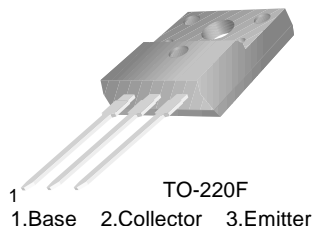


KSD1589

KSD1589

Low Frequency Power Amplifier Low Speed Switching Industrial Use

- Complement to KSB1098

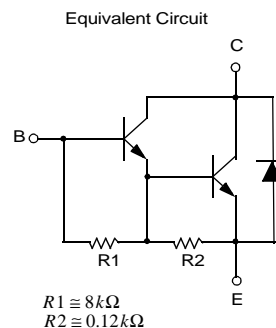


NPN Silicon Darlington Transistor

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

| Symbol | Parameter | Value | Units |
|-----------|--|------------|------------------|
| V_{CBO} | Collector-Base Voltage | 150 | V |
| V_{CEO} | Collector-Emitter Voltage | 100 | V |
| V_{EBO} | Emitter-Base Voltage | 7 | V |
| I_C | Collector Current (DC) | 5 | A |
| I_{CP} | *Collector Current (Pulse) | 8 | A |
| I_B | Base Current | 0.5 | A |
| P_C | Collector Dissipation ($T_a=25^\circ\text{C}$) | 1.5 | W |
| | Collector Dissipation ($T_C=25^\circ\text{C}$) | 20 | W |
| T_J | Junction Temperature | 150 | $^\circ\text{C}$ |
| T_{STG} | Storage Temperature | - 55 ~ 150 | $^\circ\text{C}$ |

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



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

| Symbol | Parameter | Test Condition | Min. | Typ. | Max. | Units |
|------------------------|---------------------------------------|--|-----------|------|------|---------------|
| I_{CBO} | Collector Cut-off Current | $V_{CB} = 100\text{V}, I_E = 0$ | | | 1 | μA |
| h_{FE1} h_{FE2} | *DC Current Gain | $V_{CE} = 2\text{V}, I_C = 3\text{A}$ $V_{CE} = 2\text{V}, I_C = 5\text{A}$ | 2K 500 | 6K | 15K | |
| $V_{CE(sat)}$ | *Collector-Emitter Saturation Voltage | $I_C = 3\text{A}, I_B = 3\text{mA}$ | | 0.9 | 1.5 | V |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage | $I_C = 3\text{A}, I_B = 3\text{mA}$ | | 1.6 | 2 | V |
| t_{ON} | Turn On Time | $V_{CC} = 50\text{V}, I_C = 3\text{A}$ $I_{B1} = - I_{B2} = 3\text{mA}$ $R_L = 16.7\Omega$ | | 1 | | μs |
| t_{stg} | Storage Time | | | 3.5 | | μs |
| t_f | Fall Time | | | 1.2 | | μs |

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

h_{FE} Classification

| Classification | R | O | Y |
|----------------|-------------|-------------|--------------|
| h_{FE1} | 2000 ~ 5000 | 3000 ~ 7000 | 5000 ~ 15000 |

Typical Characteristics

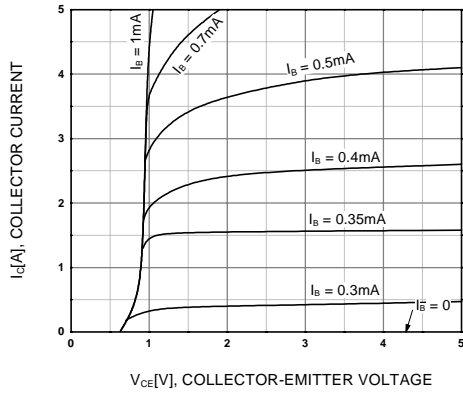


Figure 1. Static Characteristic

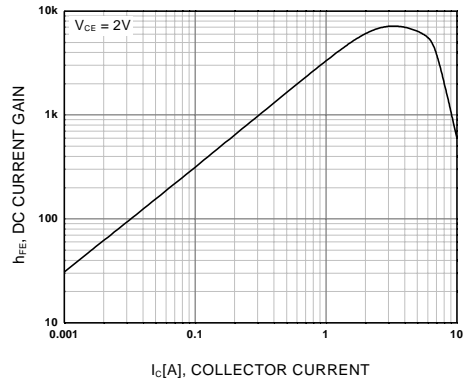


Figure 2. DC current Gain

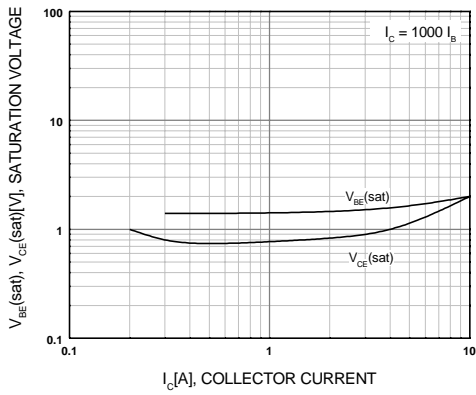


Figure 3. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

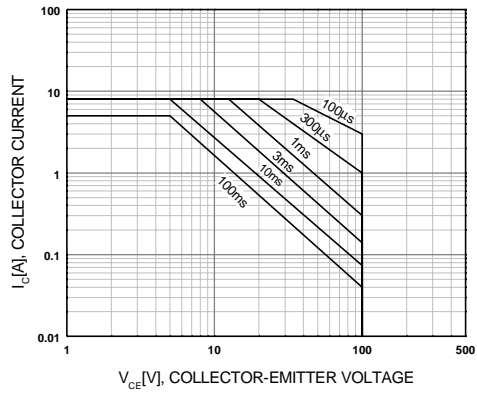


Figure 4. Safe Operating Area

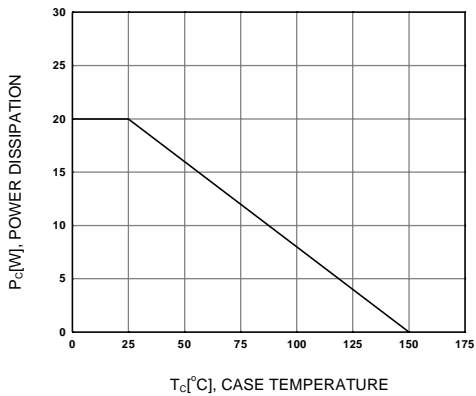
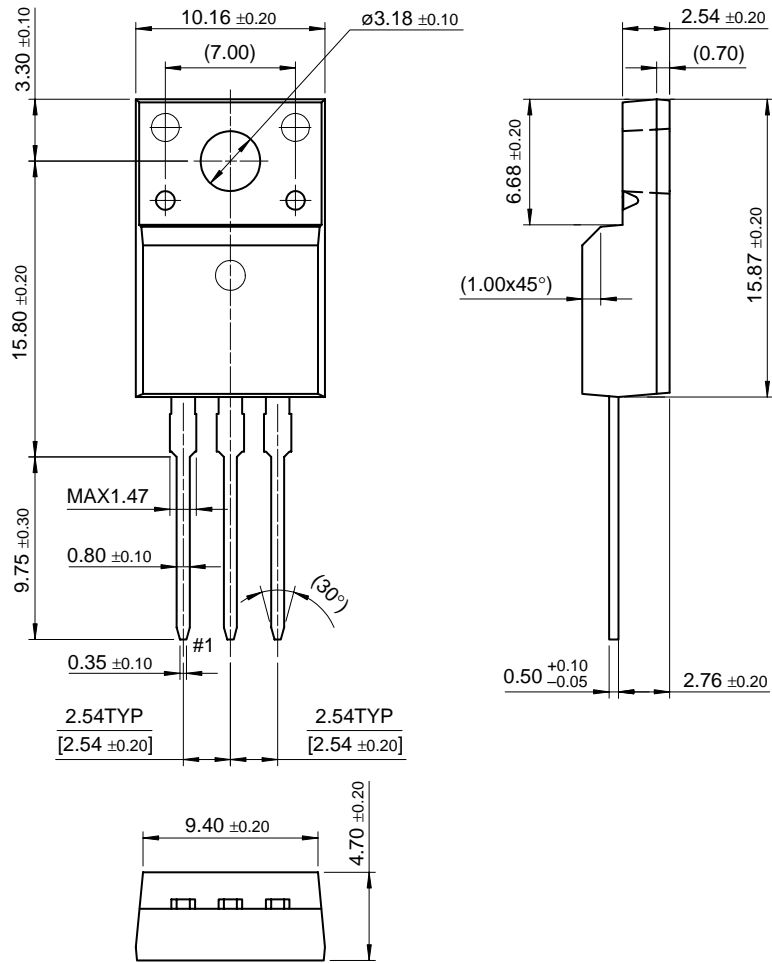


Figure 5. Power Derating

Package Dimensions

KSD1589

TO-220F



Dimensions in Millimeters

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