



PTB 20105

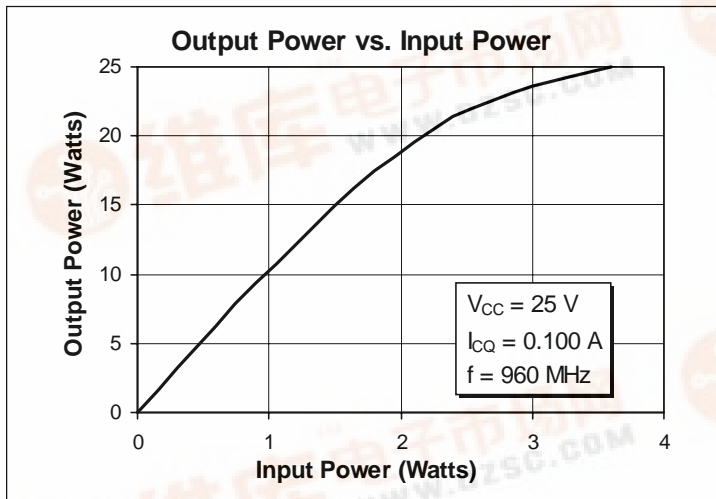
20 Watts, 925–960 MHz

Cellular Radio RF Power Transistor

Description

The 20105 is a class AB, NPN, common emitter RF power transistor intended for 25 Vdc operation from 925 to 960 MHz. Rated at 20 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.

- Class AB Characteristics
- Performance at 960 MHz, 25 V_{CC}
 - Output Power = 20 W
 - Efficiency = 50% Min
- Gold Metallization
- Silicon Nitride Passivated



Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-Emitter Voltage	V _{CER}	40	Vdc
Collector-Base Voltage	V _{CB0}	50	Vdc
Emitter-Base Voltage (collector open)	V _{EBO}	4.0	Vdc
Collector Current (continuous)	I _C	5.0	Adc
Total Device Dissipation at T _f flange = 25°C	P _D	70	Watts
Above 25°C derate by		0.4	W/°C
Storage Temperature Range	T _{STG}	-40 to +150	°C
Thermal Resistance (T _f flange = 70°C)	R _{θJC}	2.5	°C/W



Electrical Characteristics (100% Tested)

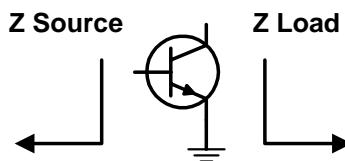
Characteristic	Conditions	Symbol	Min	Typ	Max	Units
Breakdown Voltage C to E	$I_B = 0\text{ A}, I_C = 100\text{ mA}$	$V_{(BR)CEO}$	25	30	—	Volts
Breakdown Voltage C to E	$V_{BE} = 0\text{ V}, I_C = 100\text{ mA}$	$V_{(BR)CES}$	55	70	—	Volts
Breakdown Voltage E to B	$I_C = 0\text{ A}, I_E = 5\text{ mA}$	$V_{(BR)EBO}$	3.5	5.0	—	Volts
DC Current Gain	$V_{CE} = 5\text{ V}, I_C = 1\text{ A}$	h_{FE}	20	50	120	—

RF Specifications (100% Tested)

Characteristic	Symbol	Min	Typ	Max	Units
Gain ($V_{CC} = 25\text{ Vdc}, P_{out} = 20\text{ W}, I_{CQ} = 100\text{ mA}, f = 960\text{ MHz}$)	G_{pe}	9	10	—	dB
Collector Efficiency ($V_{CC} = 25\text{ Vdc}, P_{out} = 20\text{ W}, I_{CQ} = 100\text{ mA}, f = 960\text{ MHz}$)	η_C	50	—	—	%
Load Mismatch Tolerance ($V_{CC} = 25\text{ Vdc}, P_{out} = 20\text{ W}, I_{CQ} = 100\text{ mA}, f = 960\text{ MHz}$ —all phase angles at frequency of test)	Ψ	—	—	30:1	—

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

($V_{CC} = 25\text{ Vdc}, P_{out} = 20\text{ W}, I_{CQ} = 100\text{ mA}$)



Frequency MHz	Z Source		Z Load	
	R	jX	R	jX
925	3.1	-1.8	3.1	1.4
942	3.0	-1.5	2.9	1.4
960	2.9	-1.2	2.7	1.4

Typical Performance

