

# PTB 20187

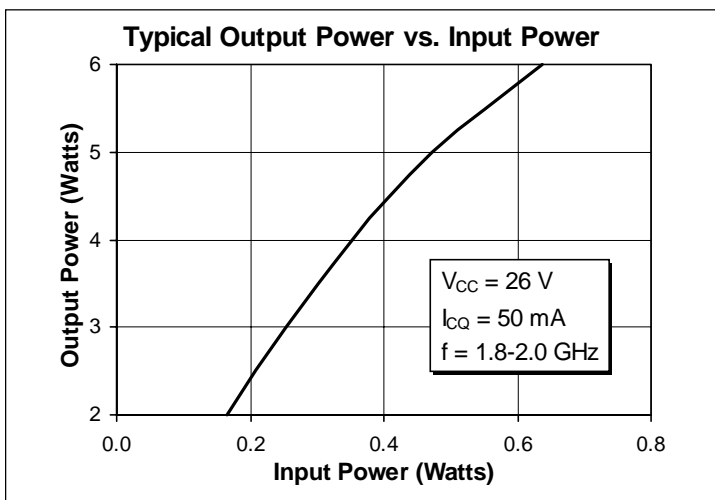
## 4 Watts, 1.8–2.0 GHz

### Cellular Radio RF Power Transistor

#### Description

The 20187 is a class AB, NPN, common emitter RF power transistor intended for 26 Vdc operation from 1.80 to 2.00 GHz. Rated at 4 watts 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.

- 4 Watts, 1.80–2.00 GHz
- Class AB Characteristics
- 30% Collector Efficiency at 4 Watts
- Gold Metallization
- Silicon Nitride Passivated
- Surface Mountable
- Available in Tape and Reel



#### Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CER}$	50	Vdc
Collector-Emitter Voltage	$V_{CES}$	50	Vdc
Emitter-Base Voltage (collector open)	$V_{EBO}$	4.0	Vdc
Collector Current (continuous)	$I_C$	1.0	Adc
Total Device Dissipation at $T_{flange} = 25^{\circ}C$ Above $25^{\circ}C$ derate by	$P_D$	19.7 0.112	Watts $W/^{\circ}C$
Storage Temperature Range	$T_{STG}$	-40 to +150	$^{\circ}C$
Thermal Resistance ( $T_{flange} = 70^{\circ}C$ )	$R_{\theta JC}$	8.9	$^{\circ}C/W$

## Electrical Characteristics (100% Tested)

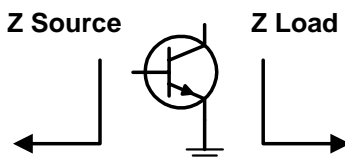
Characteristic	Conditions	Symbol	Min	Typ	Max	Units
Breakdown Voltage C to E	$I_B = 0\text{ A}, I_C = 10\text{ mA}$	$V_{(BR)CEO}$	20	—	—	Volts
Breakdown Voltage C to E	$V_{BE} = 0\text{ V}, I_C = 10\text{ mA}$	$V_{(BR)CES}$	50	—	—	Volts
Breakdown Voltage E to B	$I_C = 0\text{ A}, I_E = 5\text{ mA}$	$V_{(BR)EBO}$	4	5	—	Volts
DC Current Gain	$V_{CE} = 5\text{ V}, I_C = 50\text{ mA}$	$h_{FE}$	20	40	—	—

## RF Specifications (100% Tested)

Characteristic	Symbol	Min	Typ	Max	Units
<b>Gain</b> ( $V_{CC} = 26\text{ Vdc}, P_{out} = 4\text{ W}, I_{CQ} = 50\text{ mA}, f = 2.00\text{ GHz}$ )	$G_{pe}$	8	10	—	dB
<b>Power Output at 1 dB Compression</b> ( $V_{CC} = 26\text{ Vdc}, I_{CQ} = 50\text{ mA}, f = 2.00\text{ GHz}$ )	P-1dB	4	6	—	Watts
<b>Collector Efficiency</b> ( $V_{CC} = 26\text{ Vdc}, P_{out} = 4\text{ W}, I_{CQ} = 50\text{ mA}, f = 2.00\text{ GHz}$ )	$\eta_C$	30	—	—	%
<b>Load Mismatch Tolerance</b> ( $V_{CC} = 26\text{ Vdc}, P_{out} = 4\text{ W}, I_{CQ} = 50\text{ mA}, f = 2.00\text{ GHz}$ —all phase angles at frequency of test)	$\Psi$	—	—	5:1	—

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

( $V_{CC} = 26\text{ Vdc}, P_{out} = 4\text{ W}, I_{CQ} = 50\text{ mA}$ )



Frequency	Z Source		Z Load	
	R	jX	R	jX
1.80	14.49	-7.50	11.49	-10.15
1.90	12.30	-6.16	7.23	-6.29
2.00	10.00	-3.55	4.41	-1.34