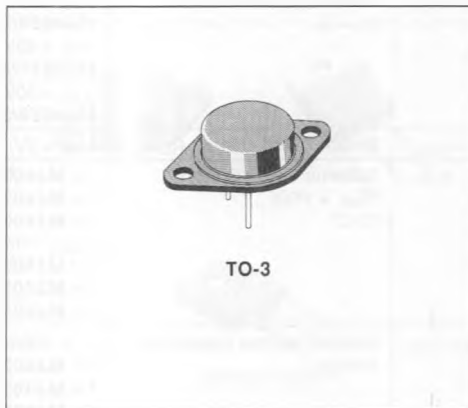


## GENERAL PURPOSE

### 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.



### INTERNAL SCHEMATIC DIAGRAMS



### ABSOLUTE MAXIMUM RATINGS

| Symbol    | Parameter                                                   | PNP*<br>NPN | Value            |                  |                  | Unit             |
|-----------|-------------------------------------------------------------|-------------|------------------|------------------|------------------|------------------|
|           |                                                             |             | MJ4030<br>MJ4033 | MJ4031<br>MJ4034 | MJ4032<br>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 $T_{case} \leq 25^\circ\text{C}$ |             | 150              |                  |                  | W                |
| $T_{stg}$ | Storage Temperature                                         |             | - 65 to 200      |                  |                  | $^\circ\text{C}$ |
| $T_J$     | Junction Temperature                                        |             | 200              |                  |                  | $^\circ\text{C}$ |

\* For PNP types voltage and current values are negative.

## THERMAL DATA

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

ELECTRICAL CHARACTERISTICS ( $T_{case} = 25^{\circ}\text{C}$  unless otherwise specified)

| Symbol          | Parameter                                           | Test Conditions                                                                                                                                                                                                                                                              | Min.            | Typ. | Max.                       | Unit                             |
|-----------------|-----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------|----------------------------|----------------------------------|
| $I_{CEO}$       | Collector Cutoff Current<br>( $I_B = 0$ )           | $V_{CE} = 30V$ $I_B = 0$<br><b>MJ4030/33</b><br>$V_{CE} = 40V$ $I_B = 0$<br><b>MJ4031/34</b><br>$V_{CE} = 50V$ $I_B = 0$<br><b>MJ4032/35</b>                                                                                                                                 |                 |      | 3<br>3<br>3                | mA<br>mA<br>mA                   |
| $I_{EBO}$       | Emitter Cutoff Current ( $I_C = 0$ )                | $V_{EB} = 5V$ $I_C = 0$                                                                                                                                                                                                                                                      |                 |      | 5                          | mA                               |
| $I_{CER}$       | Collector Cutoff Current<br>( $R_{BE} = 1K\Omega$ ) | for <b>MJ4030/33</b> $V_{CB} = 60V$<br>for <b>MJ4031/34</b> $V_{CB} = 80V$<br>for <b>MJ4032/35</b> $V_{CB} = 100V$<br>$T_{case} = 150^{\circ}\text{C}$<br>for <b>MJ4030/33</b> $V_{CB} = 60V$<br>for <b>MJ4031/34</b> $V_{CB} = 80V$<br>for <b>MJ4032/35</b> $V_{CB} = 100V$ |                 |      | 1<br>1<br>1<br>5<br>5<br>5 | mA<br>mA<br>mA<br>mA<br>mA<br>mA |
| $V_{BRCEO}^*$   | Collector-emitter Breakdown Voltage                 | $I_C = 100mA$ $I_B = 0$<br>for <b>MJ4030/33</b><br>for <b>MJ4031/34</b><br>for <b>MJ4032/35</b>                                                                                                                                                                              | 60<br>80<br>100 |      |                            | V<br>V<br>V                      |
| $V_{CE(sat)}^*$ | Collector-emitter Saturation Voltage                | $I_C = 10A$ $I_B = 40mA$<br>$I_C = 16A$ $I_B = 80mA$                                                                                                                                                                                                                         |                 |      | 2.5<br>4                   | V<br>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 = 300 $\mu$ s, duty cycles < 2%.

For PNP types voltage and current values are negative.