



PTB 20030

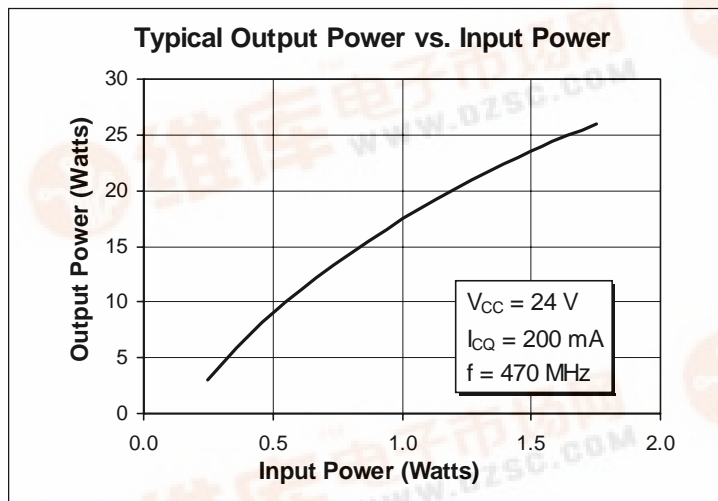
15 Watts, 420–470 MHz

RF Power Transistor

Description

The 20030 is a class AB, NPN, common emitter RF power transistor intended for 24 Vdc operation across the 420 to 470 MHz frequency band. Rated at 15 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.

- 15 Watts, 420–470 MHz
- Class AB Characteristics
- 50% Collector Efficiency at 15 Watts
- Gold Metallization
- Silicon Nitride Passivated



Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CER}	48	Vdc
Collector-Base Voltage	V_{CBO}	50	Vdc
Emitter-Base Voltage (collector open)	V_{EBO}	4.0	Vdc
Collector Current (continuous)	I_C	6.0	Adc
Total Device Dissipation at $T_{flange} = 25^{\circ}C$ Above $25^{\circ}C$ derate by	P_D	63 0.30	Watts W/ $^{\circ}C$
Storage Temperature Range	T_{STG}	-40 to +150	$^{\circ}C$
Thermal Resistance ($T_{flange} = 70^{\circ}C$)	$R_{\theta JC}$	2.8	$^{\circ}C/W$

Electrical Characteristics (100% Tested)

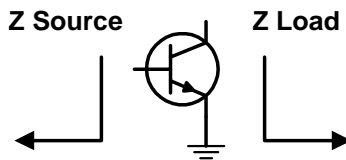
Characteristic	Conditions	Symbol	Min	Typ	Max	Units
Breakdown Voltage C to E	$I_b = 0\text{ A}$, $I_C = 40\text{ mA}$, $R_{BE} = 22\ \Omega$	$V_{(BR)CER}$	50	65	—	Volts
Breakdown Voltage C to E	$V_{BE} = 0\text{ V}$, $I_C = 40\text{ mA}$	$V_{(BR)CES}$	55	70	—	Volts
Breakdown Voltage E to B	$I_C = 0\text{ A}$, $I_E = 5\text{ mA}$	$V_{(BR)EBO}$	3.5	5	—	Volts
DC Current Gain	$V_{CE} = 5\text{ V}$, $I_C = 0.4\text{ A}$	h_{FE}	20	50	120	—

RF Specifications (100% Tested)

Characteristic	Symbol	Min	Typ	Max	Units
Gain ($V_{CC} = 24\text{ Vdc}$, $P_{Out} = 15\text{ W}$, $I_{CQ} = 200\text{ mA}$, $f = 420\text{ MHz}$)	G_{pe}	11.0	13.0	—	dB
Collector Efficiency ($V_{CC} = 24\text{ Vdc}$, $P_{Out} = 15\text{ W}$, $I_{CQ} = 200\text{ mA}$, $f = 420\text{ MHz}$)	η_C	50	—	—	%
Intermodulation Distortion ($V_{CC} = 24\text{ Vdc}$, $P_{Out} = 15\text{ W(PEP)}$, $I_{CQ} = 200\text{ mA}$, $f_1 = 469\text{ MHz}$, $f_2 = 470\text{ MHz}$)	IMD	—	-28	—	dBc
Load Mismatch Tolerance ($V_{CC} = 24\text{ Vdc}$, $P_{Out} = 15\text{ W}$, $I_{CQ} = 200\text{ mA}$, $f = 420\text{ MHz}$ —all phase angles at frequency of test)	Ψ	—	—	10:1	—

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

($V_{CC} = 24\text{ Vdc}$, $P_{out} = 15\text{ W}$, $I_{CQ} = 200\text{ mA}$)



Frequency	Z Source		Z Load	
	R	jX	R	jX
420	4.0	-2.2	7.2	-1.0
450	5.4	-3.9	6.8	-3.0
470	4.9	-5.7	6.6	-4.3

