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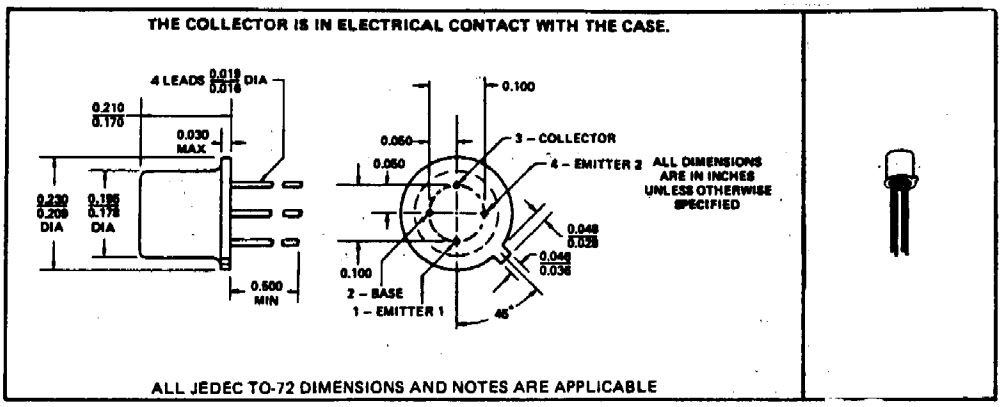
3N74 THRU 3N79
TYPES
N-P-N SILICON TRANSISTORS



***absolute maximum ratings at 25°C free-air temperature (unless otherwise noted)**

	3N74 3N75 3N76	3N77 3N78 3N79
Collector-Base Voltage	50 V	40 V
Emitter-One–Collector Voltage (See Note 1)	18 V	12 V
Emitter-Two–Collector Voltage (See Note 1)	18 V	12 V
Emitter-One–Emitter-Two Voltage (See Note 2)	±18 V	±12 V
Emitter-One–Base Voltage	18 V	12 V
Emitter-Two–Base Voltage	18 V	12 V
Continuous Collector Current	←±20 mA→	
Continuous Base Current	←±20 mA→	
Continuous Emitter-One Current	←±10 mA→	
Continuous Emitter-Two Current	←±10 mA→	
Continuous Device Dissipation at (or below) 25°C Free-Air Temperature (See Note 3)	←300 mW→	
Continuous Device Dissipation at (or below) 25°C Case Temperature (See Note 4)	←600 mW→	
Storage Temperature Range	−65°C to 200°C	
Lead Temperature 1/16 Inch from Case for 10 Seconds	←230°C→	

*electrical characteristics at 25°C free-air temperature (unless otherwise noted)

PARAMETER		TEST CONDITIONS			3N74		3N75		3N76		UNIT
					MIN	MAX	MIN	MAX	MIN	MAX	
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C = 100 μA,	$I_{E1} = I_{E2} = 0$		50		50		50		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	I_E = 10 μA,	I_C = 0,	See Note 5	18		18		18		V
$V_{(BR)E1E2}$	Emitter-Emitter Breakdown Voltage	I_{E1} = ±10 μA,	V_{CB} = 0,	See Note 6	±18		±18		±18		V
I_{CBO}	Collector Cutoff Current	V_{CB} = 30 V,	$I_{E1} = I_{E2} = 0$			10		10		10	nA
I_{EBO}	Emitter Cutoff Current	V_{EB} = 15 V,	I_C = 0,	See Note 5		2		2		2	nA
$I_{E1E2(off)}$	Emitter Cutoff Current	V_{E1E2} = ±15 V,	V_{CB} = 0,	See Note 6		±2		±2		±2	nA
		V_{E1E2} = ±15 V,	V_{CB} = 0,	T_A = 100°C, See Note 6		±100		±100		±100	
$\lvert V_{E1E2(ofs)} \rvert$	Emitter-Emitter Offset Voltage	I_B = 1 mA, T_A = −25°C, 25°C, and 100°C	$I_{E1} = I_{E2} = 0$,	See Figure 1,		50		100		200	μV
$\lvert \Delta V_{E1E2(ofs)} / \Delta I_B \rvert$	Offset Voltage Change with Base Current†	$I_{B(1)}$ = 1.5 mA,	$I_{B(2)}$ = 0.5 mA,	$I_{E1} = I_{E2} = 0$		25		25		50	μV
$\lvert \Delta V_{E1E2(ofs)} / \Delta T_A \rvert$	Offset Voltage Change with Temperature†	I_B = 1 mA,	$I_{E1} = I_{E2} = 0$,	$T_{A(1)}$ = 100°C, $T_{A(2)}$ = −25°C		75		125		175	μV
$r_{e1e2(on)}$	Small-Signal Emitter-Emitter On-State Resistance	I_B = 1 mA, f = 1 kHz,	$I_{E1} = I_{E2} = 0$,	I_e = 100 μA, See Figure 2	10	40	10	40	10	60	Ω
$\lvert h_{fe} \rvert$	Small-Signal Common-Emitter Forward Current Transfer Ratio	V_{CE} = 5 V,	I_C = 1 mA,	f = 20 MHz, See Note 5	1.5		1.5		1.5		
C_{obo}	Common-Base Open-Circuit Output Capacitance	V_{CB} = 5 V,	$I_{E1} = I_{E2} = 0$,	f = 140 kHz		8		8		8	pF
C_{ibo}	Common-Base Open-Circuit Input Capacitance	V_{EB} = 5 V,	I_C = 0,	f = 140 kHz, See Note 5		5		5		5	pF

PARAMETER		TEST CONDITIONS			3N77		3N78		3N79		UNIT
					MIN	MAX	MIN	MAX	MIN	MAX	
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C = 100 μA,	$I_{E1} = I_{E2} = 0$		40		40		40		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	I_E = 10 μA,	I_C = 0,	See Note 5	12		12		12		V
$V_{(BR)E1E2}$	Emitter-Emitter Breakdown Voltage	I_{E1} = ±10 μA,	V_{CB} = 0,	See Note 6	±12		±12		±12		V
I_{CBO}	Collector Cutoff Current	V_{CB} = 30 V,	$I_{E1} = I_{E2} = 0$			10		10		20	nA
I_{EBO}	Emitter Cutoff Current	V_{EB} = 5 V,	I_C = 0,	See Note 5		5		5		10	nA
$I_{E1E2(off)}$	Emitter Cutoff Current	V_{E1E2} = ±5 V,	V_{CB} = 0,	See Note 6		±5		±5		±10	nA
		V_{E1E2} = ±5 V,	V_{CB} = 0,	T_A = 100°C, See Note 6		±100		±100		±200	
$\lvert V_{E1E2(ofs)} \rvert$	Emitter-Emitter Offset Voltage	I_B = 1 mA, T_A = −25°C, 25°C, and 100°C	$I_{E1} = I_{E2} = 0$,	See Figure 1,		50		100		200	μV
$\lvert \Delta V_{E1E2(ofs)} / \Delta I_B \rvert$	Offset Voltage Change with Base Current†	$I_{B(1)}$ = 1.5 mA,	$I_{B(2)}$ = 0.5 mA,	$I_{E1} = I_{E2} = 0$		25		50		75	μV
$\lvert \Delta V_{E1E2(ofs)} / \Delta T_A \rvert$	Offset Voltage Change with Temperature†	I_B = 1 mA,	$I_{E1} = I_{E2} = 0$,	$T_{A(1)}$ = 100°C, $T_{A(2)}$ = −25°C		75		125		175	μV
$r_{e1e2(on)}$	Small-Signal Emitter-Emitter On-State Resistance	I_B = 1 mA, f = 1 kHz,	$I_{E1} = I_{E2} = 0$,	I_e = 100 μA, See Figure 2	10	50	10	50	10	60	Ω
$\lvert h_{fe} \rvert$	Small-Signal Common-Emitter Forward Current Transfer Ratio	V_{CE} = 5 V,	I_C = 1 mA,	f = 20 MHz, See Note 5	1.5		1.5		1.5		
C_{obo}	Common-Base Open-Circuit Output Capacitance	V_{CB} = 5 V,	$I_{E1} = I_{E2} = 0$,	f = 140 kHz		8		8		10	pF
C_{ibo}	Common-Base Open-Circuit Input Capacitance	V_{EB} = 5 V,	I_C = 0,	f = 140 kHz, See Note 5		8		5		6	pF

PARAMETER MEASUREMENT INFORMATION

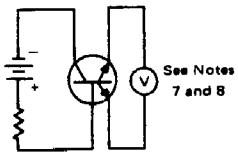


FIGURE 1

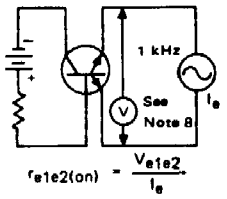


FIGURE 2

NOTES: 1. These values apply when the base and other emitter are open-circuited.
2. These values apply when the collector is short-circuited to the base but open-circuited with respect to the emitters.
3. Derate linearly to 175°C free-air temperature at the rate of 2 mW/°C.
4. Derate linearly to 175°C case temperature at the rate of 4 mW/°C.
5. These limits apply separately for each emitter with the other emitter open-circuited.
6. These parameters must be measured with the collector short-circuited to the base but open-circuited with respect to the emitters. The limits apply to both polarities of emitter-to-emitter voltage.

†Offset Voltage Change is defined as the magnitude of the algebraic difference between the offset voltages at two specified base currents or temperatures.

7. Care must be taken to avoid error due to thermocouple action.
8. The voltmeter impedance must be high enough that halving it does not change the measured value.

*JEDEC registered data