

PTB 20091

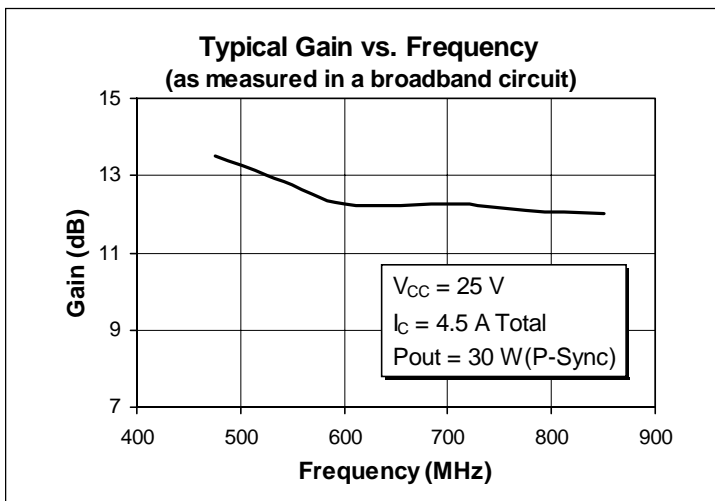
30 Watts, 470–860 MHz

UHF TV Linear Power Transistor

Description

The 20091 is an NPN, common emitter RF power transistor intended for 25 Vdc class A operation from 470 to 860 MHz. It is rated at 30 watts P-sync output power. Ion implantation, nitride surface passivation and gold metallization are used to ensure excellent device reliability. 100% lot traceability is standard.

- 30 Watts (P-Sync), 470–860 MHz
- Class A Characteristics
- Silicon Nitride Passivated
- Gold Metallization
- Excellent Linearity



Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	30	Vdc
Collector-Base Voltage	V_{CBO}	65	Vdc
Emitter-Base Voltage (collector open)	V_{EBO}	4.0	Vdc
Collector Current (continuous)	I_C	6.7	Adc
Total Device Dissipation at $T_{flange} = 25^\circ\text{C}$ Above 25°C derate by	P_D	150 1.33	Watts W/ $^\circ\text{C}$
Storage Temperature Range	T_{STG}	-40 to +150	$^\circ\text{C}$
Thermal Resistance ($T_{flange} = 70^\circ\text{C}$)	$R_{\theta JC}$.75	$^\circ\text{C/W}$

Electrical Characteristics (100% Tested)

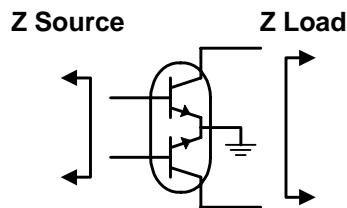
Characteristic	Conditions	Symbol	Min	Typ	Max	Units
Breakdown Voltage C to E	$I_B = 0\text{ A}, I_C = 100\text{ mA}$	$V_{(BR)CEO}$	25	30	—	Volts
Breakdown Voltage C to E	$V_{BE} = 0\text{ V}, I_C = 100\text{ mA}$	$V_{(BR)CES}$	55	70	—	Volts
Breakdown Voltage E to B	$I_C = 0\text{ A}, I_E = 5\text{ mA}$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

RF Specifications (100% Tested)

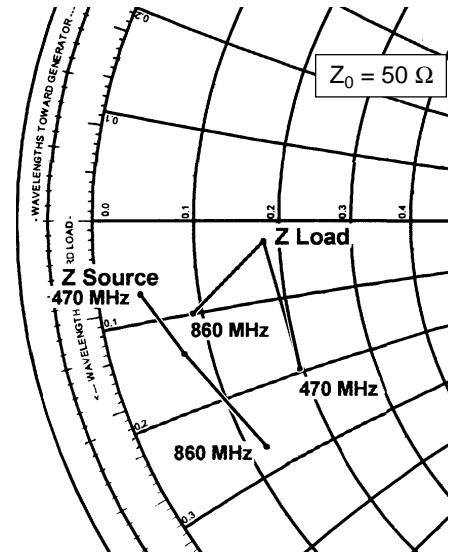
Characteristic	Symbol	Min	Typ	Max	Units
Gain ($V_{CC} = 25\text{ Vdc}, P_{out} = 30\text{ W(P-sync)}, I_C = 4.5\text{ A Total}, f = 470\text{--}860\text{ MHz}$)	G_{pe}	11	12	—	dB
Intermodulation Distortion ($V_{CC} = 25\text{ Vdc}, P_{out} = 27.5\text{ W(P-sync)}, I_C = 4.5\text{ A Total}, f_1 = 860\text{ MHz}, \text{Vision} = -8\text{ dB}, f_2 = 863.5\text{ MHz}, \text{Subcarrier} = -16\text{ dB}, f_3 = 864.5\text{ MHz}, \text{Sound} = -7\text{ dB}$)	IM_3	—	-50	—	dBc
Load Mismatch Tolerance ($V_{CC} = 25\text{ Vdc}, P_{out} = 30\text{ W(P-sync)}, I_C = 4.5\text{ A Total}, f = 470\text{--}860\text{ MHz}$ —all phase angles at frequency of test)	Ψ	—	—	10:1	—

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

($V_{CC} = 25\text{ Vdc}, P_{out} = 30\text{ W(P-sync)}, I_C = 4.5\text{ A Total}$)



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



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