DATA SHEET

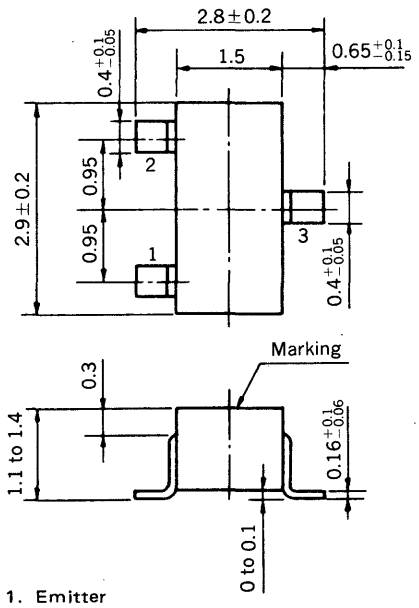
NEC
ELECTRON DEVICE

SILICON TRANSISTOR

FA1F4M

MEDIUM SPEED SWITCHING
RESISTOR BUILT-IN TYPE NPN TRANSISTOR
MINI MOLD

PACKAGE DIMENSIONS
in millimeters

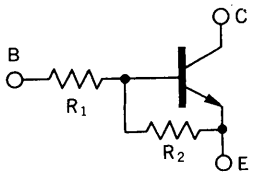


1. Emitter
2. Base
3. Collector

Marking: L33

FEATURES

- Resistors Built-in TYPE



R_1 = 22 kΩ
R_2 = 22 kΩ

- Complementary to FN1F4M

ABSOLUTE MAXIMUM RATINGS

Maximum Voltages and Currents (T_a = 25 °C)			
Collector to Base Voltage	V_{CBO}	60	V
Collector to Emitter Voltage	V_{CEO}	50	V
Emitter to Base Voltage	V_{EBO}	10	V
Collector Current (DC)	I_C	100	mA
Collector Current (Pulse)	I_C	200	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

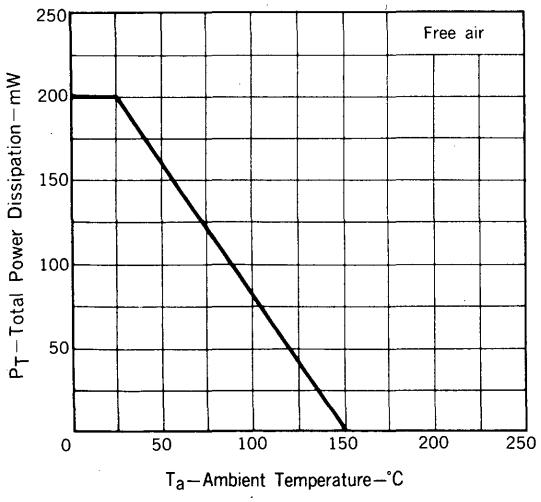
ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	I_{CBO}			100	nA	V_{CB} = 50 V, I_E = 0
DC Current Gain	h_{FE1}*	60	120	195		V_{CE} = 5.0 V, I_C = 5.0 mA
DC Current Gain	h_{FE2}*	90	400			V_{CE} = 5.0 V, I_C = 50 mA
Collector Saturation Voltage	$V_{CE(sat)}$*		0.04	0.2	V	I_C = 50 mA, I_B = 0.25 mA
Low-Level Input Voltage	V_{IL}*		1.05	0.8	V	V_{CE} = 5.0 V, I_C = 100 μA
High-Level Input Voltage	V_{IH}*	4.0	1.6		V	V_{CE} = 0.2 V, I_C = 5.0 mA
Input Resistor	R_1	15.4	22.0	28.6	kΩ	
Resistor Ratio	R_1/R_2	0.9	1.0	1.1		
Turn-on Time	t_{on}		0.11	0.4	μs	V_{CC} = 5 V, V_{in} = 5 V R_L = 1 kΩ PW = 2 μs, Duty Cycle ≦ 2 %
Storage Time	t_{stg}		2.3	5.0	μs	
Turn-off Time	t_{off}		2.6	6.0	μs	

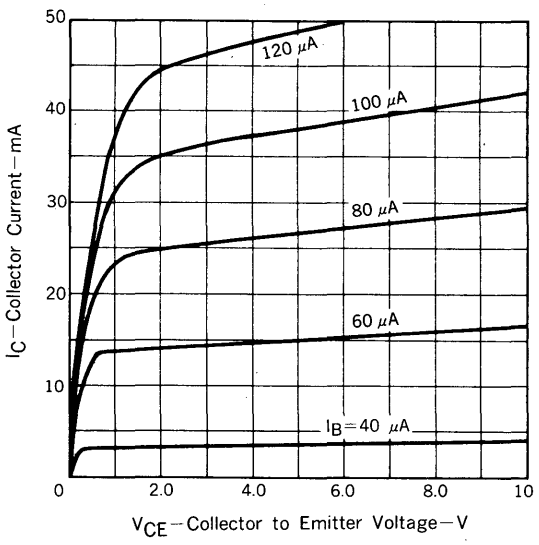
* Pulsed: PW ≦ 350 μs, Duty Cycle ≦ 2 %

TYPICAL CHARACTERISTICS (T_a = 25 °C)

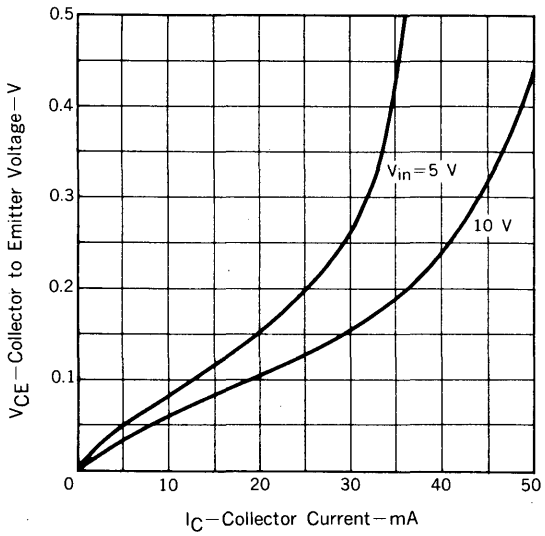
TOTAL POWER DISSIPATION vs.
AMBIENT TEMPERATURE



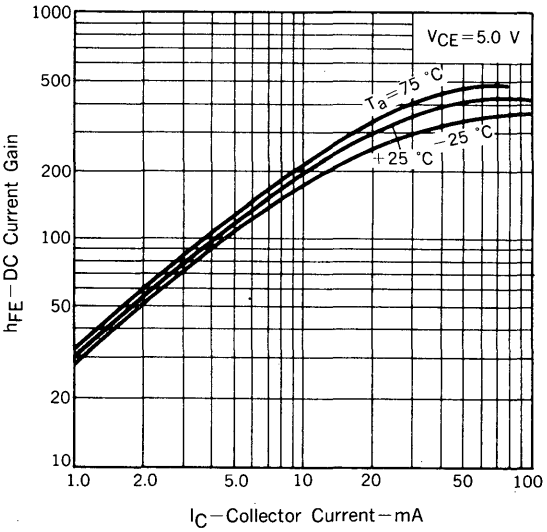
COLLECTOR CURRENT vs.
COLLECTOR TO EMITTER VOLTAGE



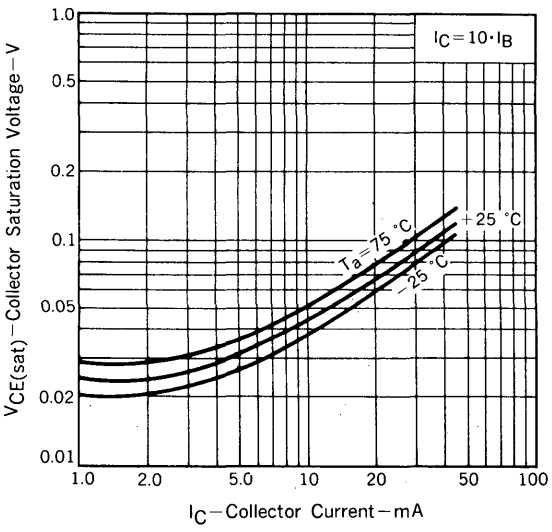
COLLECTOR TO EMITTER VOLTAGE vs.
COLLECTOR CURRENT



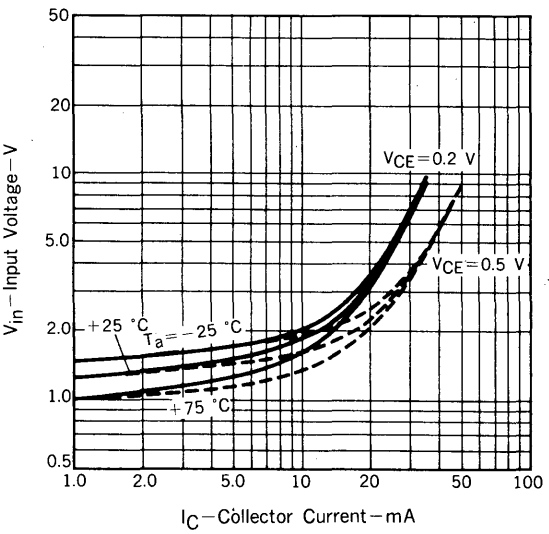
DC CURRENT GAIN vs.
COLLECTOR CURRENT



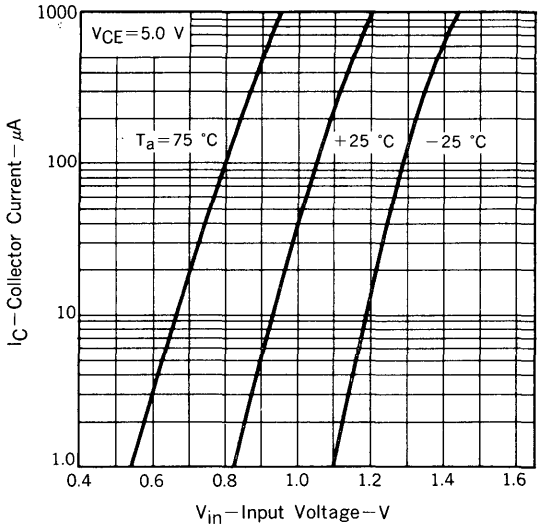
COLLECTOR SATURATION VOLTAGE vs.
COLLECTOR CURRENT



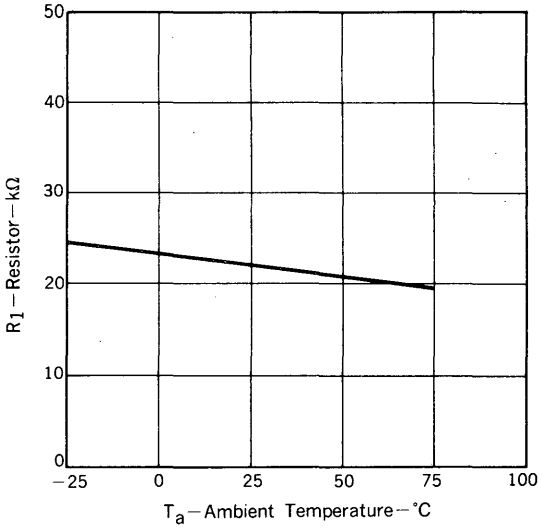
INPUT VOLTAGE vs.
COLLECTOR CURRENT



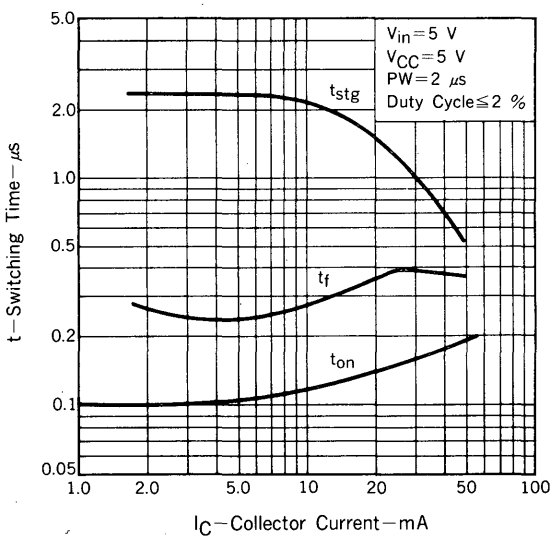
COLLECTOR CURRENT vs.
INPUT VOLTAGE



RESISTOR vs.
AMBIENT TEMPERATURE



SWITCHING TIME vs.
COLLECTOR CURRENT



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