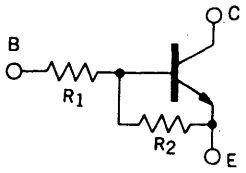
NEC

NPN SILICON TRANSISTOR
BA1L4L

DESCRIPTION The BA1L4L is designed for use in medium speed switching circuit.

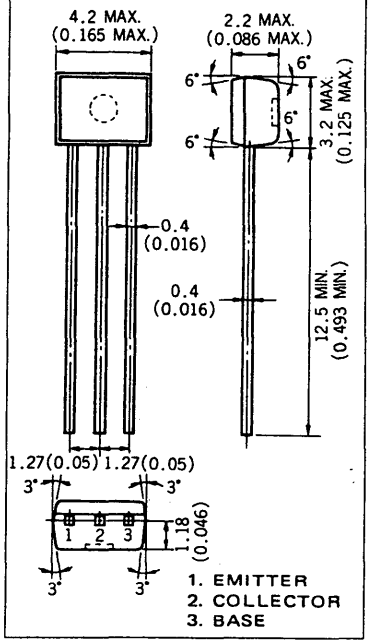
FEATURE

- Bias resistors built-in type NPN transistor equivalent circuit.



R_1 = 47 kΩ
R_2 = 22 kΩ

PACKAGE DIMENSIONS
in millimeters (inches)



ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures

	Storage Temperature	−55 to +150 °C	
	Junction Temperature	150 °C Maximum	

Maximum Power Dissipation (T_a = 25 °C)

	Total Power Dissipation	250	mW

Maximum Voltages and Currents (T_a = 25 °C)

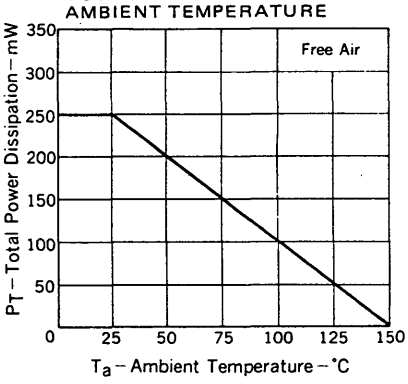
V_{CBO}	Collector to Base Voltage	60	V
V_{CEO}	Collector to Emitter Voltage	50	V
V_{EBO}	Emitter to Base Voltage	15	V
$I_{C(DC)}$	Collector Current (DC)	100	mA
$I_{C(pulse)}$	Collector Current (pulse)	200	mA

ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

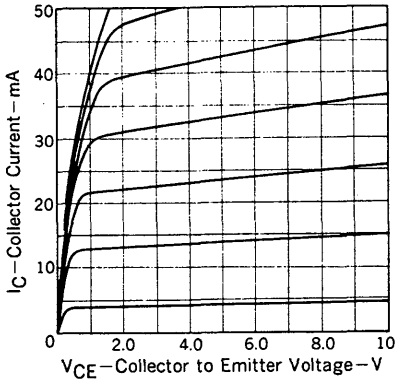
SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
R_1	Input Resistance	32.9	47.0	61.1	kΩ	
R_2	Input Resistance	15.4	22.0	28.6	kΩ	
V_{IL}	Low Level Input Voltage		1.7	0.9	V	V_{CE} = 5.0 V, I_C = 100 μA
V_{IH}	Hi Level Input Voltage	6.0	2.5		V	V_{CE} = 0.2 V, I_C = 5.0 mA
t_{on}	Turn On Time		0.38	1.0	μs	V_{CC} = 5.0 V, R_L = 1.0 kΩ,
t_{stg}	Storage Time		1.2	3.0	μs	V_{in} = 5.0 V,
t_{off}	Turn Off Time		1.6	5.0	μs	PW = 2 μs, Duty Cycle ≦ 2 %
h_{FE1}	DC Current Gain	60	120	195	—	V_{CE} = 5.0 V, I_C = 5.0 mA
h_{FE2}	DC Current Gain	90	340		—	V_{CE} = 5.0 V, I_C = 50 mA
$V_{CE(sat)}$	Collector Saturation Voltage		0.04	0.2	V	I_C = 5.0 mA, I_B = 0.25 mA
I_{CBO}	Collector Cutoff Current			0.1	μA	V_{CB} = 50 V, I_E = 0

TYPICAL CHARACTERISTICS (T_a = 25 °C)

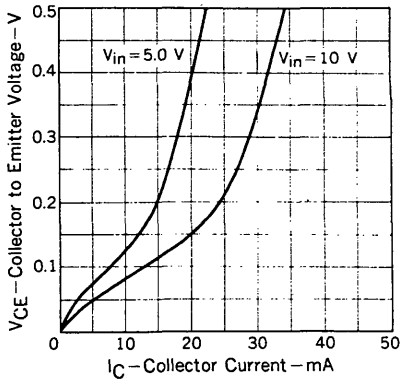
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



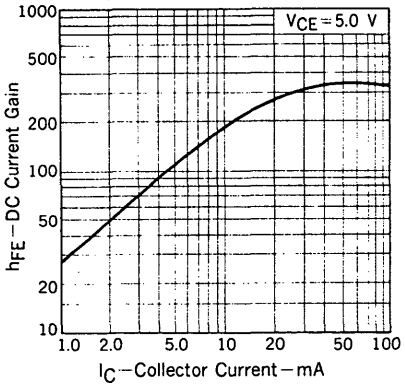
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



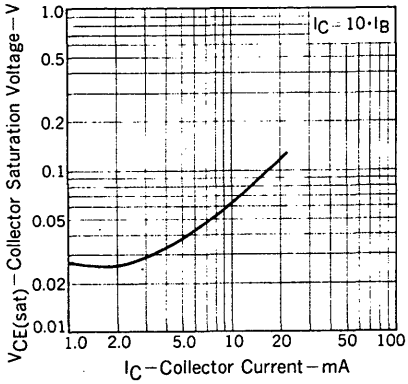
COLLECTOR TO EMITTER VOLTAGE vs. COLLECTOR CURRENT



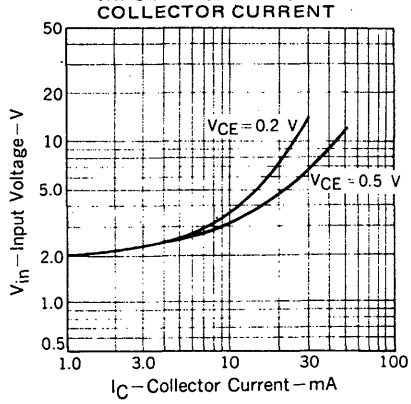
DC CURRENT GAIN vs. COLLECTOR CURRENT



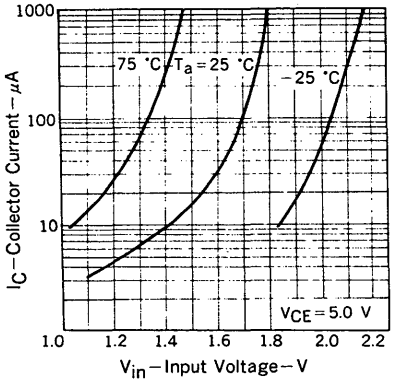
COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



INPUT VOLTAGE vs. COLLECTOR CURRENT



COLLECTOR CURRENT vs. INPUT VOLTAGE



SWITCHING TIME vs. COLLECTOR CURRENT