

# PTB 20011

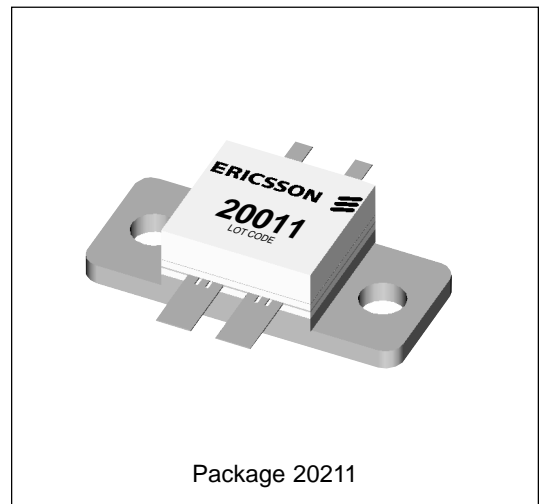
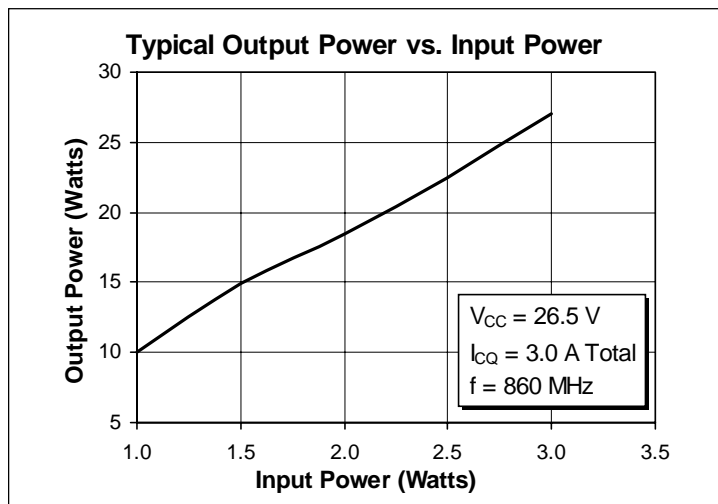
## 20 Watts P-Sync, 470–860 MHz

### UHF TV Linear Power Transistor

#### Description

The 20011 is an NPN common emitter UHF power transistor intended for 26.5 Vdc class A operation from 470 to 860 MHz. It is rated at 20 watts (p-sync) output power, and may be used for both CW and PEP applications. Ion implantation, nitride surface passivation and gold metallization ensure excellent device reliability. 100% lot traceability is standard.

- 20 Watts (P-Sync), 470–860 MHz
- Class A 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)	$I_C$	9.0	Adc
Total Device Dissipation at $T_{flange} = 25^\circ\text{C}$ Above $25^\circ\text{C}$ derate by	$P_D$	145 0.83	Watts W/°C
Storage Temperature Range	$T_{STG}$	-40 to +150	°C
Thermal Resistance ( $T_{flange} = 70^\circ\text{C}$ )	$R_{\theta JC}$	1.2	°C/W

## Electrical Characteristics (100% Tested)

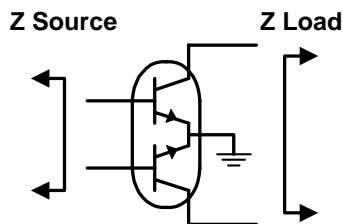
Characteristic	Conditions	Symbol	Min	Typ	Max	Units
Breakdown Voltage C to E	$I_B = 0 \text{ A}, I_C = 50 \text{ mA}$	$V_{(BR)CEO}$	25	30	—	Volts
Breakdown Voltage C to E	$V_{BE} = 0 \text{ V}, I_C = 50 \text{ mA}$	$V_{(BR)CES}$	55	70	—	Volts
Breakdown Voltage E to B	$I_C = 0 \text{ A}, I_E = 5 \text{ mA}$	$V_{(BR)EBO}$	3.5	5	—	Volts
DC Current Gain	$V_{CE} = 5 \text{ V}, I_C = 250 \text{ mA}$	$h_{FE}$	20	50	100	—
Output Capacitance	$V_{CB} = 25 \text{ V}, I_E = 0 \text{ A}, f = 1 \text{ MHz}$	$C_{ob}$	—	36	—	—

## RF Specifications (100% Tested)

Characteristic	Symbol	Min	Typ	Max	Units
<b>Gain</b> ( $V_{CC} = 26.5 \text{ Vdc}, I_C = 3.0 \text{ A Total}, P_{out} = 20 \text{ W(P-sync)},$ $f_1 = 860 \text{ MHz}, \text{Vision} = -8\text{dB}, f_2 = 863.5 \text{ MHz}, \text{Subcarrier} = -16\text{dB},$ $f_3 = 864.5 \text{ MHz}, \text{Sound} = -7\text{dB}$ )	$G_{pe}$	8.5	9.5	—	dB
<b>Power Output (P-sync)</b> ( $V_{CC} = 26.5 \text{ Vdc}, I_C = 3.0 \text{ A Total}, f_1 = 860 \text{ MHz}, \text{Vision} = -8\text{dB},$ $f_2 = 863.5 \text{ MHz}, \text{Subcarrier} = -16\text{dB},$ $f_3 = 864.5 \text{ MHz}, \text{Sound} = -7\text{dB}$ )	$P_{out}$	20	—	—	Watts
<b>Intermodulation Distortion</b> ( $V_{CC} = 26.5 \text{ Vdc}, I_C = 3.0 \text{ A Total}, P_{out} = 20 \text{ W(P-sync)},$ $f_1 = 860 \text{ MHz}, \text{Vision} = -8\text{dB}, f_2 = 863.5 \text{ MHz}, \text{Subcarrier} = -16\text{dB},$ $f_3 = 864.5 \text{ MHz}, \text{Sound} = -7\text{dB}$ )	$IM_3$	—	-48	-46	dBc
<b>Load Mismatch Tolerance</b> ( $V_{CC} = 26.5 \text{ Vdc}, I_C = 3.0 \text{ A Total}, P_{out} = 20 \text{ W(P-sync)},$ $f_1 = 860 \text{ MHz}, \text{Vision} = -8\text{dB}, f_2 = 863.5 \text{ MHz}, \text{Subcarrier} = -16\text{dB},$ $f_3 = 864.5 \text{ MHz}, \text{Sound} = -7\text{dB}$ —all phase angles at frequency of test)	$\Psi$	—	—	3:1	—

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

( $V_{CC} = 26.5 \text{ Vdc}, I_C = 3.0 \text{ A Total}, P_{out} = 20 \text{ W(P-sync)}$ )



Frequency MHz	Z Source		Z Load	
	R	jX	R	jX
470	4.8	-25.0	9.0	15.0
665	10.0	-31.0	7.2	20.4
860	32.0	-36.0	6.4	25.4

