

# PTB 20147

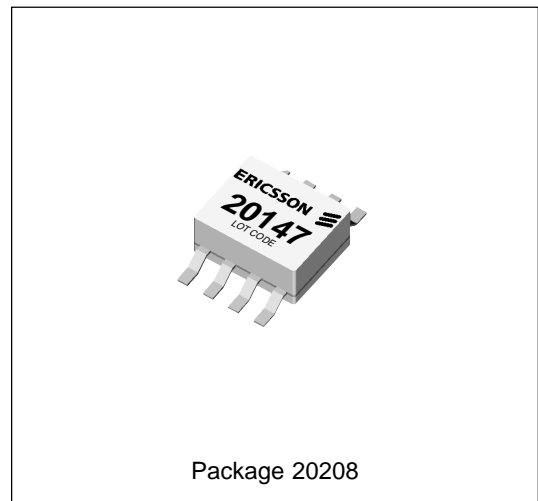
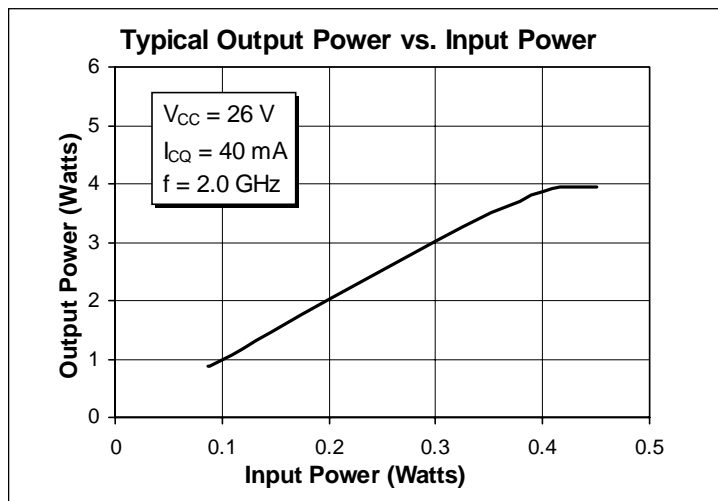
## 2.5 Watts, 1.8–2.0 GHz

### Cellular Radio RF Power Transistor

#### Description

The 20147 is a class AB, NPN, common emitter RF power transistor intended for 26 Vdc operation from 1.8 to 2.0 GHz. Rated at 2.5 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.

- 2.5 Watts, 1.8–2.0 GHz
- Class AB Characteristics
- 35% Collector Efficiency at 4 Watts
- Tested to solderability standards:
  - IEC-68-2-54
  - ANSI/J Std-002-A
- 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-Base Voltage	$V_{CBO}$	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°C derate by	$P_D$	10 0.057	Watts W/°C
Storage Temperature Range	$T_{STG}$	-40 to +150	°C
Thermal Resistance ( $T_{flange} = 70^{\circ}C$ )	$R_{\theta JC}$	17.5	°C/W

## Electrical Characteristics (100% Tested)

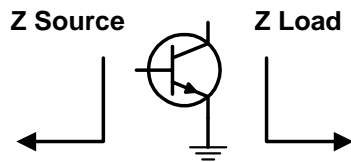
Characteristic	Conditions	Symbol	Min	Typ	Max	Units
Breakdown Voltage C to E	$V_{BE} = 0\text{ V}, I_C = 10\text{ mA}$	$V_{(BR)CES}$	50	—	—	Volts
Breakdown Voltage C to E	$I_B = 0\text{ A}, I_C = 10\text{ mA}, R_{BE} = 22\ \Omega$	$V_{(BR)CER}$	50	—	—	Volts
Breakdown Voltage E to B	$I_C = 0\text{ A}, I_E = 5\text{ mA}$	$V_{(BR)EBO}$	4	5	—	Volts
DC Current Gain	$V_{CE} = 5\text{ V}, I_C = 250\text{ mA}$	$h_{FE}$	20	40	—	—

## RF Specifications (100% Tested)

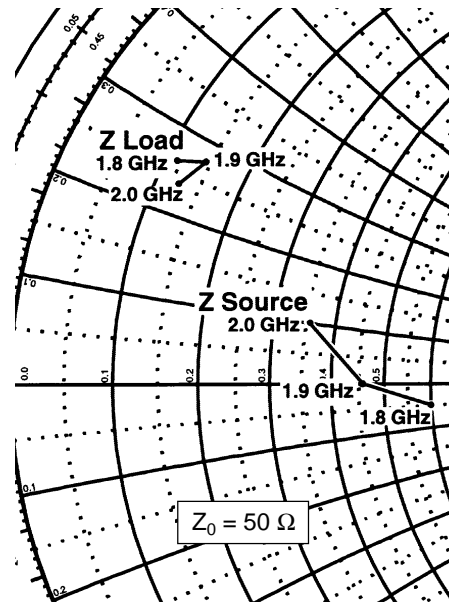
Characteristic	Symbol	Min	Typ	Max	Units
<b>Gain</b> ( $V_{CC} = 26\text{ Vdc}, P_{out} = 2.5\text{ W}, I_{CQ} = 40\text{ mA}, f = 2.0\text{ GHz}$ )	$G_{pe}$	8	10	—	dB
<b>Power Output at 1 dB Compression</b> ( $V_{CC} = 26\text{ Vdc}, I_{CQ} = 40\text{ mA}, f = 2.0\text{ GHz}$ )	P-1dB	2.5	4	—	Watts
<b>Collector Efficiency</b> ( $V_{CC} = 26\text{ Vdc}, P_{out} = 1.17\text{ W}, I_{CQ} = 40\text{ mA}, f = 2.0\text{ GHz}$ )	$\eta_C$	20	—	—	%
<b>Load Mismatch Tolerance</b> ( $V_{CC} = 26\text{ Vdc}, P_{out} = 2.5\text{ W}, I_{CQ} = 40\text{ mA}, f = 2.0\text{ GHz}$ —all phase angles at frequency of test)	$\Psi$	—	—	5:1	—

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

( $V_{CC} = 26\text{ Vdc}, P_{out} = 2.5\text{ W}, I_{CQ} = 40\text{ mA}$ )



Frequency GHz	Z Source		Z Load	
	R	jX	R	jX
1.8	30.0	-2.45	5.65	13.1
1.9	22.9	0.00	7.23	13.8
2.0	17.7	5.14	6.30	11.9



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 EUS/KR 1301-PTB 20147 Uen Rev. D 09-28-98