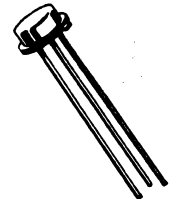


**2N5229 PNP SILICON
 2N5230 CHOPPER
 2N5231 TRANSISTORS**

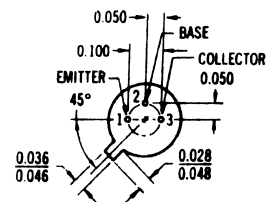
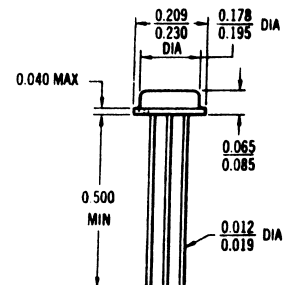


- Low Offset Voltage – $V_{EC(off)} = 0.5 \text{ mVdc (Max) @ } I_B = 100 \mu\text{Adc}$
- Low Dynamic "ON" Series Resistance –
 $r_{ec(ON)} = 6.0 \text{ Ohms (Max) @ } I_B = 1.0 \text{ mAdc}$
- Space Saving TO-46 Package

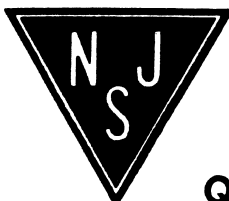
MAXIMUM RATINGS

Rating	Symbol	2N5229	2N5230	2N5231	Unit
*Collector-Emitter Voltage	V_{CEO}	10	20	30	Vdc
*Collector-Base Voltage	V_{CB}	15	30	50	Vdc
*Emitter-Base Voltage	V_{EB}	15	30	50	Vdc
*Collector Current	I_C	← 50 →			mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	← 0.5 →			Watt
		← 2.86 →			mW/°C
*Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	← 2.0 →			Watts
		← 12 →			mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	← -65 to +200 →			°C

*Indicates JEDEC Registered Data.



TO-46 PACKAGE



2N5229, 2N5230, 2N5231 (continued)

*ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Emitter-Collector Breakdown Voltage ($I_E = 10 \mu\text{Adc}$, $I_B = 0$)	BV _{ECO}	10 20 30	— — —	V _{dc}
Collector-Base Breakdown Voltage ($I_C = 10 \mu\text{Adc}$, $I_E = 0$)	BV _{CBO}	15 30 50	— — —	V _{dc}
Emitter-Base Breakdown Voltage ($I_E = 10 \mu\text{Adc}$, $I_C = 0$)	BV _{EBO}	15 30 50	— — —	V _{dc}
Collector Cutoff Current ($V_{CB} = 12 \text{ Vdc}$, $I_E = 0$) ($V_{CB} = 25 \text{ Vdc}$, $I_E = 0$) ($V_{CB} = 40 \text{ Vdc}$, $I_E = 0$)	I _{CBO}	— — —	1.0 1.0 1.0	nAdc
Emitter Cutoff Current ($V_{EB} = 12 \text{ Vdc}$, $I_C = 0$) ($V_{EB} = 25 \text{ Vdc}$, $I_C = 0$) ($V_{EB} = 40 \text{ Vdc}$, $I_C = 0$)	I _{EBO}	— — —	1.0 1.0 1.0	nAdc
ON CHARACTERISTICS				
DC Current Gain ($I_C = 100 \mu\text{Adc}$, $V_{CE} = 1.0 \text{ Vdc}$) ($I_C = 200 \mu\text{Adc}$, $V_{CE} = 0.5 \text{ Vdc}$) (Inverted Connection)	h _{FE}	50 15	— —	—
Offset Voltage ($I_B = 100 \mu\text{Adc}$, $I_E = 0$) ($I_B = 1.0 \text{ mAdc}$, $I_E = 0$)	V _{EC(off)}	— — —	0.5 0.8 0.8 1.0	mV _{dc}
DYNAMIC CHARACTERISTICS				
Collector-Base Capacitance ($V_{CB} = 10 \text{ Vdc}$, $I_E = 0$, $f = 140 \text{ kHz}$)	C _{cb}	—	5.0	pF
Emitter-Base Capacitance ($V_{EB} = 10 \text{ Vdc}$, $I_C = 0$, $f = 140 \text{ kHz}$)	C _{eb}	—	4.0	pF
Small-Signal Current Gain ($I_C = 1.0 \text{ mAdc}$, $V_{CE} = 5.0 \text{ Vdc}$, $f = 4.0 \text{ MHz}$)	h _{fe}	2.0	—	—
"ON" Series Resistance ($I_B = 1.0 \text{ mAdc}$, $I_E = 0$, $I_E = 100 \mu\text{Adc}$, $f = 1.0 \text{ kHz}$)	r _{ec (ON)}	1.0 2.0 2.0	6.0 8.0 10	Ohms

* Indicates JEDEC Registered Data.