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BU806 Silicon NPN Transistor Fast Switching Power Darlington TO-220 Type Package

Description:

The BU806 is a silicon epitaxial planer NPN power Darlington transistor in a TO-220 type package with an integrated base-emitter speed-up diode designed for use in high voltage, high current, fast switching applications. In particular, the BU806 can be used in horizontal output stages of 110° CRT video displays and is primarily intended for large screen displays.

Absolute Maximum Ratings:

| | |
|---|----------------|
| Collector-Base Voltage ($I_E = 0$), V_{CBO} | 400V |
| Collector-Emitter Voltage ($V_{BE} = -6V$), V_{CEV} | 400V |
| Collector-Emitter Voltage ($I_B = 0$), V_{CEO} | 200V |
| Emitter-Base Voltage ($I_C = 0$), V_{EBO} | 6V |
| Collector Current, I_C | |
| Continuous | 8A |
| Peak | 15A |
| Base Current, I_B | 2A |
| Damper Diode Peak Forward Current, I_{DM} | 10A |
| Total Power Dissipation ($T_C \leq +25^\circ C$), P_{tot} | 60W |
| Operating Junction Temperature, T_J | +150°C |
| Storage Temperature Range, T_{stg} | -65° to +150°C |
| Thermal Resistance, Junction-to-Case, R_{thJC} | 2.08°C/W |
| Thermal Resistance, Junction-to-Ambient, R_{thJA} | 70°C/W |

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

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|--------------------------------------|----------------|---------------------------------------|-----|------|------|---------|
| Collector Cutoff Current | I_{CES} | $V_{CE} = 400V, V_{BE} = 0$ | - | - | 100 | μA |
| | I_{CEV} | $V_{CE} = 400V, V_{BE} = -6V$ | - | - | 100 | μA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB} = 6V, I_C = 0$ | - | - | 3 | mA |
| Collector-Emitter Sustaining Voltage | $V_{CEO(sus)}$ | $I_C = 100mA, I_B = 0, \text{Note 1}$ | 200 | - | - | V |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 5A, I_B = 50mA, \text{Note 1}$ | - | - | -1.5 | V |
| Base-Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C = 5A, I_B = 50mA, \text{Note 1}$ | - | - | 2.0 | V |
| DC Current Gain | h_{FE} | $I_C = 3A, V_{CE} = 5V$ | - | 3500 | - | |

Note 1. Pulse test: Pulse Duration = 300 μs , Duty Cycle = 1.5%.

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

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|------------------------------|------------------|---|-----|------|-----|---------------|
| Damper Diode Forward Voltage | V_F | $I_F = 4\text{A}$, Note 1 | - | - | 2 | V |
| Turn-Off Time | t_{off} | $I_C = 5\text{A}$, $I_{B1} = 50\text{mA}$ | - | 0.4 | 1.0 | μs |
| Resistive Load | | | | | | |
| Turn-On Time | t_{on} | $I_C = 5\text{A}$, $I_{B1} = 50\text{mA}$, $I_{B2} = -500\text{mA}$, $V_{CC} = 100\text{V}$ | - | 0.35 | - | μs |
| Storage Time | t_s | | - | 0.55 | - | μs |
| Fall Time | t_f | | - | 0.20 | - | μs |

Note 1. Pulse test: Pulse Duration = $300\mu\text{s}$, Duty Cycle = 1.5%.

