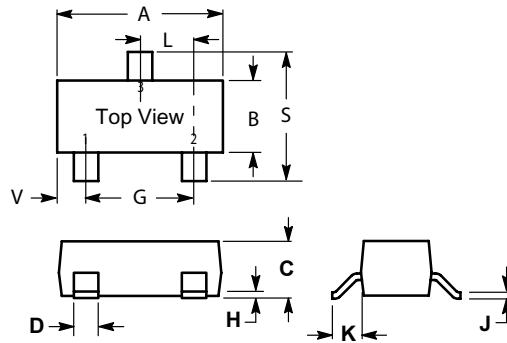
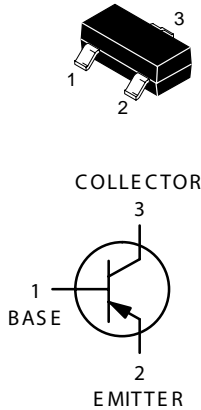


RoHS Compliant Product

A suffix of "-C" specifies halogen & lead-free

SOT-23



SOT-23		
Dim	Min	Max
A	2.800	3.040
B	1.200	1.400
C	0.890	1.110
D	0.370	0.500
G	1.780	2.040
H	0.013	0.100
J	0.085	0.177
K	0.450	0.600
L	0.890	1.020
S	2.100	2.500
V	0.450	0.600
All Dimension in mm		

● MAXIMUM RATINGS

RATING		SYMBOL	VALUE	UNIT
Collector - Emitter Voltage	MMBTA55	V_{CEO}	-60	V
	MMBTA56		-80	
Collector - Base Voltage	MMBTA55	V_{CBO}	-60	V
	MMBTA56		-80	
Emitter - Base Voltage		V_{EBO}	-4.0	V
Collector Current - Continuous		I_C	-500	mA

Marking Code: MMBTA55:2H , MMBTA56:2GM

● THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Total Device Dissipation FR-5 Board ⁽¹⁾ $T_A = 25\text{ }^\circ\text{C}$	P_D	225	mW
Derate Above $25\text{ }^\circ\text{C}$		1.8	mW / $^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	$^\circ\text{C} / \text{W}$
Total Device Dissipation Alumina Substrate ⁽²⁾ , $T_A = 25\text{ }^\circ\text{C}$	P_D	300	mW
Derate Above $25\text{ }^\circ\text{C}$		2.4	mW / $^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	417	$^\circ\text{C} / \text{W}$
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 ~ +150	$^\circ\text{C}$

1. FR-5 = 1.0 x 0.75 x 0.062 in.

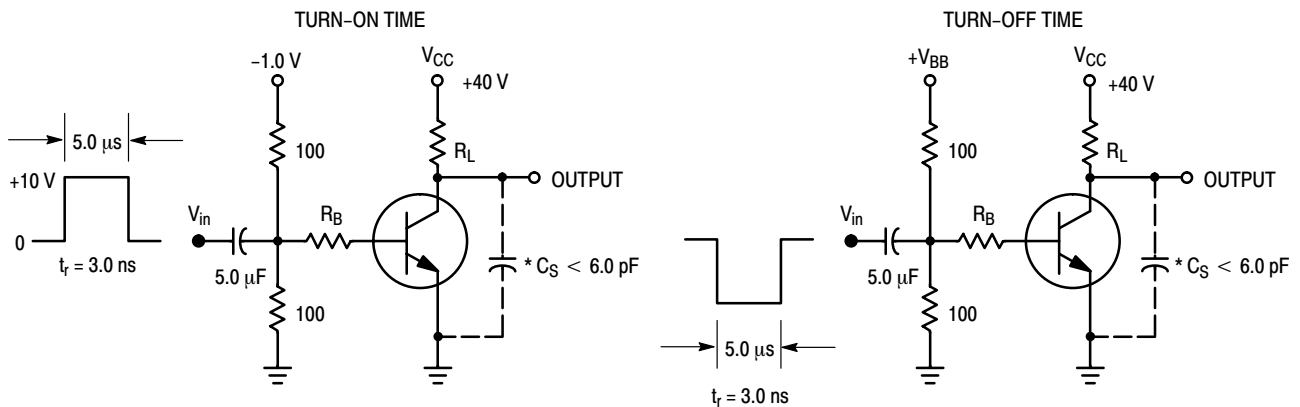
2. Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.

● **ELECTRICAL CHARACTERISTICS** ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

CHARACTERISTIC	SYMBOL	Min.	Max.	UNIT	
OFF CHARACTERISTICS					
Collector - Emitter Breakdown Voltage ⁽³⁾ ($I_C = -1.0\text{ mA}$, $I_B = 0$)	MMBTA55 MMBTA56	$V_{(BR)CEO}$	-60 -80	- -	V
Emitter - Base Breakdown Voltage ($I_E = -100\text{ }\mu\text{A}$, $I_C = 0$)		$V_{(BR)EBO}$	-4.0	-	V
Collector Cutoff Current ($V_{CE} = -60\text{ V}$, $I_B = 0\text{ V}$)		I_{CES}	-	-0.1	nA
Collector Cutoff Current ($V_{CB} = -60\text{ V}$, $I_E = 0$) ($V_{CB} = -80\text{ V}$, $I_E = 0$)	MMBTA55 MMBTA56	I_{CBO}	- -	-0.1 -0.1	μA
ON CHARACTERISTICS					
DC Current Gain ($I_C = -10\text{ mA}$, $V_{CE} = -1.0\text{ V}$) ($I_C = -100\text{ mA}$, $V_{CE} = -1.0\text{ V}$)		h_{FE}	100 100	- -	-
Collector - Emitter Saturation Voltage ($I_C = -100\text{ mA}$, $I_B = -10\text{ mA}$)		$V_{CE(sat)}$	-	-0.25	V
Base - Emitter Saturation Voltage ($I_C = -100\text{ mA}$, $V_{CE} = -1.0\text{ V}$)		$V_{BE(ON)}$	-	-1.2	V
SMALL - SIGNAL CHARACTERISTICS					
Current - Gain - Bandwidth Product ⁽⁴⁾ ($I_C = -100\text{ mA}$, $V_{CE} = -1.0\text{ V}$, $f = 100\text{ MHz}$)		f_T	50	-	MHz

3. Pulse Test: Pulse Width $\leq 300\text{ }\mu\text{s}$, Duty Cycle $\leq 2.0\%$.

4. f_T is defined as the frequency at which $|h_{fe}|$ extrapolates to unity.



*Total Shunt Capacitance of Test Jig and Connectors
For PNP Test Circuits, Reverse All Voltage Polarities

Figure 1. Switching Time Test Circuits

● SWITCHING TIME EQUIVALENT TEST CIRCUITS

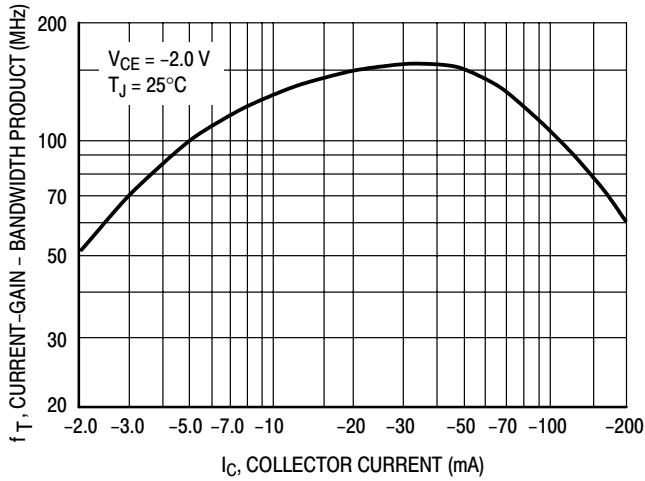


Figure 2. Current-Gain — Bandwidth Product

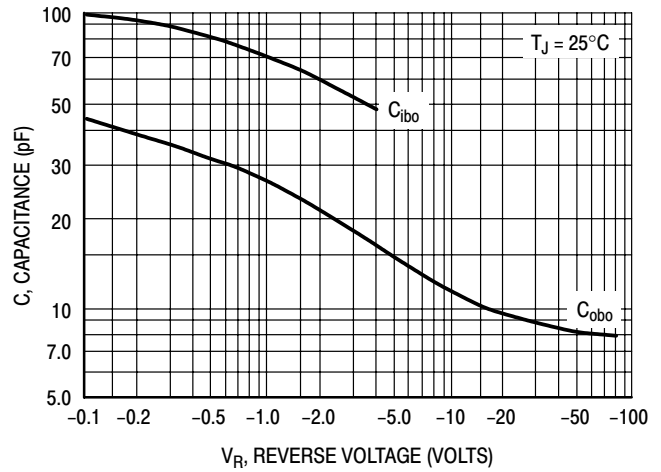


Figure 3. Capacitance

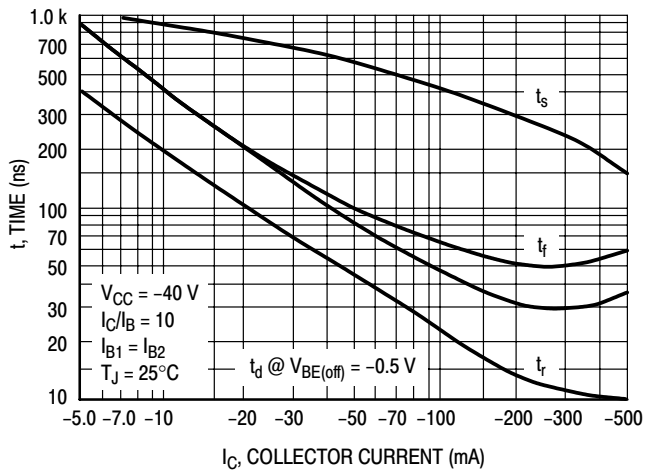


Figure 4. Switching Time

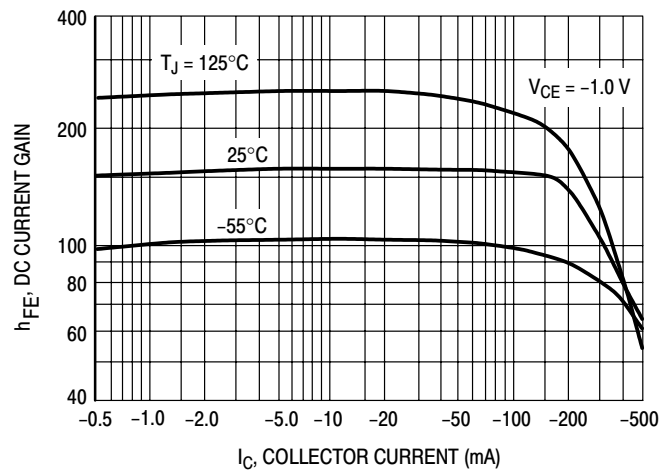


Figure 5. DC Current Gain

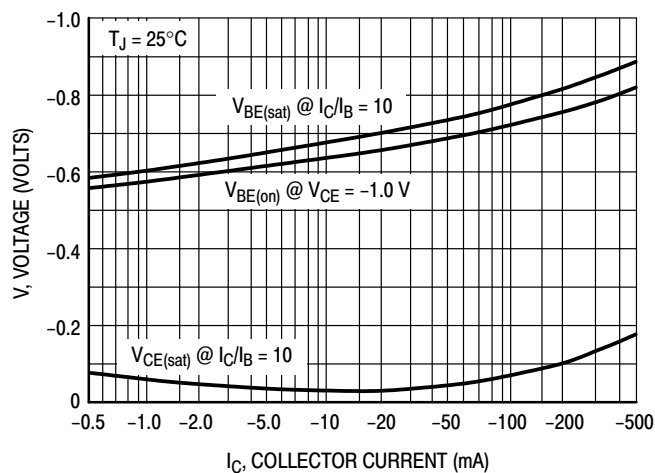


Figure 6. "ON" Voltages

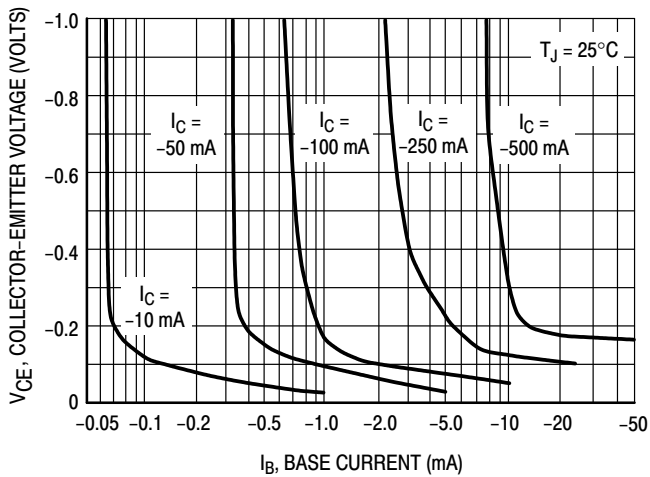


Figure 7. Collector Saturation Region

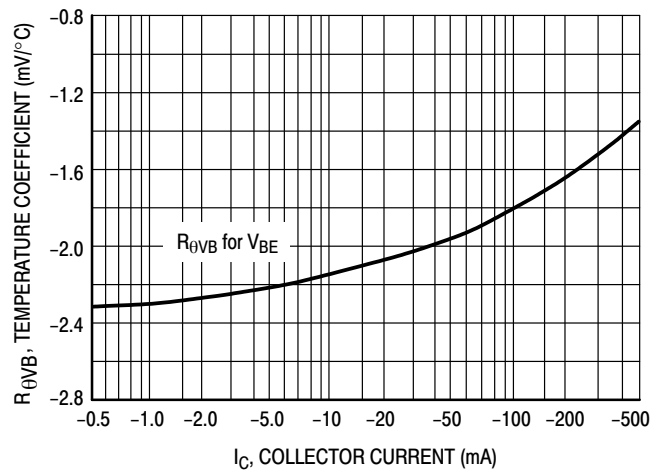


Figure 8. Base-Emitter Temperature Coefficient