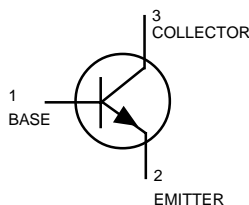
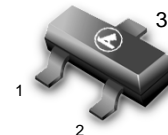


# Driver Transistors

## NPN Silicon



**MMBTA05LT1**  
**MMBTA06LT1**



CASE 318-08, STYLE 6  
SOT-23 (TO-236AB)

### MAXIMUM RATINGS

Rating	Symbol	Value		Unit
		MMBTA05	MMBTA06	
Collector-Emitter Voltage	$V_{CE0}$	60	80	Vdc
Collector-Base Voltage	$V_{CB0}$	60	80	Vdc
Emitter-Base Voltage	$V_{EB0}$	4.0		Vdc
Collector Current — Continuous	$I_C$	500		mAdc

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board, (1) $T_A = 25^\circ\text{C}$	$P_D$	225	mW
Derate above $25^\circ\text{C}$		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) $T_A = 25^\circ\text{C}$	$P_D$	300	mW
Derate above $25^\circ\text{C}$		2.4	mW/ $^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	417	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature	$T_J, T_{stg}$	-55 to +150	$^\circ\text{C}$

### DEVICE MARKING

MMBTA05LT1 = 1H, MMBTA06LT1 = 1GM

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

Characteristic	Symbol	Min	Max	Unit
----------------	--------	-----	-----	------

### OFF CHARACTERISTICS

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

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  $\leq 300 \mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

**MMBTA05LT1 MMBTA06LT1**
**ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted) (Continued)

Characteristic	Symbol	Min	Max	Unit
----------------	--------	-----	-----	------

**ON CHARACTERISTICS**

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

**SMALL–SIGNAL CHARACTERISTICS**

Current –Gain – Bandwidth Product(4) ( $V_{CE} = 2.0\text{ V}$ , $I_C = 10\text{ mA}$ , $f = 100\text{ MHz}$ )	$f_T$	100	—	MHz
---	-------	-----	---	-----

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