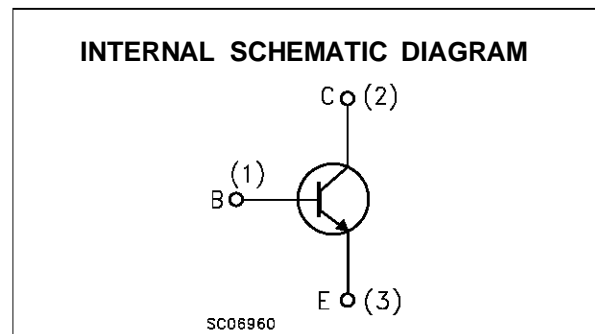
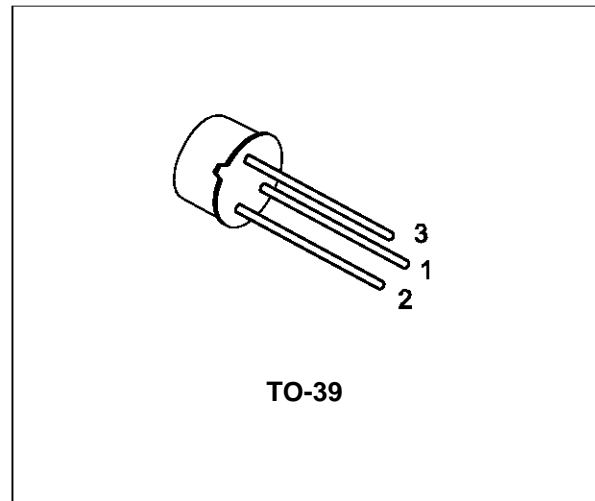


## MEDIUM POWER AMPLIFIER

### DESCRIPTION

The BFY50 and BFY52 are silicon planar epitaxial NPN transistors in Jedec TO-39 metal case. They are intended for general purpose linear and switching applications.



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		BFY50	BFY51	
$V_{CBO}$	Collector-Base Voltage ( $I_E = 0$ )	80	60	V
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )	35	30	V
$V_{EBO}$	Emitter-Base Voltage ( $I_C = 0$ )	6		V
$I_C$	Collector Current	1		A
$I_{CM}$	Collector Peak Current ( $t_p < 5$ ms)	1.5		A
$P_{tot}$	Total Dissipation at $T_{amb} \leq 25$ °C at $T_{case} \leq 25$ °C	0.8		W
		5		W
$T_{stg}$	Storage Temperature	-65 to 200		°C
$T_j$	Max. Operating Junction Temperature	200		°C

# BFY50/BFY51

## THERMAL DATA

R <sub>thj-case</sub>	Thermal Resistance Junction-Case	Max	35	°C/W
R <sub>thj-amb</sub>	Thermal Resistance Junction-Ambient	Max	218	°C/W

## ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I <sub>CBO</sub>	Collector Cut-off Current (I <sub>E</sub> = 0)	for <b>BFY50</b> V <sub>CB</sub> = 60 V V <sub>CB</sub> = 60 V T <sub>case</sub> = 100 °C for <b>BFY51</b> V <sub>CB</sub> = 40 V V <sub>CB</sub> = 40 V T <sub>case</sub> = 100 °C			50 2.5 50 2.5	nA μA nA μA
I <sub>EBO</sub>	Emitter Cut-off Current (I <sub>C</sub> = 0)	V <sub>EB</sub> = 5 V V <sub>EB</sub> = 5 V T <sub>case</sub> = 100 °C			50 2.5	nA μA
V <sub>(BR)CBO</sub>	Collector-Base Breakdown Voltage (I <sub>E</sub> = 0)	I <sub>C</sub> = 100 μA for <b>BFY50</b> for <b>BFY51</b>	80 60			V V
V <sub>(BR)CEO*</sub>	Collector-Emitter Breakdown Voltage (I <sub>B</sub> = 0)	I <sub>C</sub> = 30 mA for <b>BFY50</b> for <b>BFY51</b>	35 30			V V
V <sub>(BR)EBO</sub>	Emitter-Base Breakdown Voltage (I <sub>C</sub> = 0)	I <sub>C</sub> = 100 μA	6			V
V <sub>CE(sat)*</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 150 mA I <sub>B</sub> = 15 mA for <b>BFY50</b> for <b>BFY51</b> I <sub>C</sub> = 1 A I <sub>B</sub> = 0.1 A for <b>BFY50</b> for <b>BFY51</b>		0.14 0.14 0.7 0.7	0.2 0.35 1 1.6	V V V V
V <sub>BE(sat)*</sub>	Base-Emitter Saturation Voltage	I <sub>C</sub> = 150 mA I <sub>B</sub> = 15 mA I <sub>C</sub> = 1 A I <sub>B</sub> = 0.1 A		0.95 1.5	1.3 2	V V
h <sub>FE*</sub>	DC Current Gain	for <b>BFY50</b> I <sub>C</sub> = 10 mA V <sub>CE</sub> = 10 V I <sub>C</sub> = 150 mA V <sub>CE</sub> = 10 V I <sub>C</sub> = 1 A V <sub>CE</sub> = 10 V for <b>BFY51</b> I <sub>C</sub> = 10 mA V <sub>CE</sub> = 10 V I <sub>C</sub> = 150 mA V <sub>CE</sub> = 10 V I <sub>C</sub> = 1 A V <sub>CE</sub> = 10 V	20 30 15 30 40 15	40 55 30 55 70 40		
h <sub>fe*</sub>	Small Signal Current Gain	V <sub>CE</sub> = 6 V f = 1KHz I <sub>C</sub> = 1 mA for <b>BFY50</b> for <b>BFY51</b> I <sub>C</sub> = 10 mA for <b>BFY50</b> for <b>BFY51</b>		25 30 45 60		
f <sub>T</sub>	Transition Frequency	I <sub>C</sub> = 50 mA V <sub>CE</sub> = 10 V for <b>BFY50</b> for <b>BFY51</b>	60 50	100 110		MHz MHz
C <sub>CBO</sub>	Collector Base Capacitance	I <sub>E</sub> = 0 V <sub>CB</sub> = 10 V f = 1MHz		10		pF

\* Pulsed: Pulse duration = 300 μs, duty cycle ≤ 1 %

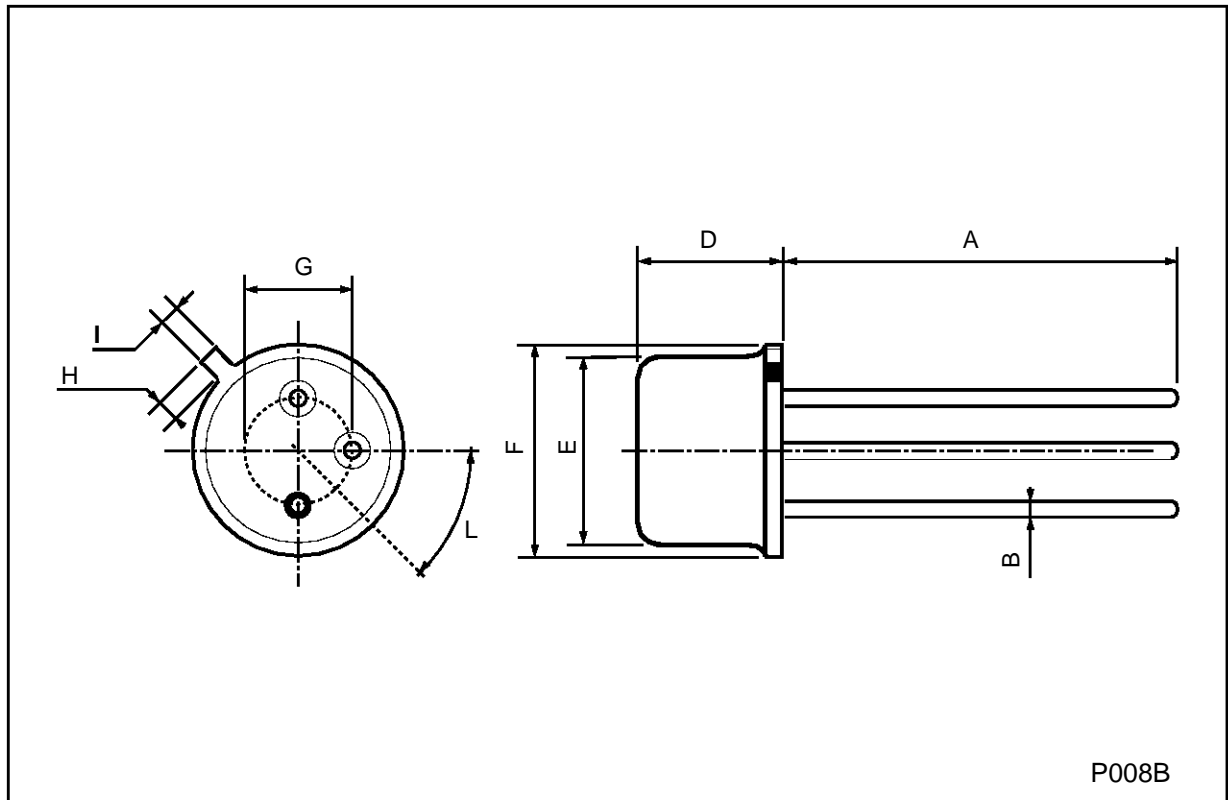
## ELECTRICAL CHARACTERISTICS (continued)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$h_{ie}$	Input Impedance	$I_C = 10 \text{ mA}$ $V_{CE} = 5 \text{ V}$ $f = 1 \text{ KHz}$ for <b>BFY50</b> for <b>BFY51</b>		180 220		$\Omega$ $\Omega$
$h_{re}$	Reverse Voltage Ratio	$I_C = 10 \text{ mA}$ $V_{CE} = 5 \text{ V}$ $f = 1 \text{ KHz}$ for <b>BFY50</b> for <b>BFY51</b>		55 70		$10^{-6}$ $10^{-6}$
$h_{oe}$	Output Admittance	$I_C = 10 \text{ mA}$ $V_{CE} = 5 \text{ V}$ $f = 1 \text{ KHz}$ for <b>BFY50</b> for <b>BFY51</b>		30 35		$\mu\text{S}$ $\mu\text{S}$
$t_d$	Delay Time	$I_C = 150 \text{ mA}$ $V_{CC} = 10 \text{ V}$ $I_{B1} = 15 \text{ mA}$ $V_{BE} = -2 \text{ V}$		15		ns
$t_r$	Rise Time	$I_C = 150 \text{ mA}$ $V_{CC} = 10 \text{ V}$ $I_{B1} = 15 \text{ mA}$ $V_{BE} = -2 \text{ V}$		40		ns
$t_s$	Storage Time	$I_C = 150 \text{ mA}$ $V_{CC} = 10 \text{ V}$ $I_{B1} = -I_{B2} = 15 \text{ mA}$		300		ns
$t_f$	Fall Time	$I_C = 150 \text{ mA}$ $V_{CC} = 10 \text{ V}$ $I_{B1} = -I_{B2} = 15 \text{ mA}$		60		ns

\* Pulsed: Pulse duration = 300  $\mu\text{s}$ , duty cycle  $\leq 1\%$

**TO-39 MECHANICAL DATA**

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	12.7			0.500		
B			0.49			0.019
D			6.6			0.260
E			8.5			0.334
F			9.4			0.370
G	5.08			0.200		
H			1.2			0.047
I			0.9			0.035
L	45° (typ.)					



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