

PTB 20191

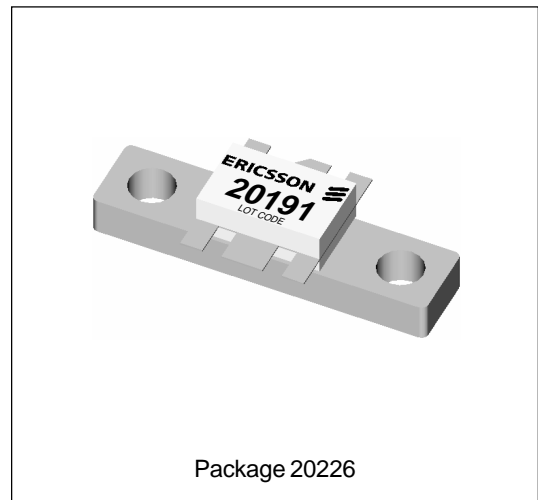
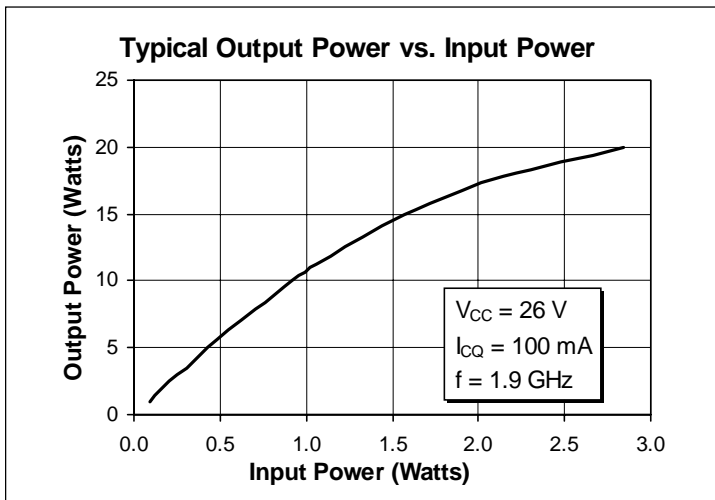
12 Watts, 1.78–1.92 GHz

RF Power Transistor

Description

The 20191 is a class AB, NPN, common emitter RF power transistor intended for 26 Vdc operation from 1.78 to 1.92 GHz. It is rated at 12 watts (CW) minimum output power, or 15 watts (PEP) output power. Ion implantation, nitride surface passivation and gold metallization are used to ensure excellent device reliability. 100% lot traceability is standard.

- Class AB Characteristics
- 26 Volt, 1.9 GHz Characterization
- Output Power = 12 W(CW), 15 W(PEP)
- Internal Input Matching
- Gold Metallization
- Silicon Nitride Passivated



Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	20	Vdc
Collector-Base Voltage (emitter open)	V_{CBO}	50	Vdc
Emitter-Base Voltage (collector open)	V_{EBO}	4.0	Vdc
Collector Current (continuous)	I_C	2.8	Adc
Total Device Dissipation at $T_{flange} = 25^{\circ}C$ Above $25^{\circ}C$ derate by	P_D	60 0.34	Watts W/ $^{\circ}C$
Storage Temperature Range	T_{STG}	-40 to +150	$^{\circ}C$
Thermal Resistance ($T_{flange} = 70^{\circ}C$)	$R_{\theta JC}$	2.90	$^{\circ}C/W$

Electrical Characteristics (100% Tested)

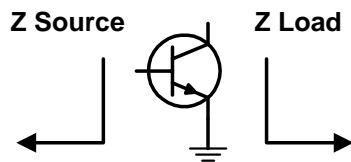
Characteristic	Conditions	Symbol	Min	Typ	Max	Units
Breakdown Voltage C to E	$I_B = 0\text{ A}, I_C = 5\text{ mA}, R_{BE} = 27\ \Omega$	$V_{(BR)CER}$	50	—	—	Volts
Breakdown Voltage C to B	$I_C = 5\text{ mA}$	$V_{(BR)CBO}$	50	—	—	Volts
Breakdown Voltage E to B	$I_C = 0\text{ A}, I_E = 5\text{ mA}$	$V_{(BR)EBO}$	4	—	—	Volts
DC Current Gain	$V_{CE} = 5\text{ V}, I_C = 200\text{ mA}$	h_{FE}	20	—	100	—
Output Capacitance	$V_{CB} = 26\text{ V}, I_E = 0\text{ A}, f = 1\text{ MHz}$	C_{ob}	—	7	—	pF

RF Specifications (100% Tested)

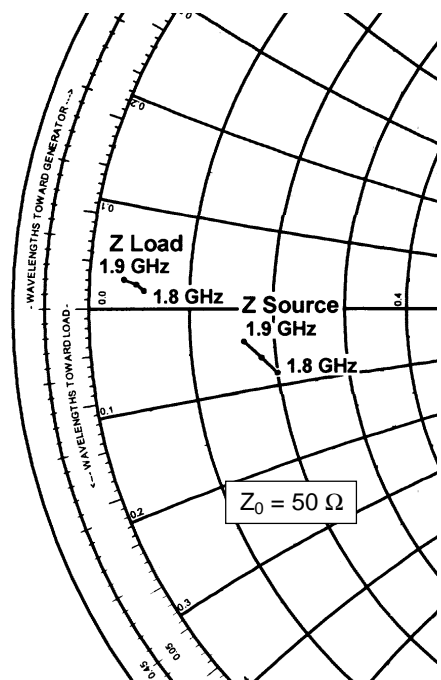
Characteristic	Symbol	Min	Typ	Max	Units
Gain ($V_{CC} = 26\text{ Vdc}, P_{out} = 12\text{ W}, I_{CQ} = 100\text{ mA}, f = 1.9\text{ GHz}$)	G_{pe}	8.0	10.0	—	dB
Output Power at 1 dB Compression ($V_{CC} = 26\text{ Vdc}, I_{CQ} = 100\text{ mA}, f = 1.9\text{ GHz}$)	P-1dB	10	12	—	Watts
Collector Efficiency ($V_{CC} = 26\text{ Vdc}, P_{out} = 12\text{ W}, I_{CQ} = 100\text{ mA}, f = 1.9\text{ GHz}$)	η_C	35	40	—	%
Intermodulation Distortion ($V_{CC} = 26\text{ Vdc}, P_{out} = 15\text{ W(PEP)}, I_{CQ} = 100\text{ mA}, f_1 = 1.899\text{ GHz}, f_2 = 1.901\text{ GHz}$)	IMD	-30	-32	—	dBc
Load Mismatch Tolerance ($V_{CC} = 26\text{ Vdc}, P_{out} = 12\text{ W}, I_{CQ} = 100\text{ mA}, f = 1.9\text{ GHz}$ —all phase angles at frequency of test)	Ψ	—	—	5:1	—

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

($V_{CC} = 26\text{ Vdc}, P_{out} = 12\text{ W}, I_{CQ} = 100\text{ mA}$)



Frequency GHz	Z Source		Z Load	
	R	jX	R	jX
1.80	10.0	-4.2	2.6	0.9
1.85	9.1	-3.1	2.2	1.2
1.90	8.1	-2.0	1.6	1.4



Typical Performance

