SGS-THOMSON
MICROELECTRONICS

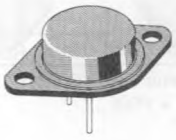
# MJ4030/1/2
# MJ4033/4/5

## GENERAL PURPOSE

### DESCRIPTION

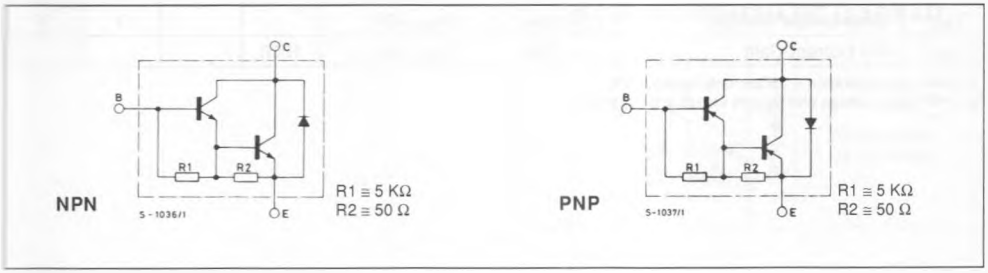
The MJ4030/31/32/33/34/35 are medium-power silicon NPN Darlington in Jedec TO-3 metal case, intended for use in general purpose and amplifier applications.

The complementary PNP types are the MJ4033/34/35 respectively.



TO-3

### INTERNAL SCHEMATIC DIAGRAMS




### ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | PNP* NPN | Value | | | Unit |
|---|---|---|---|---|---|---|
| | | | MJ4030 MJ4033 | MJ4031 MJ4034 | MJ4032 MJ4035 | |
| $V_{CBO}$ | Collector-base Voltage ($I_E = 0$) | | 60 | 80 | 100 | V |
| $V_{CEO}$ | Collector-emitter Voltage ($I_B = 0$) | | 60 | 80 | 100 | V |
| $V_{EBO}$ | Emitter-base Voltage ($I_C = 0$) | | 5 | | | V |
| $I_C$ | Collector Current | | 16 | | | A |
| $I_B$ | Base Current | | 0.5 | | | A |
| $P_{tot}$ | Total Power Dissipation at $T_{case} \leq 25°C$ | | 150 | | | W |
| $T_{stg}$ | Storage Temperature | | – 65 to 200 | | | °C |
| $T_j$ | Junction Temperature | | 200 | | | °C |

* For PNP types voltage and current values are negative.

## THERMAL DATA

| | | | | |
|---|---|---|---|---|
| $R_{th\ j\text{-}case}$ | Thermal Resistance Junction-case | Max | 1.17 | °C/W |

## ELECTRICAL CHARACTERISTICS ($T_{case}$ = 25°C unless otherwise specified)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_{CEO}$ | Collector Cutoff Current ($I_B$ = 0) | $V_{CE}$ = 30V $I_B$ = 0 | | | | |
| | | **MJ4030/33** | | | 3 | mA |
| | | $V_{CE}$ = 40V $I_B$ = 0 | | | | |
| | | **MJ4031/34** | | | 3 | mA |
| | | $V_{CE}$ = 50V $I_B$ = 0 | | | | |
| | | **MJ4032/35** | | | 3 | mA |
| $I_{EBO}$ | Emitter Cutoff Current ($I_C$ = 0) | $V_{EB}$ = 5V $I_C$ = 0 | | | 5 | mA |
| $I_{CER}$ | Collector Cutoff Current ($R_{BE}$ = 1KΩ) | for **MJ4030/33** $V_{CB}$ = 60V | | | 1 | mA |
| | | for **MJ4031/34** $V_{CB}$ = 80V | | | 1 | mA |
| | | for **MJ4032/35** $V_{CB}$ = 100V | | | 1 | mA |
| | | $T_{case}$ = 150°C | | | | |
| | | for **MJ4030/33** $V_{CB}$ = 60V | | | 5 | mA |
| | | for **MJ4031/34** $V_{CB}$ = 80V | | | 5 | mA |
| | | for **MJ4032/35** $V_{CB}$ = 100V | | | 5 | mA |
| $V_{(BR)CEO}$* | Collector-emitter Breakdown Voltage | $I_C$ = 100mA $I_B$ = 0 | | | | |
| | | for **MJ4030/33** | 60 | | | V |
| | | for **MJ4031/34** | 80 | | | V |
| | | for **MJ4032/35** | 100 | | | V |
| $V_{CE(sat)}$* | Collector-emitter Saturation Voltage | $I_C$ = 10A $I_B$ = 40mA | | | 2.5 | V |
| | | $I_C$ = 16A $I_B$ = 80mA | | | 4 | V |
| $V_{BE}$* | Base-emitter Voltage | $I_C$ = 10A $V_{CE}$ = 3V | | | 3 | V |
| $h_{FE}$* | DC Current Gain | $I_C$ = 10A $V_{CE}$ = 3V | 1000 | | | |

* Pulsed : pulse duration = 300μs, duty cycles < 2%.
For PNP types voltage and current values are negative.