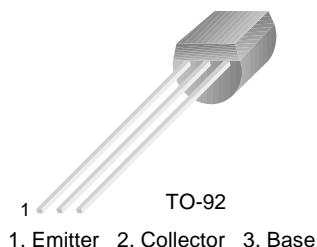


## KSD1616/1616A

### Audio Frequency Power Amplifier & Medium Speed Switching

- Complement to KSB1116/1116A



### NPN Epitaxial Silicon Transistor

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

Symbol	Parameter	Rated	Units
$V_{CBO}$	Collector-Base Voltage	: KSD1616	60
		: KSD1616A	120
$V_{CEO}$	Collector-Emitter Voltage	: KSD1616	50
		: KSD1616A	60
$V_{EBO}$	Emitter-Base Voltage	6	V
$I_C$	Collector Current (DC)	1	A
$I_{CP}$	* Collector Current (Pulse)	2	A
$P_C$	Collector Power Dissipation	0.75	W
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature	-55 ~ 150	$^\circ\text{C}$

\*  $PW \leq 10\text{ms}$ , Duty Cycle < 50%

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
$I_{CBO}$	Collector Cut-off Current	$V_{CB}=60\text{V}$ , $I_E=0$			100	nA
$I_{EBO}$	Emitter Cut-off Current	$V_{EB}=6\text{V}$ , $I_C=0$			100	nA
$h_{FE1}$	DC Current Gain : KSD1616 : KSD1616A	$V_{CE}=2\text{V}$ , $I_C=100\text{mA}$	135		600	
			135		400	
$h_{FE2}$		$V_{CE}=2\text{V}$ , $I_C=1\text{A}$	81			
$V_{BE(on)}$	* Base-Emitter On Voltage	$V_{CE}=2\text{V}$ , $I_C=50\text{mA}$	600	640	700	mV
$V_{CE(sat)}$	* Collector-Emitter Saturation Voltage	$I_C=1\text{A}$ , $I_B=50\text{mA}$		0.15	0.3	V
$V_{BE(sat)}$	* Base-Emitter Saturation Voltage	$I_C=1\text{A}$ , $I_B=50\text{mA}$		0.9	1.2	V
$C_{ob}$	Output Capacitance	$V_{CE}=10\text{V}$ , $I_E=0$ , $f=1\text{MHz}$		19		pF
$f_T$	Current Gain Bandwidth Product	$V_{CE}=2\text{V}$ , $I_C=100\text{mA}$	100	160		MHz
$t_{ON}$	Turn On Time	$V_{CC}=10\text{V}$ , $I_C=100\text{mA}$ $I_{B1}=-I_{B2}=10\text{mA}$ $V_{BE(off)}=-2\sim-3\text{V}$		0.07		$\mu\text{s}$
$t_{STG}$	Storage Time			0.95		$\mu\text{s}$
$t_F$	Fall Time			0.07		$\mu\text{s}$

\* Pulse Test:  $PW < 350\mu\text{s}$ , Duty Cycle  $\leq 2\%$  Pulsed

### $h_{FE1}$ Classification

Classification	Y	G	L
$h_{FE1}$	135 ~ 270	200 ~ 400	300 ~ 600

# Typical Characteristics

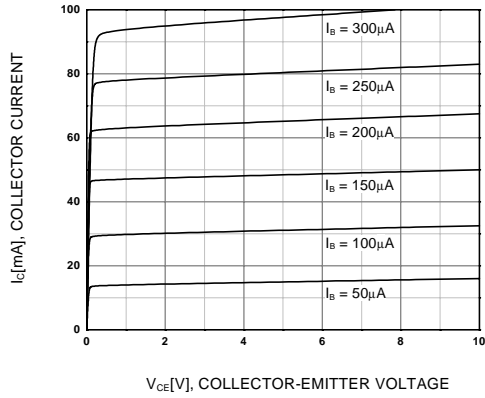


Figure 1. Static Characteristic

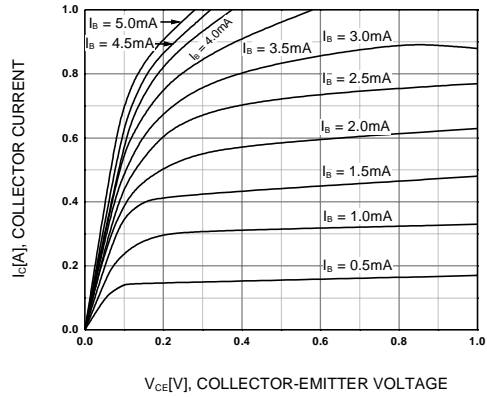


Figure 2. Static Characteristic

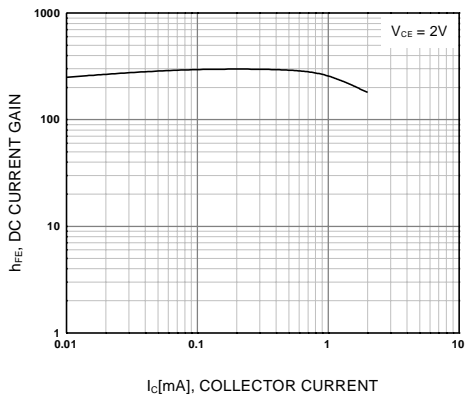


Figure 3. DC current Gain

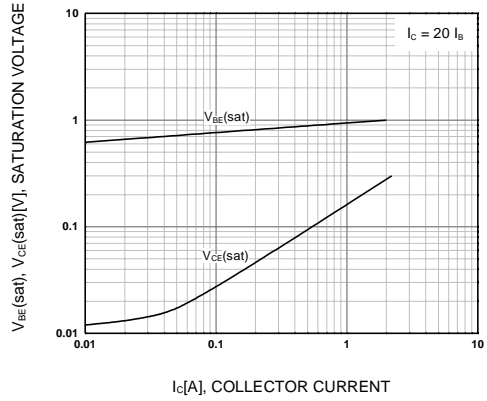


Figure 4. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

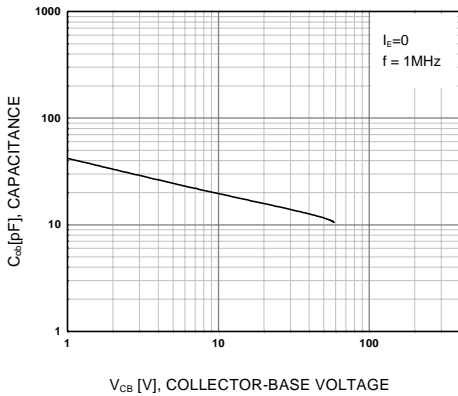


Figure 5. Collector Output Capacitance

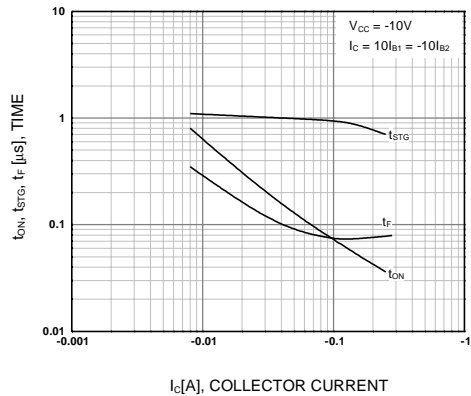


Figure 6. Switching Time

Typical Characteristics (Continued)

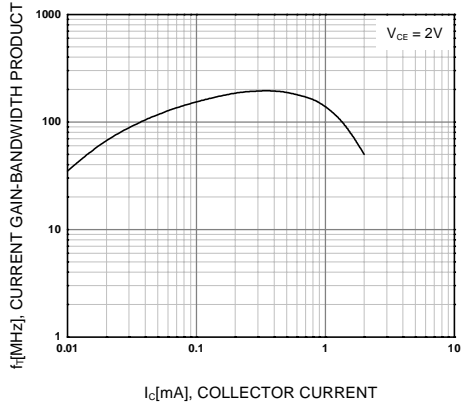


Figure 7. Current Gain Bandwidth Product

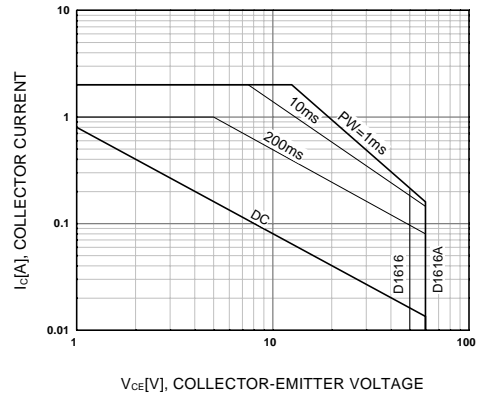


Figure 8. Safe Operating Area

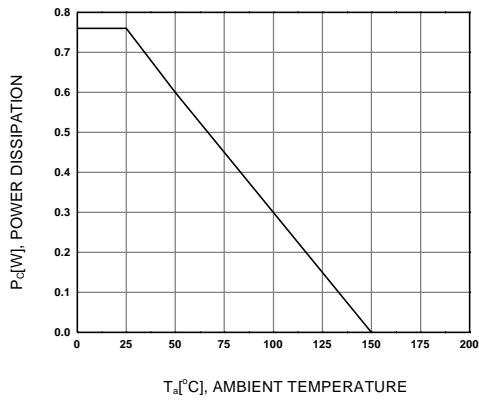


Figure 9. Power Derating

# Package Dimensions

## TO-92

KSD1616/1616A



Dimensions in Millimeters

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