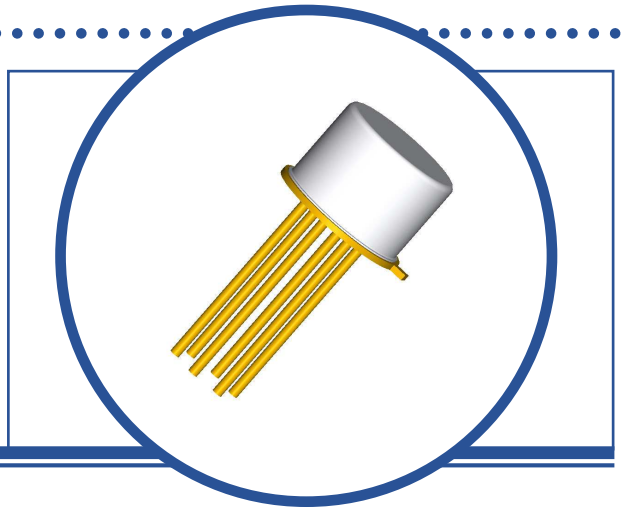
SILICON DUAL MATCHED NPN TRANSISTORS

TT electronics
Semelab Limited

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°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	
		One Side	Both Sides
P_D	Total Power Dissipation at T_A = 25°C	400mW	500mW
	Derate Above 25°C	2.3mW/°C	2.9mW/°C
P_D	Total Power Dissipation at T_C = 25°C	800mW	1.3W
	Derate Above 25°C	4.6mW/°C	7.4mW/°C
T_J	Junction Temperature Range	-65 to +200°C	
T_{stg}	Storage Temperature Range	-65 to +200°C	

THERMAL PROPERTIES

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

SEMELAB
A subsidiary of TT electronics plc.

Semelab Limited Coventry Road, Lutterworth, Leicestershire, LE17 4JB
Telephone +44 (0) 1455 556565 Fax +44 (0) 1455 552612 Email: sales@semelab-tt.com Website: http://www.semelab-tt.com

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

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

ELECTRICAL MATCHING CHARACTERISTICS

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

DYNAMIC CHARACTERISTICS

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

Notes

(1) Pulse Width ≤ 300us, δ ≤ 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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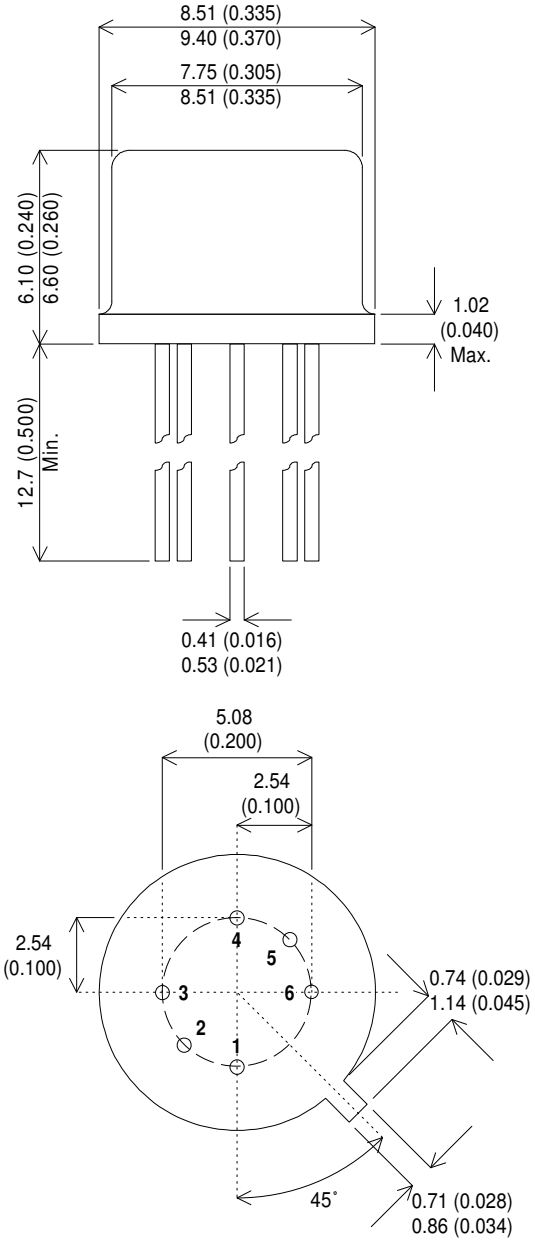
MECHANICAL DATA

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