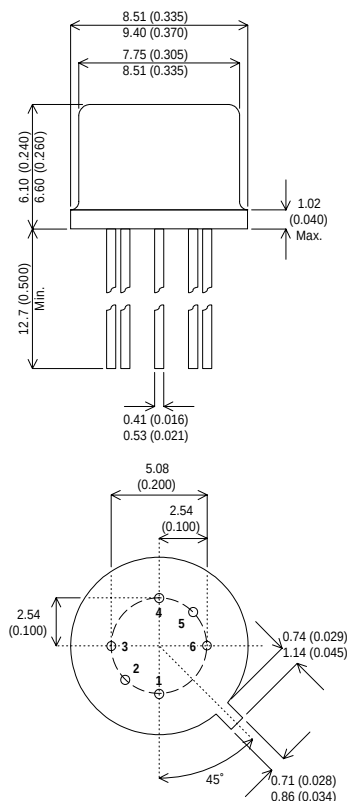


MECHANICAL DATA

Dimensions in mm (inches)



DUAL NPN PLANAR TRANSISTORS IN TO77 PACKAGE

TO-77 PACKAGE

PIN 1 – Collector 1	PIN 4 – Emitter 2
PIN 2 – Base 1	PIN 5 – Base 2
PIN 3 – Emitter 1	PIN 6 – Collector 2

ABSOLUTE MAXIMUM RATINGS

($T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

		EACH SIDE	TOTAL DEVICE
V_{CBO}	Collector – Base Voltage	60V	
V_{CEO}	Collector – Emitter Voltage ¹	60V	
V_{EBO}	Emitter – Base Voltage	6V	
I_C	Continuous Collector Current	30	
P_D	Total Device Dissipation	$T_{AMB} = 25^{\circ}\text{C}$ 300mW	500mW
		Derate above 25°C 1.72mW / $^{\circ}\text{C}$	2.86W / $^{\circ}\text{C}$
P_D	Total Device Dissipation	$T_C = 25^{\circ}\text{C}$ 750mW	1.5W
		Derate above 25°C 4.3mW / $^{\circ}\text{C}$	8.6mW / $^{\circ}\text{C}$
T_{STG}	Storage Temperature Range	–65 to 200°C	
T_L	Lead temperature (Soldering, 10 sec.)	300 $^{\circ}\text{C}$	

NOTES

1. Base – Emitter Diode Open Circuited.

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

Parameter	Test Conditions ¹	Min.	Typ.	Max.	Unit
INDIVIDUAL TRANSISTOR CHARACTERISTICS					
$V_{(BR)CBO}$ Collector – Base Breakdown Voltage	$I_C = 10\mu\text{A}$ $I_E = 0$	60			V
$V_{(BR)CEO^*}$ Collector – Emitter Breakdown Voltage	$I_C = 10\text{mA}$ $I_B = 0$	60			
$V_{(BR)EBO}$ Emitter – Base Breakdown Voltage	$I_E = 10\mu\text{A}$ $I_C = 0$	6			
I_{CBO} Collector Cut-off Current	$V_{CB} = 45\text{V}$ $I_E = 0$			2	nA
	$T_A = 150^{\circ}\text{C}$			10	μA
I_{CEO} Collector Cut-off Current	$V_{CE} = 5\text{V}$ $I_B = 0$			2	nA
I_{EBO} Emitter Cut-off Current	$V_{EB} = 5\text{V}$ $I_C = 0$			2	
h_{FE} DC Current Gain	$V_{CE} = 5\text{V}$ $I_C = 10\mu\text{A}$	150		600	—
	$T_A = -55^{\circ}\text{C}$	40			
	$V_{CE} = 5\text{V}$ $I_C = 100\mu\text{A}$	225			
	$V_{CE} = 5\text{V}$ $I_C = 1\text{mA}$	300			
V_{BE} Base – Emitter Voltage	$V_{CE} = 5\text{V}$ $I_C = 100\mu\text{A}$			0.70	V
$V_{CE(sat)}$ Collector – Emitter Saturation Voltage	$I_B = 100\mu\text{A}$ $I_C = 1\text{mA}$			0.35	
h_{ib} Small Signal Common – Base Input Impedance	$V_{CB} = 5\text{V}$ $I_C = 1\text{mA}$ $f = 1\text{kHz}$	25		32	Ω
h_{ob} Small Signal Common – Base Output Admittance	$V_{CB} = 5\text{V}$ $I_C = 1\text{mA}$ $f = 1\text{kHz}$			1	μmho
$ h_{fe} $ Small Signal Common – Base Current Gain	$V_{CE} = 5\text{V}$ $I_C = 500\mu\text{A}$ $f = 20\text{MHz}$	3			—
C_{obo} Common – Base Open Circuit Output Capacitance	$V_{CB} = 5\text{V}$ $I_E = 0$ $f = 140\text{kHz to } 1\text{MHz}$			6	pF

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
TRANSISTOR MATCHING CHARACTERISTICS					
h_{FE1} Static Forward Current Gain	$V_{CE} = 5\text{V}$ $I_C = 100\mu\text{A}$	0.9		1	—
h_{FE2} Balance Ratio	See Note 2.				
$ V_{BE1} - V_{BE2} $ Base – Emitter Voltage Differential	$V_{CE} = 5\text{V}$ $I_C = 100\mu\text{A}$			3	mV
	$V_{CE} = 5\text{V}$ $I_C = 10\mu\text{A to } 1\text{mA}$			5	
$ \Delta(V_{BE1} - V_{BE2})/\Delta T_A $ Base – Emitter Voltage Differential Change With Temperature	$V_{CE} = 5\text{V}$ $I_C = 100\mu\text{A}$ $T_{A1} = 25^{\circ}\text{C}$ $T_{A2} = -55^{\circ}\text{C}$			0.8	mV
	$V_{CE} = 5\text{V}$ $I_C = 100\mu\text{A}$ $T_{A1} = 25^{\circ}\text{C}$ $T_{A2} = 125^{\circ}\text{C}$			1	

NOTES

- 1) Terminals not under test are open circuited under all test conditions.
- 2) The lower of the two readings is taken as h_{FE1} .