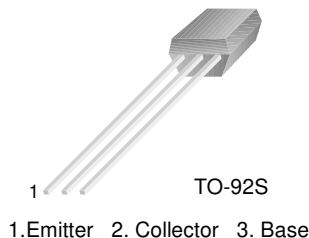


# KSC2786

## 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  $f=100\text{MHz}$



## NPN Epitaxial Silicon Transistor

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

Symbol	Parameter	Value	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	
$V_{BE}(\text{on})$	Base-Emitter On Voltage	$V_{CE}=6\text{V}, I_C=1\text{mA}$		0.72		V
$V_{CE}(\text{sat})$	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

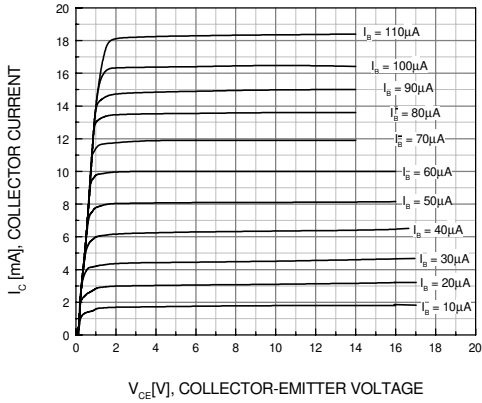


Figure 1. Static Characteristics

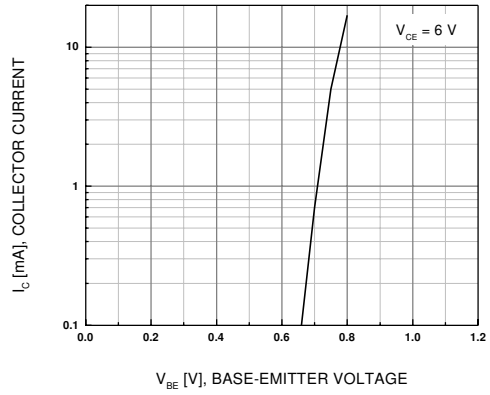


Figure 2. Base-Emitter On Voltage

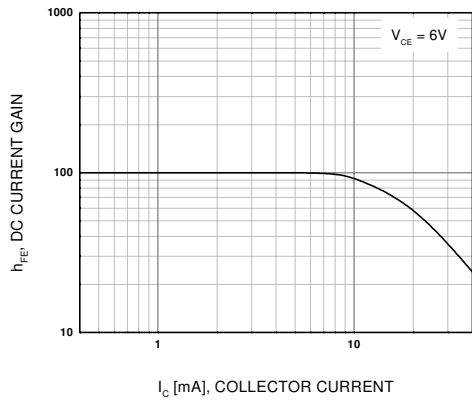


Figure 3. DC Current Gain

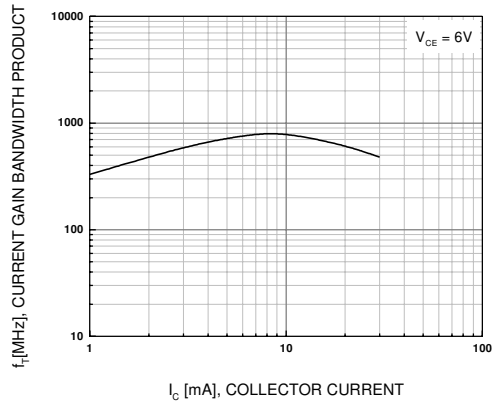


Figure 4.  $f_T - I_C$

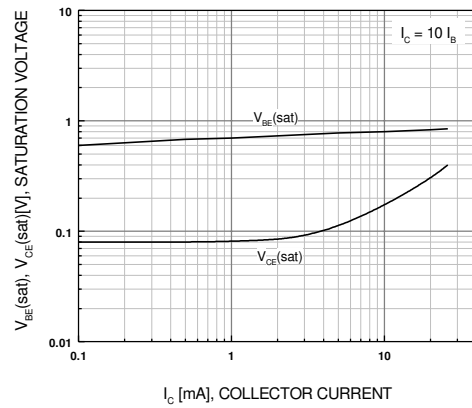


Figure 5. Saturation Voltage

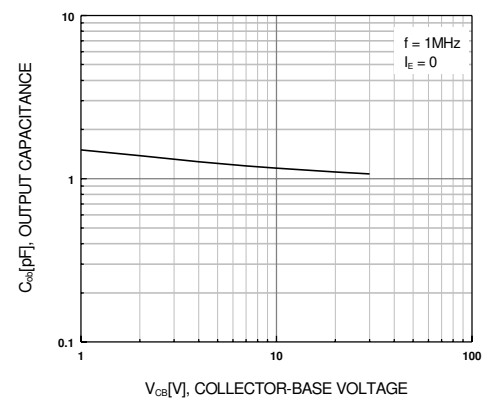


Figure 6. Output Capacitance

Typical Characteristics (Continued)

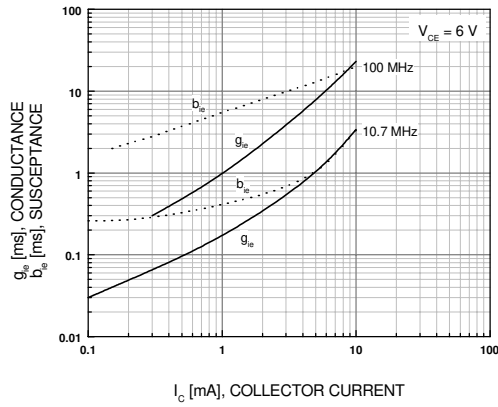


Figure 7. yie - f

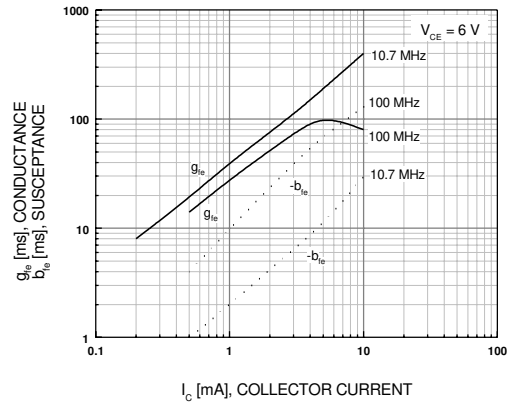


Figure 8. yfe - f

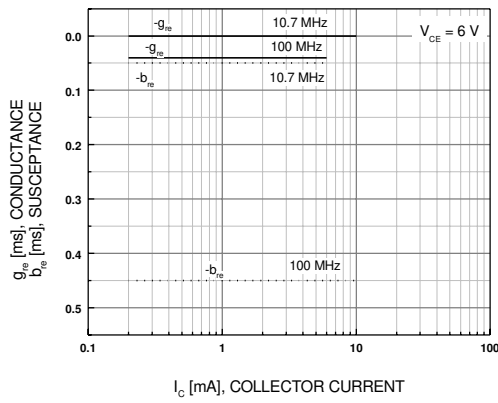


Figure 9. yre - f

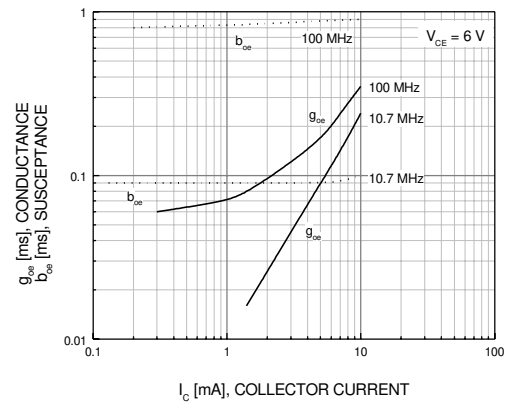


Figure 10. yoe - f

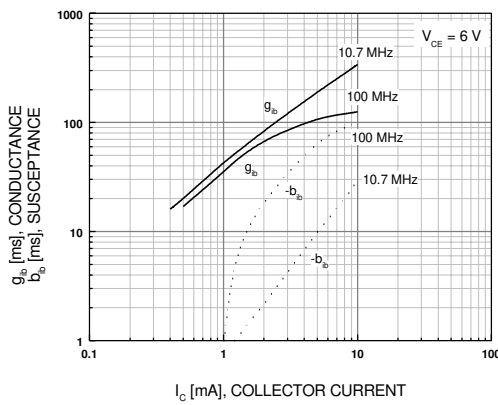


Figure 11. yib - f

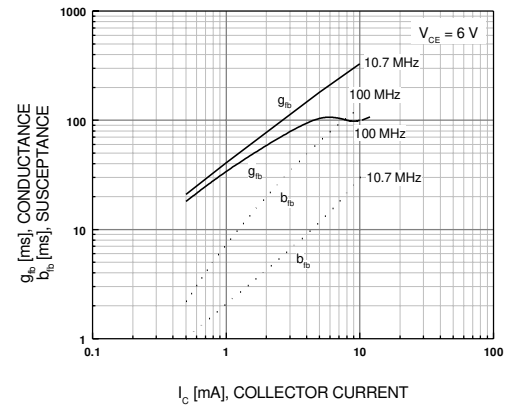


Figure 12. yfb - f

Typical Characteristics (Continued)

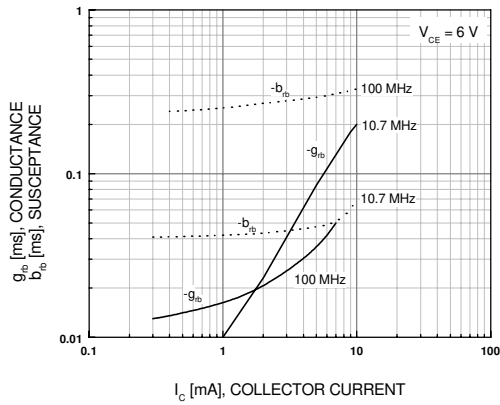


Figure 13. yrb - f

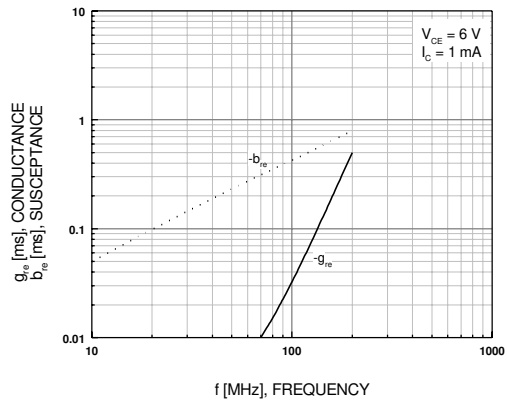


Figure 14. yre - f

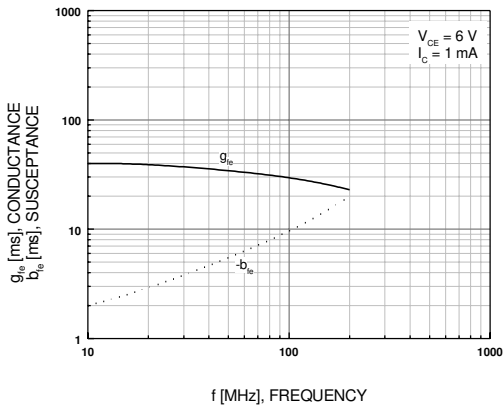


Figure 15. yfe - f

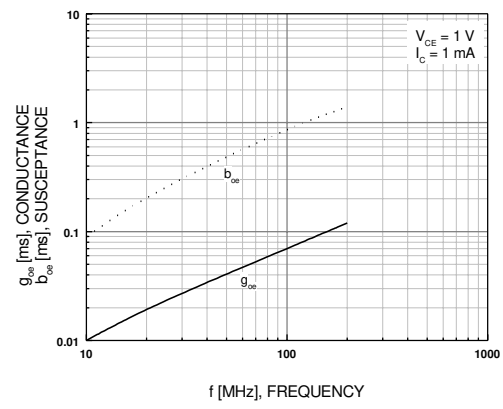


Figure 16. yoe - f

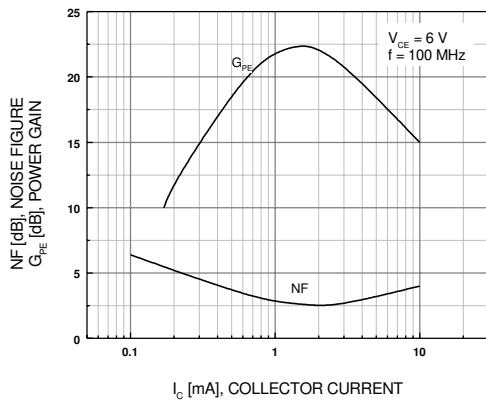


Figure 17. Power Gain & NF

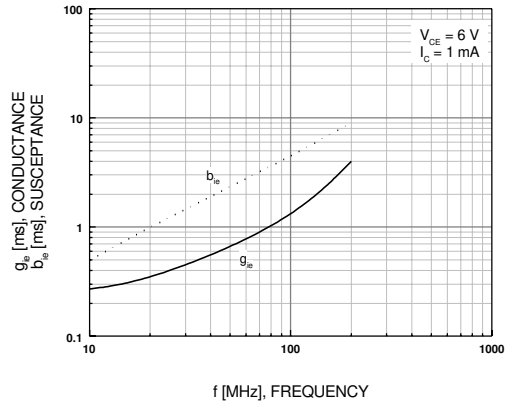
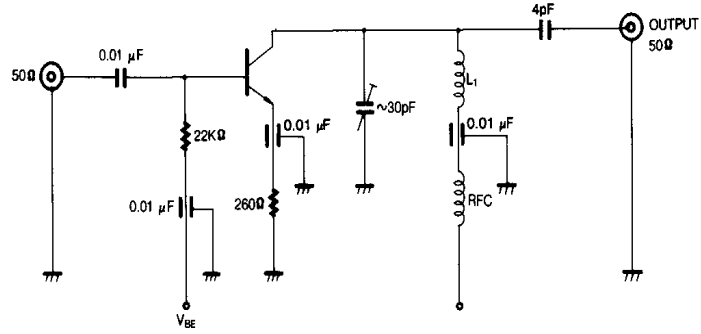


Figure 18. yie - f

# Typical Characteristics (Continued)

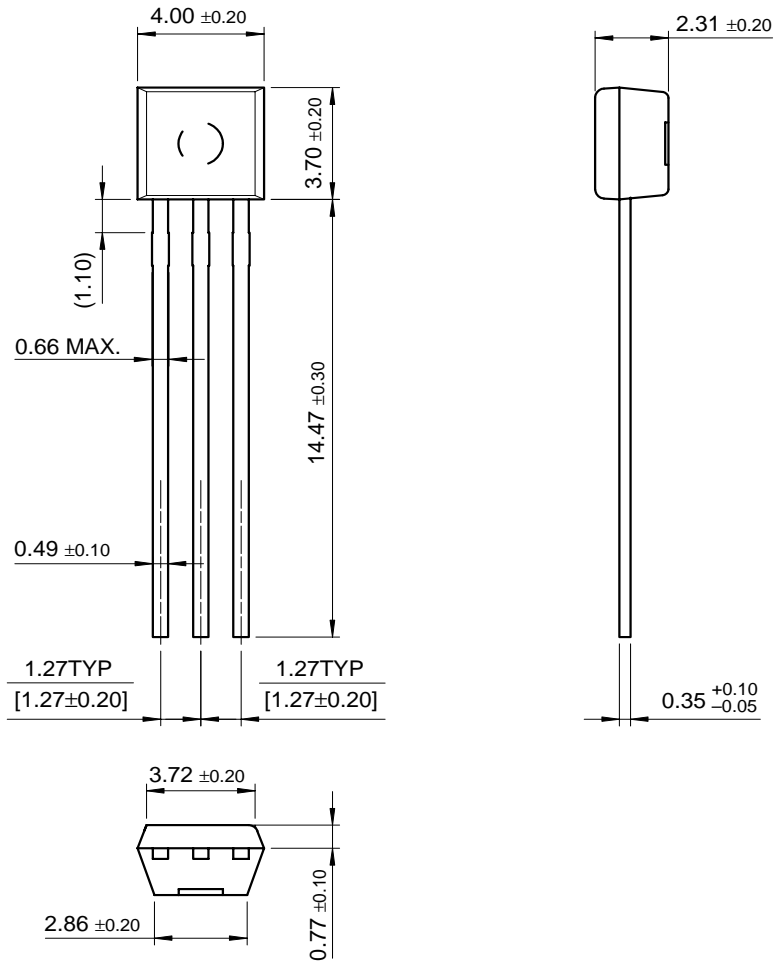
KSC2786

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



# Package Dimensions

## TO-92S



Dimensions in Millimeters

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CoolFET™	FAST <sub>r</sub> ™	MicroFET™	PowerTrench®	SuperSOT™-6
CROSSVOLT™	FRFET™	MicroPak™	QFET™	SuperSOT™-8
DOME™	GlobalOptoisolator™	MICROWIRE™	QS™	SyncFET™
EcoSPARK™	GTO™	MSX™	QT Optoelectronics™	TinyLogic™
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