

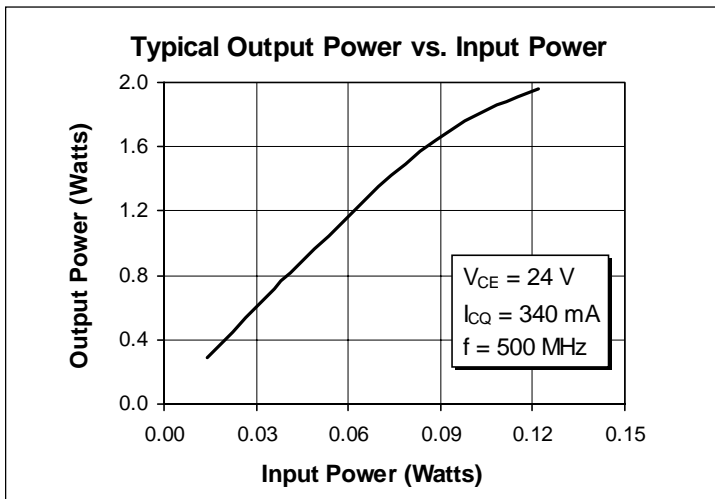
PTB 20204

1.0 Watt, 380–500 MHz RF Power Transistor

Description

The 20204 is a class A, NPN, common emitter RF power transistor intended for 24 Vdc operation from 380 to 500 MHz. Rated at 1.0 watt minimum output power, it may be used for both CW and PEP applications. Ion implantation, nitride surface passivation and gold metallization ensure excellent device reliability. 100% lot traceability is standard.

- 1.0 Watt, 380–500 MHz
- Class A Characteristics
- -40 dB Max Two-Tone IMD at 1.0 W(PEP)
- Gold Metallization
- Silicon Nitride Passivated



Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CE}	60	Vdc
Collector-Base Voltage	V_{CBO}	60	Vdc
Emitter-Base Voltage (collector open)	V_{EBO}	4.0	Vdc
Collector Current (continuous)	I_C	0.5	Adc
Total Device Dissipation at $T_{flange} = 25^\circ\text{C}$ Above 25°C derate by	P_D	11 0.0625	Watts W/ $^\circ\text{C}$
Storage Temperature Range	T_{STG}	-40 to +150	$^\circ\text{C}$
Thermal Resistance ($T_{flange} = 70^\circ\text{C}$)	$R_{\theta JC}$	16	$^\circ\text{C}/\text{W}$

Electrical Characteristics (100% Tested)

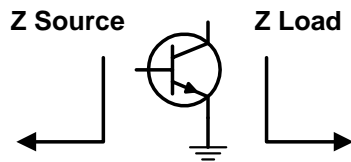
Characteristic	Conditions	Symbol	Min	Typ	Max	Units
Breakdown Voltage C to E	$I_B = 0\text{ A}, I_C = 5\text{ mA}$	$V_{(BR)CEO}$	25	30	—	Volts
Breakdown Voltage C to E	$V_{BE} = 0\text{ V}, I_C = 5\text{ mA}$	$V_{(BR)CES}$	70	—	—	Volts
Breakdown Voltage E to B	$I_C = 0\text{ A}, I_E = 5\text{ mA}$	$V_{(BR)EBO}$	4	5	—	Volts
DC Current Gain	$V_{CE} = 5\text{ V}, I_C = 250\text{ mA}$	h_{FE}	20	40	—	—
Output Capacitance	$V_{CB} = 24\text{ V}, I_E = 0\text{ A}, f = 1\text{ MHz}$	C_{obo}	—	4.4	—	pF

RF Specifications (100% Tested)

Characteristic	Symbol	Min	Typ	Max	Units
Gain ($V_{CE} = 24\text{ Vdc}, P_{out} = 1.0\text{ W}, I_{CQ} = 340\text{ mA}, f = 500\text{ MHz}$)	G_{pe}	12.5	13.5	—	dB
Two-Tone Intermodulation Distortion ($V_{CE} = 24\text{ Vdc}, P_{out} = 1.0\text{ W(PEP)}, I_{CQ} = 340\text{ mA}, f_1 = 500\text{ MHz}, f_2 = 501\text{ MHz}$)	IM_2	—	-44	-40	dB
Load Mismatch Tolerance ($V_{CE} = 24\text{ Vdc}, P_{out} = 2\text{ W}, I_{CQ} = 340\text{ mA}, f = 500\text{ MHz}$ —all phase angles at frequency of test)	Ψ	—	—	30:1	—

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

($V_{CE} = 24\text{ Vdc}, P_{out} = 1.0\text{ W}, I_{CQ} = 340\text{ mA}$)



Frequency MHz	Z Source		Z Load	
	R	jX	R	jX
400	6.0	-4.0	33.2	24.9
450	3.9	-0.6	34.0	17.3
500	3.4	2.1	30.1	12.2

