# 2N6251

SILICON NPN TRIPLE DIFFUSED TYPE

DC-DC CONVERTER, SWITCHING REGULATOR
AND HIGH POWER AMPLIFIER APPLICATIONS.

FEATURES:

. High Collector-Emitter Sustaining Voltage
: $V_{CEO(SUS)}$=350V (Min.)

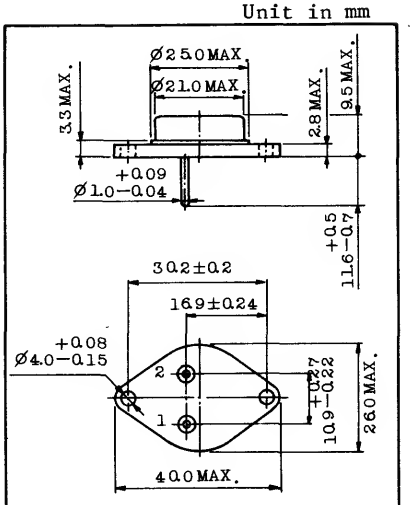
. Low Saturation Voltage : $V_{CE(sat)}$ <1.5V
@ $I_C$=10A, $I_B$=1.67A

. Excellent Switching Times : $t_r$ <2.0μs, $t_f$ <1.0μs
@ $I_C$=10A, $I_B$=±1.67A

. High Collector Power Dissipation Capacity
: $P_C$=175W (Max.)

. Excellent Area of Safe Operatings

Unit in mm




1. BASE
2. EMITTER
COLLECTOR (CASE)

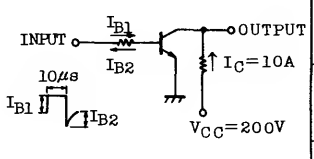
| | |
|---|---|
| JEDEC | TO−204MA/TO−3 |
| EIAJ | TC−3, TB−3 |
| TOSHIBA | 2−21E1A |

Weight : 15.8g

MAXIMUM RATINGS ($Ta=25^{\circ}C$)

| | CHARACTERISTIC | | SYMBOL | RATING | UNIT |
|---|---|---|---|---|---|
| * | Collector-Base Voltage | | $V_{CBO}$ | 450 | V |
| | Collector-Emitter Sustaining Voltage ($R_{BE}$=50Ω) | | $V_{CER(SUS)}$ | 375 | V |
| * | Collector-Emitter Sustaining Voltage ($V_{BE}$=0) | | $V_{CEX(SUS)}$ | 375 | V |
| | Collector-Emitter Sustaining Voltage | | $V_{CEO(SUS)}$ | 350 | V |
| * | Emitter-Base Voltage | | $V_{EBO}$ | 6 | V |
| * | Collector Current | DC | $I_C$ | 10 | A |
| | | Peak | $I_{CM}$ | 30 | A |
| * | Base Current | | $I_B$ | 10 | A |
| * | Collector Power Dissipation | $Tc=25^{\circ}C$ | $P_C$ | 175 | W |
| | | $Tc=100^{\circ}C$ | | 100 | W |
| | Derate Linearly above 25°C | | | 1.0 | $W/^{\circ}C$ |
| * | Junction Temperature | | $T_j$ | 200 | $^{\circ}C$ |
| * | Storage Temperature Range | | $T_{stg}$ | −65 ~ 200 | $^{\circ}C$ |
| * | Lead Temperature (0.8mm from case for 10s) | | $T_L$ | 230 | $^{\circ}C$ |

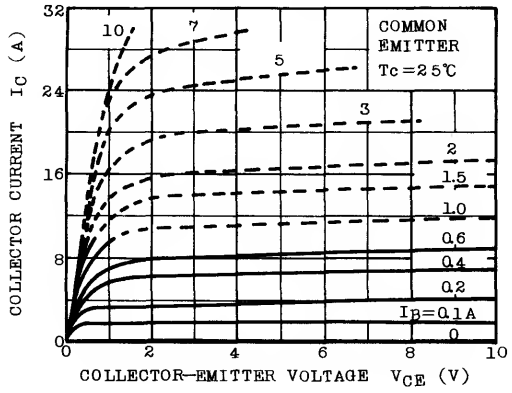
ELECTRICAL CHARACTERISTICS ($Ta=25^{\circ}C$)

| | CHARACTERISTIC | | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|---|---|
| * | Collector Cut-off Current | | $I_{CEV}$ | $V_{CE}$=375V, $V_{BE}$=-1.5V | - | - | 5 | mA |
| * | Collector Cut-off Current | | $I_{CEV}$ | $V_{CE}$=375V, $V_{BE}$=-1.5V $Tc=125^{\circ}C$ | - | - | 10 | mA |
| | Collector Cut-off Current | | $I_{CEO}$ | $V_{CE}$=300V, $I_B$=0 | - | - | 5 | mA |
| * | Emitter Cut-off Current | | $I_{EBO}$ | $V_{EB}$=6V, $I_C$=0 | - | - | 1 | mA |
| * | Collector-Emitter Sustaining Voltage | | $V_{CER(SUS)}$ ** | $I_C$=0.2A, $R_{BE}$=50Ω | 375 | - | - | V |
| * | Collector-Emitter Sustaining Voltage | | $V_{CEO(SUS)}$ ** | $I_C$=0.2A, $I_B$=0 | 350 | - | - | V |
| * | Emitter-Base Breakdown Voltage | | $V_{(BR)EBO}$ | $I_E$=1mA, $I_C$=0 | 6 | - | - | V |
| * | DC Current Gain | | hFE | $V_{CE}$=3V, $I_C$=10A | 6 | - | 50 | |
| * | Saturation Voltage | Collector-Emitter | $V_{CE(sat)}$ | $I_C$=10A, $I_B$=1.67A | - | - | 1.5 | V |
| | | Base-Emitter | $V_{BE(sat)}$ | $I_C$=10A, $I_B$=1.67A | - | - | 2.25 | V |
| * | Small Signal Current Gain | | $h_{fe}$ | $V_{CE}$=10V, $I_C$=1A f=1MHz | 2.5 | - | - | |
| * | Switching Time | Rise Time | $t_r$ |   $I_{B1}$=-$I_{B2}$=1.67A DUTY CYCLE≤2% | - | - | 2.0 | μs |
| | | Storage Time | $t_s$ | | - | - | 3.5 | μs |
| | | Fall Time | $t_f$ | | - | - | 1.0 | μs |
| * | Second Breakdown Collector Current (Base Forward Bias) | | $I_{s/b}$ | $V_{CE}$=30V, t=1s (non-repetitive) | 5.8 | - | - | A |
| * | Second Breakdwon Energy (Base Reverse Bias) | | $E_{s/b}$ | $I_C$=10A, $V_{BE}$=-4V L=50μH | 2.5 | - | - | mJ |

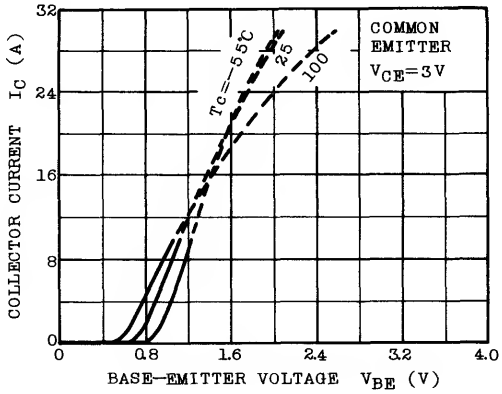
* In accordance with JEDEC registration data.

** The sustaining voltages $V_{CER(SUS)}$ and $V_{CEO(SUS)}$ MUST NOT be measured a curve tracer.

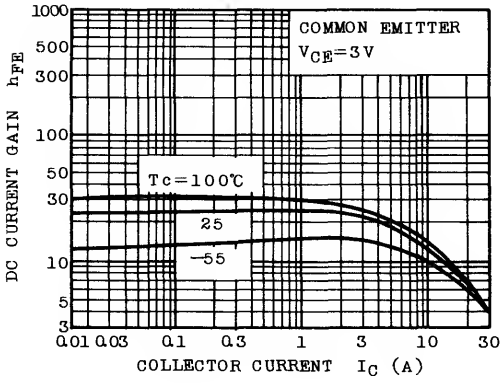
$I_C - V_{CE}$



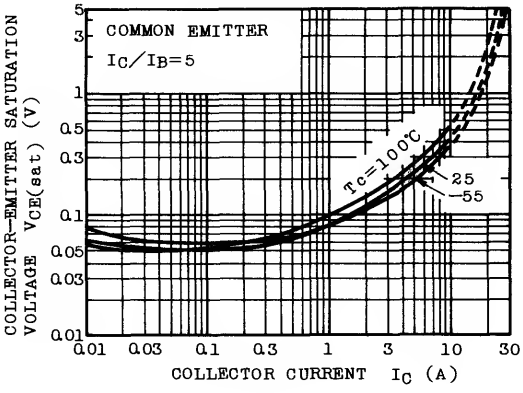

$I_C - V_{BE}$



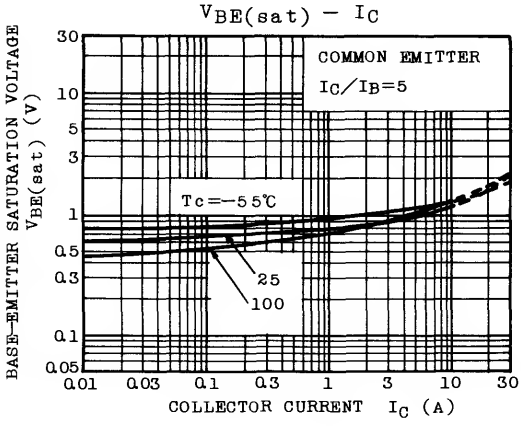

$h_{FE} - I_C$




$V_{CE(sat)} - I_C$




$V_{BE(sat)} - I_C$




$P_C - T_c$