

# PTB 20101

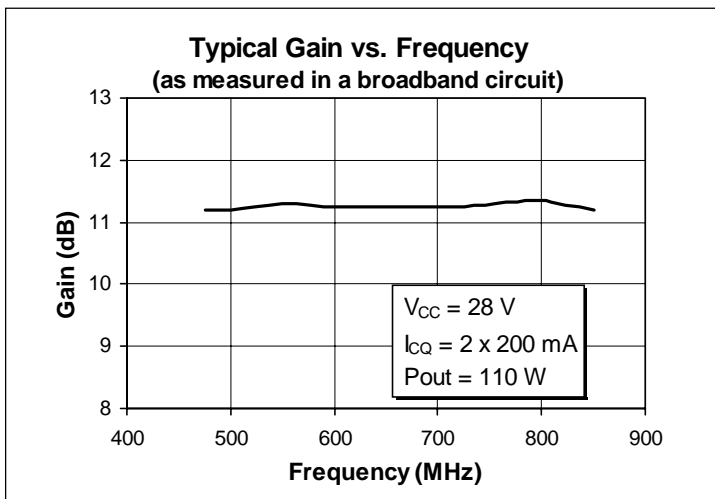
## 175 Watts P-Sync, 470–860 MHz

### UHF TV Power Transistor

#### Description

The 20101 is a class AB, NPN, common emitter UHF TV power transistor intended for 28 Vdc operation from 470 to 860 MHz. It is rated at 175 watts P-sync minimum output power. Ion implantation, nitride surface passivation and gold metallization are used to ensure excellent device reliability. 100% lot traceability is standard.

- 28 Volt, 860 MHz Characteristics
  - Output Power = 175 Watts P-Sync
  - Output Power = 110 (CW)
  - Gain = 10.0 dB Min
- 55% Collector Efficiency at 110 Watts
- Class AB Characteristics
- Gold Metallization
- Silicon Nitride Passivated



#### 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)	$I_C$	20	Adc
Total Device Dissipation at $T_{flange} = 25^\circ\text{C}$ Above $25^\circ\text{C}$ derate by	$P_D$	330 1.89	Watts W/ $^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-40 to +150	$^\circ\text{C}$
Thermal Resistance ( $T_{flange} = 70^\circ\text{C}$ )	$R_{\theta JC}$	0.53	$^\circ\text{C}/\text{W}$

**Electrical Characteristics** (100% Tested)

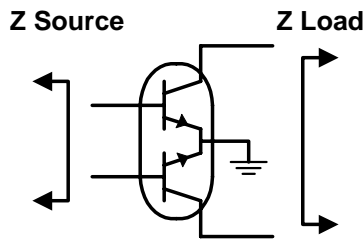
Characteristic	Conditions	Symbol	Min	Typ	Max	Units
Breakdown Voltage C to E	$I_B = 0\text{ A}, I_C = 100\text{ mA}$	$V_{(BR)CEO}$	25	30	—	Volts
Breakdown Voltage C to E	$V_{BE} = 0\text{ V}, I_C = 100\text{ mA}$	$V_{(BR)CES}$	55	70	—	Volts
Breakdown Voltage E to B	$I_C = 0\text{ A}, I_E = 5\text{ mA}$	$V_{(BR)EBO}$	3.5	5	—	Volts
DC Current Gain	$V_{CE} = 5\text{ V}, I_C = 1\text{ A}$	$h_{FE}$	20	50	100	—
Output Capacitance (per side)	$V_{CB} = 28\text{ V}, I_E = 0\text{ A}, f = 1\text{ MHz}$	$C_{ob}$	—	85	—	pF

**RF Specifications** (100% Tested)

Characteristic	Symbol	Min	Typ	Max	Units
<b>Output Power (P-Sync)</b> ( $V_{CC} = 28\text{ Vdc}, I_{CQ} = 200\text{ mA}$ per side, $f = 860\text{ MHz}$ )	$P_{out}$	175	—	—	Watts
<b>Gain</b> ( $V_{CC} = 28\text{ Vdc}, P_{out} = 110\text{ W}, I_{CQ} = 200\text{ mA}$ per side, $f = 860\text{ MHz}$ )	$G_{pe}$	10.0	11	—	dB
<b>Collector Efficiency</b> ( $V_{CC} = 28\text{ Vdc}, P_{out} = 110\text{ W}, I_{CQ} = 200\text{ mA}$ per side, $f = 860\text{ MHz}$ )	$\eta_C$	55	58	—	%
<b>Load Mismatch Tolerance</b> ( $V_{CC} = 28\text{ Vdc}, P_{out} = 175\text{ W}, I_{CQ} = 200\text{ mA}$ per side, $f = 860\text{ MHz}$ —all phase angles at frequency of test)	$\Psi$	—	—	5:1	—

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

( $V_{CC} = 28\text{ Vdc}, P_{out} = 110\text{ W}, I_{CQ} = 200\text{ mA}$  per side)



Frequency MHz	Z Source		Z Load	
	R	jX	R	jX
450	0.4	-1.0	2.0	0.3
550	0.5	-1.3	1.6	0.0
650	0.7	-1.8	1.3	0.0
750	1.8	-2.0	1.0	-0.8
850	2.7	-0.5	0.9	-1.2

