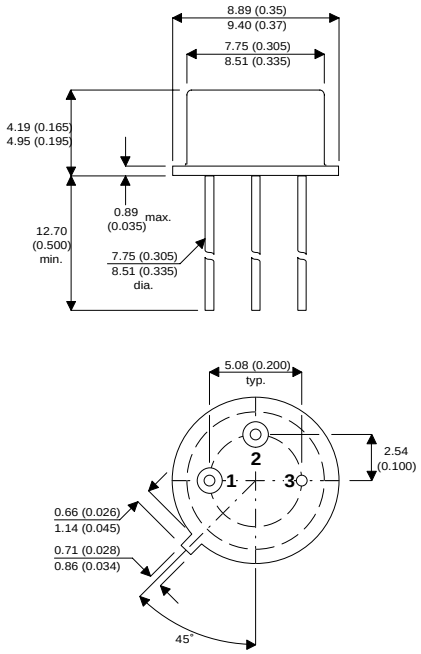
# BFY50

**MECHANICAL DATA**
Dimensions in mm (inches)







**TO39 PACKAGE**

**Underside View**

Pin 1 = Emitter Pin 2 = Base Pin 3 = Collector

# MEDIUM POWER AMPLIFIERS NPN SILICON PLANAR TRANSISTOR

## Description

**The BFY50 is a Silicon Planar Epitaxial NPN Transistor in Jedec TO39 metal case. they are intended for general purpose linear and switching applications**

## ABSOLUTE MAXIMUM RATINGS ($T_{case}$ = 25°C unless otherwise stated)

| | | |
|---|---|---|
| $V_{CBO}$ | Collector – Base Voltage | 80V |
| $V_{CEO}$ | Collector – Emitter Voltage | 35V |
| $V_{EBO}$ | Emitter – Base Voltage | 6V |
| $I_C$ | Collector Current | 1A |
| $I_{CM}$ | Collector Peak Current | 1.5A |
| $P_{TOT}$ | Total Power Dissipation @ $T_{amb} \leq 25°C$ | 0.8W |
| | @ $T_{case} \leq 25°C$ | 5W |
| $T_{stg}, T_j$ | Storage and Operatuing Junction Temperature | –65 to 200°C |
| $R_{j\text{-}case}$ | Thermal Resistance Junction to Case | 35°C / W |
| $R_{j\text{-}amb}$ | Thermal Resistance Junction to Ambient | 218°C / W |

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

| Parameter | | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| $V_{(BR)CBO*}$ | Collector – Base Breakdown Voltage | $I_C$ = 100µA | $I_E$ = 0 | 80 | | | V |
| $V_{(BR)CEO*}$ | Collector – Emitter Breakdown Voltage | $I_C$ = 30mA | $I_B$ = 0 | 35 | | | |
| $V_{(BR)EBO*}$ | Emitter – Base Breakdown Voltage | $I_C$ = 100mA | $I_E$ = 100µA | 6 | | | |
| $I_{CBO}$ | Collector Cut-off Current | $V_{CB}$ = 60V | $I_E$ = 0 | | | 50 | nA |
| | | | $T_C$ = 100°C | | | 2.5 | µA |
| $I_{EBO}$ | Emitter Cut-off Current | $V_{EB}$ = 5V | $I_C$ = 0 | | | 50 | nA |
| | | | $T_C$ = 100°C | | | 2.5 | µA |
| $V_{CE(sat)}$ | Collector – Emitter Saturation Voltage | $I_C$ = 150mA | $I_E$ = 15mA | | 0.14 | 0.2 | V |
| | | $I_C$ = 1A | $I_B$ = 0.1A | | 0.7 | 1 | |
| $V_{BE(sat)}$ | Base – Emitter Saturation Voltage | $I_C$ = 150mA | $I_B$ = 15mA | | 0.95 | 1.3 | V |
| | | $I_C$ = 1A | $I_B$ = 0.1A | | 1.5 | 2 | |
| $h_{FE*}$ | DC Current Gain | $I_C$ = 10mA | $V_{CE}$ = 10V | 20 | 40 | | — |
| | | $I_C$ = 150mA | $V_{CE}$ = 10V | 30 | 55 | | |
| | | $I_C$ = 1mA | $V_{CE}$ = 10V | 15 | 30 | | |

## DYNAMIC CHARACTERISTICS ($T_{case}$ = 25°C unless otherwise stated)

| Parameter | | Test Conditions | | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|---|
| $h_{fe}$ | Small Signal Current Gain | $V_{CE}$ = 6V | $I_C$ = 1mA | f = 1kHz | | 25 | | — |
| | | $V_{CE}$ = 6V | $I_C$ = 10mA | f = 1KHz | | 45 | | |
| $h_{ie}$ | Imput Impedance | $V_{CE}$ = 5V | $I_C$ = 10mA | f = 1.KHz | | 180 | | Ω |
| $h_{rE}$ | Reverse Voltage Ratio | $V_{CE}$ = 5V | $I_C$ = 10mA | f = 1.KHz | | | 55 x10$^{-6}$ | — |
| $h_{oe}$ | Output Admittance | $V_{CE}$ = 5V | $I_C$ = 10mA | f = 1.KHz | | 30 | | µS |
| $C_{cbo}$ | Collector -Base Capacitance | $V_{CB}$ = 5V | $I_E$ = 10mA | f = 1.KHz | | 10 | | pF |
| $f_T$ | Transistion Frequency | $V_{CE}$ = 10V | $I_C$ = 50mA | | 60 | 100 | | MHz |
| $t_d$ | Delay Time | $I_C$ = 150mA | $V_{CC}$ = 10V | | | 15 | | ns |
| $t_r$ | Rise Time | $I_{B1}$= 15mA | $V_{BE}$ = -2V | | | 40 | | |
| $t_s$ | Storage Time | $I_C$ = 150mA | $V_{CC}$ = 10V | | | 300 | | |
| $t_f$ | Fall Time | $I_{B1}$= -$I_{B2}$ = 15mA | | | | 60 | | |

Pulse Duration = 300µs, Duty Cycle = 1%

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