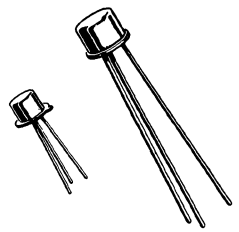
2N2330 (SILICON)
2N2331



NPN silicon annular Star transistors for low-level DC/AC chopper applications.

CASE 22
(TO-18)
2N2331

CASE 31
(TO-5)
2N2330

Collector connected to case

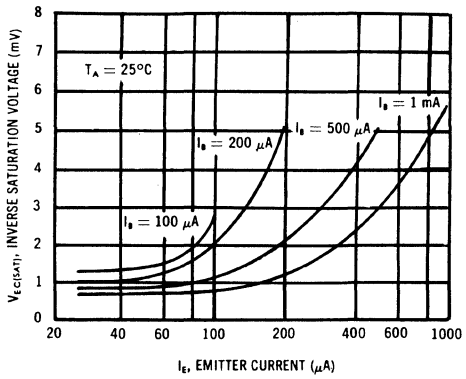
MAXIMUM RATINGS

Rating	Symbol	2N2330 (TO-5)	2N2331 (TO-18)	Unit
Collector-Emitter Voltage	V_{CEO}	20	20	Vdc
Collector-Base Voltage	V_{CB}	30	30	Vdc
Emitter-Base Voltage	V_{EB}	5.0	5.0	Vdc
Collector Current	I_C	500		mAdc
Total Device Dissipation @ $T_A = 25^oC$ Derate above 25^oC	P_D	0.8 5.33	0.5 3.33	Watt $mW/^oC$
Total Device Dissipation @ $T_C = 25^oC$ Derate above 25^oC	P_D	3.0 20	1.8 12	Watts $mW/^oC$
Operating Junction Temperature Range	T_J	-65 to +175		^oC
Storage Temperature Range	T_{stg}	-65 to +200		^oC

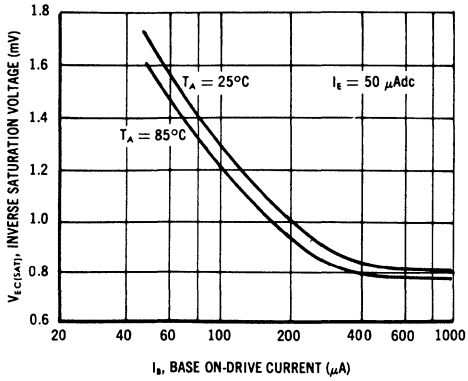
ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage (I_C = 1 mAdc, I_B = 0)	BV_{CEO}	20	-	Vdc
Collector-Base Breakdown Voltage (I_C = 10 μAdc, I_E = 0)	BV_{CBO}	30	-	Vdc
Emitter-Base Breakdown Voltage (I_E = 10 μAdc, I_C = 0)	BV_{EBO}	5.0	-	Vdc
Collector Cutoff Current (V_{CB} = 4.5 Vdc, I_E = 0)	I_{CBO}	-	1.0	nAdc
Emitter Cutoff Current (V_{BE} = 4.5 Vdc)	I_{EBO}	-	5.0	nAdc
Offset Current (V_{BC} = 2 Vdc, V_{CE} = 0, T_A = 25°C)	$I_{(off)}$	-	1	nAdc
(V_{BC} = 2 Vdc, V_{CE} = 0, T_A = 85°C)		-	10	
ON CHARACTERISTICS				
DC Current Gain (I_C = 10 mAdc, V_{CE} = 1 Vdc)	h_{FE}	50	-	-
Offset Voltage (I_B = 200 μAdc, I_E = 0)	$V_{(off)}$	-	0.75	mVdc
Inverse Saturation Voltage (I_B = 200 μAdc, I_E = 50 μAdc)	$V_{EC(sat)}$	-	3.0	mVdc
DYNAMIC CHARACTERISTICS				
Current-Gain — Bandwidth Product (I_C = 1 mAdc, V_{CE} = 1 Vdc, f = 100 MHz)	f_T	100	-	MHz
Output Capacitance (V_{CB} = 2 Vdc, I_E = 0)	C_{ob}	-	10	pF
Input Capacitance (V_{BE} = 2 Vdc, I_C = 0)	C_{ib}	-	20	pF

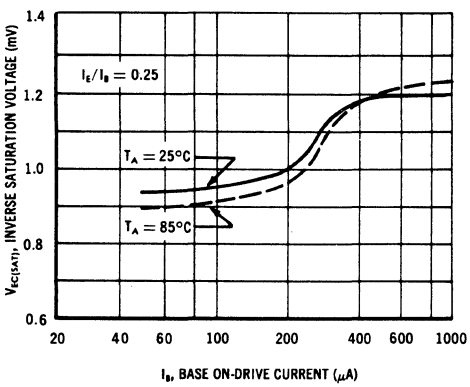
INVERSE SATURATION VOLTAGE versus EMITTER CURRENT



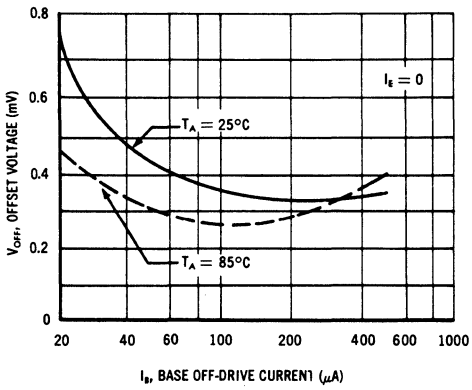
INVERSE SATURATION VOLTAGE versus BASE CURRENT



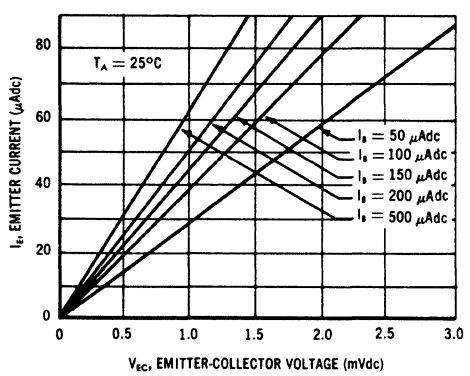
INVERSE SATURATION VOLTAGE versus BASE CURRENT



OFFSET VOLTAGE versus BASE CURRENT



INVERSE SATURATION CHARACTERISTICS



OUTPUT CAPACITANCE versus COLLECTOR-BASE VOLTAGE and INPUT CAPACITANCE versus EMITTER-BASE VOLTAGE