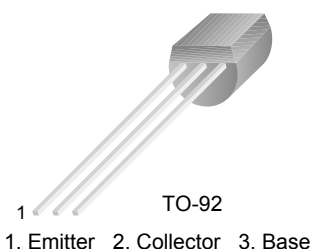


KSD1616/1616A

Audio Frequency Power Amplifier & Medium Speed Switching

- Complement to KSB1116/1116A



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

| Symbol | Parameter | Ratings | Units | |
|-----------|-----------------------------|------------|------------------|---|
| V_{CBO} | Collector-Base Voltage | : KSD1616 | 60 | V |
| | | : KSD1616A | 120 | V |
| V_{CEO} | Collector-Emitter Voltage | : KSD1616 | 50 | V |
| | | : KSD1616A | 60 | V |
| 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 | | | |
| $V_{BE}(\text{on})$ | * Base-Emitter On Voltage | $V_{CE}=2\text{V}, I_C=50\text{mA}$ | 600 | 640 | 700 | mV |
| $V_{CE}(\text{sat})$ | * Collector-Emitter Saturation Voltage | $I_C=1\text{A}, I_B=50\text{mA}$ | | 0.15 | 0.3 | V |
| $V_{BE}(\text{sat})$ | * 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 | $V_{CC}=10\text{V}, I_C=100\text{mA}$ $I_{B1} = -I_{B2}=10\text{mA}$ $V_{BE}(\text{off}) = -2 \sim -3\text{V}$ | | 0.07 | | μs |
| t_{STG} | Storage Time | | | 0.95 | | μs |
| t_F | Fall Time | | | 0.07 | | μs |

* 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

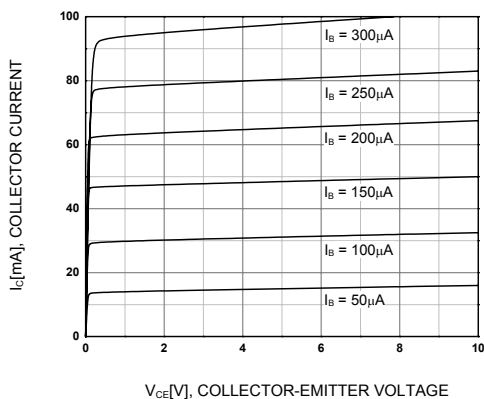


Figure 1. Static Characteristic

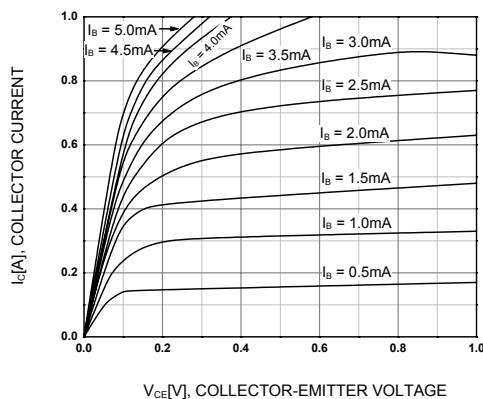


Figure 2. Static Characteristic

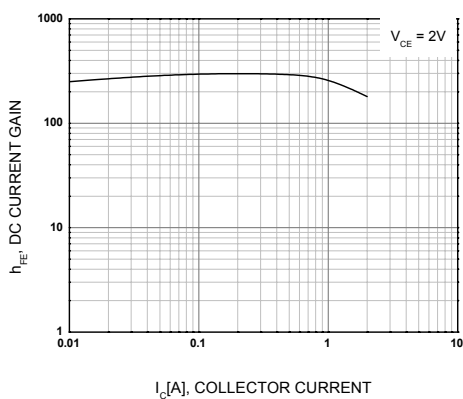


Figure 3. DC current Gain

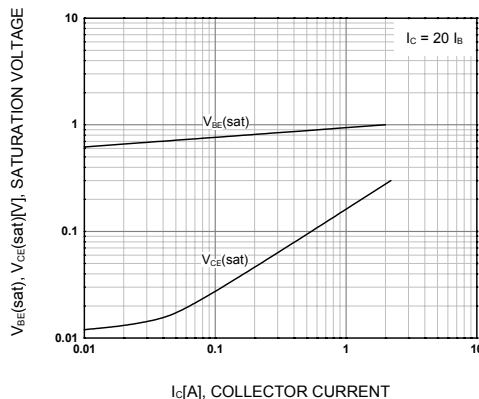


Figure 4. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

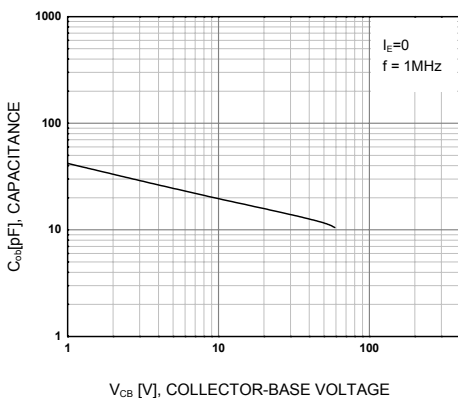


Figure 5. Collector Output Capacitance

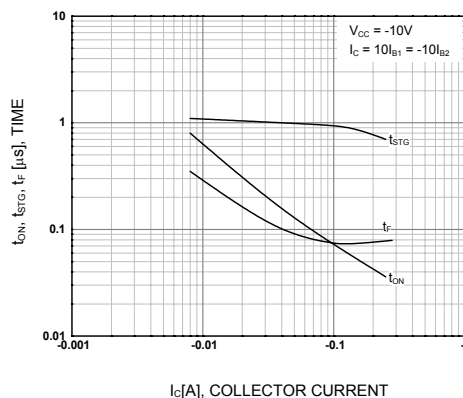


Figure 6. Switching Time

Typical Characteristics(Continued)

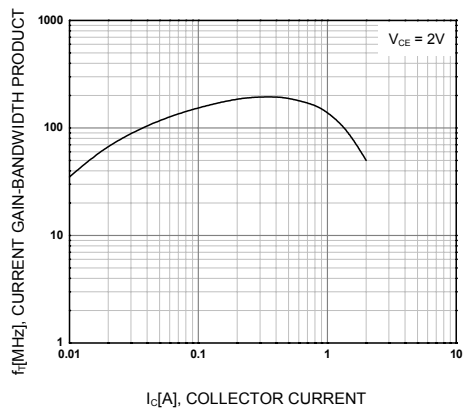


Figure 7. Current Gain Bandwidth Product

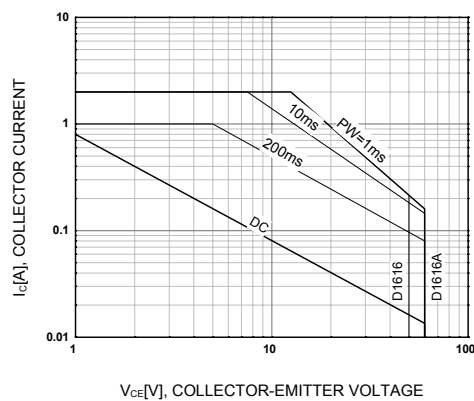


Figure 8. Safe Operating Area

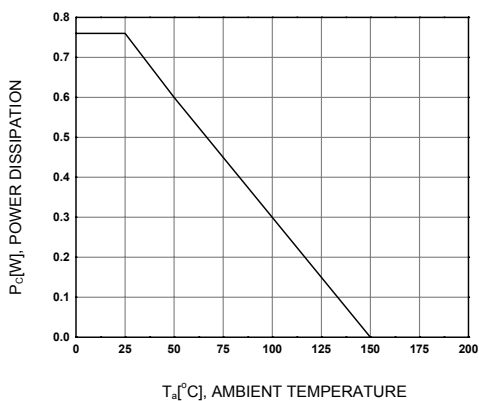


Figure 9. Power Derating



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