

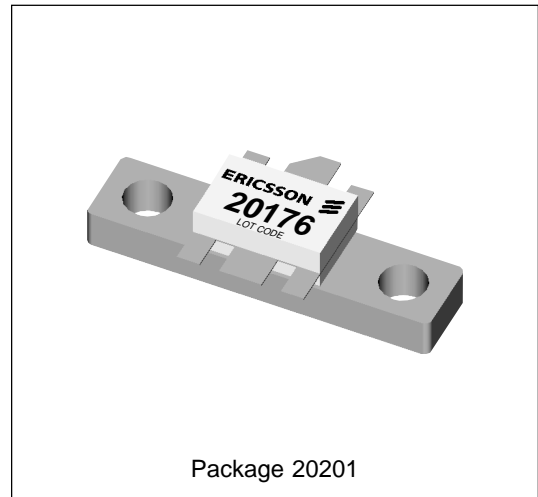
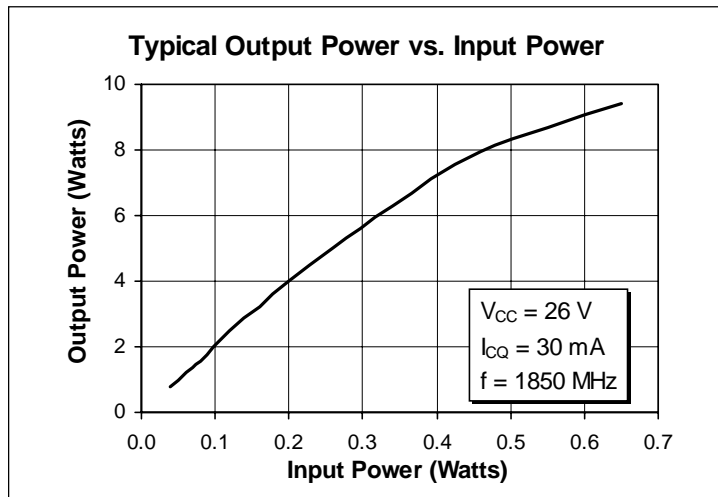
PTB 20176

5 Watts, 1.78–1.92 GHz RF Power Transistor

Description

The 20176 is a common emitter RF power transistor intended for 26 Vdc operation from 1.78 to 1.92 GHz. Rated at 5 watts minimum output power, it is specifically designed for class A or AB linear power amplifier applications. Ion implantation, nitride surface passivation and gold metallization are used to ensure excellent device reliability. 100% lot traceability is standard.

- 26 Volt, 1.85 GHz Characteristics
- Class A/AB
- Internally Matched
- Gold Metallization
- Silicon Nitride Passivated



Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	20	Vdc
Collector-Emitter Voltage	V_{CES}	45	Vdc
Emitter-Base Voltage (collector open)	V_{EBO}	4.0	Vdc
Collector Current (continuous)	I_C	1	Adc
Total Device Dissipation at $T_{flange} = 25^\circ\text{C}$ Above 25°C derate by	P_D	21 0.12	Watts W/ $^\circ\text{C}$
Storage Temperature	T_{stg}	150	$^\circ\text{C}$
Thermal Resistance ($T_{flange} = 70^\circ\text{C}$)	$R_{\theta JC}$	8.5	$^\circ\text{C}/\text{W}$

Electrical Characteristics (100% Tested)

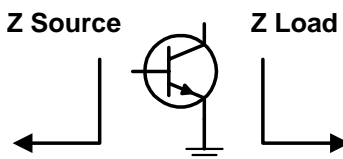
Characteristic	Conditions	Symbol	Min	Typ	Max	Units
Breakdown Voltage C to E	$I_B = 0\text{ A}, I_C = 5\text{ mA}, R_{BE} = 22\ \Omega$	$V_{(BR)CER}$	45	—	—	Volts
Breakdown Voltage C to B	$I_B = 0\text{ A}, I_C = 5\text{ mA}$	$V_{(BR)CBO}$	45	—	—	Volts
Breakdown Voltage E to B	$I_C = 0\text{ A}, I_E = 5\text{ mA}$	$V_{(BR)EBO}$	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 ($V_{CC} = 26\text{ Vdc}, P_{out} = 5\text{ W}, I_{CQ} = 30\text{ mA}, f = 1.85\text{ GHz}$)	G_{pe}	11	12	—	dB
Power Output at 1 dB Compression ($V_{CC} = 26\text{ Vdc}, I_{CQ} = 30\text{ mA}, f = 1.85\text{ GHz}$)	P-1dB	6.3	7.9	—	Watts
Collector Efficiency ($V_{CC} = 26\text{ Vdc}, P_{out} = 5\text{ W}, I_{CQ} = 30\text{ mA}, f = 1.85\text{ GHz}$)	η_C	38	42	—	%
Intermodulation Distortion ($V_{CC} = 26\text{ Vdc}, P_{out} = 5\text{ W(PEP)}, I_{CQ} = 30\text{ mA}, f_1 = 1.8800\text{ GHz}, f_2 = 1.8801\text{ GHz}$)	IMD	-30	-35	—	dBc
Load Mismatch Tolerance ($V_{CC} = 26\text{ Vdc}, P_{out} = 5\text{ W}, I_{CQ} = 30\text{ mA}, f = 1.85\text{ GHz}$ —all phase angles at frequency of test)	Ψ	—	—	10:1	—

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

($V_{CC} = 26\text{ Vdc}, P_{out} = 5\text{ W}, I_{CQ} = 30\text{ mA}$)



Frequency	Z Source		Z Load	
	R	jX	R	jX
1.800	7.8	-7.0	6.7	1.5
1.850	7.6	-6.4	6.7	2.3
1.900	7.5	-5.8	6.7	3.1

Typical Performance

