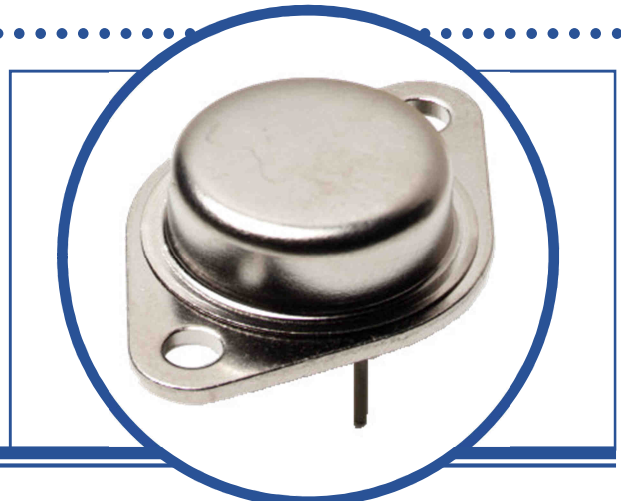


SILICON NPN TRANSISTOR

BDY54

- High Power
- Hermetic TO-3 Metal Package
- Ideally suited for Switching and Amplifier Applications
- Screening Options Available



ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$ unless otherwise stated)

| | | |
|-----------|--|--------------------------------|
| V_{CBO} | Collector – Base Voltage | 180V |
| V_{CEO} | Collector – Emitter Voltage | 120V |
| V_{EBO} | Emitter – Base Voltage | 7V |
| I_C | Continuous Collector Current | 12A |
| I_B | Base Current | 5A |
| P_D | Total Power Dissipation at $T_C = 25^\circ\text{C}$ Derate Above 25°C | 60W 0.35W/ $^\circ\text{C}$ |
| T_J | Junction Temperature Range | -65 to +200 $^\circ\text{C}$ |
| T_{stg} | Storage Temperature Range | -65 to +200 $^\circ\text{C}$ |

THERMAL PROPERTIES

| Symbols | Parameters | Max. | Units |
|-----------------|--------------------------------------|------|--------------------|
| $R_{\theta JC}$ | Thermal Resistance, Junction To Case | 2.9 | $^\circ\text{C/W}$ |

Semelab Limited reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.



SILICON NPN TRANSISTOR BDY54

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise stated)

| Symbols | Parameters | Test Conditions | Min. | Typ | Max. | Units |
|---------------------|--|---|------|-----|------|-------|
| I_{CEX} | Collector Cut-Off Current | $V_{CE} = 150\text{V}$ $V_{BE} = -1.5\text{V}$ $T_C = 150^\circ\text{C}$ | | | 15 | mA |
| I_{EBO} | Emitter Cut-Off Current | $V_{EB} = 7\text{V}$ $I_C = 0$ | | | 3 | |
| $V_{(BR)CEO}^{(1)}$ | Collector – Emitter Breakdown Voltage | $I_C = 100\text{mA}$ $I_B = 0$ | 120 | | | V |
| $h_{FE}^{(1)}$ | Static Forward-Current Transfer Ratio | $V_{CE} = 1.5\text{V}$ $I_C = 2\text{A}$ | 20 | | 60 | - |
| $V_{CE(sat)}^{(1)}$ | Collector – Emitter Saturation Voltage | $I_C = 4\text{A}$ $I_B = 0.4\text{A}$ | | | 1.1 | V |
| | | $I_C = 7\text{A}$ $I_B = 1.4\text{A}$ | | | 2.2 | |
| $V_{BE(sat)}^{(1)}$ | Base – Emitter Saturation Voltage | $I_C = 4\text{A}$ $I_B = 0.4\text{A}$ | | | 2 | |
| | | $I_C = 7\text{A}$ $I_B = 1.4\text{A}$ | | | 2.5 | |

DYNAMIC CHARACTERISTICS

| | | | | | | |
|-----------|----------------------|---|----|------|--|---------------|
| f_T | Transition Frequency | $V_{CE} = 4\text{V}$ $I_C = 0.5\text{A}$ $f = 10\text{MHz}$ | 20 | | | MHz |
| t_{on} | Turn-On Time | $I_C = 5\text{A}$ $I_B = 1.0\text{A}$ | | 0.15 | | μs |
| t_{off} | Turn-Off Time | $I_C = 5\text{A}$ $I_{B1} = 1.0\text{A}$ $I_{B2} = -1.0\text{A}$ | | 1.2 | | |

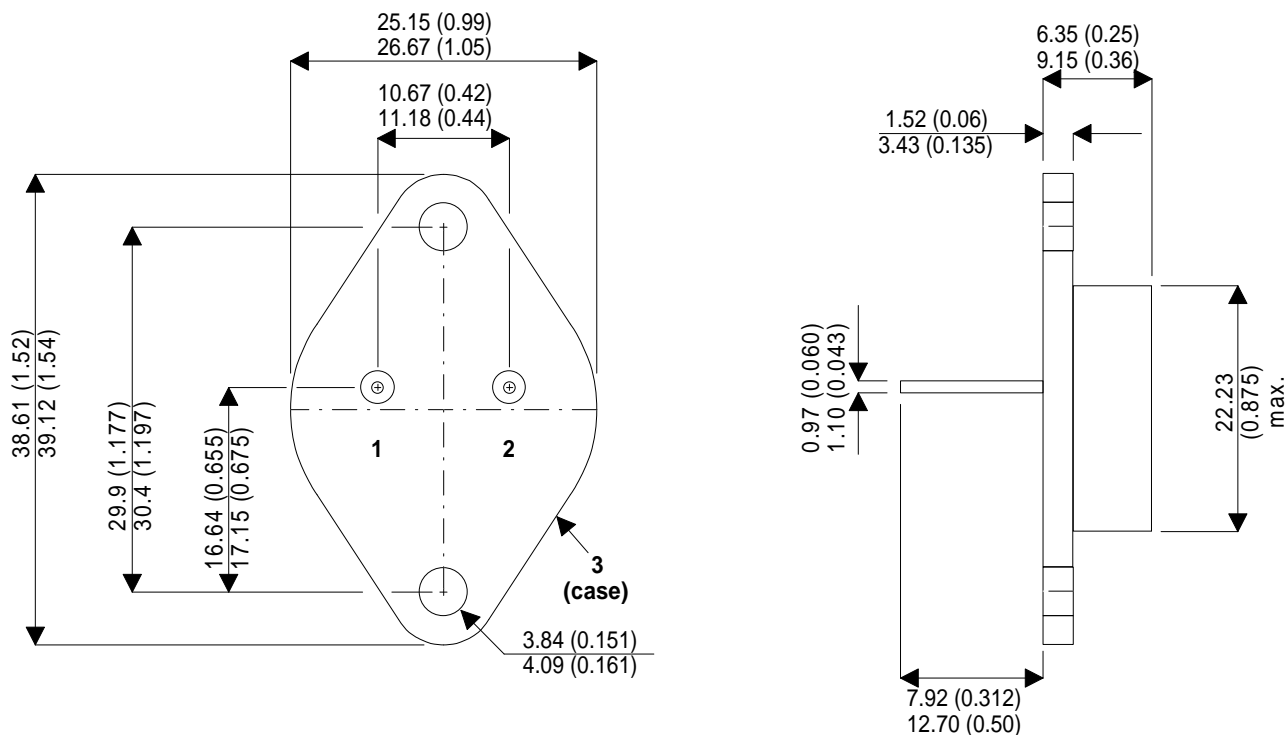
Notes

(1) Pulse Width $\leq 380\mu\text{s}$, $\delta \leq 2\%$

SILICON NPN TRANSISTOR BDY54

MECHANICAL DATA

Dimensions in mm (inches)



TO3 (TO-204AA) METAL PACKAGE Underside View

Pin 1 - Base

Pin 2 - Emitter

Case - Collector