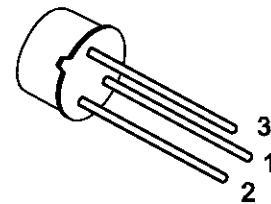


MEDIUM POWER AMPLIFIER

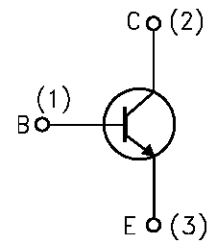
DESCRIPTION

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.



TO-39

INTERNAL SCHEMATIC DIAGRAM



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

$R_{thj-case}$	Thermal Resistance Junction-Case	Max	35	$^{\circ}C/W$
$R_{thj-amb}$	Thermal Resistance Junction-Ambient	Max	218	$^{\circ}C/W$

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current ($I_E = 0$)	for BFY50 $V_{CB} = 60 V$ $V_{CB} = 60 V$ $T_{case} = 100^{\circ}C$ for BFY51 $V_{CB} = 40 V$ $V_{CB} = 40 V$ $T_{case} = 100^{\circ}C$			50 2.5 50 2.5	nA μA nA μA
I_{EBO}	Emitter Cut-off Current ($I_C = 0$)	$V_{EB} = 5 V$ $V_{EB} = 5 V$ $T_{case} = 100^{\circ}C$			50 2.5	nA μA
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage ($I_E = 0$)	$I_C = 100 \mu A$ for BFY50 for BFY51	80 60			V V
$V_{(BR)CEO}^*$	Collector-Emitter Breakdown Voltage ($I_B = 0$)	$I_C = 30 mA$ for BFY50 for BFY51	35 30			V V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ($I_C = 0$)	$I_C = 100 \mu A$	6			V
$V_{CE(sat)}^*$	Collector-Emitter Saturation Voltage	$I_C = 150 mA$ $I_B = 15 mA$ for BFY50 for BFY51 $I_C = 1 A$ $I_B = 0.1 A$ for BFY50 for BFY51		0.14 0.14 0.7 0.7	0.2 0.35 1 1.6	V V V V
$V_{BE(sat)}^*$	Base-Emitter Saturation Voltage	$I_C = 150 mA$ $I_B = 15 mA$ $I_C = 1 A$ $I_B = 0.1 A$		0.95 1.5	1.3 2	V V
h_{FE}^*	DC Current Gain	for BFY50 $I_C = 10 mA$ $V_{CE} = 10 V$ $I_C = 150 mA$ $V_{CE} = 10 V$ $I_C = 1 A$ $V_{CE} = 10 V$ for BFY51 $I_C = 10 mA$ $V_{CE} = 10 V$ $I_C = 150 mA$ $V_{CE} = 10 V$ $I_C = 1 A$ $V_{CE} = 10 V$	20 30 15 30 40 15	40 55 30 55 70 40		
h_{fe}^*	Small Signal Current Gain	$V_{CE} = 6 V$ $f = 1 KHz$ $I_C = 1 mA$ for BFY50 for BFY51 $I_C = 10 mA$ for BFY50 for BFY51		25 30 45 60		
f_T	Transition Frequency	$I_C = 50 mA$ $V_{CE} = 10 V$ for BFY50 for BFY51	60 50	100 110		MHz MHz
C_{CBO}	Collector Base Capacitance	$I_E = 0$ $V_{CB} = 10 V$ $f = 1 MHz$		10		pF

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

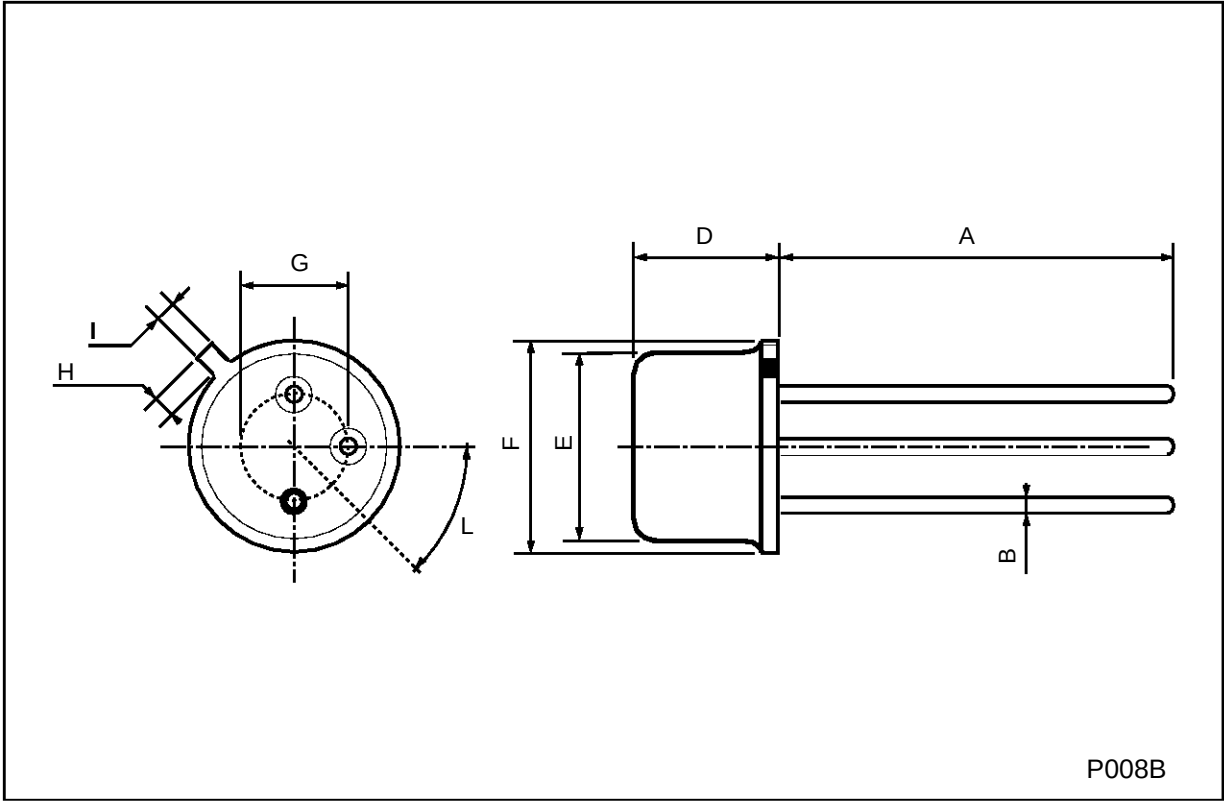
ELECTRICAL CHARACTERISTICS (continued)

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 BFY50 for BFY51		180 220		Ω Ω
h_{re}	Reverse Voltage Ratio	$I_C = 10 \text{ mA}$ $V_{CE} = 5 \text{ V}$ $f = 1 \text{ KHz}$ for BFY50 for BFY51		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 BFY50 for BFY51		30 35		μS μS
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 μs , 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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