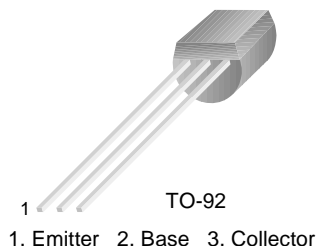


# KSC1674

KSC1674

## TV PIF Amplifier, FM Tuner RF Amplifier, Mixer, Oscillator

- High Current Gain Bandwidth Product :  $f_T=600\text{MHz}$  (TYP.)
- High Power Gain :  $G_{PE}=22\text{dB}$  at  $f=100\text{MHz}$
- Suffix "-C" means Center Collector (1. Emitter 2. Collector 3. Base)



## NPN Epitaxial Silicon Transistor

### Absolute Maximum Ratings $T_a=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Ratings	Units
$V_{CBO}$	Collector-Base Voltage	30	V
$V_{CEO}$	Collector-Emitter Voltage	20	V
$V_{EBO}$	Emitter-Base Voltage	4	V
$I_C$	Collector Current	20	mA
$P_C$	Collector Power Dissipation	250	mW
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature	-55 ~ 150	$^\circ\text{C}$

### Electrical Characteristics $T_a=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
$BV_{CBO}$	Collector-Base Breakdown Voltage	$I_C=10\mu\text{A}, I_E=0$	30			V
$BV_{CEO}$	Collector-Emitter Breakdown Voltage	$I_C=5\text{mA}, I_B=0$	20			V
$BV_{EBO}$	Emitter-Base Breakdown Voltage	$I_E=10\mu\text{A}, I_C=0$	4			V
$I_{CBO}$	Collector Cut-off Current	$V_{CB}=30\text{V}, I_E=0$			0.1	$\mu\text{A}$
$I_{EBO}$	Emitter Cut-off Current	$V_{EB}=4\text{V}, I_C=0$			0.1	$\mu\text{A}$
$h_{FE}$	DC Current Gain	$V_{CE}=6\text{V}, I_C=1\text{mA}$	40		240	
$V_{BE(on)}$	Base-Emitter On Voltage	$V_{CE}=6\text{V}, I_C=1\text{mA}$		0.72		V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=10\text{mA}, I_B=1\text{mA}$		0.1	0.3	V
$f_T$	Current Gain Bandwidth Product	$V_{CE}=6\text{V}, I_C=1\text{mA}$	400	600		MHz
$C_{ob}$	Output Capacitance	$V_{CB}=6\text{V}, I_E=0, f=1\text{MHz}$		1.2		pF
$C_{c-rbb'}$	Collector-Base Time Constant	$V_{CE}=6\text{V}, I_C=1\text{mA}$ $f=31.9\text{MHz}$		12	15	ps
NF	Noise Figure	$V_{CE}=6\text{V}, I_C=1\text{mA}$ $R_S=50\Omega, f=100\text{MHz}$		3.0	5.0	dB
$G_{PE}$	Power Gain	$V_{CE}=6\text{V}, I_C=1\text{mA},$ $f=100\text{MHz}$	18	22		dB

### $h_{FE}$ Classification

Classification	R	O	Y
$h_{FE}$	40 ~ 80	70 ~ 140	120 ~ 240

# Typical Characteristics

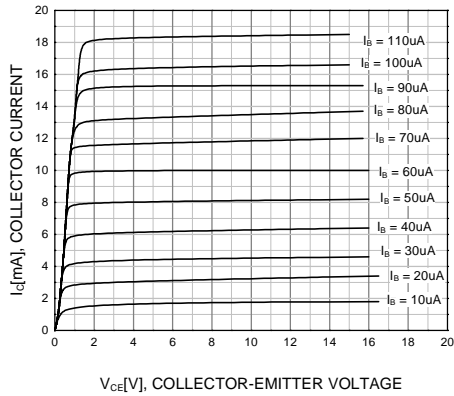


Figure 1. Static Characteristic

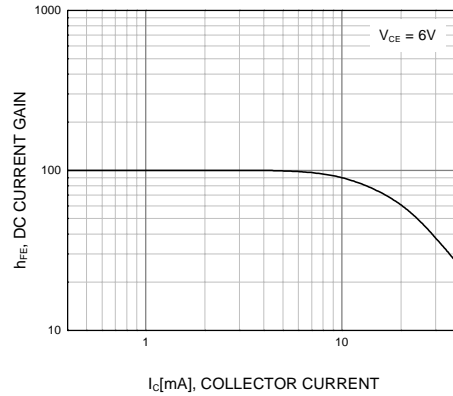


Figure 2. DC current Gain

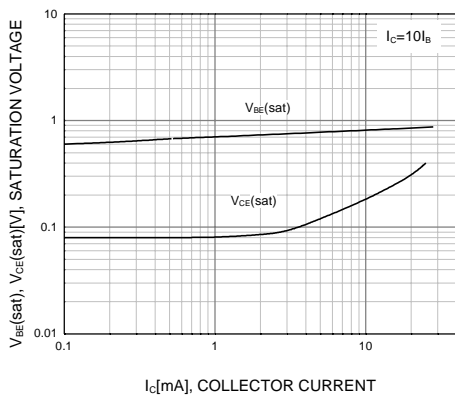


Figure 3. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

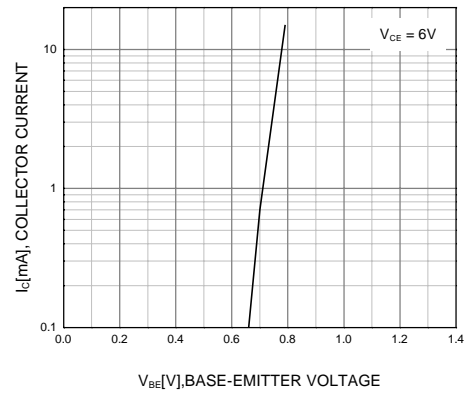


Figure 4. Base-Emitter On Voltage

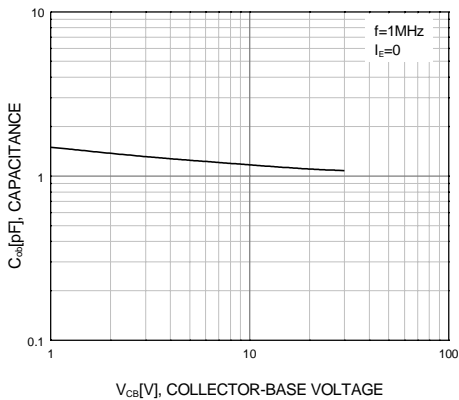


Figure 5. Collector Output Capacitance

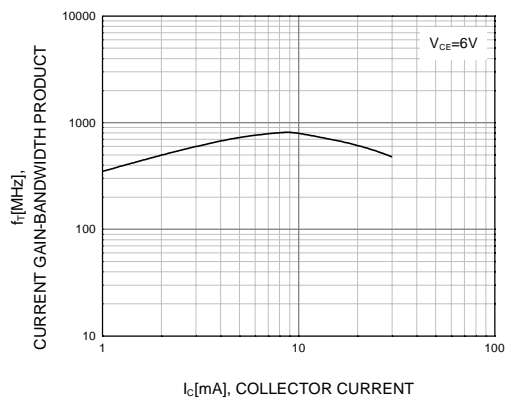


Figure 6. Current Gain Bandwidth Product

Typical Characteristics (Continued)

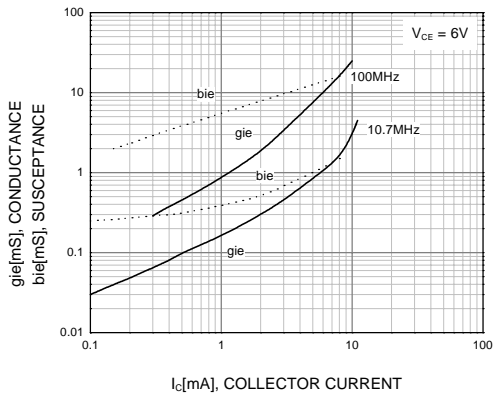


Figure 7. Input Admittance ( $y_{ie}$ ) vs. Collector Current

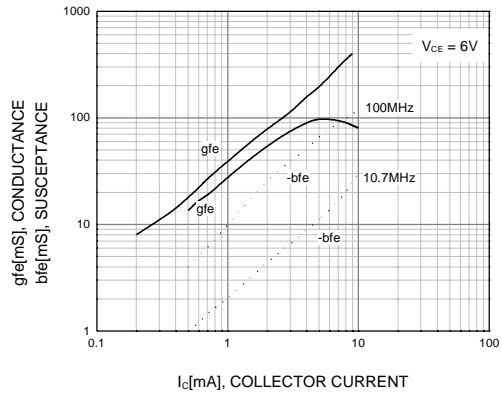


Figure 8. Forward Transfer Admittance ( $y_{fe}$ ) vs. Collector Current

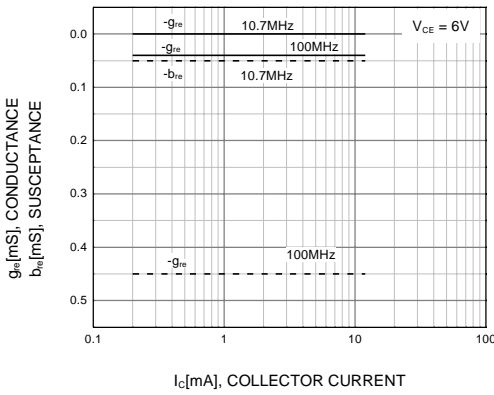


Figure 9. Reverse Transfer Admittance ( $y_{re}$ ) vs. Collector Current

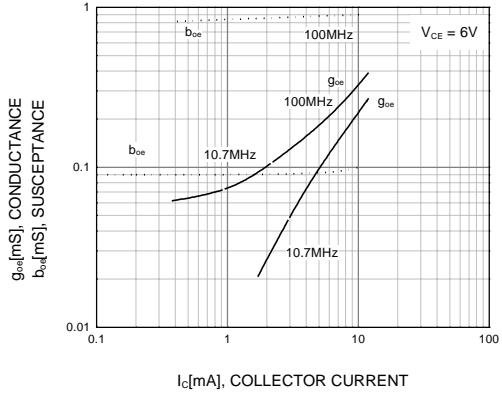


Figure 10. Output Admittance ( $y_{oe}$ ) vs. Collector Current

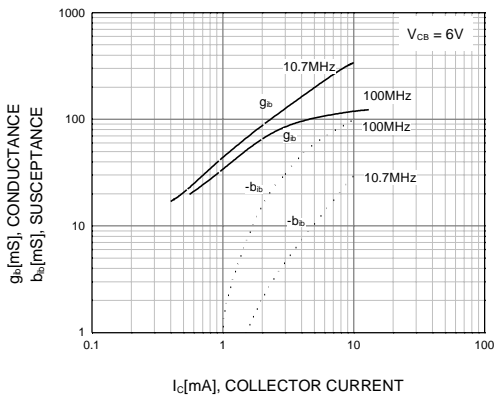


Figure 11. Input Admittance ( $y_{ib}$ ) vs. Collector Current

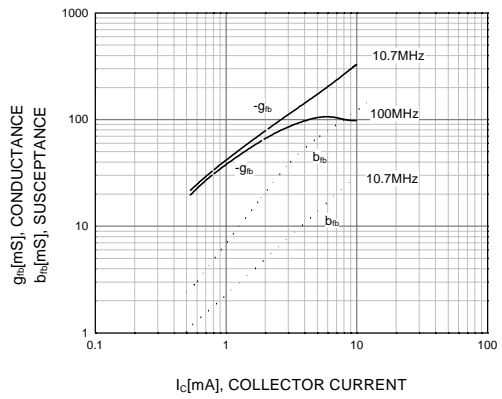


Figure 12. Forward Transfer Admittance ( $y_{fb}$ ) vs. Collector Current

Typical Characteristics (Continued)

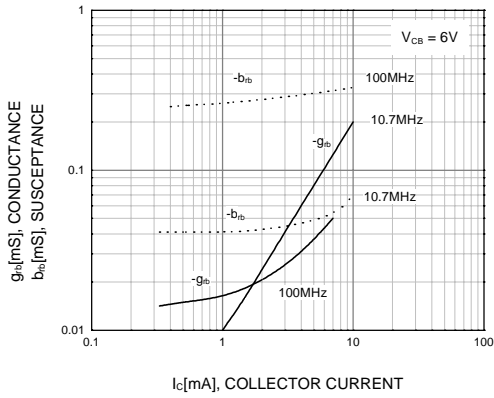


Figure 13. Reverse Transfer Admittance (yrb) vs. Collector Current

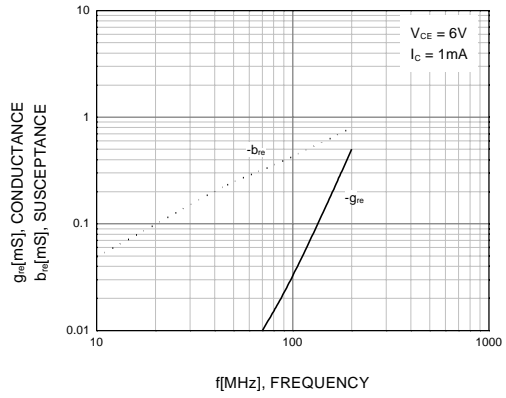


Figure 14. Reverse Transfer Admittance (yre) vs. Frequency

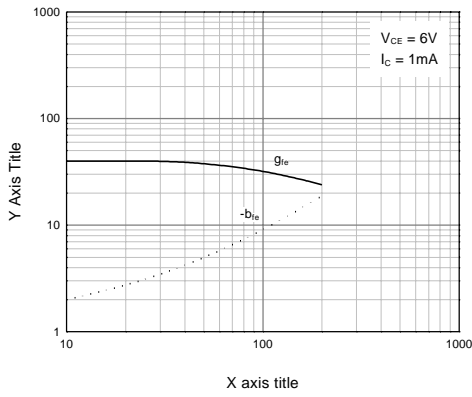


Figure 15. Forward Transfer Admittance (yfe) vs. Frequency

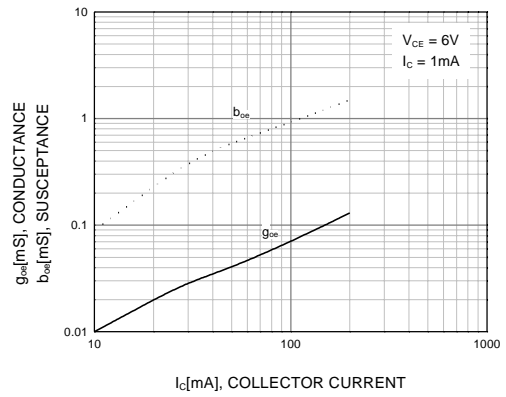


Figure 16. Output Admittance (yoe) vs. Frequency

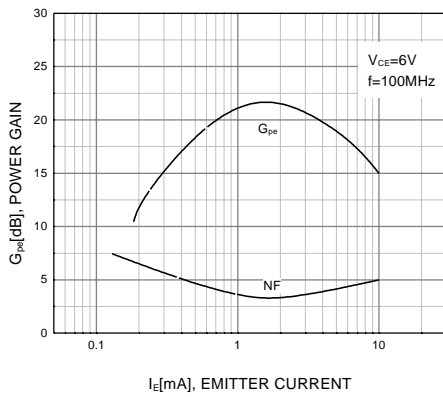


Figure 17. Power Gain and Noise Figure vs. Emitter Current

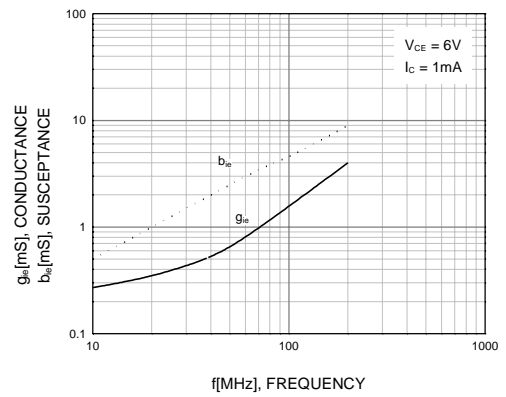
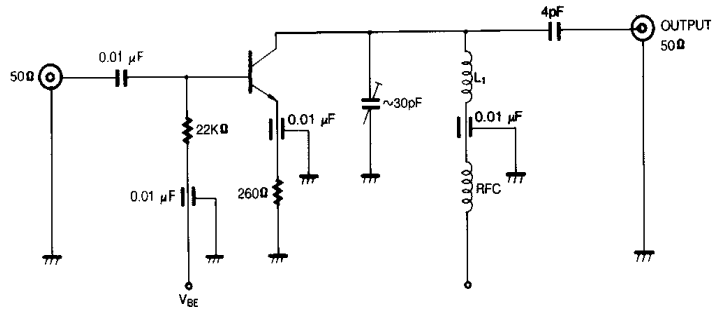


Figure 18. Input Admittance (yie) vs. Frequency

# Typical Characteristics (Continued)

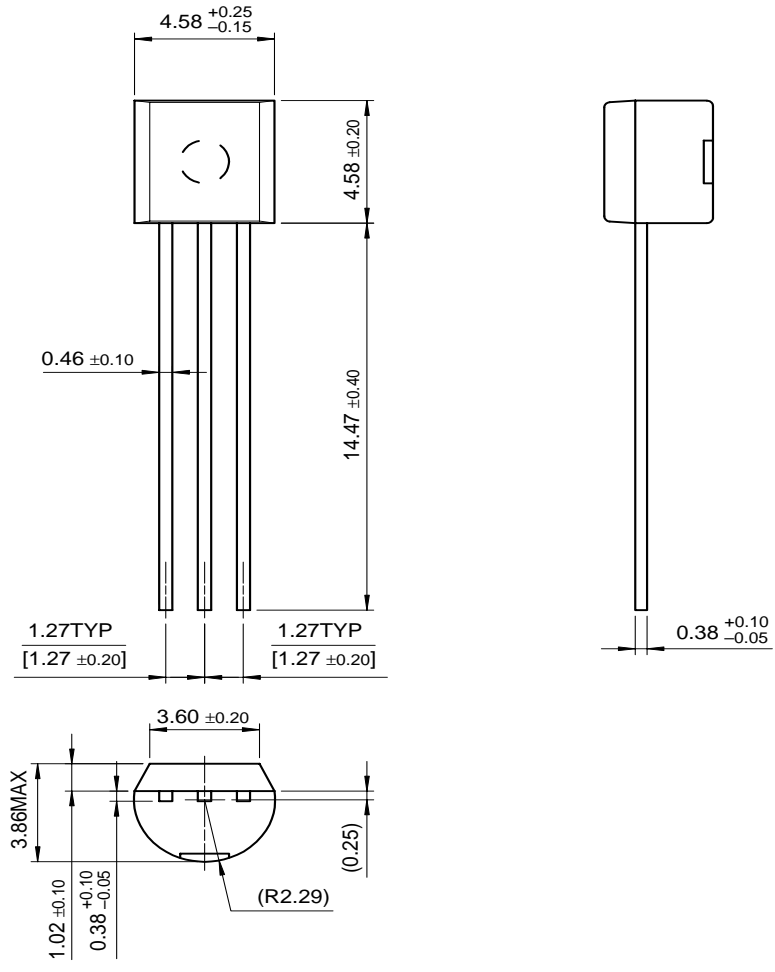
KSC1674

100MHz  $G_{pe}$ , NF TEST CIRCUIT



# Package Dimensions

## TO-92



Dimensions in Millimeters

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Datasheet Identification	Product Status	Definition
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KSC1674

NPN Epitaxial Silicon Transistor

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Features

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Applications

**TV PIF Amplifier, FM Tuner RF Amplifier, Mixer, Oscillator**

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Product status/pricing/packaging

Product	Product status	Pricing*	Package type	Leads	Packing method
KSC1674COBU	Full Production	\$0.05	<a href="#">TO-92</a>	3	BULK
KSC1674RTA	Full Production	\$0.05	<a href="#">TO-92</a>	3	TAPE REEL
KSC1674OBU	Full Production	\$0.05	<a href="#">TO-92</a>	3	BULK
KSC1674RBU	Full Production	\$0.05	<a href="#">TO-92</a>	3	BULK
KSC1674YBU	Full Production	\$0.05	<a href="#">TO-92</a>	3	BULK
KSC1674CYTA	Full Production	\$0.05	<a href="#">TO-92</a>	3	TAPE REEL
KSC1674CYBU	Full Production	\$0.05	<a href="#">TO-92</a>	3	BULK
KSC1674OTA	Full Production	\$0.05	<a href="#">TO-92</a>	3	TAPE REEL



KSC1674COTA	Full Production	\$0.05	<a href="#">TO-92</a>	3	TAPE REEL
KSC1674YTA	Full Production	\$0.05	<a href="#">TO-92</a>	3	TAPE REEL

\* 1,000 piece Budgetary Pricing

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