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TIP100, TIP101, TIP102 Silicon NPN Darlington Power Amp, Switch TO-220 Type Package

Absolute Maximum Ratings: ($T_A = +25^\circ\text{C}$, Note 1 unless otherwise specified)

| | | |
|---------------------------------------|-------|----------------|
| Collector-Base Voltage, V_{CBO} | | |
| TIP100 | ..... | 60V |
| TIP101 | ..... | 80V |
| TIP102 | ..... | 100V |
| Collector-Emitter Voltage, V_{CEO} | | |
| TIP100 | ..... | 60V |
| TIP101 | ..... | 80V |
| TIP102 | ..... | 100V |
| Emitter-Base Voltage, V_{EBO} | | 5V |
| Collector Current, I_C | | |
| DC | ..... | 5A |
| Pulse | ..... | 8A |
| Base Current, I_B | | 1A |
| Collector Dissipation, P_C | | |
| $T_A = +25^\circ\text{C}$ | ..... | 2W |
| $T_C = +25^\circ\text{C}$ | ..... | 80W |
| Operating Junction Temperature, T_J | | +150°C |
| Storage Temperature Range, T_{stg} | | -65° to +150°C |

Note 1. These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

Electrical Characteristics: ($T_A = +25^\circ\text{C}$, Note 2 unless otherwise specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|--|----------------|---------------------------------|-----|-----|-----|---------------|
| Collector-Emitter Sustaining Voltage TIP100 | $V_{CEO(sus)}$ | $I_C = 30\text{mA}, I_B = 0$ | 60 | - | - | V |
| TIP101 | | | 80 | - | - | V |
| TIP102 | | | 100 | - | - | V |
| Collector Cutoff Current TIP100 | I_{CEO} | $V_{CE} = 30\text{V}, I_B = 0$ | - | - | 50 | μA |
| TIP101 | | $V_{CE} = 40\text{V}, I_B = 0$ | - | - | 50 | μA |
| TIP102 | | $V_{CE} = 50\text{V}, I_B = 0$ | - | - | 50 | μA |
| TIP100 | I_{CBO} | $V_{CE} = 60\text{V}, I_B = 0$ | - | - | 50 | μA |
| TIP101 | | $V_{CE} = 80\text{V}, I_B = 0$ | - | - | 50 | μA |
| TIP102 | | $V_{CE} = 100\text{V}, I_B = 0$ | - | - | 50 | μA |

Note 2. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

Electrical Characteristics (Cont'd): ($T_A = +25^\circ\text{C}$, Note 2 unless otherwise specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|--------------------------------------|---------------|---|------|-----|-------|------|
| Emitter Cutoff Current | I_{EBO} | $V_{EB} = 5\text{V}, I_C = 0$ | - | - | 2 | mA |
| DC Current Gain | h_{FE} | $V_{CE} = 4\text{V}, I_C = 3\text{A}$ | 1000 | - | 20000 | |
| | | $V_{CE} = 4\text{V}, I_C = 8\text{A}$ | 200 | - | - | |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 3\text{A}, I_B = 6\text{mA}$ | - | - | 2.0 | V |
| | | $I_C = 8\text{A}, I_B = 80\text{mA}$ | - | - | 2.5 | V |
| Base-Emitter ON Voltage | $V_{BE(on)}$ | $V_{CE} = 4\text{V}, I_C = 8\text{A}$ | - | - | 2.8 | V |
| Output Capacitance | C_{ob} | $V_{CB} = 10\text{V}, I_E = 0, f = 0.1\text{MHz}$ | - | - | 20 | pF |

Note 2. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

