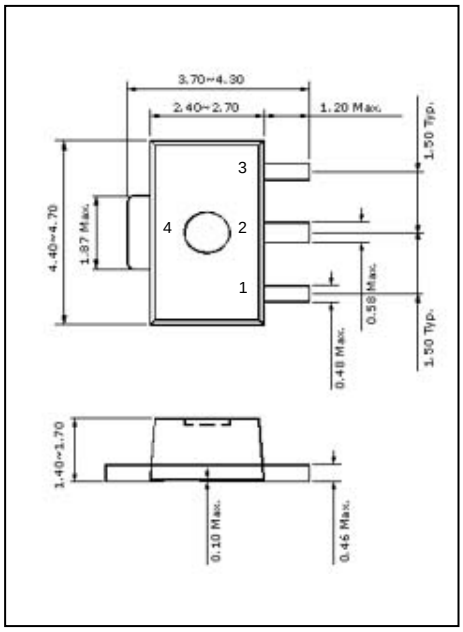
AUK Semiconductor

THN6702F

SiGe NPN Transistor

SOT-89 **Unit in mm**



☐ *Applications*

- VHF and UHF wide band amplifier

☐ *Features*

- Medium power application (2W)
- Power gain

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

Output power

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

Pin Configuration

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

☐ *Absolute Maximum Ratings* (T_A = 25 ℃)

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	℃
Storage Temperature	T_{stg}	-65 ~ 150	℃

☐ *Thermal Characteristics*

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

☐ *Electrical Characteristics* (T_A = 25 ℃)

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

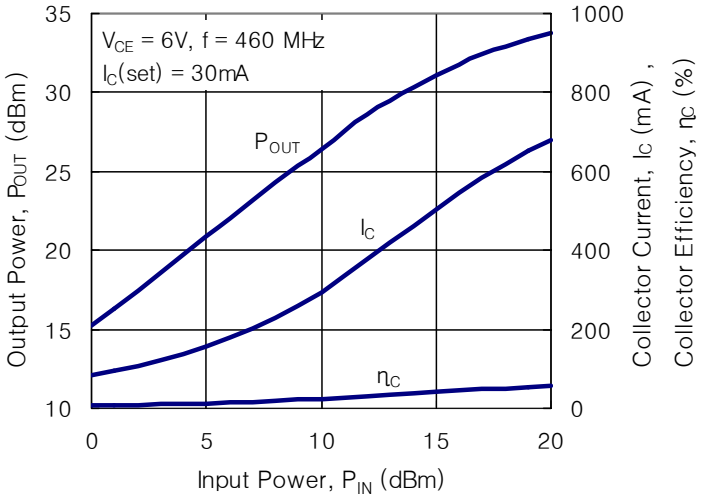
☐ *h_{FE} Classification*

Marking	PD1
h_{FE} Value	60 -180

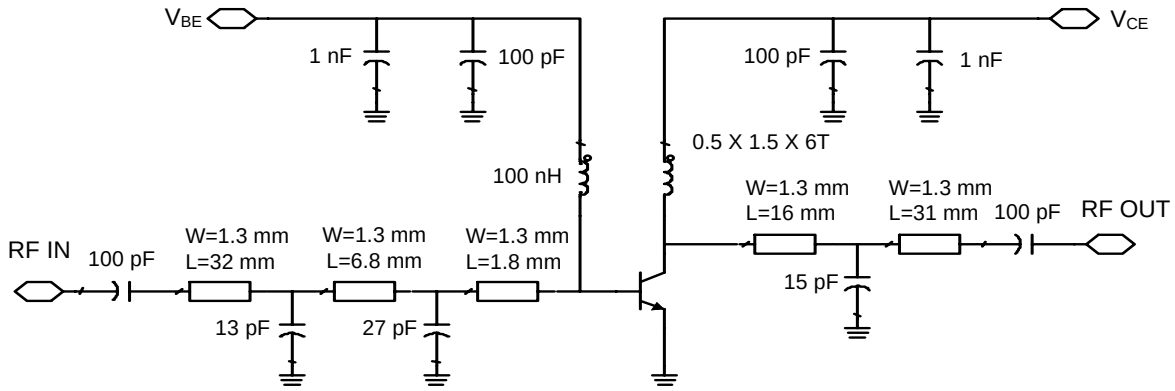
☐ *Application Information (at f = 460 MHz)*

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

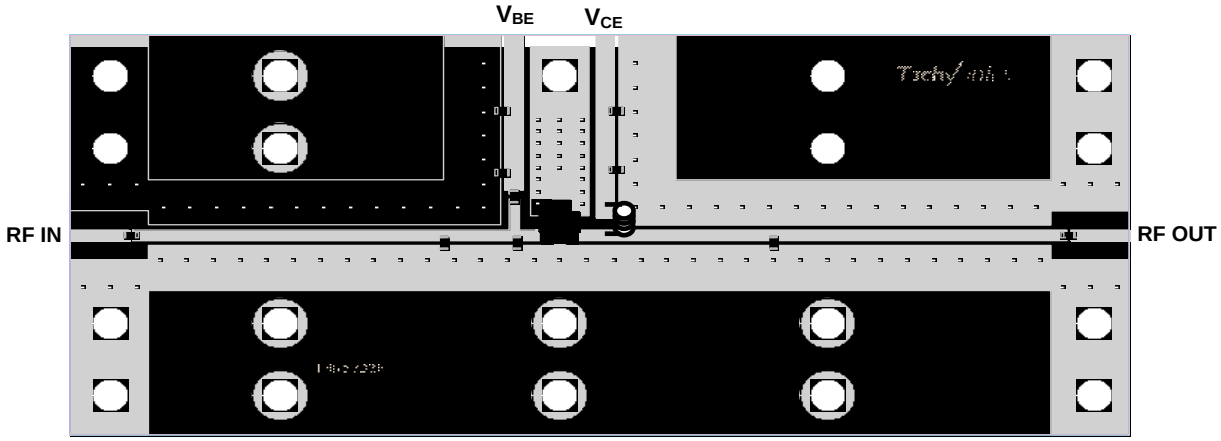
Output Power, Collector Current, Collector Efficiency vs. Input Power



☐ *Test Circuit Schematic Diagram (f = 460 MHz)*



☐ *Evaluation Board (f = 460 MHz)*



Notes

1. FR4 glass epoxy: dielectric constant = 4.5, thickness = 0.8 mm
2. Evaluation board dimension = 119 x 50 mm^2