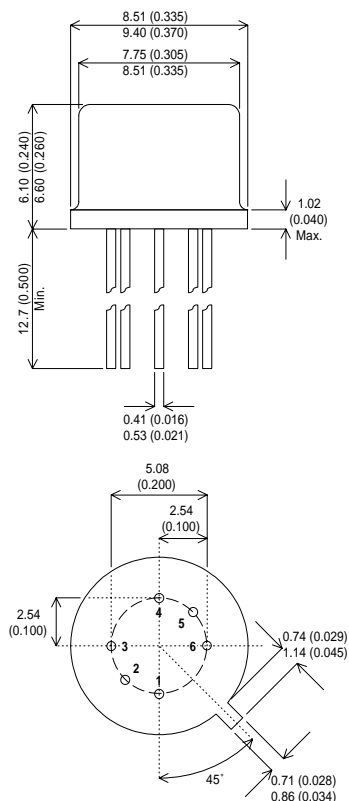


MECHANICAL DATA

Dimensions in mm (inches)



**DUAL NPN
PLANAR TRANSISTORS IN
TO77 PACKAGE**

TO-77 PACKAGE

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

ABSOLUTE MAXIMUM RATINGS

			(T _{amb} = 25°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°C	300mW	500mW
		Derate above 25°C	1.72mW / °C	2.86W / °C
P _D	Total Device Dissipation	T _C = 25°C	750mW	1.5W
		Derate above 25°C	4.3mW / °C	8.6mW / °C
T _{STG}	Storage Temperature Range		-65 to 200°C	
T _L	Lead temperature (Soldering, 10 sec.)		300°C	

NOTES

1. Base – Emitter Diode Open Circuited.

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

Parameter	Test Conditions ¹	Min.	Typ.	Max.	Unit		
INDIVIDUAL TRANSISTOR CHARACTERISTICS							
$V_{(BR)CBO}$	Collector – Base Breakdown Voltage	$I_C = 10\mu A$	$I_E = 0$	60	V		
$V_{(BR)CEO^*}$	Collector – Emitter Breakdown Voltage	$I_C = 10mA$	$I_B = 0$	60			
$V_{(BR)EBO}$	Emitter – Base Breakdown Voltage	$I_E = 10\mu A$	$I_C = 0$	6			
I_{CBO}	Collector Cut-off Current	$V_{CB} = 45V$	$I_E = 0$		2	nA	
			$T_A = 150^{\circ}C$			10	μA
I_{CEO}	Collector Cut-off Current	$V_{CE} = 5V$	$I_B = 0$		2	nA	
I_{EBO}	Emitter Cut-off Current	$V_{EB} = 5V$	$I_C = 0$		2	nA	
h_{FE}	DC Current Gain	$V_{CE} = 5V$	$I_C = 10\mu A$	$T_A = -55^{\circ}C$	60	240	—
					15		
			$I_C = 100\mu A$	100			
	$V_{CE} = 5V$	$I_C = 1mA$		150			
V_{BE}	Base – Emitter Voltage	$V_{CE} = 5V$	$I_C = 100\mu A$		0.70	V	
$V_{CE(sat)}$	Collector – Emitter Saturation Voltage	$I_B = 100\mu A$	$I_C = 1mA$		0.35		
h_{ib}	Small Signal Common – Base Input Impedance	$V_{CB} = 5V$	$I_C = 1mA$	25	32	Ω	
		$f = 1kHz$					
h_{ob}	Small Signal Common – Base Output Admittance	$V_{CB} = 5V$	$I_C = 1mA$		1	μmho	
		$f = 1kHz$					
$ h_{fe} $	Small Signal Common – Base Current Gain	$V_{CE} = 5V$	$I_C = 500\mu A$	3		—	
		$f = 20MHz$					
C_{obo}	Common – Base Open Circuit Output Capacitance	$V_{CB} = 5V$	$I_E = 0$		6	pF	
		$f = 140kHz$ to $1MHz$					

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

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

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} .