

NPN Silicon Planar Power Transistor

160V_{CB0}, 10A I_c, TO-3

multicomp PRO

**RoHS
Compliant**



Description

This is High-power industrial transistor NPN silicon power transistor designed for applications in industrial and commercial equipment including high fidelity audio amplifiers, series and shunt regulators and power switches

Features

1. Higher safe operating area at VCE >40V
2. Low saturation voltages
3. High power dissipation capability

Applications:

For high power audio, series pass power supplies, disk-head positioners and other linear application. These devices can also be used in power switching circuits such as converters or inverters

Absolute Maximum Ratings (T_A = 25 °C)

| Parameter | Symbol | Value | Unit |
|--|-----------------------------------|-------------|-------|
| Collector-Base Voltage | V _{CB0} | 160 | V DC |
| Collector-Emitter Voltage | V _{CEO} | 140 | |
| Emitter-Base Voltage | V _{EBO} | 7 | |
| Collector Current-continuous | I _c | 10 | A |
| Collector Current-Peak | I _{CM} | 15 | |
| Base Current | I _B | 7 | |
| Total Power Dissipation @TC= 25°C | P _D | 117 | W |
| Total Power Dissipation Derate above @TC= 25°C | | 0.67 | W/ °C |
| Operating and Storage Junction Temperature Range | T _J , T _{STG} | -65 to +200 | °C |

Thermal Characteristics

| Parameter | Symbol | Value | Unit |
|-------------------------------------|------------------|-------|------|
| Thermal Resistance Junction to Case | R _{θjc} | 1.17 | °C/W |

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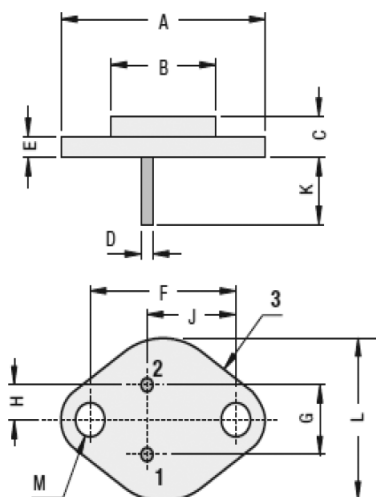
Electrical Characteristics at T_A = 25 °C unless otherwise specified

| Parameter | Symbol | Test Conditions | Value | | Unit |
|---|-----------------------|--|-------|------|------|
| | | | Min. | Max. | |
| Off Characteristics | | | | | |
| Collector-Emitter Sustaining Voltage | V _{CEO(SUS)} | I _c = 200mA, I _B =0 | 140 | - | V DC |
| Collector Cut-off Current | I _{CEO} | V _{CE} =140V, I _B =0 | - | 200 | mA |
| Collector Cut-off Current | I _{CEX} | V _{CE} =140 V DC, V _{BE(off)} =1.5 V DC | - | 5 | |
| | | V _{CE} =140V DC, mA V _{BE (off)} =1.5V DC, T _c =150°C | - | 30 | |
| Emitter Cut-off Current | I _{EBO} | V _{EB} = 7V DC, I _c = 0 | - | 5 | |
| On Characteristics Note3. | | | | | |
| DC Current Gain | h _{FE} | I _c = 3A DC, V _{CE} = 4V DC) | 2 | 70 | |
| | | I _c =10A DC, V _{CE} =4V DC | 7.5 | - | |
| Collector-Emitter Saturation Voltage | V _{CE(SAT)} | I _c = 10A DC, I _B = 2A DC | - | 5 | V DC |
| Base-Emitter On Voltage | V _{BE(SAT)} | I _c =10A DC, V _{CE} =4V DC | - | 5.7 | |
| Dynamic Characteristics | | | | | |
| Current-Gain - Bandwidth Product (Note 4) | f _T | I _c =2A DC, V _{CE} =4V DC, f _{TEST} = 40kHz | 80 | - | kHz |
| Small-Signal Current Gain | h _{FE} | I _c =2A DC, V _{CE} =4V DC, f=1kHz | 12 | 72 | |

Note:

(3) Pulse Test : Pulse Width = 300μs, Duty Cycle ≤2%

(4) f_T = | h_{fe} | • f_{test}



| Din | Min | Max |
|-----|-------|-------|
| A | - | 40 |
| B | - | 25 |
| C | 6.35 | 11.43 |
| D | 0.70 | 1.09 |
| E | - | 3.8 |
| F | 29.90 | 30.40 |

| Din | Min | Max |
|-----|-------|-------|
| G | 10.67 | 11.18 |
| H | 5.21 | 5.72 |
| J | 16.64 | 17.15 |
| K | 7.92 | - |
| L | - | 26.68 |
| M | 3.84 | 4.09 |

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Recommended Product Storage Environment for Diode and Transistors

This storage environment assumes that the Diodes and transistors are packed properly inside the original packing supplied by.

Temperature 5°C to 30°C

- Humidity between 40%RH to 70%RH
- Air should be clean.
- Avoid harmful gas or dust
- Avoid outdoor exposure or storage in areas subject to rain or water spraying .
- Avoid storage in areas subject to corrosive gas or dust. Product shall not be stored in areas exposed to direct sunlight.
- Avoid rapid change of temperature.
- Avoid condensation.
- Mechanical stress such as vibration and impact shall be avoided.
- The product shall not be placed directly on the floor.
- The product shall be stored on a plane area. They should not be turned upside down. They should not be placed against the wall.

Shelf Life of Products

The shelf life of products is the period from product manufacture to shipment to customers. The product can be unconditionally shipped within this period. The period is defined as 2 years.

If products are stored longer than the shelf life of 2 years, the products shall be subjected to quality check as per COIL quality procedure.

The products are further warranted for another one year after the date of shipment subject to the above conditions in COIL original packing.

Floor Life of Products and MSL Level

When the products are opened from the original packing, the floor life will start. For this the following JEDEC table may be referred:

| JEDEC MSL Level | | |
|-----------------|---------------------|-----------------|
| Level | Time | Condition |
| 1 | Unlimited | ≤30°C / 85% RH |
| 2 | 1 Year | ≤30°C / 60% RH |
| 2a | 4 Weeks | ≤30°C / 60% RH |
| 3 | 168 Hours | ≤30 °C / 60% RH |
| 4 | 72 Hours | ≤30°C / 60% RH |
| 5 | 48 Hours | ≤30°C / 60% RH |
| Sa | 24 Hours | ≤30°C / 60% RH |
| 6 | Time on Label (TOL) | ≤30°C / 60% RH |

Part Number Table

| Description | Part Number |
|---|-------------|
| NPN Silicon Planar Power Transistor, 160 V _{CEO} , 10A I _C , TO-3 | 2N3442 |

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