

NPN EPITAXIAL SILICON TRANSISTOR
FOR HIGH-FREQUENCY LOW-NOISE AMPLIFICATION

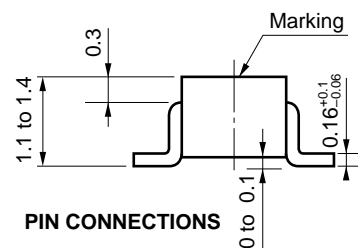
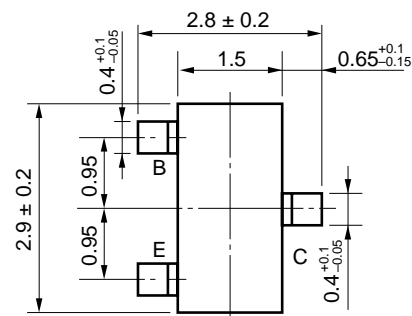
FEATURES

- Low-voltage, low-current, low-noise and high-gain
 $NF = 3.0 \text{ dB TYP. @ } V_{CE} = 1 \text{ V, } I_C = 250 \mu\text{A, } f = 1.0 \text{ GHz}$
 $G_A = 3.5 \text{ dB TYP. @ } V_{CE} = 1 \text{ V, } I_C = 250 \mu\text{A, } f = 1.0 \text{ GHz}$
- Ideal for battery drive of pagers, compact radio equipment, cordless phones, etc.
- Gold electrode gives high reliability.
- Mini mold package, ideal for hybrid ICs.

ABSOLUTE MAXIMUM RATINGS ($T_A = 25 \text{ }^\circ\text{C}$)

PARAMETER	SYMBOL	RATING	UNIT
Collector to Base Voltage	V_{CBO}	15	V
Collector to Emitter Voltage	V_{CEO}	8	V
Emitter to Base Voltage	V_{EBO}	2	V
Collector Current	I_C	5	mA
Total Power Dissipation	P_T	50	mW
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-65 to +150	$^\circ\text{C}$

PACKAGE DIMENSIONS (in mm)



PIN CONNECTIONS

- E: Emitter
 - B: Base
 - C: Collector
- Marking: R62

ELECTRICAL CHARACTERISTICS ($T_A = 25 \text{ }^\circ\text{C}$)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CBO}	$V_{CB} = 5 \text{ V, } I_E = 0$			0.1	μA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = 1 \text{ V, } I_C = 0$			0.1	μA
DC Current Gain	h_{FE}	$V_{CE} = 1 \text{ V, } I_C = 250 \mu\text{A, pulse}$	50	100	250	
Gain Bandwidth Product	f_T	$V_{CE} = 1 \text{ V, } I_C = 1 \text{ mA}$		4		GHz
Insertion Power Gain	$ S_{21e} ^2$	$V_{CE} = 1 \text{ V, } I_C = 1 \text{ mA, } f = 1 \text{ GHz}$	4.0	6.5		dB
Maximum Available Gain	MAG	$V_{CE} = 1 \text{ V, } I_C = 1 \text{ mA, } f = 1 \text{ GHz}$		12.5		dB
Noise Figure	NF	$V_{CE} = 1 \text{ V, } I_C = 250 \mu\text{A, } f = 1.0 \text{ GHz}$		3.0	4.5	dB
Associated Power Gain	G_A	$V_{CE} = 1 \text{ V, } I_C = 250 \mu\text{A, } f = 1.0 \text{ GHz}$		3.5		dB
Collector Capacitance	C_{ob}^{Note}	$V_{CB} = 1 \text{ V, } I_E = 0, f = 1.0 \text{ MHz}$		0.4	0.6	pF

Note Measured using 3-pin bridge, with emitter pin connected to the bridge guard pin.

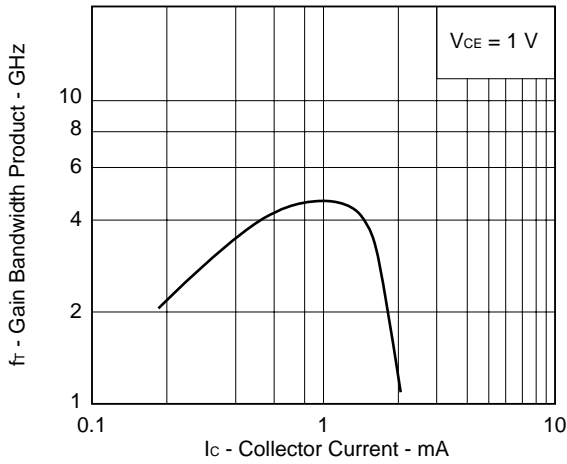
hFE CLASSIFICATION

RANK	K/P ^{Note}
Marking	R62
hFE	50 to 250

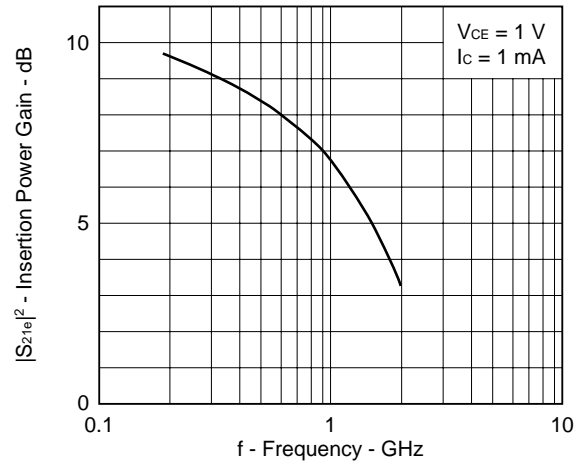
Note Existing rank classification/newly added rank

TYPICAL CHARACTERISTICS (T_A = 25 °C)

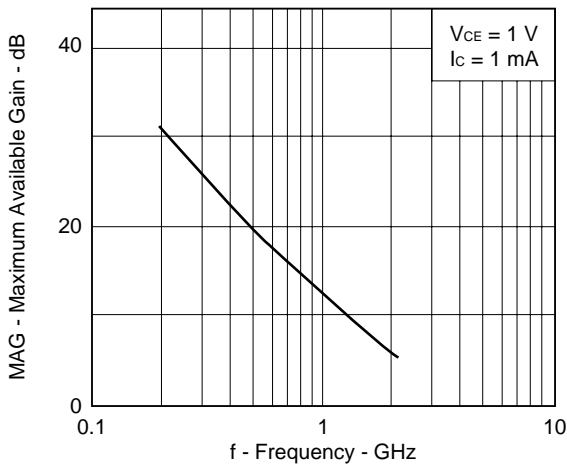
GAIN BANDWIDTH PRODUCT vs. COLLECTOR CURRENT



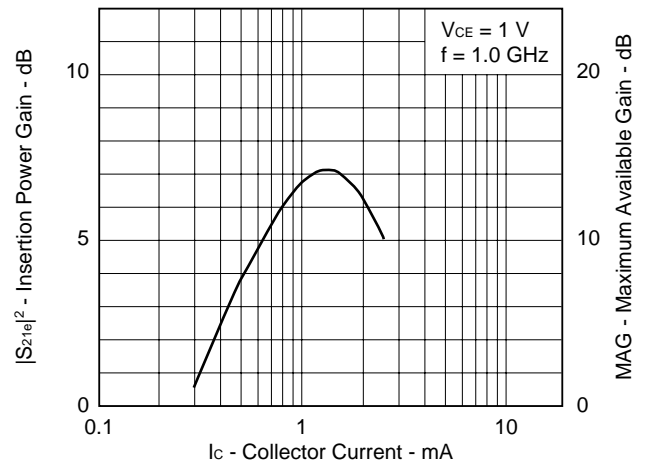
INSERTION POWER GAIN vs. FREQUENCY



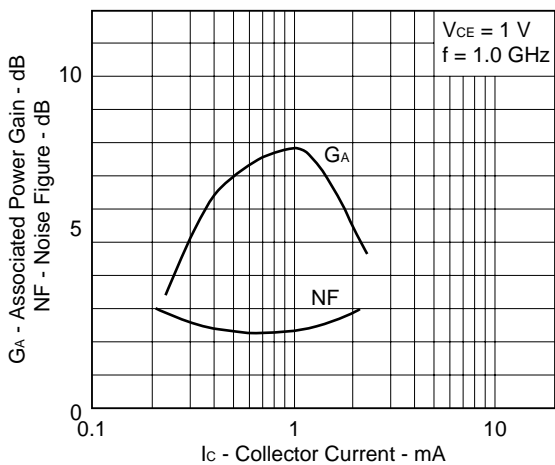
MAXIMUM AVAILABLE GAIN vs. FREQUENCY

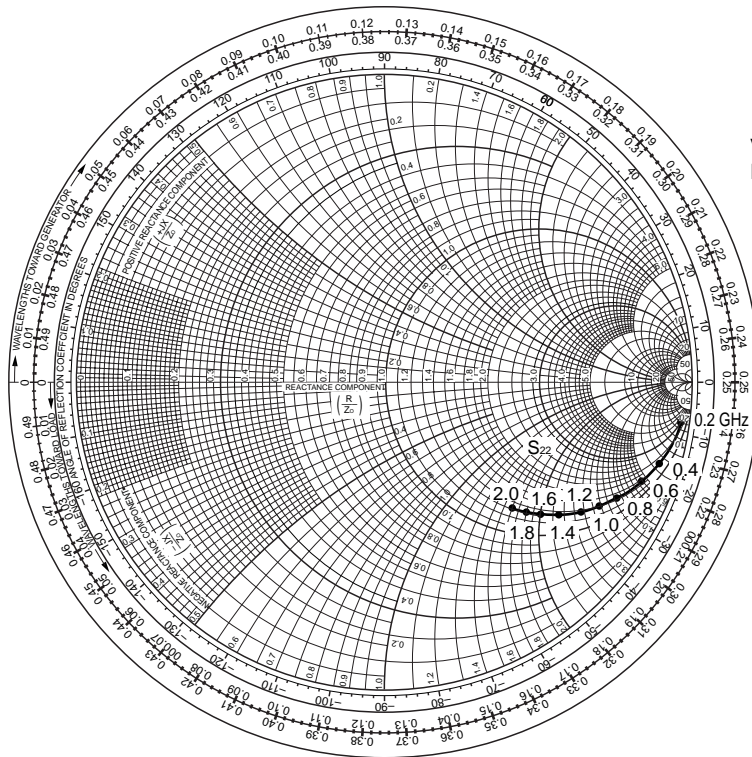
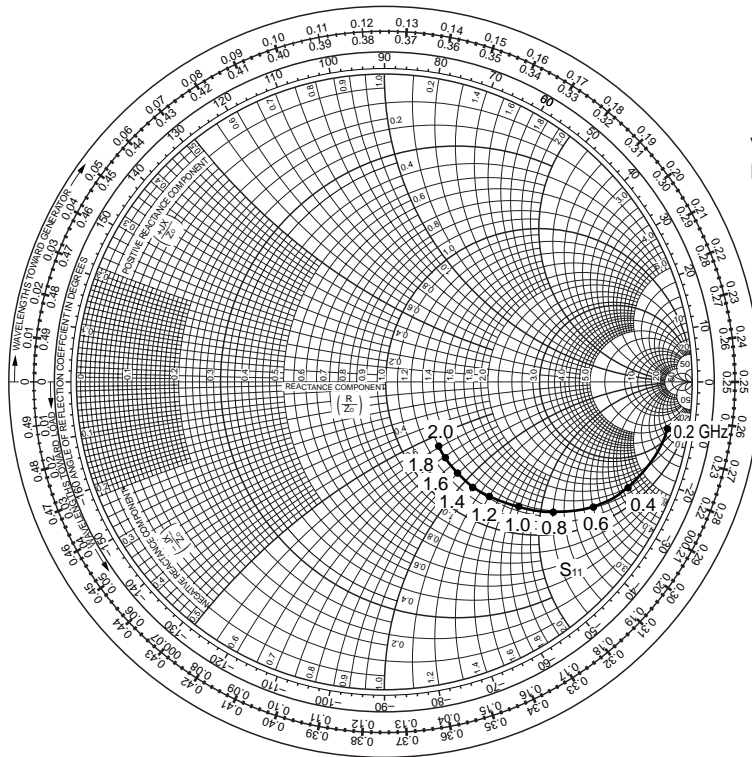


INSERTION POWER GAIN vs. COLLECTOR CURRENT



NOISE FIGURE AND POWER GAIN AT OPTIMUM NF vs. COLLECTOR CURRENT





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Anti-radioactive design is not implemented in this product.