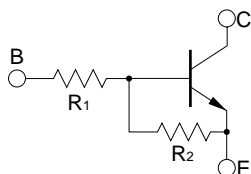


MEDIUM SPEED SWITCHING
RESISTOR BUILT-IN TYPE NPN TRANSISTOR
MINI MOLD

FEATURES

- Resistors Built-in TYPE



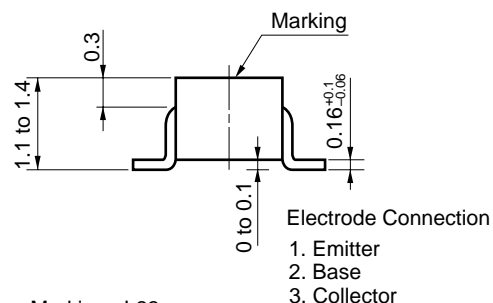
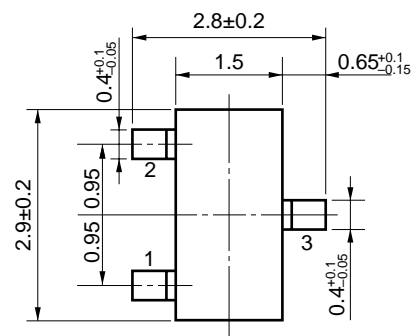
- Complementary to FN1A4M

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$)

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
Total Power Dissipation	P_T	200	mW
($T_A = 25^\circ\text{C}$)			
Junction temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to +150	$^\circ\text{C}$

PACKAGE DIMENSIONS

in millimeters



Marking : L33

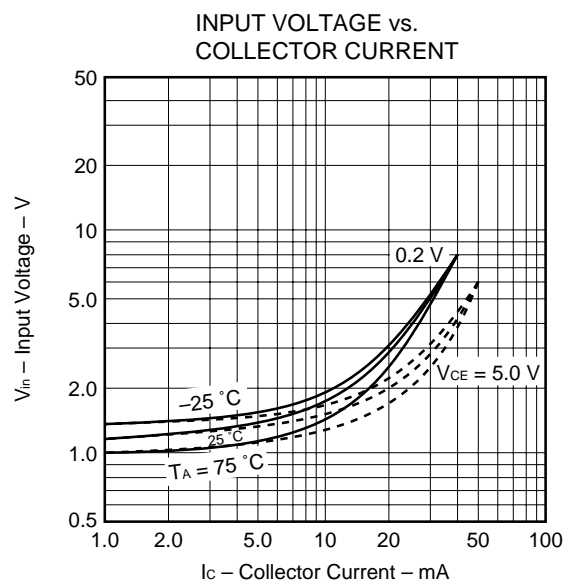
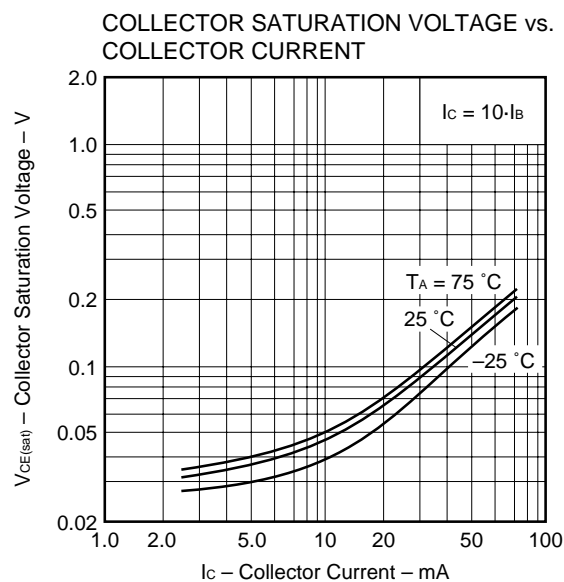
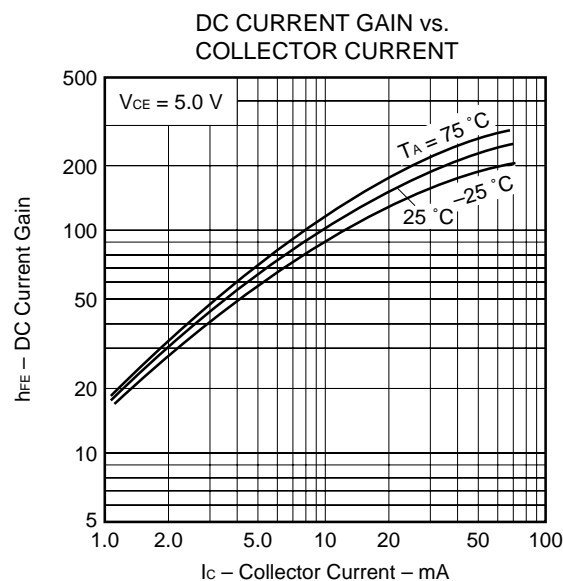
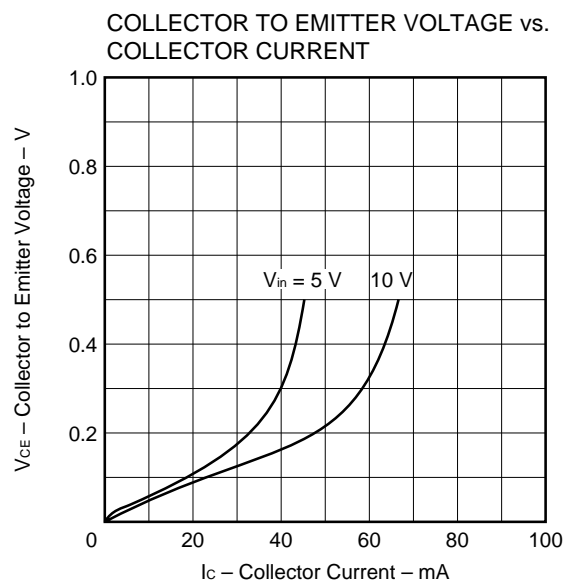
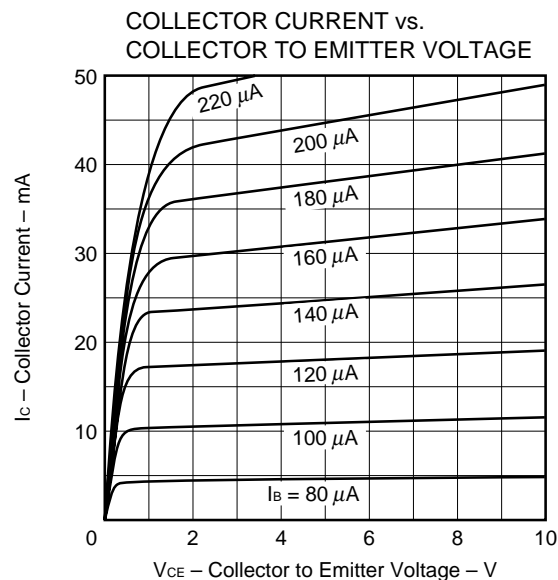
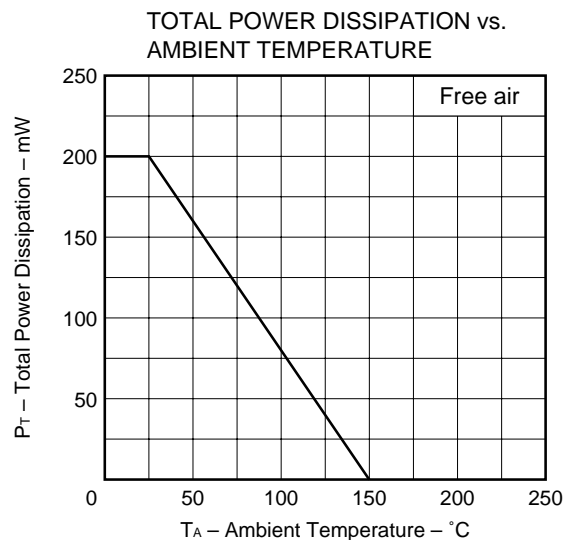
Electrode Connection
1. Emitter
2. Base
3. Collector

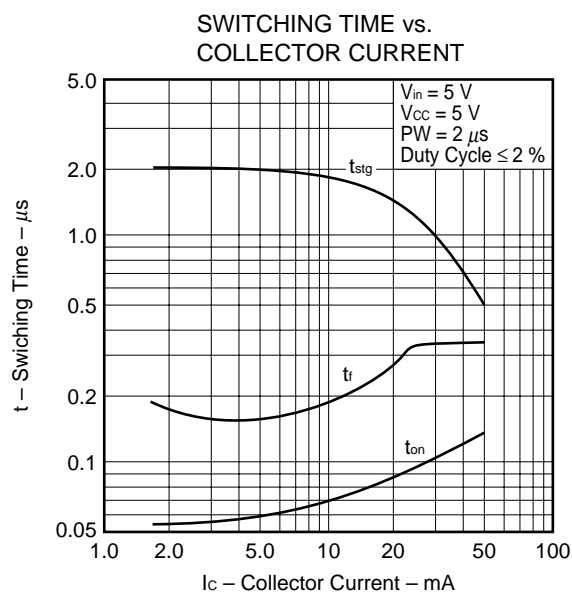
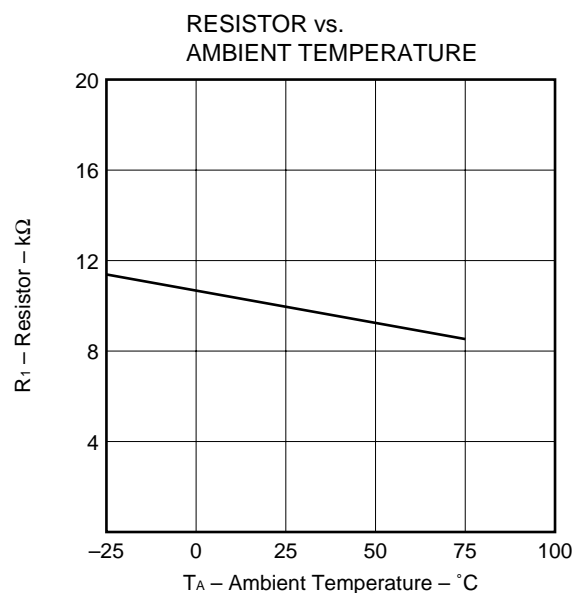
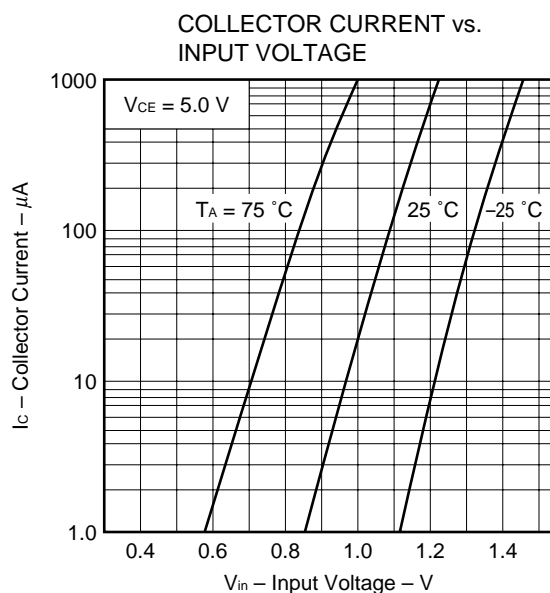
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	I_{CBO}			100	nA	$V_{CB} = 50\text{ V}, I_E = 0$
DC Current Gain	h_{FE1}^*	35	62	100		$V_{CE} = 5.0\text{ V}, I_C = 5.0\text{ mA}$
DC Current Gain	h_{FE2}^*	80	230			$V_{CE} = 5.0\text{ V}, I_C = 50\text{ mA}$
Collector Saturation Voltage	$V_{CE(sat)}^*$		0.05	0.2	V	$I_C = 5.0\text{ mA}, I_B = 0.25\text{ mA}$
Low-Level Input Voltage	V_{IL}^*		1.08	0.8	V	$V_{CE} = 5.0\text{ V}, I_C = 100\text{ }\mu\text{A}$
High-Level Input Voltage	V_{IH}^*	3.0	1.4		V	$V_{CE} = 0.2\text{ V}, I_C = 5.0\text{ mA}$
Input Resistor	R_1	7.0	10	13	k Ω	
Resistor Ratio	R_1/R_2	0.9	1.0	1.1		
Turn-on Time	t_{on}		0.06	0.2	μs	$V_{CC} = 5\text{ V}, V_{in} = 5\text{ V}$ $R_L = 1\text{ k}\Omega$ $PW = 2\text{ }\mu\text{s}, \text{Duty Cycle} \leq 2\%$
Storage Time	t_{stg}		2.0	5.0	μs	
Turn-off Time	t_{off}		2.15	6.0	μs	

* Pulsed: $PW = 350\text{ }\mu\text{s}$, Duty Cycle = 2 %

TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)





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

[MEMO]

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Special: Transportation equipment (automobiles, trains, ships, etc.), traffic control systems, anti-disaster systems, anti-crime systems, safety equipment and medical equipment (not specifically designed for life support)

Specific: Aircrafts, aerospace equipment, submersible repeaters, nuclear reactor control systems, life support systems or medical equipment for life support, etc.

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Anti-radioactive design is not implemented in this product.