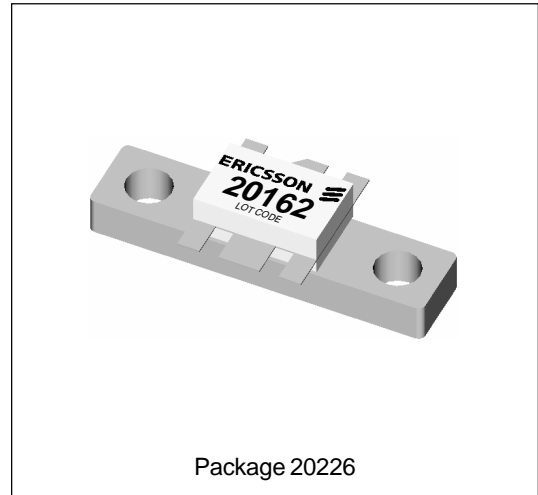
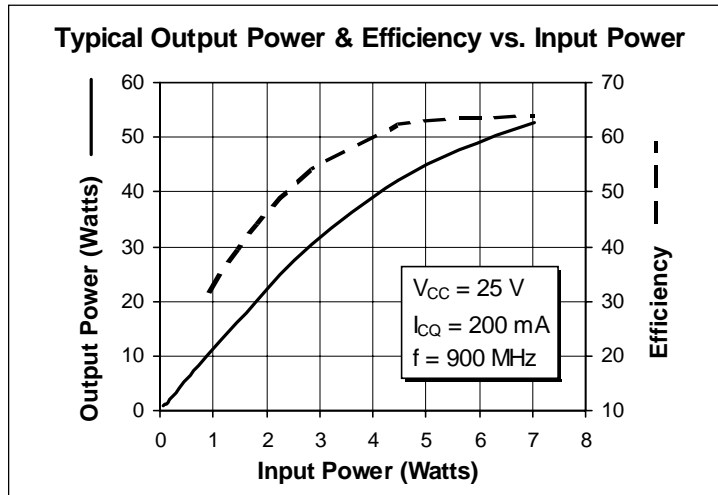
## 40 Watts, 470–900 MHz

### RF Power Transistor

#### Description

The 20162 is an NPN common emitter RF power transistor intended for 25 Vdc class AB operation from 470 to 900 MHz. Rated at 40 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.

- 40 Watts, 470–900 MHz
- Class AB Characteristics
- 50% Min Collector Efficiency at 40 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)  | $I_C$           | 10.0        | Adc                          |
| Total Device Dissipation at $T_{flange} = 25^\circ\text{C}$<br>Above $25^\circ\text{C}$ derate by | $P_D$           | 80<br>0.45  | Watts<br>W/ $^\circ\text{C}$ |
| Storage Temperature Range   | $T_{STG}$       | -40 to +150 | $^\circ\text{C}$             |
| Thermal Resistance ( $T_{flange} = 70^\circ\text{C}$ )  | $R_{\theta JC}$ | 2.2         | $^\circ\text{C}/\text{W}$    |

## Electrical Characteristics (100% Tested)

| Characteristic           | Conditions   | Symbol        | Min | Typ | Max | Units |
|--------------------------|--|---------------|-----|-----|-----|-------|
| Breakdown Voltage C to E | $I_B = 0 \text{ A}$ , $I_C = 50 \text{ mA}$ , $R_{BE} = 22 \Omega$ | $V_{(BR)CER}$ | 50  | —   | —   | Volts |
| Breakdown Voltage C to E | $V_{BE} = 0 \text{ V}$ , $I_C = 50 \text{ mA}$                     | $V_{(BR)CES}$ | 50  | —   | —   | Volts |
| Breakdown Voltage E to B | $I_C = 0 \text{ A}$ , $I_E = 20 \text{ mA}$                        | $V_{(BR)EBO}$ | 4.0 | 5   | —   | Volts |
| DC Current Gain          | $V_{CE} = 5 \text{ V}$ , $I_C = 1 \text{ A}$                       | $h_{FE}$      | 20  | 50  | 100 | —     |

## RF Specifications (100% Tested)

| Characteristic  | Symbol   | Min | Typ | Max  | Units |
|---|----------|-----|-----|------|-------|
| <b>Gain</b><br>( $V_{CC} = 25 \text{ Vdc}$ , $P_{out} = 40 \text{ W}$ , $I_{CQ} = 200 \text{ mA}$ , $f = 900 \text{ MHz}$ )   | $G_{pe}$ | 8.0 | 9.5 | —    | dB    |
| <b>Collector Efficiency</b><br>( $V_{CC} = 25 \text{ Vdc}$ , $P_{out} = 40 \text{ W}$ , $I_{CQ} = 200 \text{ mA}$ , $f = 900 \text{ MHz}$ )   | $\eta_C$ | 50  | —   | —    | %     |
| <b>Power Output at 1 dB Compression</b><br>( $V_{CC} = 25 \text{ Vdc}$ , $I_{CQ} = 200 \text{ mA}$ , $f = 900 \text{ MHz}$ )  | P-1dB    | 40  | 45  | —    | Watts |
| <b>Intermodulation Distortion</b><br>( $V_{CC} = 25 \text{ Vdc}$ , $P_{out} = 30 \text{ W(PEP)}$ , $I_{CQ} = 60 \text{ mA}$ ,<br>$f_1 = 899 \text{ MHz}$ , $f_2 = 900 \text{ MHz}$ )        | IMD      | -32 | -35 | —    | dBc   |
| <b>Load Mismatch Tolerance</b><br>( $V_{CC} = 25 \text{ Vdc}$ , $P_{out} = 40 \text{ W(CW)}$ , $I_{CQ} = 200 \text{ mA}$ ,<br>$f = 900 \text{ MHz}$ —all phase angles at frequency of test) | $\Psi$   | —   | —   | 30:1 | —     |

## Typical Performance

