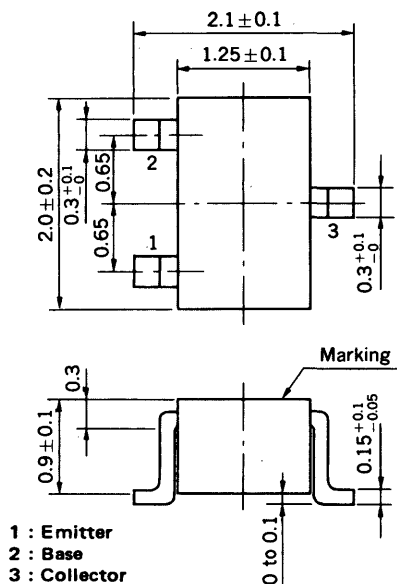


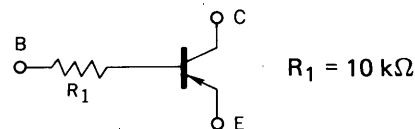
**MEDIUM SPEED SWITCHING
RESISTOR BUILT-IN TYPE PNP TRANSISTOR**

PACKAGE DIMENSIONS
in millimeters



FEATURES

- Resistor Built-in TYPE



- Complementary to GA1A4Z

ABSOLUTE MAXIMUM RATINGS

Maximum Voltages and Currents ($T_a = 25^\circ\text{C}$)

Collector to Base Voltage	V_{CB0}	-60	V
Collector to Emitter Voltage	V_{CEO}	-50	V
Emitter to Base Voltage	V_{EBO}	-5	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	150	mW
Maximum Temperatures			
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to +150	$^\circ\text{C}$

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

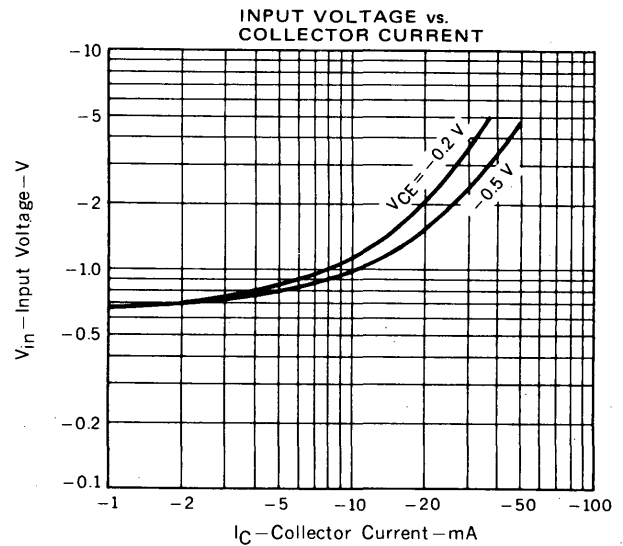
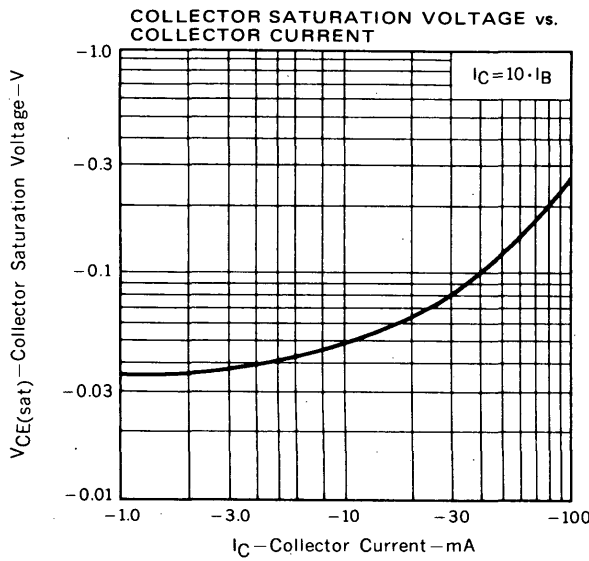
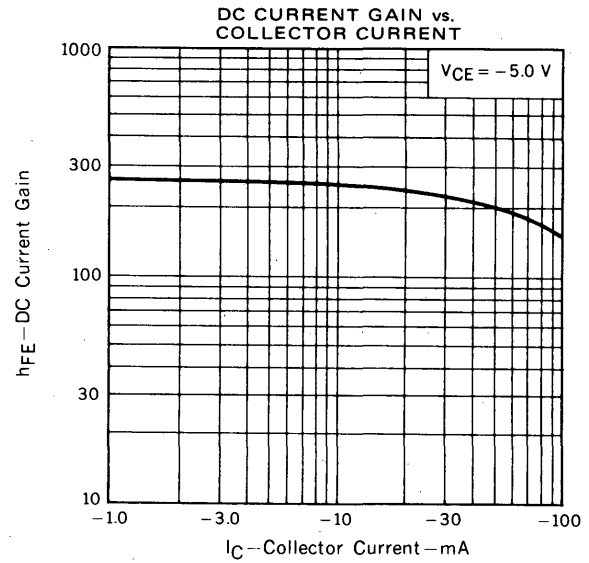
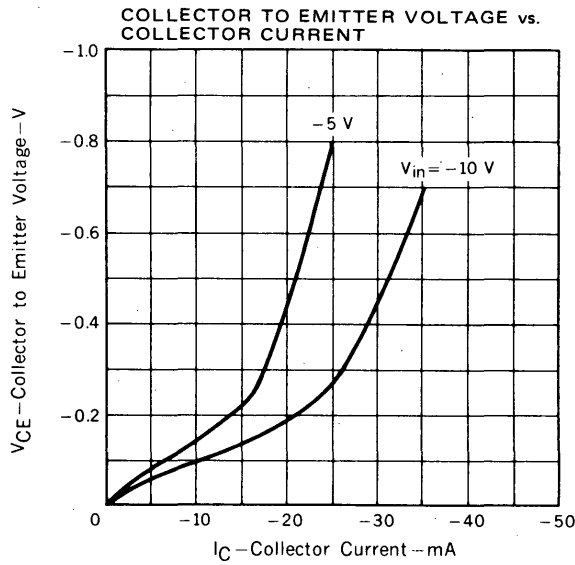
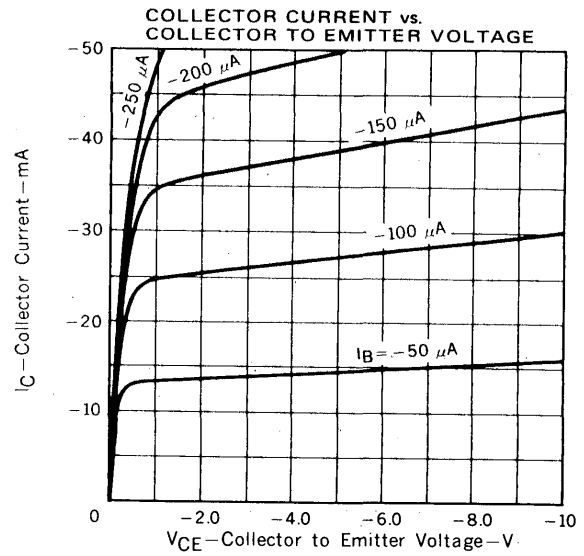
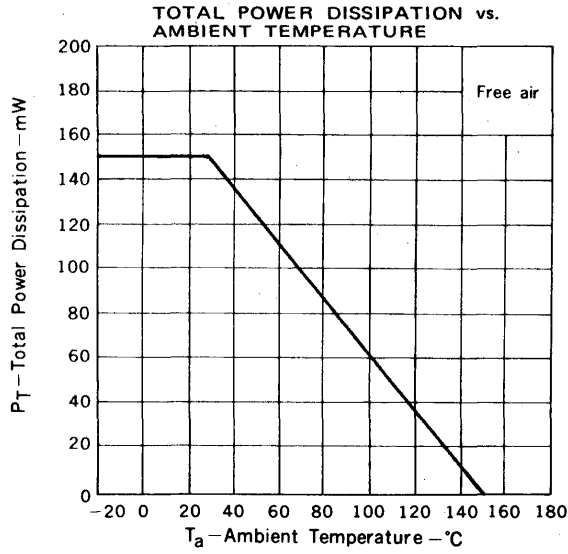
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	I_{CBO}			-100	nA	$V_{CB} = -50\text{ V}, I_E = 0$
DC Current Gain	h_{FE1}^*	135	190	600		$V_{CE} = -5.0\text{ V}, I_C = -5.0\text{ mA}$
DC Current Gain	h_{FE2}^*	100	170			$V_{CE} = -5.0\text{ V}, I_C = -50\text{ mA}$
Collector Saturation Voltage	$V_{CE(sat)}^*$		-0.07	-0.2	V	$I_C = -5.0\text{ mA}, I_B = -0.25\text{ mA}$
Low-Level Input Voltage	V_{IL}^*		-0.57	-0.5	V	$V_{CE} = -5.0\text{ V}, I_C = -100\text{ }\mu\text{A}$
High-Level Input Voltage	V_{IH}^*	-2.0	-0.9		V	$V_{CE} = -0.2\text{ V}, I_C = -5.0\text{ mA}$
Input Resistor	R_1	7.0	10	13.0	$k\Omega$	
Turn-on Time	t_{on}			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}			5.0	μs	
Turn-off Time	t_{off}			6.0	μs	

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

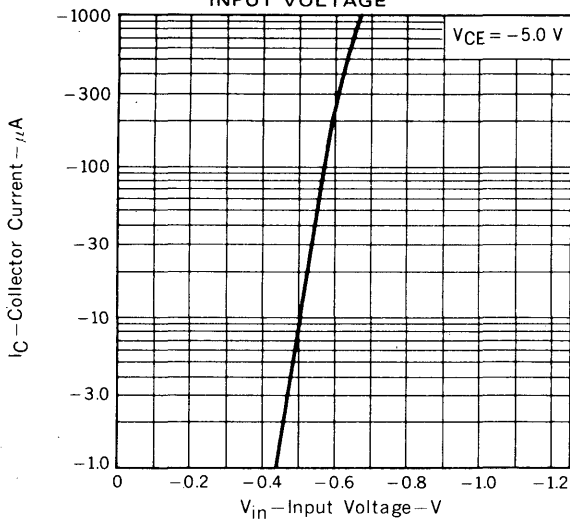
h_{FE} Classification

Marking	M67	M68	M69
h_{FE1}	135 to 270	200 to 400	300 to 600

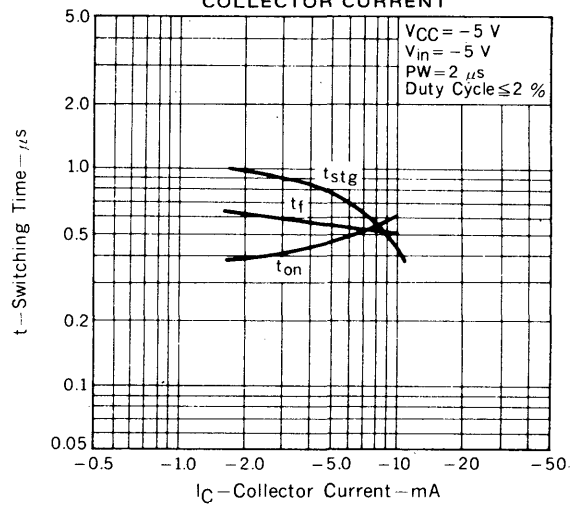
TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)



COLLECTOR CURRENT vs. INPUT VOLTAGE



SWITCHING TIME vs. COLLECTOR CURRENT



RESISTOR vs. AMBIENT TEMPERATURE

