

PTB 20003

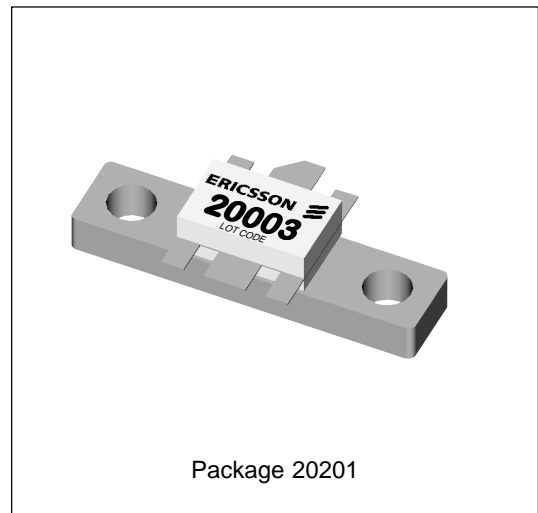
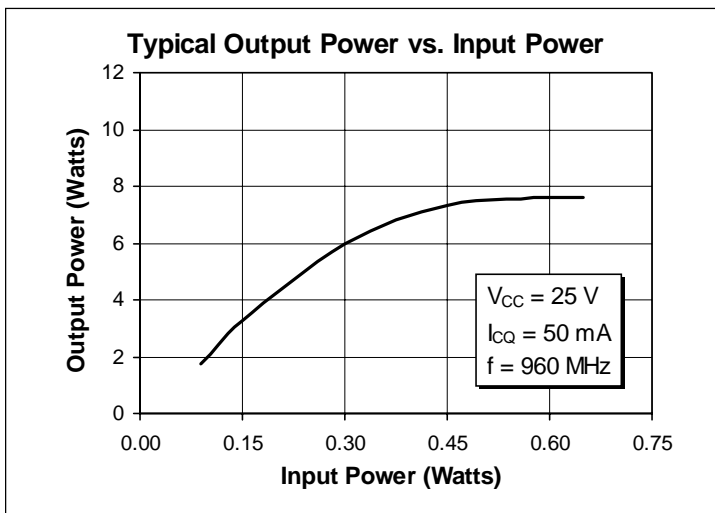
4 Watts, 915–960 MHz

Cellular Radio RF Power Transistor

Description

The 20003 is a class AB, NPN, common emitter RF power transistor intended for 25 Vdc operation across the 915 to 960 MHz frequency band. Rated at 4 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.

- Specified 25 Volts
- 4 Watts, 915–960 MHz
- Class AB Characteristics
- 50% Collector Efficiency at 4 Watts
- Gold Metallization
- Silicon Nitride Passivated



Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CER}	40	Vdc
Collector-Base Voltage	V_{CBO}	50	Vdc
Emitter-Base Voltage (collector open)	V_{EBO}	4.0	Vdc
Collector Current (continuous)	I_C	1.7	Adc
Total Device Dissipation at $T_{flange} = 25^{\circ}C$ Above $25^{\circ}C$ derate by	P_D	35 0.2	Watts W/ $^{\circ}C$
Storage Temperature Range	T_{STG}	-40 to +150	$^{\circ}C$
Thermal Resistance ($T_{flange} = 70^{\circ}C$)	$R_{\theta JC}$	5.0	$^{\circ}C/W$

Electrical Characteristics (100% Tested)

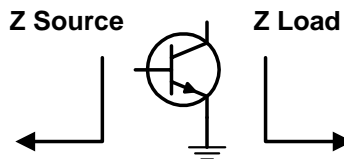
Characteristic	Conditions	Symbol	Min	Typ	Max	Units
Breakdown Voltage C to E	$I_B = 0\text{ A}, I_C = 50\text{ mA}$	$V_{(BR)CEO}$	25	30	—	Volts
Breakdown Voltage C to E	$V_{BE} = 0\text{ V}, I_C = 50\text{ mA}$	$V_{(BR)CES}$	55	70	—	Volts
Breakdown Voltage E to B	$I_C = 0\text{ A}, I_E = 5\text{ mA}$	$V_{(BR)EBO}$	4	5	—	Volts
DC Current Gain	$V_{CE} = 5\text{ V}, I_C = 250\text{ mA}$	h_{FE}	20	50	120	—

RF Specifications (100% Tested)

Characteristic	Symbol	Min	Typ	Max	Units
Gain ($V_{CC} = 25\text{ Vdc}, P_{out} = 4\text{ W}, I_{CQ} = 50\text{ mA}, f = 960\text{ MHz}$)	G_{pe}	11	13	—	dB
Collector Efficiency ($V_{CC} = 25\text{ Vdc}, P_{out} = 4\text{ W}, I_{CQ} = 50\text{ mA}, f = 960\text{ MHz}$)	η_c	50	—	—	%
Intermodulation Distortion ($V_{CC} = 25\text{ Vdc}, P_{out} = 4\text{ W(PEP)}, I_{CQ} = 50\text{ mA}, f_1 = 959.999\text{ MHz}, f_2 = 960.000\text{ MHz}$)	IMD	—	-28	—	dBc
Load Mismatch Tolerance ($V_{CC} = 25\text{ Vdc}, P_{out} = 4\text{ W}, I_{CQ} = 50\text{ mA}, f = 960\text{ MHz}$ —all phase angles at frequency of test)	Ψ	—	—	30:1	—

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

($V_{CC} = 25\text{ Vdc}, P_{out} = 4\text{ W}, I_{CQ} = 50\text{ mA}$)



Frequency MHz	Z Source		Z Load	
	R	jX	R	jX
915	6.7	-1.8	6.8	15.5
935	6.8	-1.3	6.9	16.0
960	6.8	-0.7	7.0	17.0

