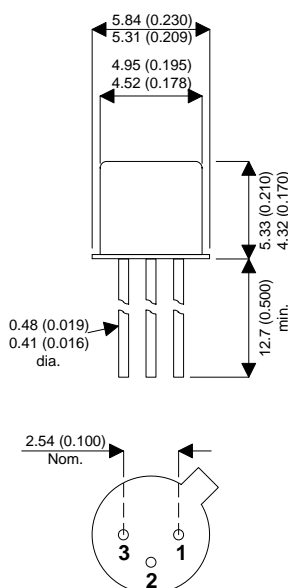


MECHANICAL DATA

Dimensions in mm (inches)



TO18 PACKAGE(TO-206AA)

Underside View

PIN 1 – Emitter PIN 2 – Base PIN 3 – Collector

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

		BCY70	BCY71	BCY72
V_{CBO}	Collector - Base Voltage ($I_E = 0$)	-50V	-45V	-25V
V_{CEO}	Collector - Emitter Voltage ($I_B = 0$)	-40V	-45V	-25V
V_{EBO}	Emitter - Base Voltage ($I_C = 0$)		-5V	
I_{CM}	Collector Peak Current		-200mA	
P_{tot}	Total Power Dissipation @ $T_{amb} < 25^\circ\text{C}$		350mW	
T_J, T_{STG}	Operating and Storage Junction Temperature Range		-65 to +200°C	
THERMAL DATA				
$R_{th-j-Case}$	Thermal Resistance Junction -case		150°C/W max	
$R_{th-j-amb}$	Thermal Resistance Junction -ambient		500°C/W max	

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ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I _{CES} Collector Cut-off Current (V _{BE} = 0)	V _{CE} = -20V V _{CE} = -50V BCY70			-10 -500	nA
	V _{CE} = -20V V _{CE} = -45V BCY71			-100 -10	nA μA
	V _{CE} = -20V V _{CE} = -25V BCY72			-100 -10	nA μA
I _{EBO} Emitter Cutoff Current (I _C = 0)	V _{EB} = -5V			-10	μA
V _{CE(sat)} * Collector – Emitter Saturation Voltage	I _C = -10mA I _B = -1mA I _C = -50mA I _B = -5mA			-0.25 -0.5	V
V _{BE(sat)} * Base – Emitter Saturation Voltage	I _C = -10mA I _B = -1mA BCY70 AND BCY71 ONLY I _C = -50mA I _B = -5mA	-0.6		-0.9 -1.2	V
h _{FE} * DC Current Gain	BCY70 I _C = -0.1mA V _{CE} = -1V	40			—
	I _C = -1mA V _{CE} = -1V	45			
	I _C = -10mA V _{CE} = -1V	50			
	I _C = -50mA V _{CE} = -1V	15			
	BCY71 I _C = -0.01mA V _{CE} = -1V		60		
	I _C = -0.1mA V _{CE} = -1V	80			
	I _C = -1mA V _{CE} = -1V	90			
	I _C = -10mA V _{CE} = 1V	100		600	
	I _C = -50mA V _{CE} = -1V	15			
	BCY72 I _C = -1mA V _{CE} = -1V	40			
	I _C = -10mA V _{CE} = -1V	50			
h _{fe} Small Signal Current	I _C = -1mA V _{CE} = -10V f = 1KHz	100		400	—
f _T Transition Frequency	I _C = -0.1mA V _{CE} = -20V f = 10.7MHz BCY71	15			MHz
	I _C = -10mA V _{CE} = -20V f = 100MHz BCY70 BCY71 and BCY72	250 200			
C _{EBO} Emitter-Base Capacitance	I _C = 0 V _{EB} = -1V f = 1MHz			8	pF
C _{CBO} Collector-Base Capacitance	I _E = 0 V _{CB} = -10V f = 1MHz			6	

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
NF Noise Figure	$I_C = -0.1\text{mA}$ $V_{CE} = -5\text{V}$ $R_g = 2\text{K}\Omega$ $f = 10 \text{ to } 10000 \text{ Hz}$ BCY70 AND BCY71 BCY70			6 2	dB
h_{ie} Input Impedance	$I_C = -1\text{mA}$ $V_{CE} = -10\text{V}$ $f = 1\text{kHz}$ BCY71 ONLY	2		12	$\text{K}\Omega$
h_{re} Reverse Voltage Ratio	$I_C = -1\text{mA}$ $V_{CE} = -10\text{V}$ $f = 1\text{kHz}$ BCY71 ONLY			20×10^{-4}	—
h_{oe} Output Admittance	$I_C = -1\text{mA}$ $V_{CE} = -10\text{V}$ $f = 1\text{kHz}$ BCY71 ONLY	10		60	μS
t_d Delay Time	$I_C = -10\text{mA}$ $V_{EE} = 3\text{V}$ $I_{B1} = -1\text{mA}$ BCY70 AND BCY72 ONLY		23	35	ns
t_r Rise Time	$I_C = -10\text{mA}$ $V_{EE} = 3\text{V}$ $I_{B1} = -1\text{mA}$ BCY70 AND BCY72 ONLY		25	35	ns
t_s Storage Time	$I_C = -10\text{mA}$ $V_{EE} = 3\text{V}$ $I_{B1} = -I_{B2} = -1\text{mA}$ BCY70 AND BCY72 ONLY		270	350	ns
t_f Fall Time	$I_C = -10\text{mA}$ $V_{EE} = 3\text{V}$ $I_{B1} = -I_{B2} = -1\text{mA}$ BCY70 AND BCY72 ONLY		50	80	ns
t_{on} Turn-on Time	$I_C = -10\text{mA}$ $V_{EE} = 3\text{V}$ $I_{B1} = -1\text{mA}$ BCY70 AND BCY72 ONLY		48	65	ns
t_{off} Turn-Off Time	$I_C = -10\text{mA}$ $V_{EE} = 3\text{V}$ $I_{B1} = -I_{B2} = -1\text{mA}$ BCY70 AND BCY72 ONLY		320	420	ns

NOTES:

* Pulse test: $t_p \leq 300\mu\text{s}$, $\delta \leq 1\%$

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