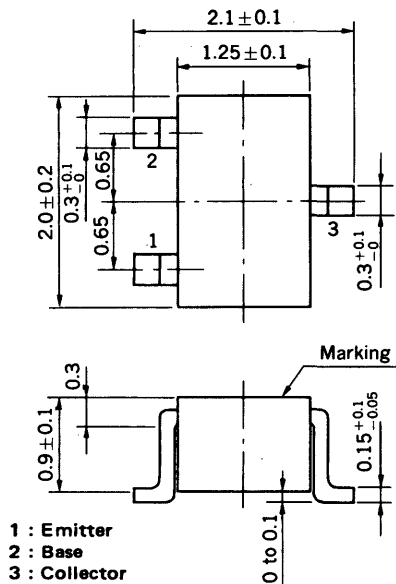


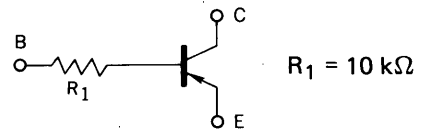
**MEDIUM SPEED SWITCHING**  
**RESISTOR BUILT-IN TYPE PNP TRANSISTOR**

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

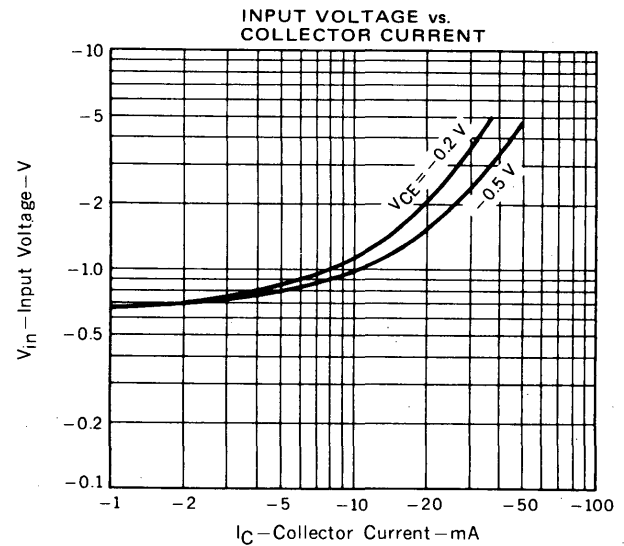
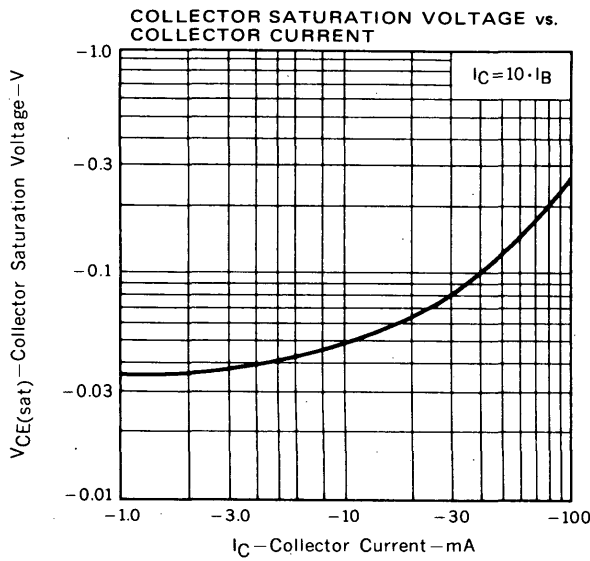
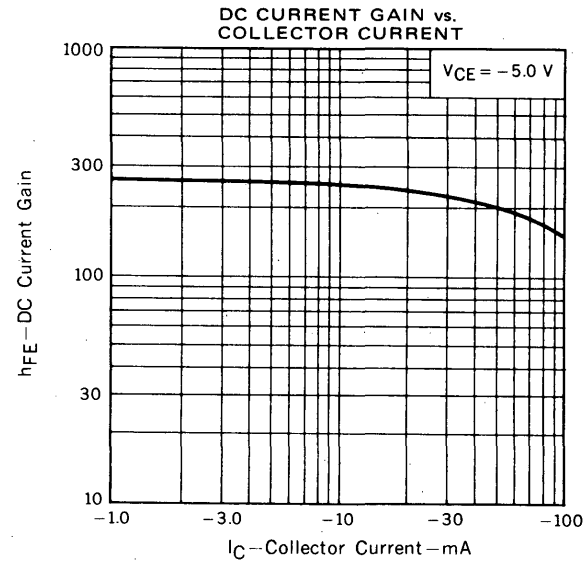
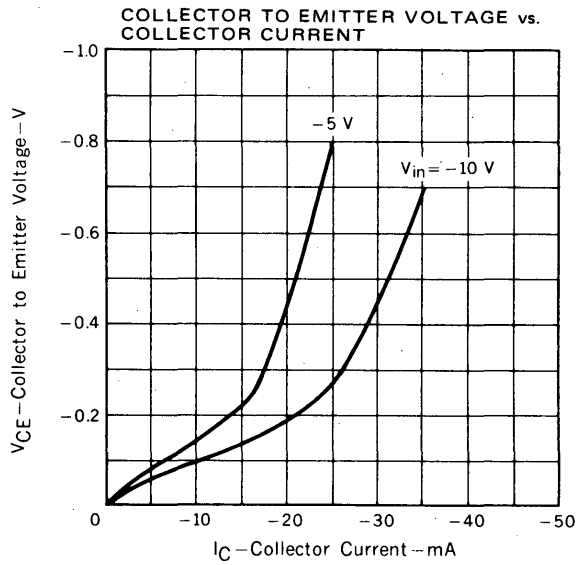
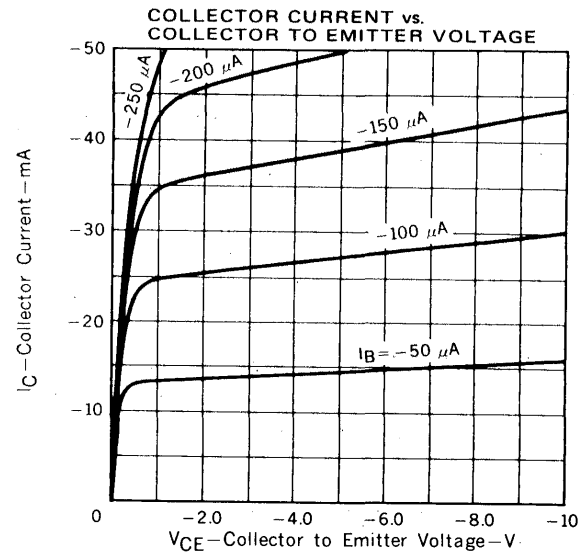
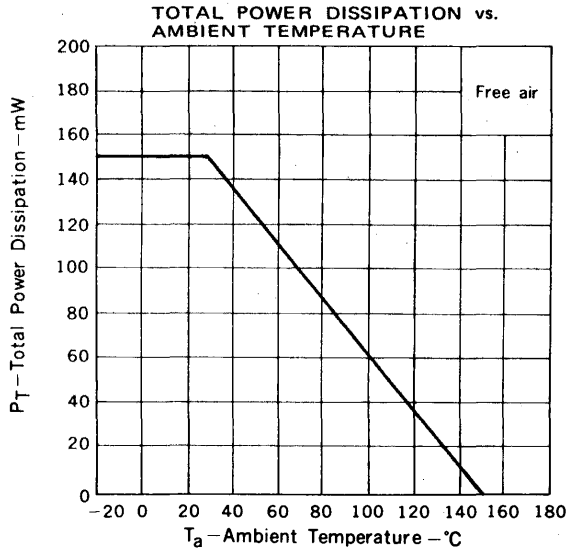
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	$I_{CBO}$			-100	nA	$V_{CB} = -50\text{ V}, I_E = 0$
DC Current Gain	$h_{FE1}^*$	135	190	600		$V_{CE} = -5.0\text{ V}, I_C = -5.0\text{ mA}$
DC Current Gain	$h_{FE2}^*$	100	170			$V_{CE} = -5.0\text{ V}, I_C = -50\text{ mA}$
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	$\mu\text{s}$	$V_{CC} = -5\text{ V}, V_{in} = -5\text{ V}$ $R_L = 1\text{ k}\Omega$ $PW = 2\text{ }\mu\text{s}, \text{Duty Cycle} \leq 2\%$
Storage Time	$t_{stg}$			5.0	$\mu\text{s}$	
Turn-off Time	$t_{off}$			6.0	$\mu\text{s}$	

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

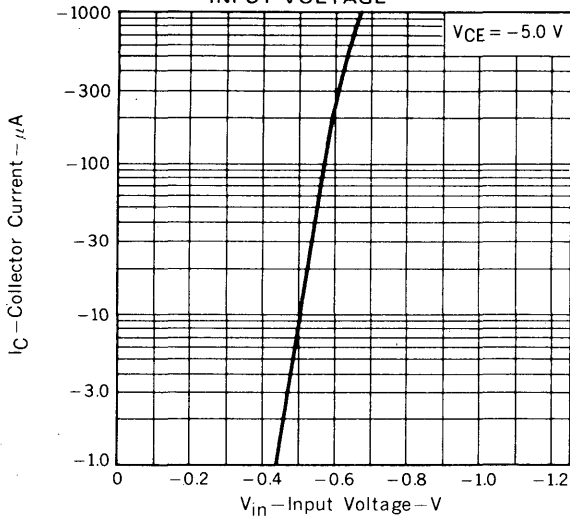
**$h_{FE}$  Classification**

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

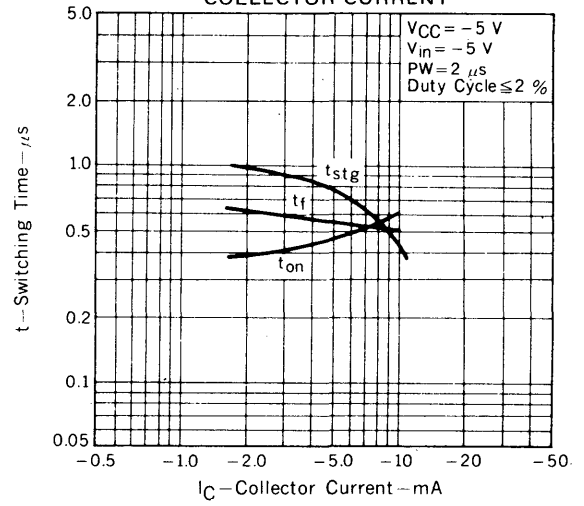
TYPICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )



COLLECTOR CURRENT vs. INPUT VOLTAGE



SWITCHING TIME vs. COLLECTOR CURRENT



RESISTOR vs. AMBIENT TEMPERATURE

