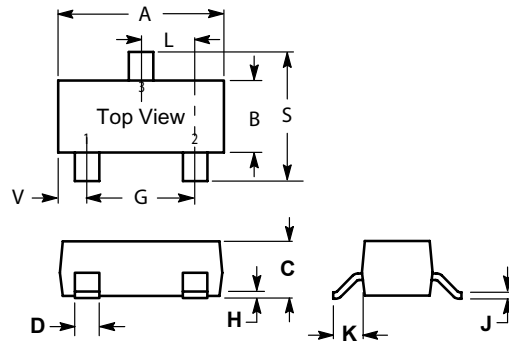
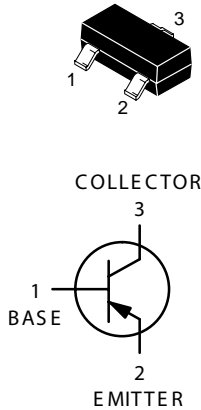


RoHS Compliant Product

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 <sup>(1)</sup> $T_A = 25\text{ }^\circ\text{C}$ Derate Above $25\text{ }^\circ\text{C}$	$P_D$	225	mW
		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 <sup>(2)</sup> , $T_A = 25\text{ }^\circ\text{C}$ Derate Above $25\text{ }^\circ\text{C}$	$P_D$	300	mW
		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.

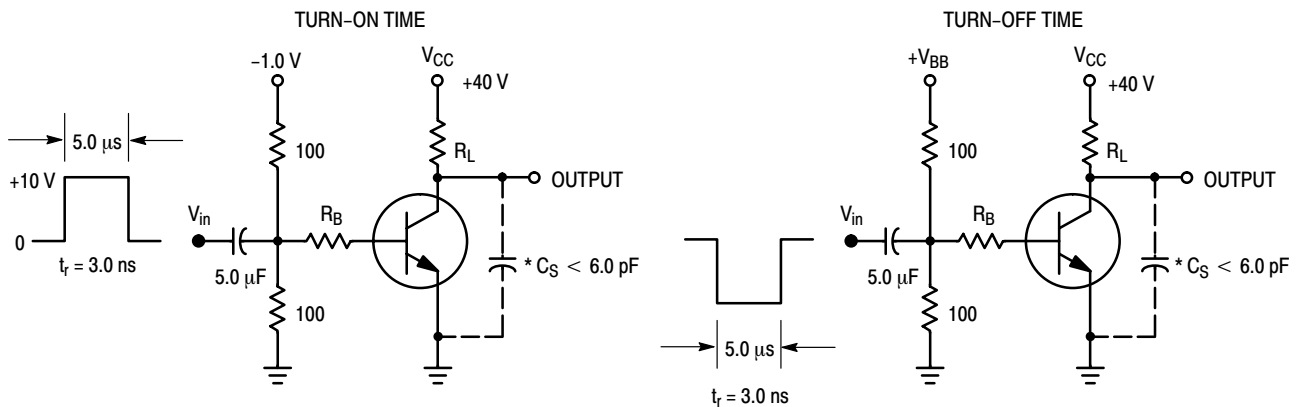
2. Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.

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

CHARACTERISTIC	SYMBOL	Min.	Max.	UNIT	
<b>OFF CHARACTERISTICS</b>					
Collector - Emitter Breakdown Voltage <sup>(3)</sup> ( $I_C = -1.0\text{ mA}$ , $I_B = 0$ )	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	$\mu\text{A}$
<b>ON CHARACTERISTICS</b>					
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
<b>SMALL - SIGNAL CHARACTERISTICS</b>					
Current - Gain - Bandwidth Product <sup>(4)</sup> ( $I_C = -100\text{ mA}$ , $V_{CE} = -1.0\text{ V}$ , $f = 100\text{ MHz}$ )		$f_T$	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

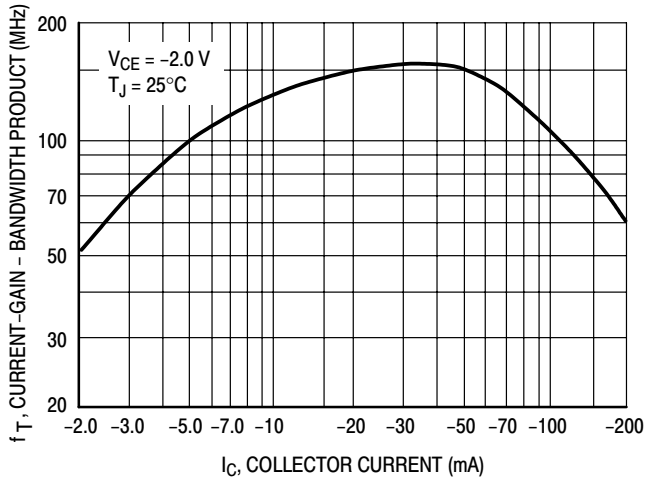


Figure 2. Current-Gain — Bandwidth Product

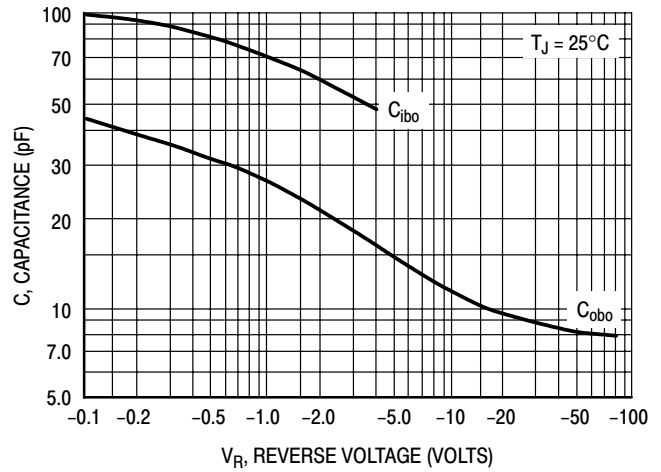


Figure 3. Capacitance

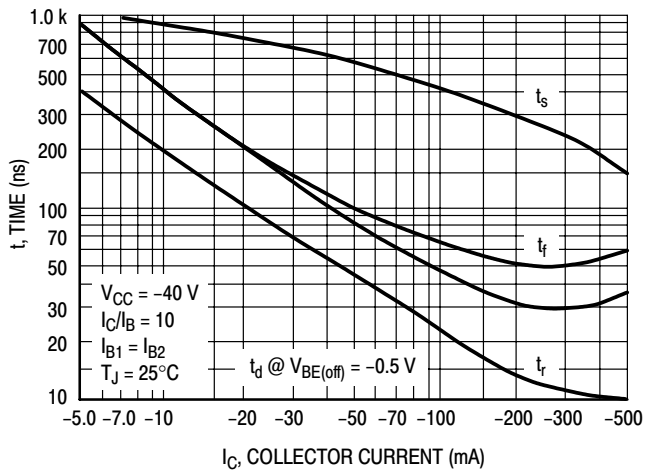


Figure 4. Switching Time

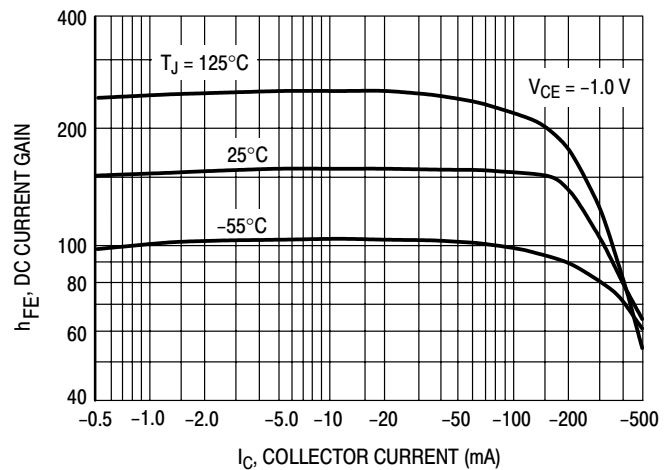


Figure 5. DC Current Gain

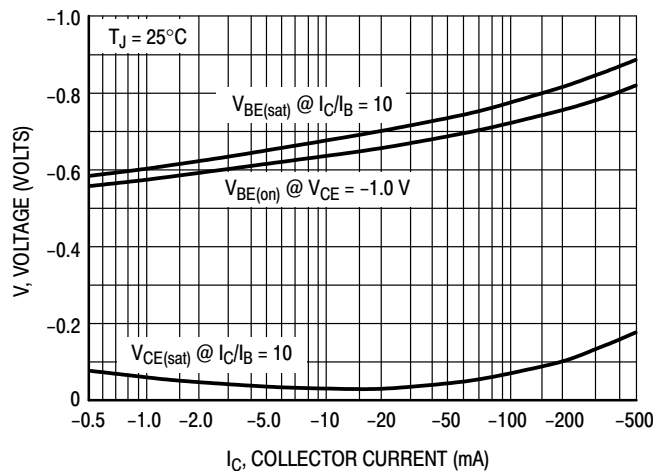
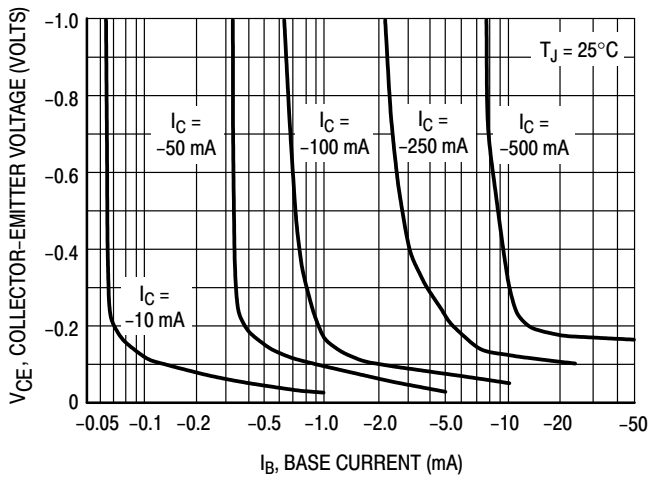
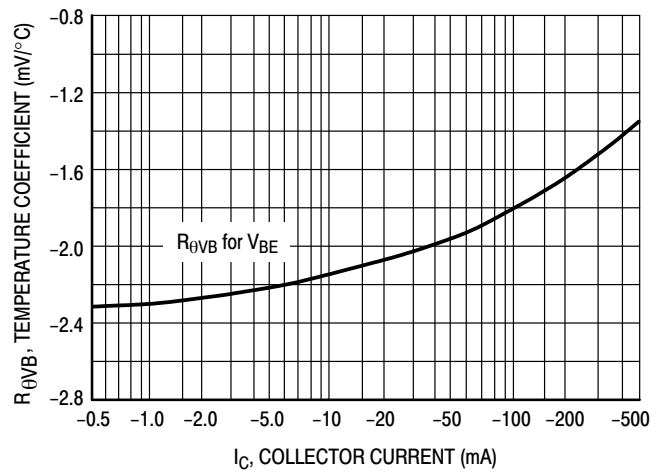


Figure 6. "ON" Voltages



**Figure 7. Collector Saturation Region**



**Figure 8. Base-Emitter Temperature Coefficient**