



PTB 20046

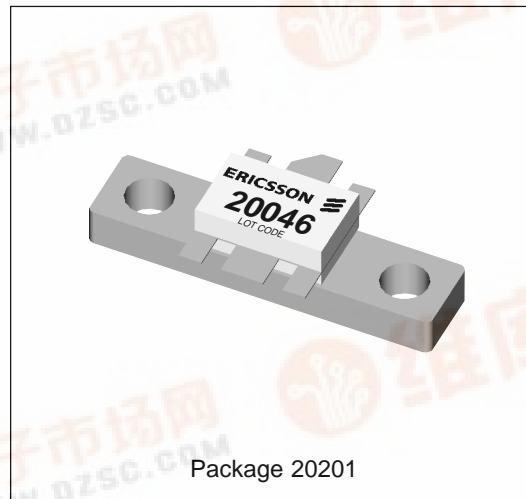
1 Watt, 1465–1513 MHz

Cellular Radio RF Power Transistor

Description

The 20046 is a class AB, NPN, common emitter RF power transistor intended for 26 Vdc operation from 1465 to 1501 MHz. Rated at 1 watt 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.

- 1 Watt, 1465–1513 MHz
- Class AB Characteristics
- 18% Collector Efficiency at 1 Watt
- Gold Metallization
- Silicon Nitride Passivated



Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CER}	50	Vdc
Collector-Base Voltage	V_{CBO}	50	Vdc
Emitter-Base Voltage (collector open)	V_{EBO}	4.0	Vdc
Collector Current (continuous)	I_C	0.7	Adc
Total Device Dissipation at $T_{flange} = 25^{\circ}C$ Above $25^{\circ}C$ derate by	P_D	10 0.057	Watts W/ $^{\circ}C$
Storage Temperature	T_{stg}	150	$^{\circ}C$
Thermal Resistance ($T_{flange} = 70^{\circ}C$)	$R_{\theta JC}$	17.5	$^{\circ}C/W$

Electrical Characteristics (100% Tested)

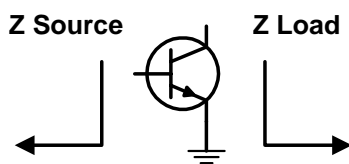
Characteristic	Conditions	Symbol	Min	Typ	Max	Units
Breakdown Voltage C to E	$I_B = 0 \text{ A}$, $I_C = 10 \text{ mA}$, $R_{BE} = 22 \ \Omega$	$V_{(BR)CER}$	50	—	—	Volts
Breakdown Voltage C to E	$V_{BE} = 0 \text{ V}$, $I_C = 10 \text{ mA}$	$V_{(BR)CES}$	50	—	—	Volts
Breakdown Voltage E to B	$I_C = 0 \text{ A}$, $I_E = 5 \text{ mA}$	$V_{(BR)EBO}$	4	5	—	Volts
DC Current Gain	$V_{CE} = 5 \text{ V}$, $I_C = 1 \text{ A}$	h_{FE}	20	50	120	—

RF Specifications (100% Tested)

Characteristic	Symbol	Min	Typ	Max	Units
Gain ($V_{CC} = 26 \text{ Vdc}$, $P_{Out} = 1 \text{ W}$, $I_{CQ} = 40 \text{ mA}$, $f = 1501 \text{ MHz}$)	G_{pe}	10.5	—	—	dB
Power Output at 1 dB Compression ($V_{CC} = 26 \text{ Vdc}$, $I_{CQ} = 40 \text{ mA}$, $f = 1501 \text{ MHz}$)	P-1dB	2.5	—	—	Watts
Collector Efficiency ($V_{CC} = 26 \text{ Vdc}$, $P_{Out} = 1 \text{ W}$, $I_{CQ} = 40 \text{ mA}$, $f = 1501 \text{ MHz}$)	η_C	18	—	—	%
Intermodulation Distortion ($V_{CC} = 26 \text{ Vdc}$, $P_{Out} = 1 \text{ W(PEP)}$, $I_{CQ} = 40 \text{ mA}$, $f_1 = 1500 \text{ MHz}$, $f_2 = 1501 \text{ MHz}$)	IMD	—	-23	—	dBc
Load Mismatch Tolerance ($V_{CC} = 26 \text{ Vdc}$, $P_{Out} = 1 \text{ W}$, $I_{CQ} = 40 \text{ mA}$, $f = 1501 \text{ MHz}$ —all phase angles at frequency of test)	Ψ	—	—	5:1	—

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

($V_{CC} = 26 \text{ Vdc}$, $P_{Out} = 1 \text{ W}$, $I_{CQ} = 40 \text{ mA}$)



Frequency MHz	Z Source		Z Load	
	R	jX	R	jX
1477	10.42	-1.49	8.69	15.67
1489	10.20	-1.26	8.84	16.01
1501	9.87	-1.05	9.08	16.44