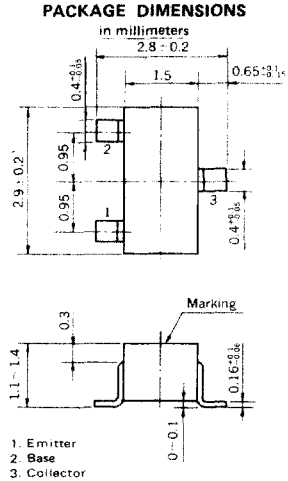
NEC
ELECTRON DEVICE

SILICON TRANSISTOR
2SA1330

HIGH VOLTAGE AMPLIFIER AND SWITCHING
PNP SILICON EPITAXIAL TRANSISTOR
MINI MOLD

PACKAGE DIMENSIONS
in millimeters



1. Emitter
2. Base
3. Collector

FEATURES

- High Voltage: V_{CEO} = –200 V
- High DC Current Gain: h_{FE} = 90 to 450
- Complementary to 2SC3360

ABSOLUTE MAXIMUM RATINGS

Maximum Voltages and Current (T_a = 25 °C)			
Collector to Base Voltage	V_{CBO}	–200	V
Collector to Emitter Voltage	V_{CEO}	–200	V
Emitter to Base Voltage	V_{EBO}	–5	V
Collector Current (DC)	I_C	–100	mA
Maximum Power Dissipation			
Total Power Dissipation at 25 °C Ambient Temperature	P_T	200	mW
Maximum Temperatures			
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{stg}	–55 to +150	°C

ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	I_{CBO}			–100	nA	V_{CB} = –200 V, I_E = 0
Emitter Cutoff Current	I_{EBO}			–100	nA	V_{EB} = –5 V, I_C = 0
DC Current Gain	h_{FE1}	90	200	450		V_{CE} = –10 V, I_C = –10 mA
DC Current Gain	h_{FE2}	50	195			V_{CE} = –10 V, I_C = –50 mA
Base to Emitter Voltage	V_{BE}	–0.6	–0.65	–0.7	V	V_{CE} = –10 V, I_C = –10 mA
Collector Saturation Voltage	$V_{CE(sat)}$		–0.21	–0.3	V	I_C = –50 mA, I_B = –5.0 mA
Base Saturation Voltage	$V_{BE(sat)}$		–0.8	–1.2	V	I_C = –50 mA, I_B = –5.0 mA
Gain Bandwidth Product	f_T		120		MHz	V_{CE} = –10 V, I_E = 10 mA
Output Capacitance	C_{ob}		3.6		pF	V_{CB} = –30 V, I_E = 0, f = 1.0 MHz
Turn-on Time	t_{on}		0.16		μs	V_{CC} = –10 V, $V_{BE(off)}$ = 2.5 V
Storage Time	t_{stg}		1.3		μs	I_C = –10 mA
Turn-off Time	t_{off}		0.18		μs	I_{B1} = –I_{B2} = –1.0 mA

* Pulsed: PW ≤ 350 μs, Duty Cycle ≤ 2 %

h_{FE} Classification

Marking	O5	O6	O7
h_{FE1}	90 to 180	135 to 270	200 to 450

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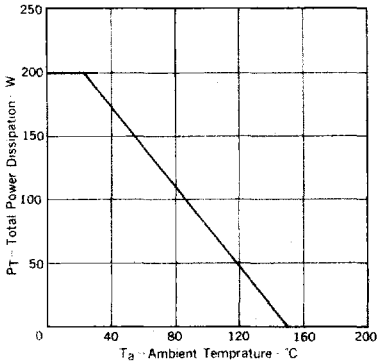
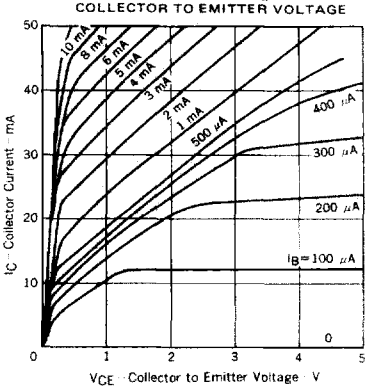
TYPICAL CHARACTERISTICS (T_a = 25 °C)

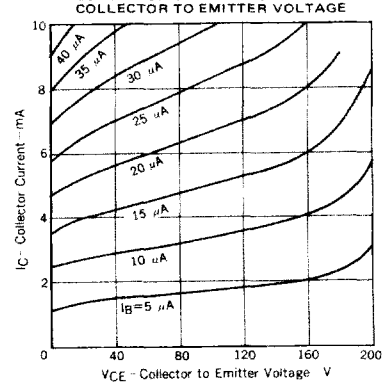
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



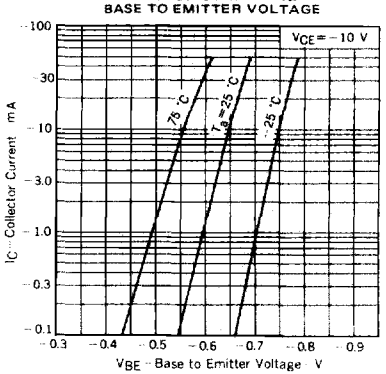
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



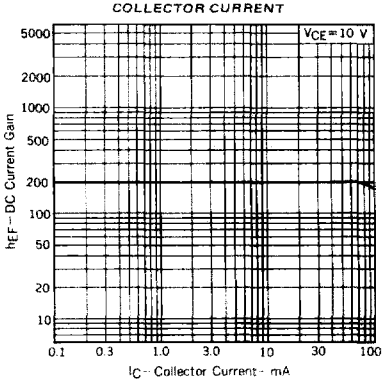
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



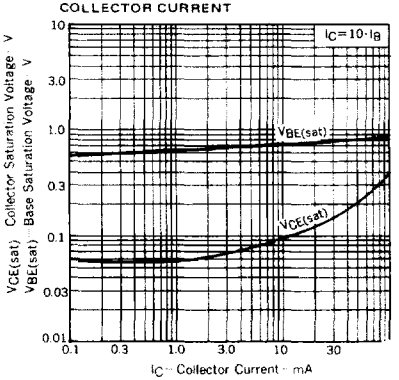
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



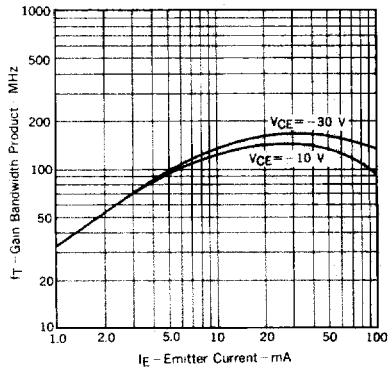
DC CURRENT GAIN vs. COLLECTOR CURRENT



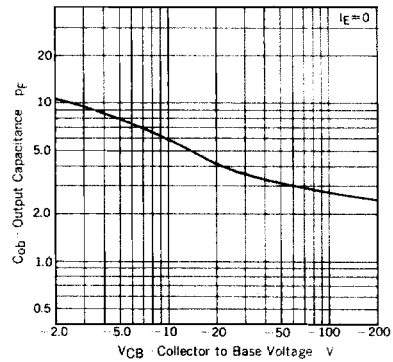
BASE AND COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



GAIN BANDWIDTH PRODUCT vs.
EMITTER CURRENT



OUTPUT CAPACITANCE vs.
COLLECTOR TO BASE VOLTAGE



SWITCHING TIME vs.
COLLECTOR CURRENT