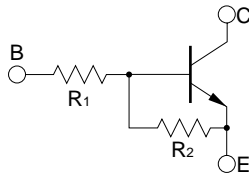


MEDIUM SPEED SWITCHING  
RESISTOR BUILT-IN TYPE NPN TRANSISTOR  
MINI MOLD

FEATURES

- Resistors Built-in TYPE



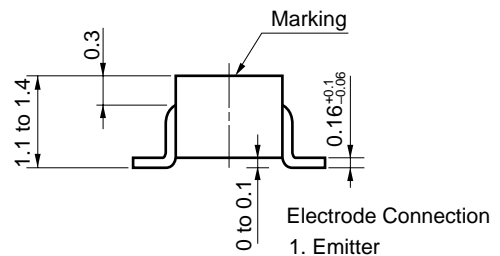
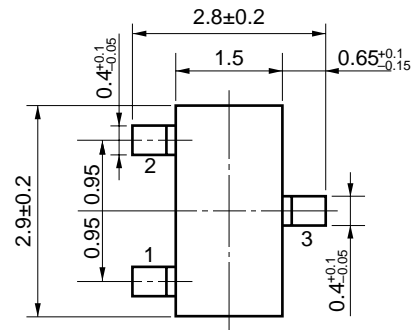
- Complementary to FN1A4M

ABSOLUTE MAXIMUM RATINGS (TA = 25 °C)

Collector to Base Voltage	V <sub>CB0</sub>	60	V
Collector to Emitter Voltage	V <sub>CEO</sub>	50	V
Emitter to Base Voltage	V <sub>EBO</sub>	10	V
Collector Current (DC)	I <sub>c</sub>	100	mA
Collector Current (Pulse)	I <sub>c</sub>	200	mA
Total Power Dissipation	P <sub>T</sub>	200	mW
(TA = 25 °C)			
Junction temperature	T <sub>J</sub>	150	°C
Storage Temperature Range	T <sub>stg</sub>	-55 to +150	°C

PACKAGE DIMENSIONS

in millimeters



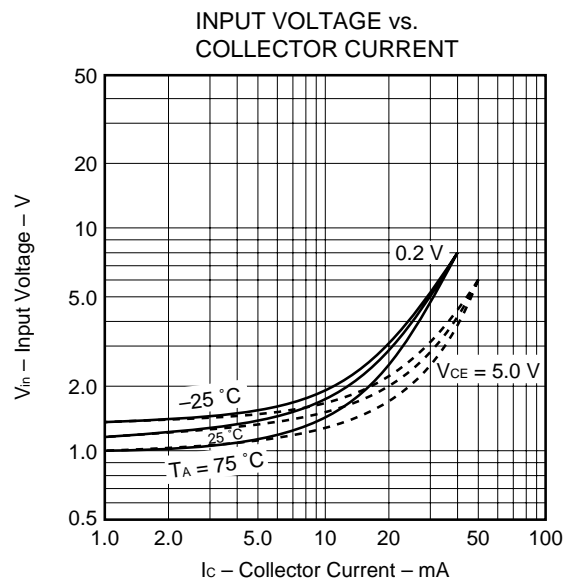
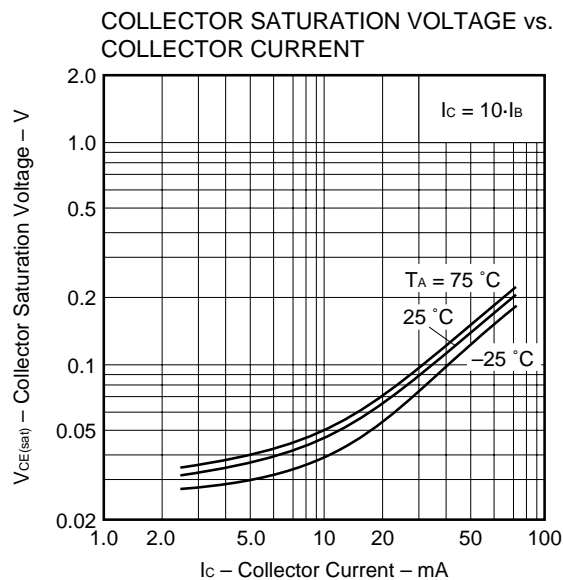
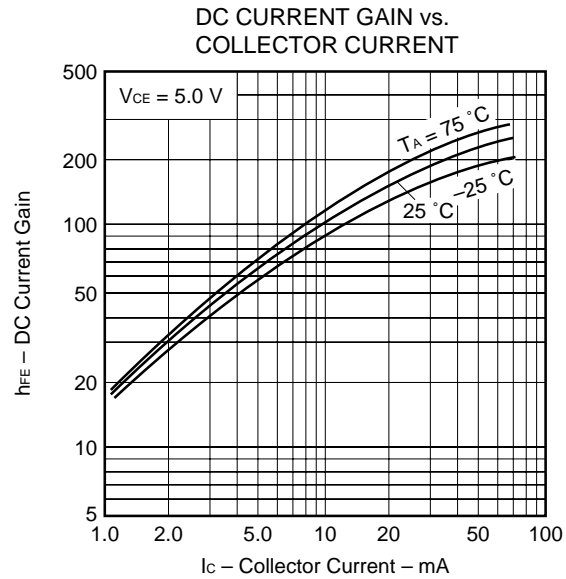
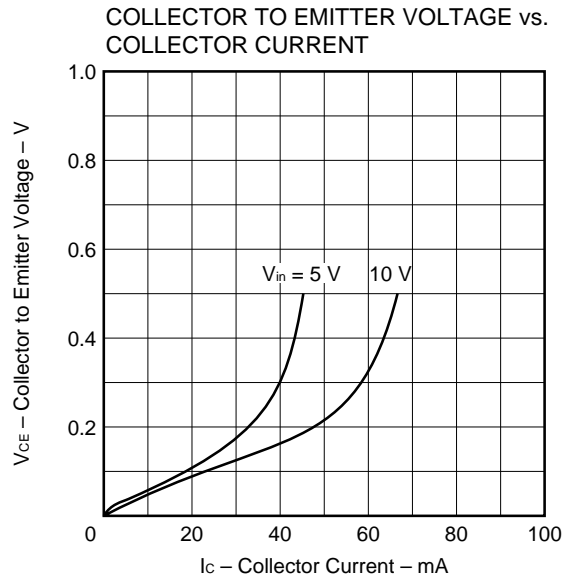
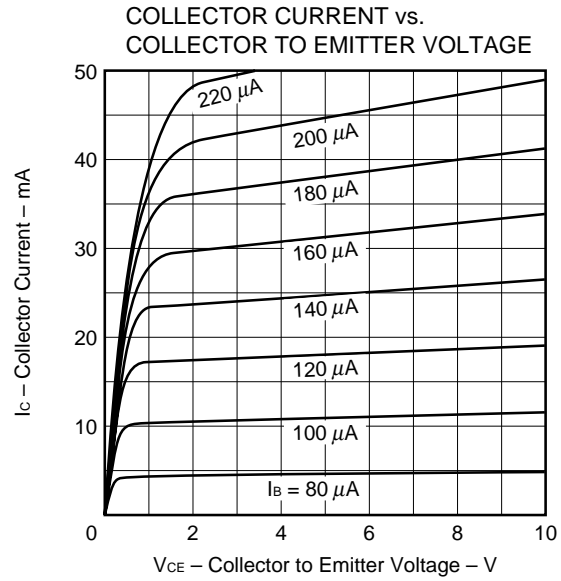
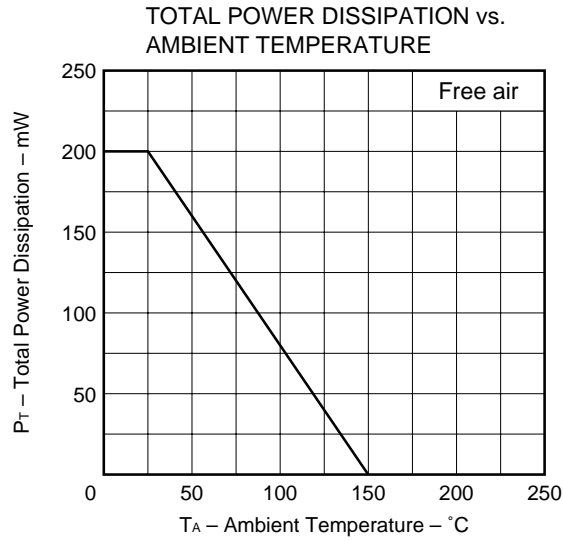
Marking : L33

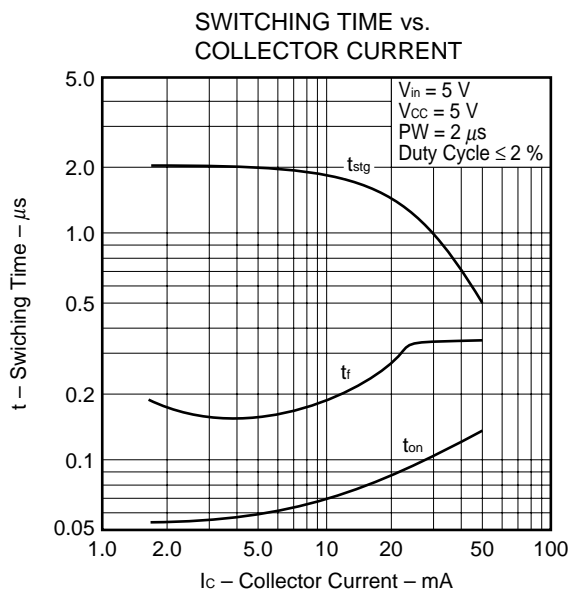
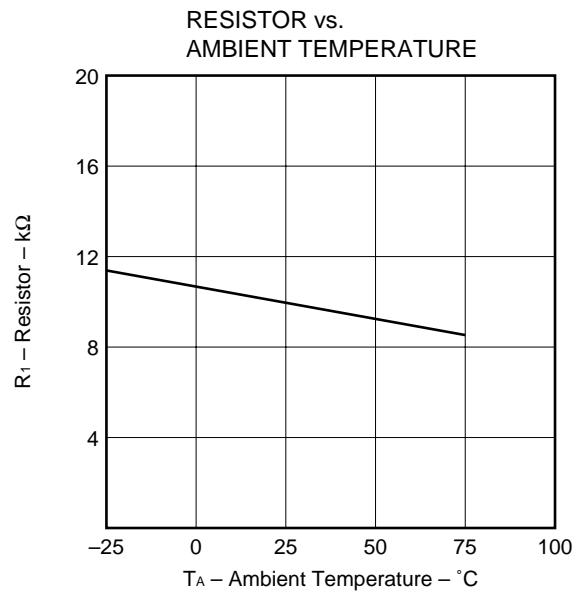
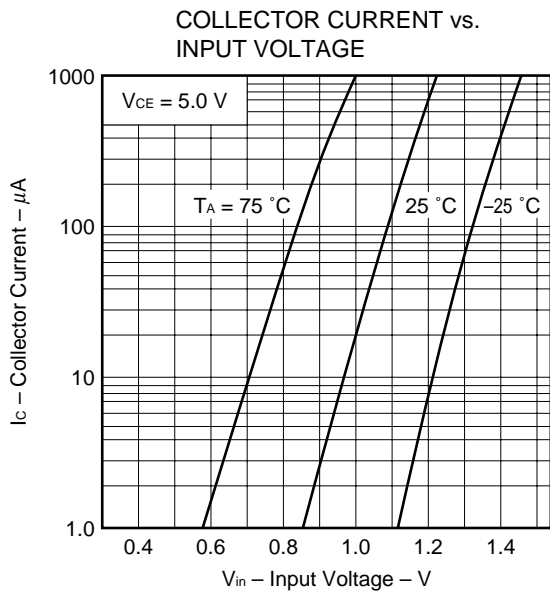
ELECTRICAL CHARACTERISTICS (TA = 25 °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	I <sub>cBO</sub>			100	nA	V <sub>CB</sub> = 50 V, I <sub>E</sub> = 0
DC Current Gain	h <sub>FE1</sub> *	35	62	100		V <sub>CE</sub> = 5.0 V, I <sub>c</sub> = 5.0 mA
DC Current Gain	h <sub>FE2</sub> *	80	230			V <sub>CE</sub> = 5.0 V, I <sub>c</sub> = 50 mA
Collector Saturation Voltage	V <sub>CE(sat)</sub> *		0.05	0.2	V	I <sub>c</sub> = 5.0 mA, I <sub>B</sub> = 0.25 mA
Low-Level Input Voltage	V <sub>IL</sub> *		1.08	0.8	V	V <sub>CE</sub> = 5.0, I <sub>c</sub> = 100 μA
High-Level Input Voltage	V <sub>IH</sub> *	3.0	1.4		V	V <sub>CE</sub> = 0.2 V, I <sub>c</sub> = 5.0 mA
Input Resistor	R <sub>1</sub>	7.0	10	13	kΩ	
Resistor Ratio	R <sub>1</sub> /R <sub>2</sub>	0.9	1.0	1.1		
Turn-on Time	t <sub>on</sub>		0.06	0.2	μs	V <sub>CC</sub> = 5 V, V <sub>in</sub> = 5 V
Storage Time	t <sub>stg</sub>		2.0	5.0	μs	R <sub>L</sub> = 1 kΩ
Turn-off Time	t <sub>off</sub>		2.15	6.0	μs	PW = 2 μs, Duty Cycle ≤ 2 %

\* Pulsed: PW = 350 μs, Duty Cycle = 2 %

TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25 °C)





**REFERENCE**

Document Name	Document No.
NEC semiconductor device reliability/quality control system	TEI-1202
Quality grade on NEC semiconductor devices	IEI-1209
Semiconductor device mounting technology manual	IEI-1207
Guide to quality assurance for semiconductor devices	MEI-1202
Semiconductor selection guide	MF-1134

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