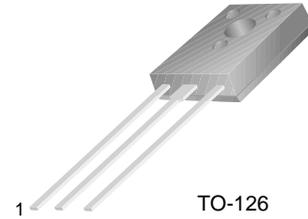


## KSE170/171/172

**Low Power Audio Amplifier**  
**Low Current, High Speed Switching Applications**



TO-126  
1. Emitter 2. Collector 3. Base

### PNP Epitaxial Silicon Transistor

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

Symbol	Parameter	Value	Units
$V_{CBO}$	Collector-Base Voltage	: KSE170	- 60
		: KSE171	- 80
		: KSE172	- 100
$V_{CEO}$	Collector-Emitter Voltage	: KSE170	- 40
		: KSE171	- 60
		: KSE172	- 80
$V_{EBO}$	Emitter-Base Voltage	- 7	V
$I_C$	Collector Current (DC)	- 3	A
$I_{CP}$	Collector Current (Pulse)	- 6	A
$I_B$	Base Current	- 1	A
$P_C$	Collector Dissipation ( $T_C=25^\circ\text{C}$ )	12.5	W
	Collector Dissipation ( $T_a=25^\circ\text{C}$ )	1.5	W
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature	- 65 ~ 150	$^\circ\text{C}$

**Electrical Characteristics**  $T_C=25^\circ\text{C}$  unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Max.	Units
$BV_{CEO}$	Collector-Emitter Breaksown Voltage	$I_C = 10\text{mA}, I_B = 0$	: KSE170	-40	V
			: KSE171	-60	V
			: KSE172	-80	V
$I_{CBO}$	Collector Cut-off Current	: KSE170	$V_{CB} = -60\text{V}, I_B = 0$	-0.1	$\mu\text{A}$
		: KSE171	$V_{CB} = -80\text{V}, I_E = 0$	-0.1	$\mu\text{A}$
		: KSE172	$V_{CB} = -100\text{V}, I_E = 0$	-0.1	$\mu\text{A}$
		: KSE170	$V_{CB} = -60\text{V}, I_E = 0, T_C = 150^\circ\text{C}$	-0.1	mA
		: KSE171	$V_{CB} = -80\text{V}, I_E = 0, T_C = 150^\circ\text{C}$	-0.1	mA
		: KSE172	$V_{CB} = -100\text{V}, I_E = 0, T_C = 150^\circ\text{C}$	-0.1	mA
$I_{EBO}$	Emitter Cut-off Current	$V_{BE} = -7\text{V}, I_C = 0$		-0.1	$\mu\text{A}$
$h_{FE}$	DC Current Gain	$V_{CE} = -1\text{V}, I_C = -100\text{mA}$	50	250	
		$V_{CE} = -1\text{V}, I_C = -500\text{mA}$	30		
		$V_{CE} = -1\text{V}, I_C = -1.5\text{A}$	12		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = -500\text{mA}, I_B = -50\text{mA}$		-0.3	V
		$I_C = -1.5\text{A}, I_B = -150\text{mA}$		-0.9	V
		$I_C = -3\text{A}, I_B = -600\text{mA}$		-1.7	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = -1.5\text{A}, I_B = -150\text{mA}$		-1.5	V
		$I_C = -3\text{A}, I_B = -600\text{mA}$		-2.0	V
$V_{BE(on)}$	Base-Emitter On Voltage	$V_{CE} = -1\text{V}, I_C = -500\text{mA}$		-1.2	V
$f_T$	Current Gain Bandwidth Product	$V_{CE} = -10\text{V}, I_C = -100\text{mA}$	50		MHz
$C_{ob}$	Output Capacitance	$V_{CB} = -10\text{V}, I_E = 0, f = 0.1\text{MHz}$		50	pF

# Typical Characteristics

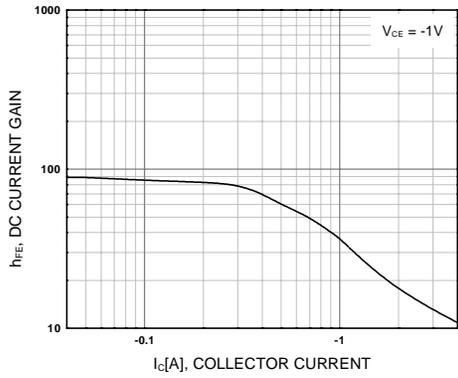


Figure 1. DC current Gain

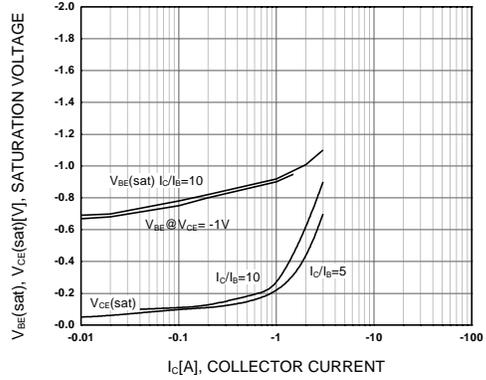


Figure 2. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

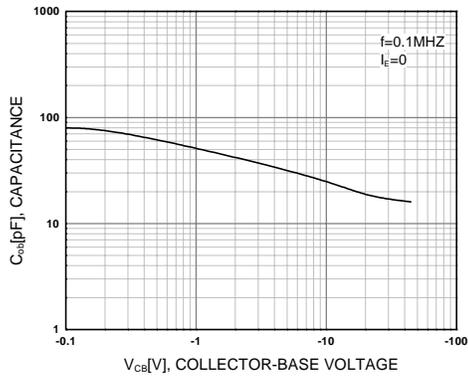


Figure 3. Collector Output Capacitance

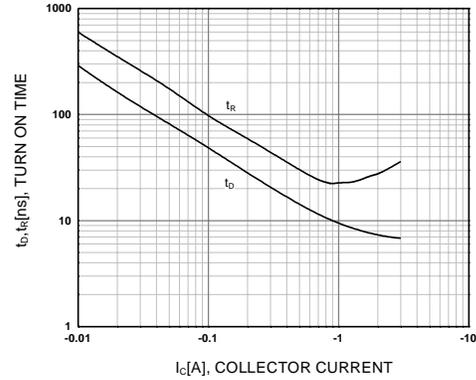


Figure 4. Turn On Time

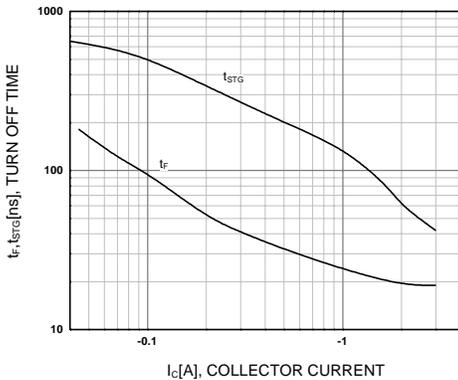


Figure 5. Turn Off Time

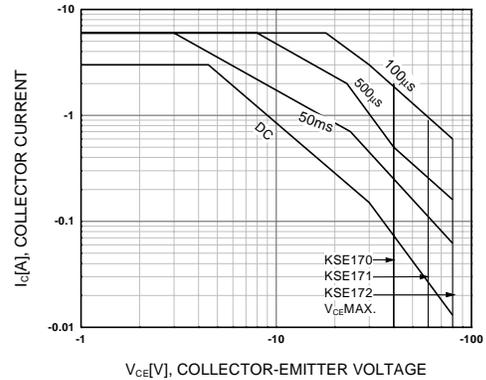


Figure 6. Safe Operating Area

### Typical Characteristics (Continued)

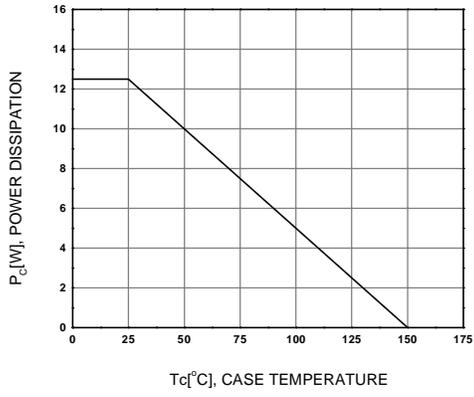
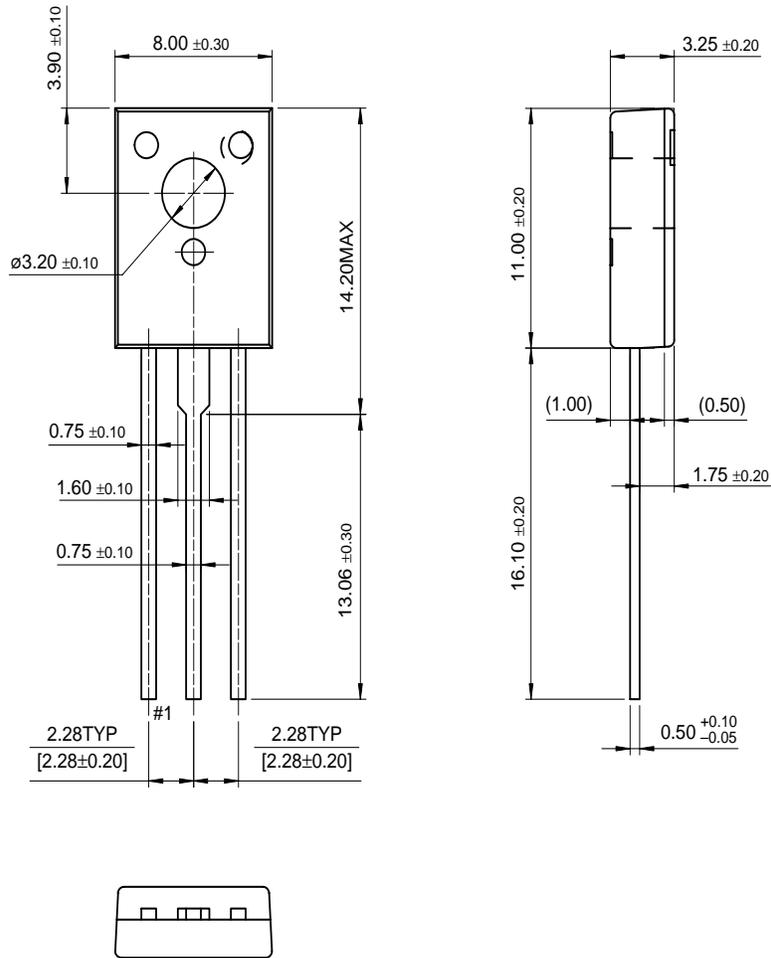


Figure 7. DC current Gain

# Package Dimensions

## TO-126

KSE170/171/172



Dimensions in Millimeters

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KSE170  
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