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2N6609

Silicon PNP Transistor Audio Amplifier Output TO-3 Type Package

Description:

The 2N6609 is a silicon PNP power transistors in a TO-3 type package designed for high power audio, disk head positioners, and other linear applications. It can also be used in power switching circuits such as relay or solenoid drivers, DC to DC converters or inverters.

Features:

- High Safe Operating Area 150W @ 100V
- Completely Characterized for Linear Operation
- High DC Current Gain and Low Saturation Voltage:
 $h_{FE} = 15$ (Min) @ 8A, 4V
 $V_{CE(sat)} = 1.4V$ (Max) @ $I_C = 8A, I_B = 0.8A$

Absolute Maximum Ratings: ($T_A = +25^\circ C$ unless otherwise specified)

| | |
|--|-------------------------------|
| Collector-Emitter Voltage, V_{CEO} | 140V |
| Collector-Emitter Voltage, V_{CEX} | 160V |
| Collector-Base Voltage, V_{CBO} | 160V |
| Emitter-Base Voltage, V_{EBO} | 7V |
| Collector Current, I_C | |
| Continuous | 16A |
| Peak (Note 1) | 30A |
| Base Current, I_B | |
| Continuous | 4A |
| Peak (Note 1) | 15A |
| Total Power Dissipation ($T_C = +25^\circ C$), P_D | 150W |
| Derate Above $+25^\circ C$ | 0.855W/ $^\circ C$ |
| Operating Junction Temperature Range, T_J | -65° to $+200^\circ C$ |
| Storage Temperature Range, T_{stg} | -65° to $+200^\circ C$ |
| Thermal Resistance, Junction-to-Case, R_{thJC} | 1.17 $^\circ C/W$ |

Note 1. Pulse Test: Pulse Width = 5ms, Duty Cycle \leq 10%.

Electrical Characteristics: ($T_C = +25^\circ\text{C}$ unless otherwise specified)

| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|---|---------------------------------|---|-----|-----|-----|------|
| OFF Characteristics (Note 1) | | | | | | |
| Collector–Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C = 0.2\text{A}, I_B = 0$ | 140 | – | – | V |
| Collector–Emitter Sustaining Voltage | $V_{CEX(sus)}$ | $I_C = 0.1\text{A}, V_{BE(off)} = 1.5\text{V}, R_{BE} = 100\Omega$ | 160 | – | – | V |
| | $V_{CER(sus)}$ | $I_C = 0.2\text{A}, R_{BE} = 100\Omega$ | 150 | – | – | V |
| Collector Cutoff Current | I_{CEO} | $V_{CE} = 120\text{V}, I_B = 0$ | – | – | 10 | mA |
| | I_{CEX} | $V_{CE} = 140\text{V}, V_{BE(off)} = 1.5\text{V}$ | – | – | 2 | mA |
| | | $V_{CE} = 140\text{V}, V_{BE(off)} = 1.5\text{V}, T_C = +150^\circ\text{C}$ | – | – | 10 | mA |
| I_{CBO} | $V_{CB} = 140\text{V}, I_E = 0$ | – | – | 2 | mA | |
| Emitter Cutoff Current | I_{EBO} | $V_{EB} = 7\text{V}, I_C = 0$ | – | – | 5 | mA |
| ON Characteristics (Note 1) | | | | | | |
| DC Current Gain | h_{FE} | $V_{CE} = 4\text{V}, I_C = 8\text{A}$ | 15 | – | 60 | |
| | | $V_{CE} = 4\text{V}, I_C = 16\text{A}$ | 5 | – | – | |
| Collector–Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 8\text{A}, I_B = 800\text{mA}$ | – | – | 1.4 | V |
| | | $I_C = 16\text{A}, I_B = 3.2\text{A}$ | – | – | 4.0 | V |
| Base–Emitter ON Voltage | $V_{BE(on)}$ | $I_C = 8\text{A}, V_{CE} = 4\text{V}$ | – | – | 2.2 | V |
| Dynamic Characteristics | | | | | | |
| Magnitude of Common–Emitter Small–Signal, Short–Circuit, Forward Current Transfer Ratio | $ h_{fe} $ | $I_C = 1\text{A}, f = 50\text{kHz}$ | 4 | – | – | |
| Small–Signal Current Gain | h_{fe} | $V_{CE} = 4\text{V}, I_C = 1\text{A}, f = 1\text{kHz}$ | 40 | – | – | |
| Second Breakdown Characteristics | | | | | | |
| Second Breakdown Collector Current with Base Forward Biased | $I_{S/b}$ | $t = 1\text{sec (non-repetitive)}, V_{CE} = 100\text{V}$ | 1.5 | – | – | A |

Note 1. Pulse Test: Pulse Width = 5ms, Duty Cycle $\leq 10\%$.

