

**Applications**

- VHF and UHF power amplifier

**Features**

- High power gain

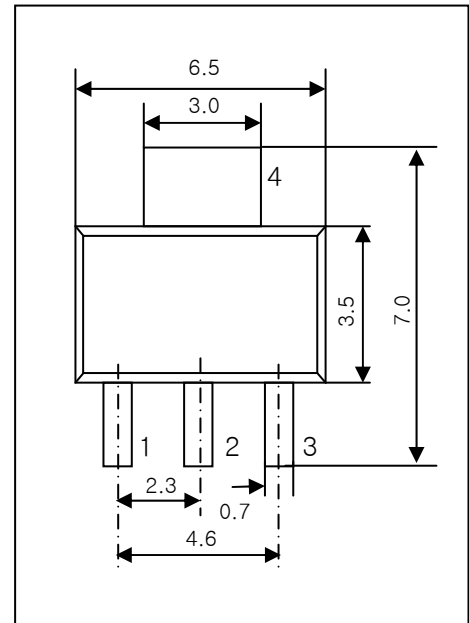
$G_P = 14 \text{ dB}$  at  $V_{CE} = 6 \text{ V}$ ,  $I_C = 400 \text{ mA}$ ,  $f = 465 \text{ MHz}$

- High power

$P_{OUT} = 35 \text{ dBm}(3\text{W})$  at  $V_{CE} = 6 \text{ V}$ ,  $I_{CQ} = 50 \text{ mA}$ ,  $f = 465 \text{ MHz}$

**SOT-223**

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	$BV_{CBO}$	17	V
Collector to Emitter Breakdown Voltage	$BV_{CEO}$	12	V
Emitter to Base Breakdown Voltage	$BV_{EBO}$	1.5	V
Collector Current	$I_C$	1	A
Total Power Dissipation	$P_{tot}$	3	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	40	K/W

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

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Collector Cut-off Current	$I_{CBO}$	$V_{CB} = 15\text{ V}, I_E = 0\text{ mA}$	-	-	1.0	$\mu\text{A}$
	$I_{CEO}$	$V_{CE} = 11\text{ V}, I_B = 0\text{ mA}$	-	-	5.0	$\mu\text{A}$
Emitter Cut-off Current	$I_{EBO}$	$V_{EB} = 1.0\text{ V}, I_C = 0\text{ mA}$	-	-	1.0	$\mu\text{A}$
DC Current Gain	$h_{FE}$	$V_{CE} = 6\text{ V}, I_C = 200\text{ mA}$	20	-	200	
Reverse Transfer Capacitance	$C_{re}$	$V_{CB} = 6\text{ V}, I_E = 0\text{ mA}, f = 1\text{ MHz}$	-	4.5	-	pF
Output Power	$P_{OUT}$	$V_{CE} = 6\text{ V}, I_{CQ} = 50\text{ mA}, f = 465\text{ MHz}, P_{IN} = 25\text{ dBm}$	-	35	-	dBm
Power Gain	$G_P$		-	10	-	dB
Power Added Efficiency	PAE		-	60	-	%

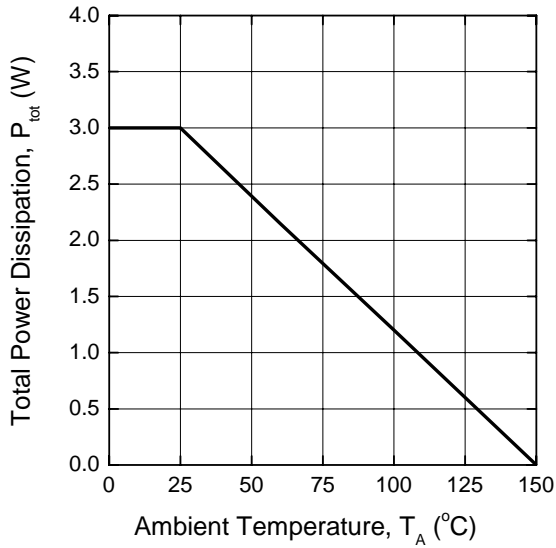
## $h_{FE}$ Classification

Marking	R6701	R6701 $\cdot$
$h_{FE}$ Value	20 - 100	80 - 200

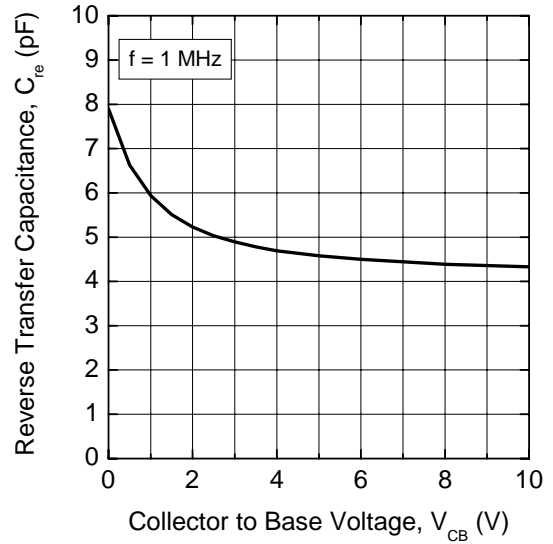
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□ **Typical Characteristics** ( $T_A = 25\text{ }^\circ\text{C}$ , unless otherwise specified)

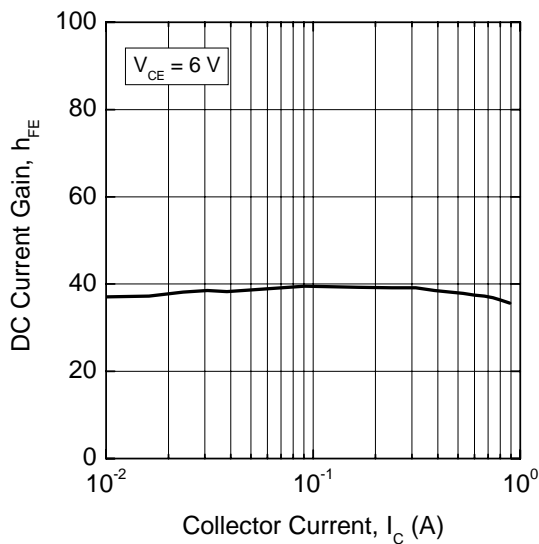
**Total Power Dissipation vs. Ambient Temperature**



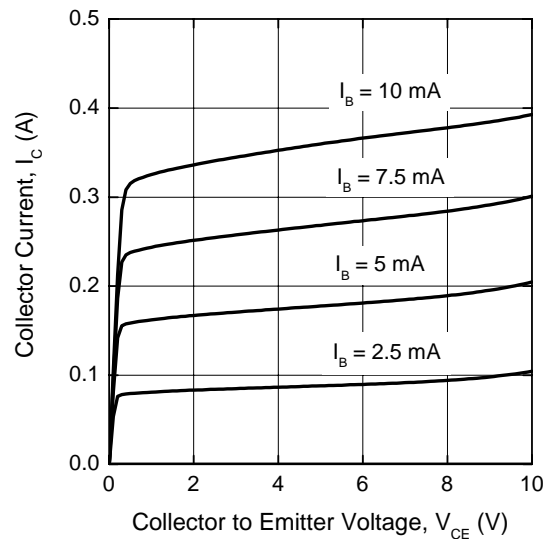
**Reverse Transfer Capacitance vs. Collector to Base Voltage**



**DC Current Gain vs. Collector Current**



**Collector Current vs. Collector to Emitter Voltage**



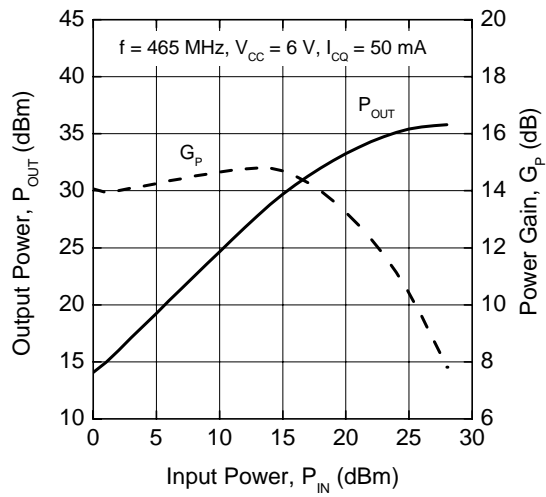
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## □ Application Information

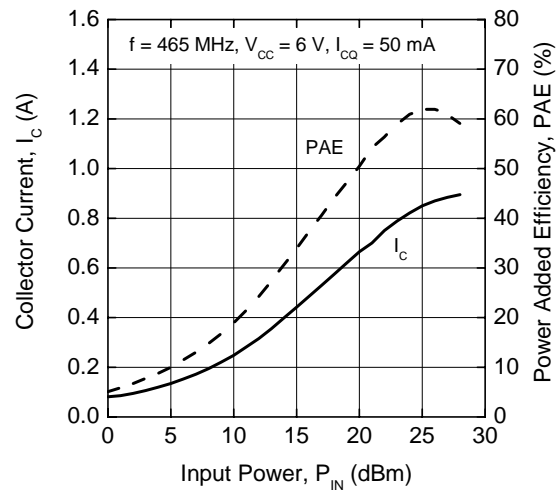
RF performance at  $T_S \leq 60\text{ }^\circ\text{C}$  in common emitter configuration

Operation Mode	f (MHz)	$V_{CE}$ (V)	$P_{OUT}$ (dBm)	$G_P$ (dB)	PAE (%)
CW, class-AB	465	6	35	$\geq 10$	60

**Output Power or Power Gain vs. Input Power**

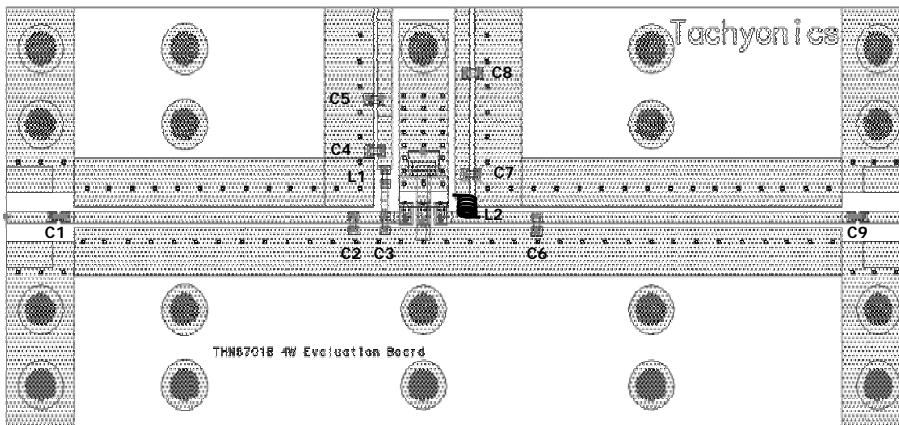


**Collector Current or Power Added Efficiency vs. Input Power**



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## □ Evaluation Board (for FRS at 465 MHz)



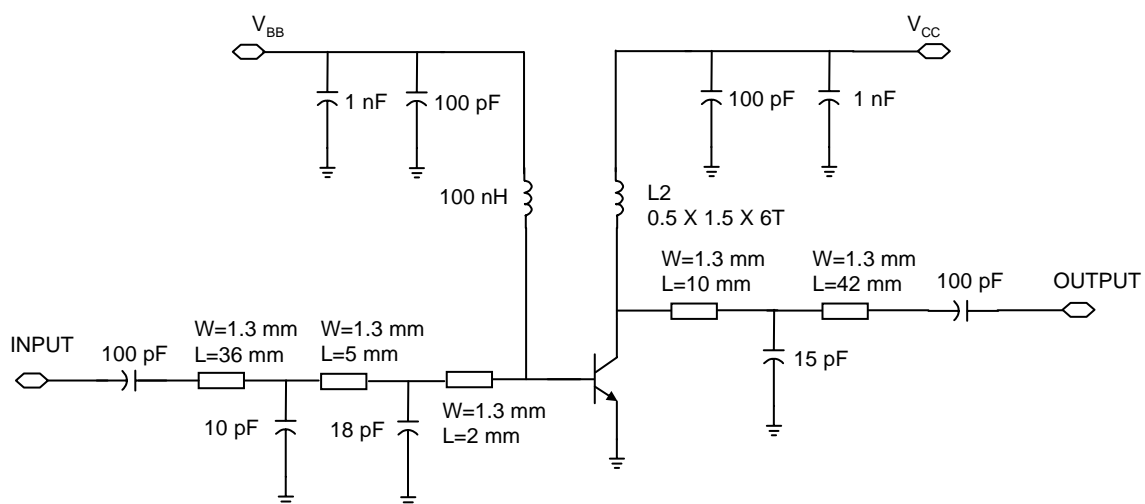
Part	Value
C1, C4 C7, C9	100 pF (1608, Murata)
C2	10 pF (1608, Murata)
C3	18 pF (1608, Murata)
C5, C8	1 nF (1608, Murata)
C6	15 pF (1608, Murata)
L1	100 nH (1608, Murata)
L2	0.4 X 1.5 X 6T (Air Coil)

FR4 glass epoxy: dielectric constant = 4.5, thickness = 0.8 mm

Evaluation board dimension = 119 x 50 mm<sup>2</sup>

Test condition: CW test,  $V_{CC} = 6.0$  V,  $I_{CQ} = 50$  mA,  $f = 465$  MHz

## □ Test Circuit Schematic Diagram



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## □ Package Dimensions

