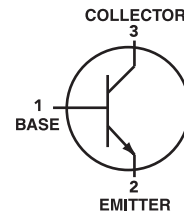


## Driver Transistors NPN Silicon



### MAXIMUM RATINGS

Rating	Symbol	MMBTA05	MMBTA06	Unit
Collector-Emitter Voltage	$V_{CEO}$	60	80	Vdc
Collector-Base Voltage	$V_{CBO}$	60	80	Vdc
Emitter-Base Voltage	$V_{EBO}$	4.0	4.0	Vdc
Collector Current-Continuous	$I_C$	600		mAdc

### THERMAL CHARACTERISTICS

Characteristics	Symbol	Max	Unit
Total Device Dissipation FR-5 Board (1) TA=25°C Derate above 25°C	$P_D$	225	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	1.8	mW/°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	°C/W
Total Device Dissipation Alumina Substrate, (2) TA=25°C Derate above 25°C	$P_D$	300	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	2.4	mW/°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	417	°C/W
Junction and Storage, Temperature	$T_J, T_{stg}$	-55 to +150	°C

### ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Min	Max	Unit
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### OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage (3) ( $I_C=1.0$ mAdc, $I_B=0$ ) MMBTA05 MMBTA06	$V_{(BR)CEO}$	60 80	- -	Vdc
Collector-Base Breakdown Voltage ( $I_C=100$ $\mu$ Adc, $I_E=0$ ) MMBTA05 MMBTA06	$V_{(BR)CBO}$	60 80	- -	Vdc
Emitter-Base Breakdown Voltage ( $I_E=100$ $\mu$ Adc, $I_C=0$ )	$V_{(BR)EBO}$	4.0	-	Vdc
Collector Cutoff Current ( $V_{CE}=60$ Vdc, $I_B=0$ )	$I_{CES}$	-	0.1	$\mu$ Adc
Collector Cutoff Current ( $V_{CB}=60$ Vdc, $I_E=0$ ) ( $V_{CB}=80$ Vdc, $I_E=0$ )	$I_{CBO}$	- -	0.1 0.1	$\mu$ Adc

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

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

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

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

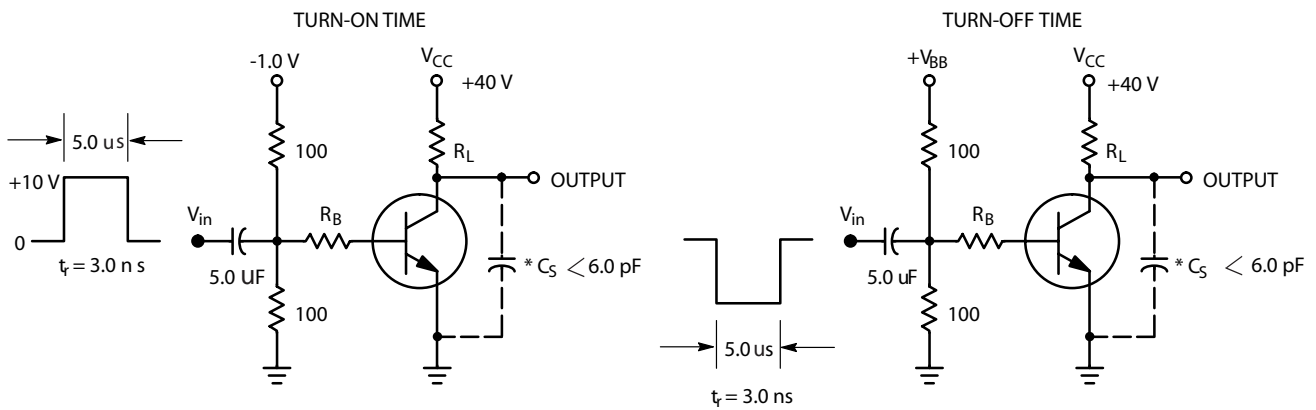
Characteristic	Symbol	Min	Max	Unit
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ON CHARACTERISTICS

DC Current Gain ( $I_C = 10\text{ mAdc}$ , $V_{CE} = 1.0\text{ Vdc}$ ) ( $I_C = 100\text{ mAdc}$ , $V_{CE} = 1.0\text{ Vdc}$ )	$h_{FE}$	100 100	- -	- -
Collector- Emitter Saturation Voltage ( $I_C = 100\text{ mAdc}$ , $I_B = 10\text{ mAdc}$ )	$V_{CE(sat)}$	-	0.25	Vdc
Base- Emitter On Voltage ( $I_C = 100\text{ mAdc}$ , $V_{CE} = 1.0\text{ Vdc}$ )	$V_{BE(on)}$	-	1.2	Vdc

SMALL- SIGNAL CHARACTERISTICS

Current- Gain - Bandwidth Product (4) ( $I_C = 10\text{ mA}$ , $V_{CE} = 2.0\text{ V}$ , $f = 100\text{ MHz}$ )	$f_T$	100	-	MHz
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\*Total Shunt Capacitance of Test Jig and Connectors  
For PNP Test Circuits, Reverse All Voltage Polarities

FIG1. Switching Time Test Circuits

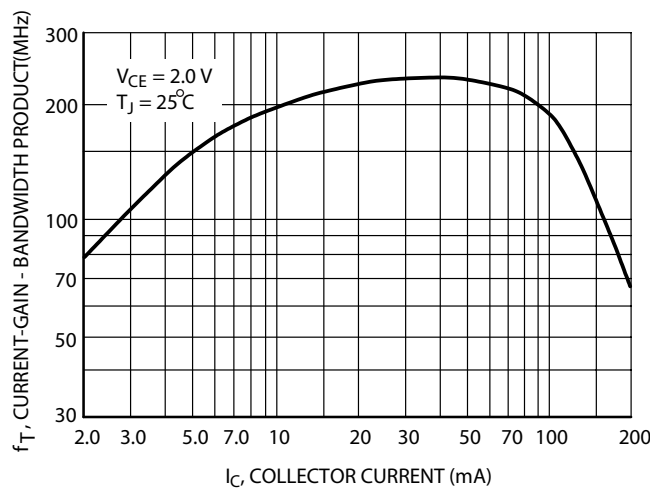


FIG2. Current-Gain Bandwidth Product

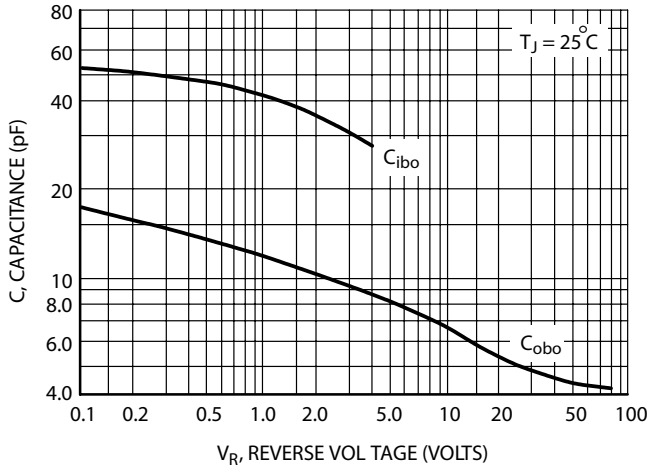


FIG3. Capacitance

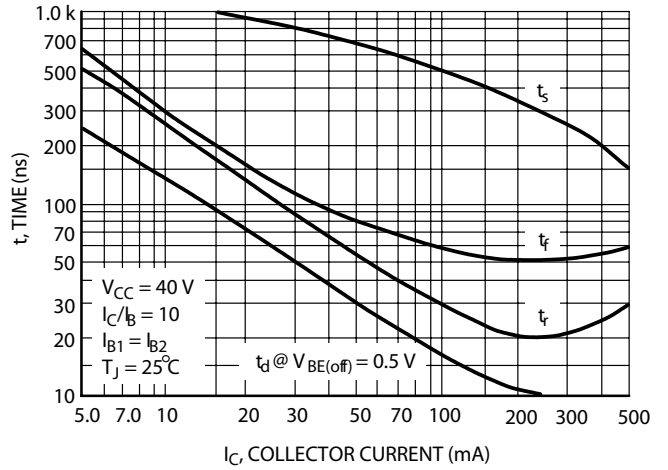


FIG4. Switching Time

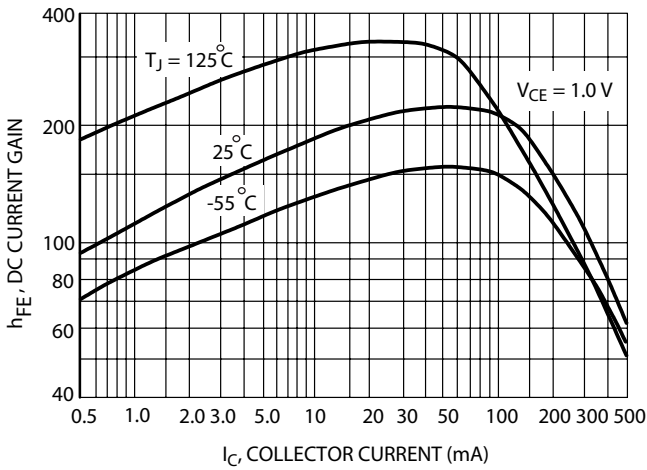


FIG5. DC Current Gain

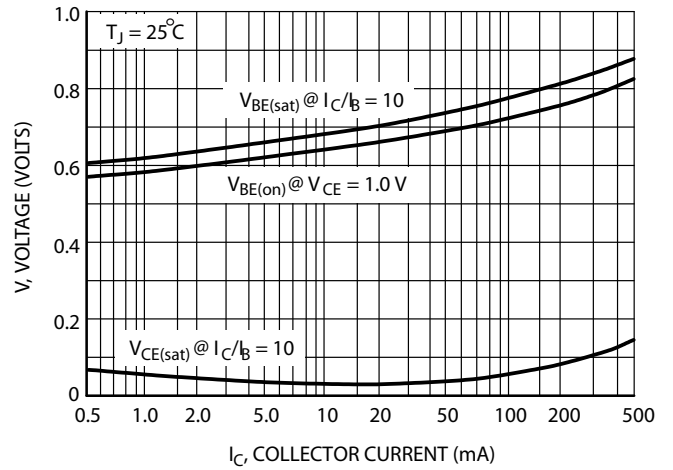


FIG6. "ON" Voltages

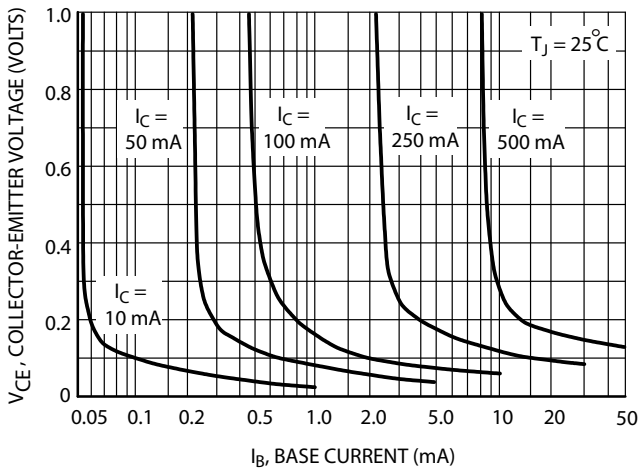


FIG7. Collector Saturation Region

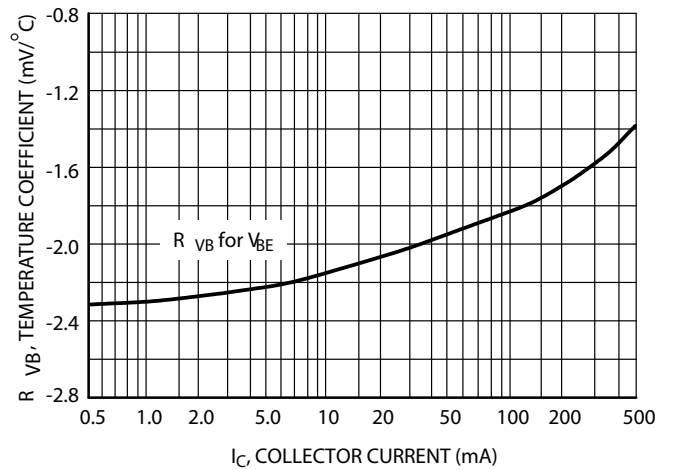


FIG8. Base-Emitter Temperature Coefficient

**Dimensions in inch (mm)**
**SOT-23**
