

NPN SILICON POWER TRANSISTORS

The 2N6676, 2N6677 and 2N6678 transistor are designed for high voltage switching applications such as:

FEATURES

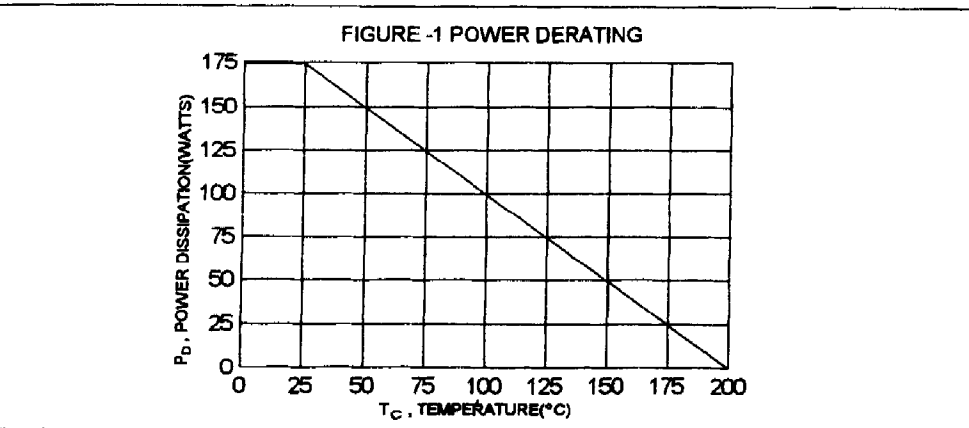
- *Off-Line Power Supplies
- *Converter Circuits
- *Pulse Width Modulated Regulators
- Specification Feature-
High Voltage Capability
Fast Switching Speeds
Low Saturation Voltage

MAXIMUM RATINGS

| Characteristic | Symbol | 2N6676 | 2N6677 | 2N6678 | Unit |
|---|----------------|-------------|--------|--------|------------|
| Collector-Emitter Voltage | V_{CEV} | 450 | 550 | 650 | V |
| Collector-Emitter Voltage | V_{CEX} | 350 | 400 | 450 | V |
| Collector-Emitter Voltage | V_{CEO} | 300 | 350 | 400 | V |
| Emitter-Base Voltage | V_{EBO} | 8.0 | | | V |
| Collector Current - Continuous | I_C | 15 | | | A |
| Collector Current - Peak | I_{CM} | 20 | | | A |
| Base Current-Peak | I_B | 5.0 | | | A |
| Total Power Dissipation @ $T_C = 25^\circ C$ Derate above $25^\circ C$ | P_T | 175 | | | W |
| Operating and Storage Junction Temperature Range | T_J, T_{STG} | -65 to +200 | | | $^\circ C$ |

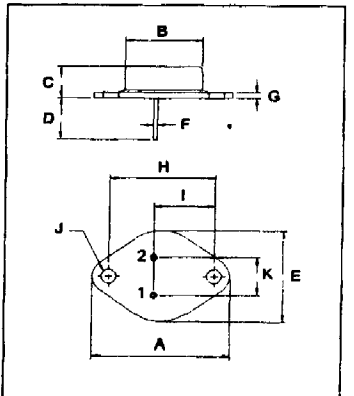
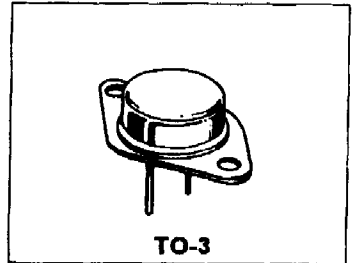
THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | UNIT |
|-------------------------------------|-----------------|-----|--------------|
| Thermal Resistance Junction to Case | $R_{\theta jc}$ | 1.0 | $^\circ C/W$ |



**NPN
2N6676
2N6677
2N6678**

**15 AMPERE
NPN SILICON
POWER TRANSISTORS
300-400 VOLTS
175 WATTS**



PIN 1. BASE
2. EMITTER
COLLECTOR (CASE)

| DIM | MILLIMETERS | |
|-----|-------------|-------|
| | MIN | MAX |
| A | 38.75 | 39.96 |
| B | 19.28 | 22.23 |
| C | 7.96 | 9.28 |
| D | 11.18 | 12.19 |
| E | 25.20 | 26.67 |
| F | 0.92 | 1.09 |
| G | 1.38 | 1.62 |
| H | 29.90 | 30.40 |
| I | 16.84 | 17.30 |
| J | 3.88 | 4.36 |
| K | 10.67 | 11.18 |

ELECTRICAL CHARACTERISTICS ($T_c = 25^\circ\text{C}$ unless otherwise noted)

| Characteristic | Symbol | Min | Max | Unit |
|----------------|--------|-----|-----|------|
|----------------|--------|-----|-----|------|

OFF CHARACTERISTICS

| | | | | |
|--|----------------------------|---------------|-------------------|----|
| Collector-Emitter Sustaining Voltage(1) ($I_C = 200\text{ mA}$, $I_B = 0$) | 2N6676 2N6677 2N6678 | $V_{CE(sus)}$ | 300 350 400 | V |
| Collector Cutoff Current ($V_{CE} = \text{Rated } V_{CEV}$, $V_{BE(off)} = -1.5\text{ V}$) ($V_{CE} = \text{Rated } V_{CEV}$, $V_{BE(off)} = -1.5\text{ V}$, $T_c = 100^\circ\text{C}$) | | I_{CEV} | 0.1 1.0 | mA |
| Emitter Cutoff Current ($V_{EB} = 8.0\text{ V}$, $I_C = 0$) | | I_{EBO} | 2.0 | mA |

ON CHARACTERISTICS (1)

| | | | | |
|--|--|---------------|-----|---|
| DC Current Gain ($I_C = 15\text{ A}$, $V_{CE} = 3.0\text{ V}$) | | hFE | 8.0 | |
| Collector-Emitter Saturation Voltage ($I_C = 15\text{ A}$, $I_B = 3.0\text{ A}$) | | $V_{CE(sat)}$ | 1.5 | V |
| Base-Emitter Saturation Voltage ($I_C = 15\text{ A}$, $I_B = 3.0\text{ A}$) | | $V_{BE(sat)}$ | 1.5 | V |

DYNAMIC CHARACTERISTICS

| | | | | |
|--|--|----------|-----|-----|
| Current - Gain - Bandwidth Product (2) ($I_C = 1.0\text{ A}$, $V_{CE} = 10\text{ V}$, $f = 5.0\text{ MHz}$) | | F_T | 3.0 | MHz |
| Output Capacitance ($I_C = 1.0\text{ A}$, $V_{CE} = 10\text{ V}$, $f = 0.1\text{ MHz}$) | | C_{ob} | 500 | pF |

SWITCHING CHARACTERISTICS

| | | | | |
|--------------|---|-------|-----|----|
| Delay Time | $V_{CC} = 200\text{ V}$, $I_C = 15\text{ A}$ $I_{B1} = I_{B2} = 3\text{ A}$, $t_p = 20\text{ us}$ Duty Cycle $\leq 2\%$ $V_{BB} = 6\text{ V}$, $R_t = 13.5\Omega$ $T_c = 25^\circ\text{C}$ | t_d | 0.2 | us |
| Rise Time | | t_r | 0.6 | us |
| Storage Time | | t_s | 2.5 | us |
| Fall Time | | t_f | 0.6 | us |

(1) Pulse Test: Pulse width = 300 us, Duty Cycle $\leq 2.0\%$ (2) $f_T = |h_{fe}| \cdot f_{max}$