

Applications

- VHF and UHF wide band amplifier

Features

- Medium power application (2W)

- Power gain

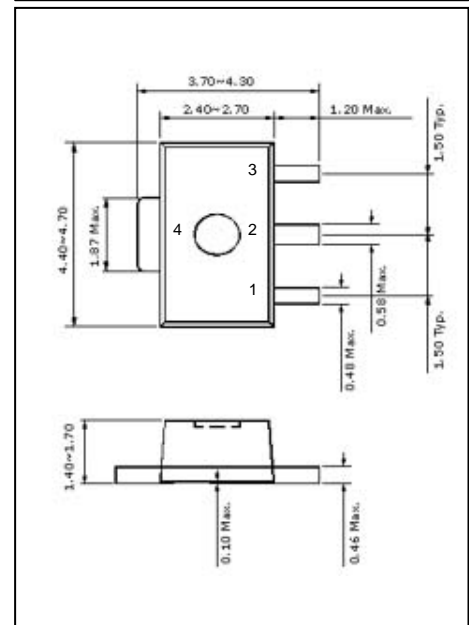
$G_P = 15 \text{ dB}$ at $V_{CE} = 6.0 \text{ V}$, $f = 460 \text{ MHz}$, $P_{IN} = 0 \text{ dBm}$

Output power

$P_{OUT} = 33.5 \text{ dBm}$ at $V_{CE} = 6.0 \text{ V}$, $I_{CQ} = 30 \text{ mA}$, $f = 460 \text{ MHz}$

SOT-89

Unit in mm



Pin Configuration

- 1. Base
- 2. Emitter
- 3. Collector
- 4. Emitter

Absolute Maximum Ratings ($T_A = 25 \text{ }^\circ\text{C}$)

Parameter	Symbol	Ratings	Unit
Collector to Base Breakdown Voltage	BV_{CBO}	15	V
Collector to Emitter Breakdown Voltage	BV_{CEO}	10	V
Emitter to Base Breakdown Voltage	BV_{EBO}	1.5	V
Collector Current	I_C	900	mA
Total Power Dissipation	P_{tot}	2	W
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-65 ~ 150	$^\circ\text{C}$

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Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{th\ j-a}$	Thermal Resistance from Junction to Ambient	65	K/W

Electrical Characteristics ($T_A = 25\text{ }^\circ\text{C}$)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Collector Cut-off Current	I_{CBO}	$V_{CB} = 10\text{ V}, I_E = 0\text{ mA}$	-	-	2.5	μA
	I_{CEO}	$V_{CE} = 7\text{ V}, I_B = 0\text{ mA}$	-	-	1.5	μA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = 1.0\text{ V}, I_C = 0\text{ mA}$	-	-	1.5	μA
DC Current Gain	h_{FE}	$V_{CE} = 3\text{ V}, I_C = 100\text{ mA}$	60		180	
Power Gain	G_P	$V_{CE} = 6.0\text{ V}, I_C = 30\text{ mA}$ (RF off), $f = 460\text{ MHz}, P_{IN} = 0\text{ dBm}$	13	15	-	dB
Output Power	P_{OUT}	$V_{CE} = 6.0\text{ V}, I_C = 30\text{ mA}$ (RF off), $f = 460\text{ MHz}, P_{IN} = 20\text{ dBm}$	32	33.5	-	dBm
Collector Efficiency	η_C	$V_{CE} = 6.0\text{ V}, I_C = 30\text{ mA}$ (RF off), $f = 460\text{ MHz}, P_{IN} = 20\text{ dBm}$		55	-	%

h_{FE} Classification

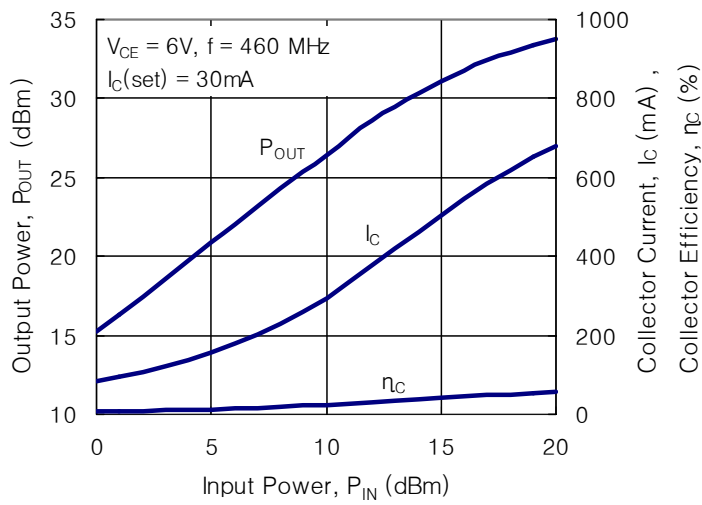
Marking	PD1
h_{FE} Value	60 -180

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□ Application Information (at $f = 460 \text{ MHz}$)

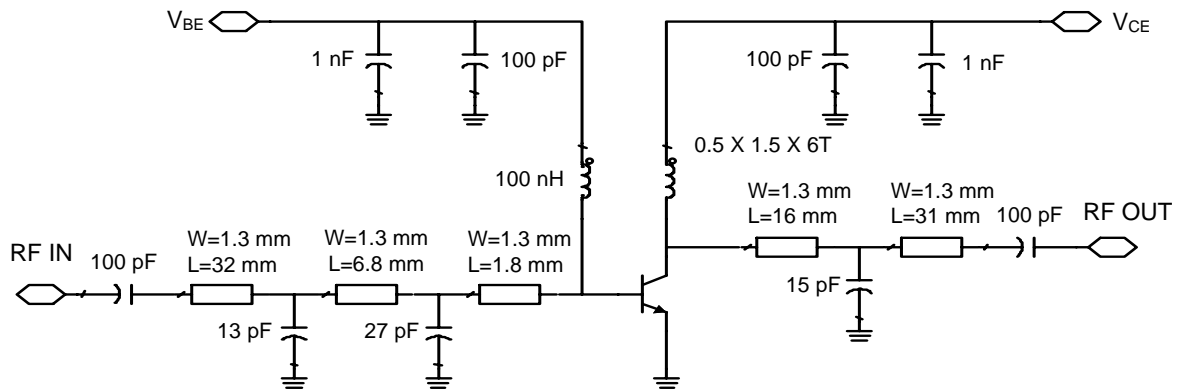
Operation Mode	f (MHz)	V_{CE} (V)	P_{OUT} (dBm)	G_p (dB)	η_c (%)
CW, class-AB	460	6.0	33.5	13.5	55

Output Power, Collector Current, Collector Efficiency vs. Input Power

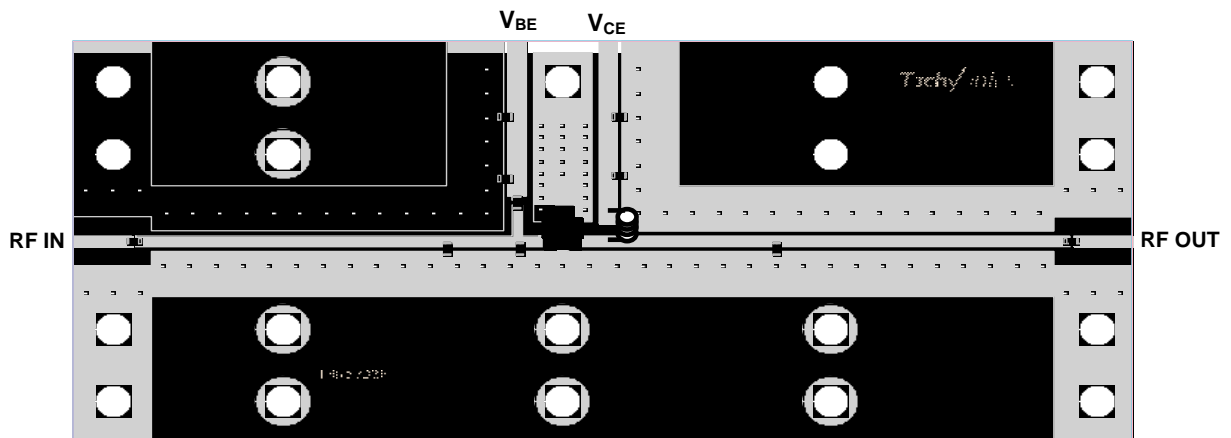


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□ Test Circuit Schematic Diagram ($f = 460 \text{ MHz}$)



□ Evaluation Board ($f = 460 \text{ MHz}$)



Notes

1. FR4 glass epoxy: dielectric constant = 4.5, thickness = 0.8 mm
2. Evaluation board dimension = $119 \times 50 \text{ mm}^2$