

PTB 20166

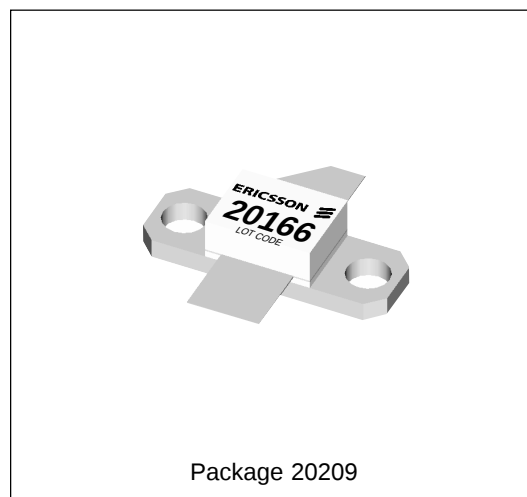
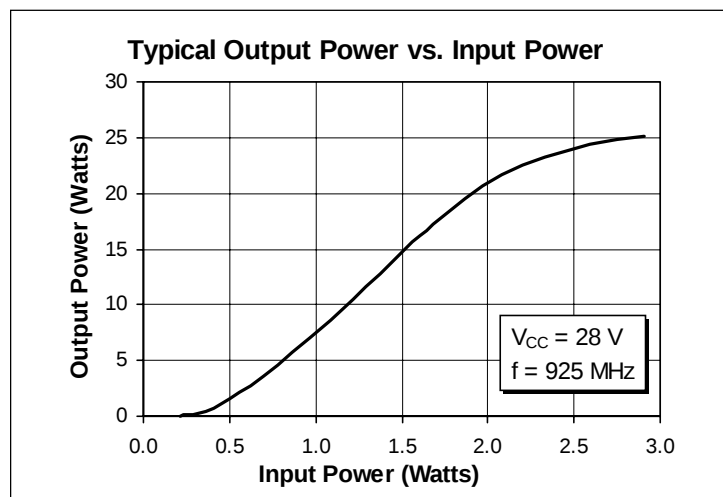
23 Watts, 675–925 MHz

Common Base RF Power Transistor

Description

The 20166 is an NPN, common base RF power transistor intended for 24–30 Vdc class C operation from 675 to 925 MHz. Rated at 23 watts minimum output power, it may be used for both CW and pulsed applications. Ion implantation, nitride surface passivation and gold metallization are used to ensure excellent device reliability. 100% lot traceability is standard.

- Specified at 28 Volt, 925 MHz
- Class C Characteristics
- 55% Min Collector Efficiency at 23 Watts
- Gold Metallization
- Silicon Nitride Passivated



Maximum Ratings

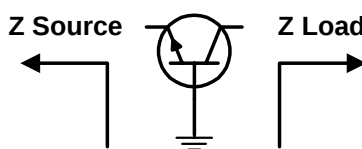
Parameter	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CER}	50	Vdc
Collector-Base Voltage	V_{CBO}	50	Vdc
Emitter-Base Voltage (collector open)	V_{EBO}	4	Vdc
Collector Current (continuous)	I_C	4	Adc
Total Device Dissipation at $T_{flange} = 25^{\circ}C$ Above $25^{\circ}C$ derate by	P_D	48 0.27	Watts W/ $^{\circ}C$
Storage Temperature Range	T_{STG}	-40 to +150	$^{\circ}C$
Thermal Resistance ($T_{flange} = 70^{\circ}C$)	$R_{\theta JC}$	3.6	$^{\circ}C/W$

Electrical Characteristics (100% Tested)

Characteristic	Conditions	Symbol	Min	Typ	Max	Units
Breakdown Voltage C to E	$I_C = 50 \text{ mA}$, $R_{BE} = 27 \Omega$	$V_{(BR)CER}$	50	—	—	Volts
Breakdown Voltage C to E	$V_{BE} = 0 \text{ V}$, $I_C = 50 \text{ mA}$	$V_{(BR)CES}$	50	—	—	Volts
Breakdown Voltage E to B	$I_C = 0 \text{ A}$, $I_E = 5 \text{ mA}$	$V_{(BR)EBO}$	4	—	—	Volts
DC Current Gain	$V_{CE} = 5 \text{ V}$, $I_C = 500 \text{ mA}$	h_{FE}	30	50	100	—

RF Specifications (100% Tested)

Characteristic	Symbol	Min	Typ	Max	Units
Gain ($V_{CC} = 28 \text{ Vdc}$, $P_{Out} = 23 \text{ W}$, $f = 925 \text{ MHz}$)	G_{pe}	8	9	—	dB
Collector Efficiency ($V_{CC} = 28 \text{ Vdc}$, $P_{Out} = 23 \text{ W}$, $f = 925 \text{ MHz}$)	η_C	55	65	—	%
Load Mismatch Tolerance ($V_{CC} = 28 \text{ Vdc}$, $P_{Out} = 23 \text{ W}$, $f = 925 \text{ MHz}$ —all phase angles at frequency of test)	Ψ	—	—	5:1	—

Impedance Data (data shown for fixed-tuned broadband circuit)($V_{CC} = 28 \text{ Vdc}$, $P_{Out} = 23 \text{ W}$)

Frequency MHz	Z Source		Z Load	
	R	jX	R	jX
675	7.4	-1.8	6.6	9.0
700	7.2	-1.4	7.2	8.6
725	7.0	-1.1	7.5	8.1
750	6.9	-0.79	7.6	7.6
775	6.6	-0.52	7.6	7.1
800	6.4	-0.26	7.5	6.7
825	6.1	0.01	7.2	6.4
850	5.7	0.29	6.9	6.2
875	5.3	0.62	6.6	6.1
900	4.9	1.0	6.2	6.0
925	4.5	1.4	5.9	6.1

Typical Performance

