BCY70
BCY71
BCY72

CASE 22-03, STYLE 1
TO-18 (TO-206AA)

TRANSISTOR

PNP SILICON

MAXIMUM RATINGS

Rating	Symbol	BCY 70	BCY 71	BCY 72	Unit
Collector-Emitter Voltage	V_{CEO}	40	45	25	Vdc
Collector-Base Voltage	V_{CBO}	50	45	25	Vdc
Emitter-Base Voltage	V_{EBO}		5		Vdc
Collector Current – Continuous	I_C		0.2		Amp
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D		360 2.06		mWatt mW/°C
Total Device Dissipation @ T_C = 25°C T_C = 100°C Derate above 25°C	P_D		0.6 4.0		mWatt mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}		−65 to +200		°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	175	°C/W

Refer to 2N3798 for graphs.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted.)

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector Emitter Breakdown Voltage (I_C = 2 mA, I_B = 0)	 BCY70 BCY71 BCY72	$V_{(BR)CEO}$	 40 45 25			Vdc
Collector Base Leakage Current (I_E = 0, V_{CB} = 50 V) (I_E = 0, V_{CB} = 45 V) (I_E = 0, V_{CB} = 25 V) (I_E = 0, V_{CB} = 40 V, T_{Amb} = 100°C) (I_E = 0, V_{CB} = 40 V, T_{Amb} = 100°C) (I_E = 0, V_{CB} = 20 V, T_{Amb} = 100°C) (I_E = 0, V_{CB} = 40 V) (I_E = 0, V_{CB} = 40 V) (I_E = 0, V_{CB} = 20 V)	 BCY70 BCY71 BCY72 BCY70 BCY71 BCY72 BCY70 BCY71 BCY72	I_{CBO}			 0.5 0.5 0.5 2 2 2 10 50 50	 µA nA
Emitter Base Leakage Current (V_{EB} = 5 V, I_C = 0) (V_{EB} = 4 V, I_C = 0) (V_{EB} = 4 V, I_C = 0, T_{Amb} = 100°C)		I_{EBO}			 0.5 10 2	 µA nA µA
Collector Emitter Leakage Current (V_{CE} = 50 V, V_{BE} = 3 V)	BCY70	I_{CEX}			 20	nA
ON CHARACTERISTICS						
DC Current Gain (V_{CE} = 1 V, I_C = 10 µA) (V_{CE} = 1 V, I_C = 100 µA) (V_{CE} = 1 V, I_C = 1 mA) (V_{CE} = 1 V, I_C = 10 mA) (V_{CE} = 1 V, I_C = 50 mA)	 BCY71 BCY70 BCY71 BCY70 BCY71 BCY72 BCY70 BCY71 BCY72 BCY70	H_{FE}	 40 40 80 45 90 40 50 100 50 15		 600 	
Base Emitter Saturation Voltage (I_C = 50 mA, I_B = 5 mA) (I_C = 10 mA, I_B = 1 mA)	 BCY70/71 BCY70/71	$V_{BE(sat)}$	 0.6		 1.2 0.9	V
Collector Emitter Saturation Voltage (I_C = 50 mA, I_B = 5 mA) (I_C = 10 mA, I_B = 1 mA)		$V_{CE(sat)}$			 0.50 0.25	V

ELECTRICAL CHARACTERISTICS (continued) (T_A = 25°C unless otherwise noted.)

Characteristic		Symbol	Min	Typ	Max	Unit
DYNAMIC CHARACTERISTICS						
Transition Frequency						
(I_C = 10 mA, f = 100 MHz, V_{CE} = 20 V)	All types	f_T	250			MHz
(I_C = 100 μA, f = 10.7 MHz, V_{CE} = 20 V)	BCY71 only		15			
Noise Figure		NF				dB
(V_{CE} = 5 V, I_C = 100 μA, Rg = 2 KΩ, 30 to 15 kHz at − 3 dB points)						
	BCY70/72				6	
	BCY71				2	
Switching Times						ns
(I_C = 10 mA, I_{B1} = I_{B2} = 1 mA)	BCY70/72	ton			65	
	BCY70/72	toff			420	
	BCY70/72	td			35	
	BCY70/72	tr			35	
	BCY70/72	ts			350	
	BCY70/72	tf			80	
h parameters						
(V_{CE} = 10 V, I_C = 1 mA, f = 1 kHz)	BCY71	h_{12e}	—		20×10^{-4}	—
		h_{21e}	100		400	—
		h_{22e}	10		60	μs
		h_{11e}	2		12	KΩ
Common Base Output Capacitance (V_{CB} = 10 V, I_E = 0, f = 1 MHz)		C_{ob}			6	pF
Input Capacitance (V_{BE} = 1 V, I_C = 0, f = 1 MHz		C_{ib}			8	pF