

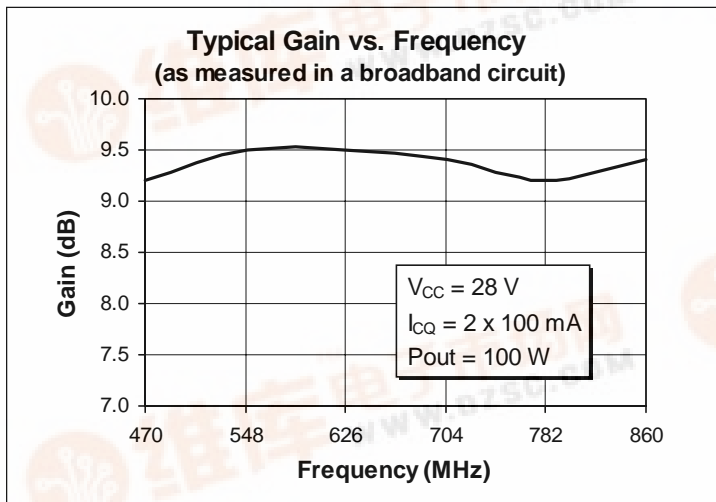


# PTB 20081 150 Watts, 470–860 MHz UHF TV Power Transistor

## Description

The 20081 is a class AB, NPN, common emitter RF power transistor intended for 28 to 32 Vdc operation across the 470 to 860 MHz UHF TV frequency band. It is rated at 100 watts minimum output power. Ion implantation, nitride surface passivation and gold metallization are used to ensure excellent device reliability. 100% lot traceability is standard.

- 150 Watts (P-Sync), 470–860 MHz
- Class AB Characteristics
- 55% Collector Efficiency at 100 Watts (CW)
- Guaranteed Performance at 28 Volts, 860 MHz
  - Output Power = 125 Watts (Peak Sync)
  - Output Power = 100 Watts (CW)
  - Minimum Gain = 8.5 dB
- Guaranteed Performance at 32 Volts, 860 MHz
  - Output Power = 150 Watts (Peak Sync)



## Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CER}$	40	Vdc
Collector-Base Voltage	$V_{CBO}$	65	Vdc
Emitter-Base Voltage (collector open)	$V_{EBO}$	4.0	Vdc
Collector Current (continuous)	$I_C$	12	Adc
Total Device Dissipation at $T_{flange} = 25^\circ\text{C}$ Above $25^\circ\text{C}$ derate by	$P_D$	233 1.33	Watts W/ $^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-40 to +150	$^\circ\text{C}$
Thermal Resistance ( $T_{flange} = 70^\circ\text{C}$ )	$R_{\theta JC}$	0.75	$^\circ\text{C/W}$



## Electrical Characteristics (100% Tested)

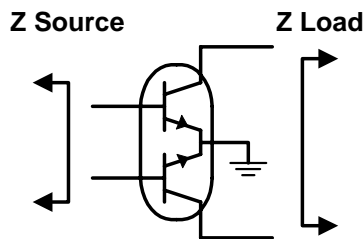
Characteristic	Conditions	Symbol	Min	Typ	Max	Units
Breakdown Voltage C to E	$I_B = 0\text{ A}, I_C = 100\text{ mA}$	$V_{(BR)CEO}$	25	30	—	Volts
Breakdown Voltage C to E	$V_{BE} = 0\text{ V}, I_C = 100\text{ mA}$	$V_{(BR)CES}$	55	70	—	Volts
Breakdown Voltage E to B	$I_C = 0\text{ A}, I_E = 5\text{ mA}$	$V_{(BR)EBO}$	3.5	5	—	Volts
DC Current Gain	$V_{CE} = 5\text{ V}, I_C = 1\text{ A}$	$h_{FE}$	20	50	100	—
Output Capacitance (each side)	$V_{CB} = 28\text{ V}, I_E = 0\text{ A}, f = 1\text{ MHz}$	$C_{ob}$	—	45	—	pF

## RF Specifications (100% Tested)

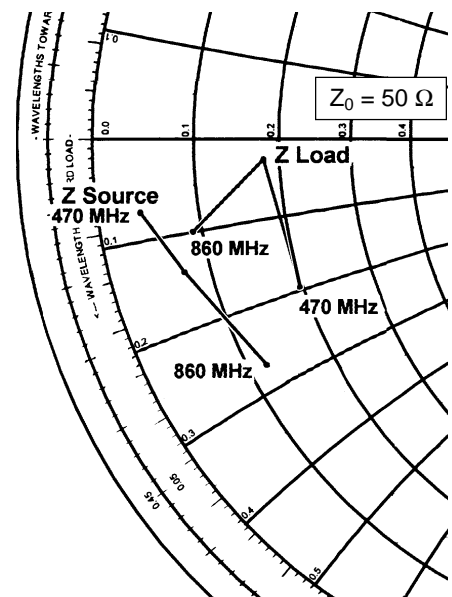
Characteristic	Symbol	Min	Typ	Max	Units
<b>Power Output</b> ( $V_{CC} = 28\text{ Vdc}, I_{CQ} = 2 \times 100\text{ mA}, f = 860\text{ MHz}$ )	$P_{out}$	100	110	—	Watts
<b>Power Output (P-Sync.)</b> ( $V_{CC} = 28\text{ Vdc}, I_{CQ} = 2 \times 100\text{ mA}, f = 860\text{ MHz}$ )	$P_{out}$	125	135	—	Watts
<b>Power Out (P-Sync.)</b> ( $V_{CC} = 32\text{ Vdc}, I_{CQ} = 2 \times 100\text{ mA}, f = 860\text{ MHz}$ )	$P_{out}$	150	160	—	Watts
<b>Gain</b> ( $V_{CC} = 28\text{ Vdc}, P_{out} = 100\text{ W}, I_{CQ} = 2 \times 100\text{ mA}, f = 860\text{ MHz}$ )	$G_{pe}$	8.5	9.5	—	dB
<b>Collector Efficiency</b> ( $V_{CC} = 28\text{ Vdc}, P_{out} = 100\text{ W}, I_{CQ} = 2 \times 100\text{ mA}, f = 860\text{ MHz}$ )	$\eta_C$	55	58	—	%
<b>Load Mismatch Tolerance</b> ( $V_{CC} = 28\text{ Vdc}, P_{out} = 100\text{ W}_{(PEP)}, f = 860\text{ MHz}$ — all phase angles at frequency of test)	$\Psi$	—	—	10:1	—

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

( $V_{CC} = 28\text{ Vdc}, P_{out} = 100\text{ W}, I_{CQ} = 2 \times 100\text{ mA}$ )



Frequency MHz	Z Source		Z Load	
	R	jX	R	jX
470	2.0	-3.6	9.8	-9.8
650	3.6	-7.0	9.0	-1.3
860	6.0	-13.5	4.5	-5.0



**Typical Performance**

