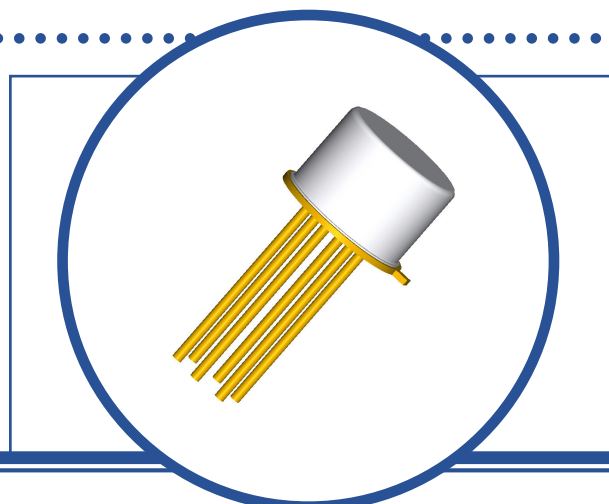


SILICON DUAL MATCHED NPN TRANSISTORS

BFY81

- Dual Silicon Matched Planar Transistors
- Hermetic TO-77 (MO-002AF) Metal Package.
- Ideally Suited For Differential And Low Level Dc Amplifiers
- Screening Options Available.



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

V_{CBO}	Collector – Base Voltage	45V	
V_{CEO}	Collector – Emitter Voltage	45V	
V_{EBO}	Emitter – Base Voltage	6V	
I_C	Continuous Collector Current	50mA	
P_D	Total Power Dissipation at $T_A = 25^\circ\text{C}$ Derate Above 25°C	One Side	Both Sides
		400mW	500mW
P_D	Total Power Dissipation at $T_C = 25^\circ\text{C}$ Derate Above 25°C	2.3mW/ $^\circ\text{C}$	2.9mW/ $^\circ\text{C}$
		800mW	1.3W
T_J	Junction Temperature Range	-65 to $+200^\circ\text{C}$	
		-65 to $+200^\circ\text{C}$	
T_{stg}	Storage Temperature Range	-65 to $+200^\circ\text{C}$	

THERMAL PROPERTIES

Symbols	Parameters	One Side Max.	Both Sides Max.	Units
$R_{\theta JA}$	Thermal Resistance, Junction To Ambient	437	350	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance, Junction To Case	219	135	$^\circ\text{C/W}$

Semelab Limited reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

SILICON DUAL MATCHED NPN TRANSISTORS BFY81

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

Symbols	Parameters	Test Conditions	Min.	Typ.	Max.	Units
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 10\mu\text{A}$ $I_E = 0$	45			V
$V_{(BR)CEO}^{(1)}$	Collector-Emitter Breakdown Voltage	$I_C = 10\text{mA}$ $I_B = 0$	45			
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10\mu\text{A}$ $I_C = 0$	6			
I_{CBO}	Collector Cut-Off Current	$V_{CB} = 40\text{V}$ $I_E = 0$			10	nA
		$T_A = 150^\circ\text{C}$			10	μA
I_{EBO}	Emitter-Cut-Off Current	$V_{EB} = 5\text{V}$ $I_C = 0$			10	nA
I_{CEO}	Collector-Cut-Off Current	$V_{CE} = 5\text{V}$ $I_B = 0$			10	nA
$V_{CE(sat)}^{(1)}$	Collector-Emitter Saturation Voltage	$I_C = 1.0\text{mA}$ $I_B = 0.1\text{mA}$			0.35	V
$V_{BE(on)}$	Base-Emitter On Voltage	$I_C = 100\mu\text{A}$ $V_{CE} = 5\text{V}$			0.7	
$h_{FE}^{(1)}$	Forward-current transfer ratio	$I_C = 10\mu\text{A}$ $V_{CE} = 5\text{V}$	60			
		$I_C = 100\mu\text{A}$ $V_{CE} = 5\text{V}$	100			
		$I_C = 1.0\text{mA}$ $V_{CE} = 5\text{V}$	150			

ELECTRICAL MATCHING CHARACTERISTICS

$\frac{h_{FE1}}{h_{FE2}}^{(2)}$	Forward-current transfer ratio (gain ratio)	$I_C = 100\mu\text{A}$ $V_{CE} = 5\text{V}$	0.8		1.0	
$ V_{BE1} - V_{BE2} $	Base-Emitter Voltage Differential	$I_C = 100\mu\text{A}$ $V_{CE} = 5\text{V}$			10	mV
$ \Delta(V_{BE1} - V_{BE2})\Delta T_A ^{(3)}$	Base-Emitter Voltage Differential Change Due To Temperature	$I_C = 100\mu\text{A}$ $V_{CE} = 5\text{V}$			25	$\mu\text{V}/^\circ\text{C}$

DYNAMIC CHARACTERISTICS

$ h_{fe} $	Small signal forward-current transfer ratio	$I_C = 500\mu\text{A}$ $V_{CE} = 5\text{V}$ $f = 30\text{MHz}$	2			
C_{obo}	Output Capacitance	$V_{CB} = 5\text{V}$ $I_E = 0$ $f = 1.0\text{MHz}$			6	pF
$N_F^{(3)}$	Noise Figure	$I_C = 10\mu\text{A}$ $V_{CE} = 5\text{V}$ $f = 1.0\text{KHz}$			4	dB

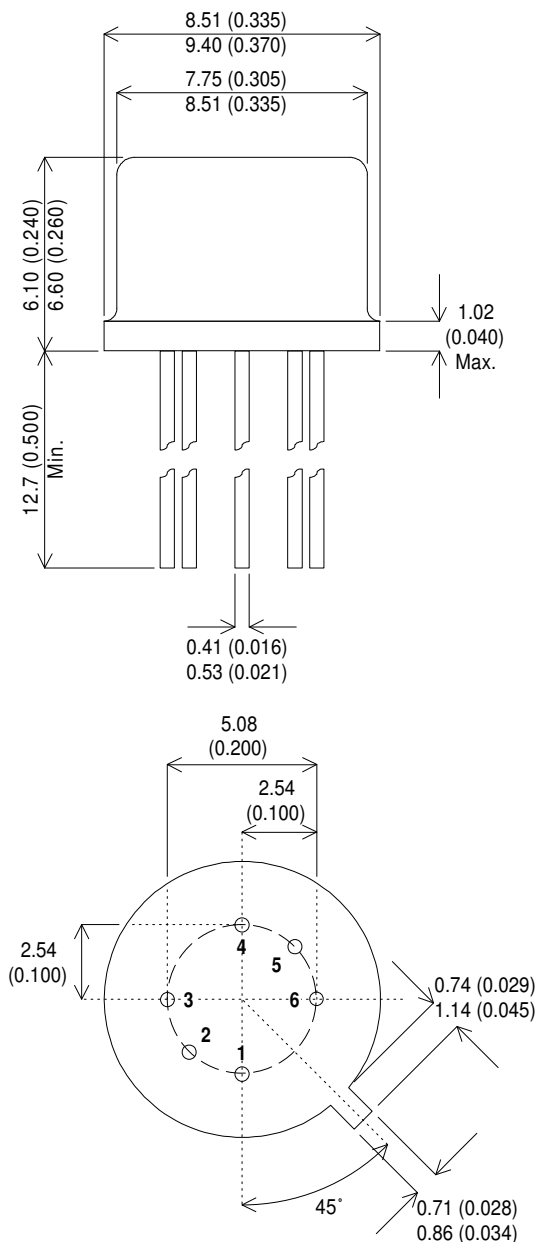
Notes

- (1) Pulse Width $\leq 300\mu\text{s}$, $\delta \leq 2\%$
- (2) The lower of the two readings is taken as h_{FE1}
- (3) By design only, not a production test

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MECHANICAL DATA

Dimensions in mm (inches)



TO-77 (MO-002AF) Underside View

Pin 1 Collector 1	Pin 2 Base 1	Pin 3 Emitter 1
Pin 4 Emitter 2	Pin 5 Base 2	Pin 6 Collector 2