# 2SD684A

SILICON NPN TRIPLE DIFFUSED TYPE
(DARLINGTON POWER)

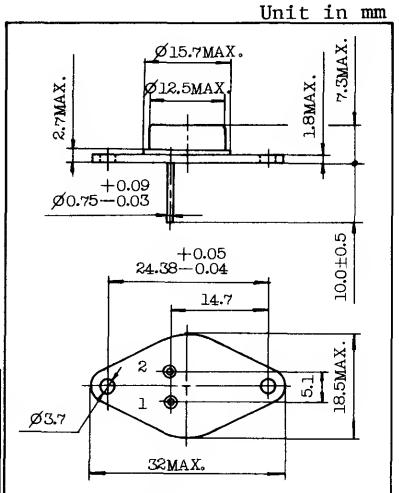
IGNITER APPLICATIONS.

HIGH VOLTAGE SWITCHING APPLICATIONS.

FEATURES:

- High DC Current Gain
  : $h_{FE}$=600 (Min.) ($V_{CE}$=2V, $I_C$=2A)
- Monolithic Construction With Built-In Base-Emitter Shunt Resistor.

Unit in mm




1. BASE
2. EMITTER
COLLECTOR(CASE)

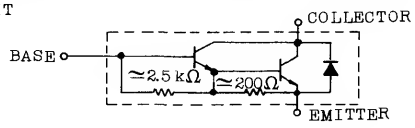
| | |
|---|---|
| JEDEC | TO — 66 |
| EIAJ | TC — 16A, TB — 23 |
| TOSHIBA | 2 — 13A1A |

Mounting kit No.AC74
Weight : 5.9g

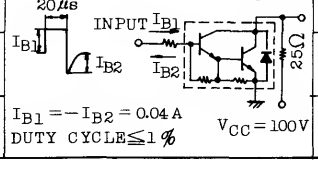
MAXIMUM RATINGS (Ta=25°C)

| CHARACTERISTIC | SYMBOL | RATING | UNIT |
|---|---|---|---|
| Collector-Base Voltage | $V_{CBO}$ | 600 | V |
| Collector-Emitter Voltage | $V_{CEO}$ | 400 | V |
| Emitter-Base Voltage | $V_{EBO}$ | 5 | V |
| Collector Current | $I_C$ | 6 | A |
| Base Current | $I_B$ | 1 | A |
| Collector Power Dissipation (Tc=25°C) | $P_C$ | 30 | W |
| Junction Temperature | $T_j$ | 150 | °C |
| Storage Temperature Range | $T_{stg}$ | −65∿150 | °C |

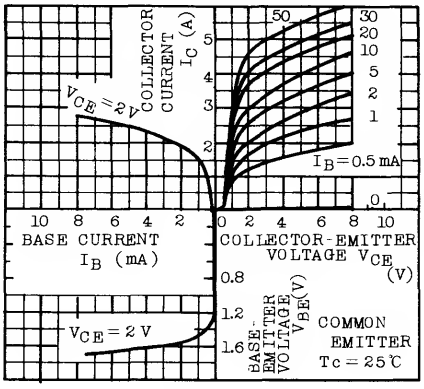
EQUIVALENT CIRCUIT



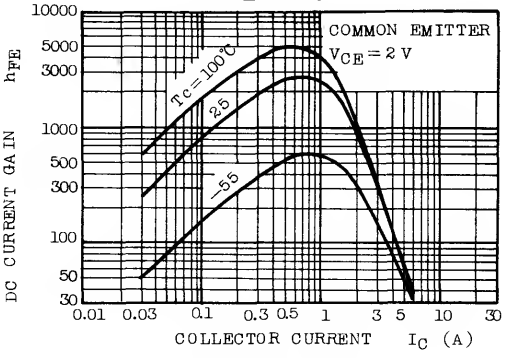

ELECTRICAL CHARACTERISTICS (Ta=25°C)

| CHARACTERISTIC | | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|---|
| Collector Cut-off Current | | $I_{CBO}$ | $V_{CB}$=600V, $I_E$=0 | − | − | 0.5 | mA |
| Emitter Cut-off Current | | $I_{EBO}$ | $V_{EB}$=5V, $I_C$=0 | − | − | 3 | mA |
| Collector-Emitter Breakdown Voltage | | V(BR)CEO | $I_C$=10mA, $I_B$=0 | 400 | − | − | V |
| DC Current Gain | | $h_{FE}$(1) | $V_{CE}$=2V, $I_C$=2A | 600 | − | − | |
| | | $h_{FE}$(2) | $V_{CE}$=2V, $I_C$=4A | 100 | − | − | |
| Collector-Emitter Saturation Voltage | | $V_{CE(sat)}$ | $I_C$=4A, $I_B$=0.04A | − | − | 2.0 | V |
| Base-Emitter Saturation Voltage | | $V_{BE(sat)}$ | $I_C$=4A, $I_B$=0.04A | − | − | 2.5 | V |
| Emitter-Collector Forward Voltage | | $V_{ECF}$ | $I_E$=4A, $I_B$=0 | − | − | 3.0 | V |
| Collector Output Capacitance | | $C_{ob}$ | $V_{CB}$=50V, $I_E$=0, f=1MHz | − | 35 | − | pF |
| Switching Time | Turn-on Time | $t_{on}$ |  | − | 1 | − | µs |
| | Storage Time | $t_{stg}$ | | − | 8 | − | |
| | Fall Time | $t_f$ | | − | 5 | − | |

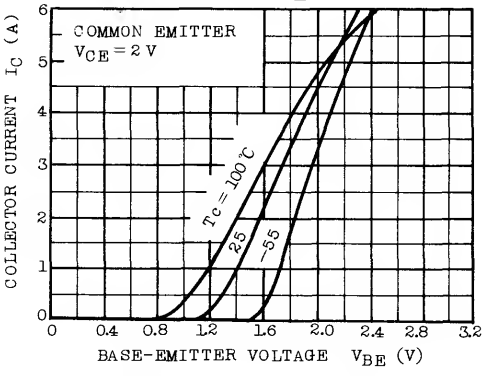
STATIC CHARACTERISTICS



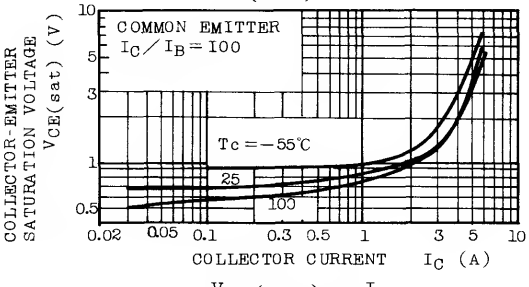

$h_{FE}$ – $I_C$



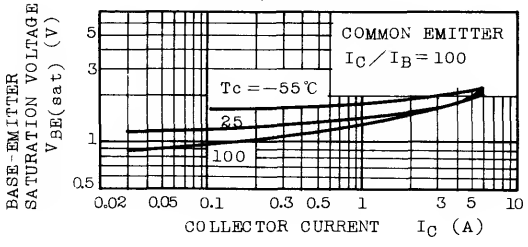

$I_C$ – $V_{BE}$



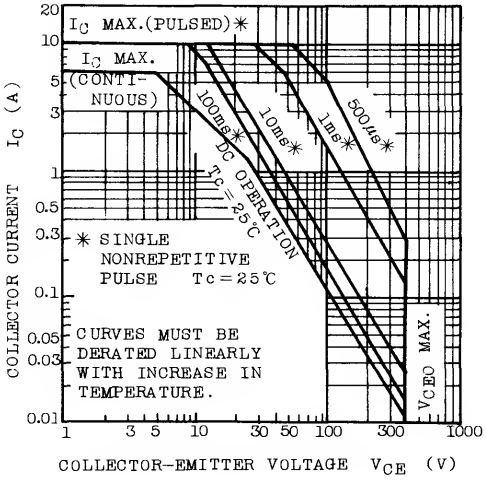

$V_{CE(sat)}$ – $I_C$




$V_{BE(sat)}$ – $I_C$




SAFE OPERATING AREA




$P_C$ – Ta