

# PTB 20189

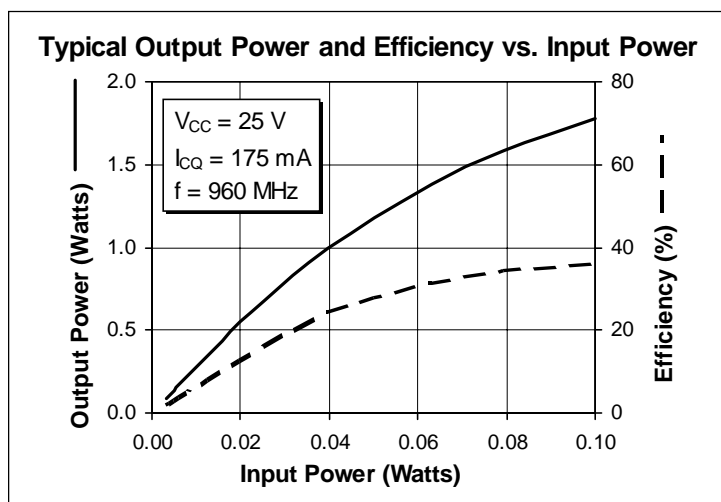
## 1 Watt, 900–960 MHz

### Cellular Radio RF Power Transistor

#### Description

The 20189 is an NPN, common emitter RF power transistor intended for 25 Vdc class A or AB operation from 900 to 960 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.

- 25 Volt, 900–960 MHz Characteristics
  - Output Power = 1 Watt
  - Gain = 12 dB Min at 1 Watt
- Class A/AB Characteristics
- Gold Metallization
- Silicon Nitride Passivated
- Surface Mountable
- Available in Tape and Reel



#### Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CER}$	40	Vdc
Collector-Base Voltage	$V_{CBO}$	50	Vdc
Emitter-Base Voltage (collector open)	$V_{EBO}$	4.0	Vdc
Collector Current (continuous)	$I_C$	0.5	Adc
Total Device Dissipation at $T_{flange} = 25^{\circ}C$ Above $25^{\circ}C$ derate by	$P_D$	11 0.063	Watts $W/^{\circ}C$
Storage Temperature Range	$T_{STG}$	-40 to +150	$^{\circ}C$
Thermal Resistance ( $T_{flange} = 70^{\circ}C$ )	$R_{\theta JC}$	16.0	$^{\circ}C/W$

**Electrical Characteristics** (100% Tested)

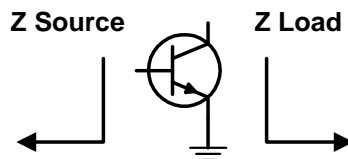
Characteristic	Conditions	Symbol	Min	Typ	Max	Units
Breakdown Voltage C to E	$I_B = 0\text{ A}, I_C = 5\text{ mA}$	$V_{(BR)CEO}$	28	32	—	Volts
Breakdown Voltage C to E	$V_{BE} = 0\text{ V}, I_C = 5\text{ mA}$	$V_{(BR)CES}$	55	70	—	Volts
Breakdown Voltage E to B	$I_C = 0\text{ A}, I_E = 5\text{ mA}$	$V_{(BR)EBO}$	3.5	5	—	Volts
DC Current Gain	$V_{CE} = 5\text{ V}, I_C = 1.5\text{ A}$	$h_{FE}$	20	50	120	—

**RF Specifications** (100% Tested)

Characteristic	Symbol	Min	Typ	Max	Units
<b>Gain</b> ( $V_{CC} = 25\text{ Vdc}, P_{out} = 1\text{ W}, I_{CQ} = 175\text{ mA}, f = 960\text{ MHz}$ )	$G_{pe}$	12	14	—	dB
<b>Collector Efficiency</b> ( $V_{CC} = 25\text{ Vdc}, P_{out} = 1\text{ W}, I_{CQ} = 175\text{ mA}, f = 960\text{ MHz}$ )	$\eta_C$	—	25	—	%
<b>Load Mismatch Tolerance</b> ( $V_{CC} = 25\text{ Vdc}, P_{out} = 1\text{ W}, I_{CQ} = 175\text{ mA}, f = 960\text{ MHz}$ —all phase angles at frequency of test)	$\Psi$	—	—	10:1	—

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

( $V_{CC} = 25\text{ Vdc}, P_{out} = 1\text{ W}, I_{CQ} = 175\text{ mA}$ )



Frequency	Z Source		Z Load	
	R	jX	R	jX
900	3.0	-0.4	9.0	6.0
930	3.0	0.0	9.0	7.5
960	2.9	0.5	9.2	8.9

**Typical Performance**

