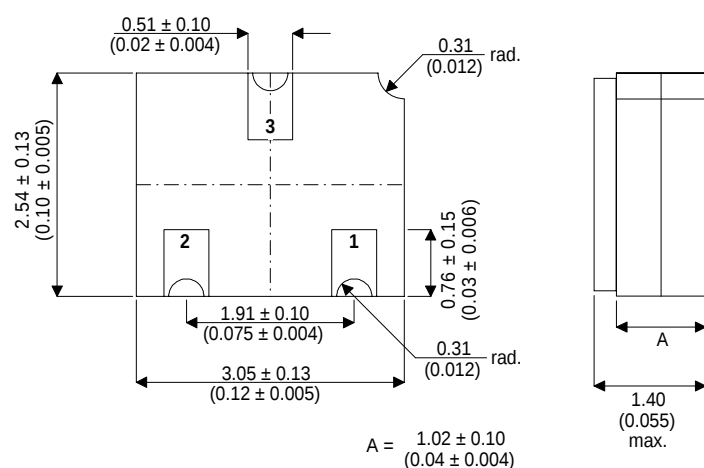


MECHANICAL DATA

Dimensions in mm (inches)



HIGH SPEED MEDIUM POWER PNP SWITCHING TRANSISTOR

FEATURES

- **Hermetic Surface Mount Package (SOT23 Compatible)**
- **CECC Screening Options available**

LCC1

Underside View

PAD 1 – Base PAD 2 – Emitter PAD 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	

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

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

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