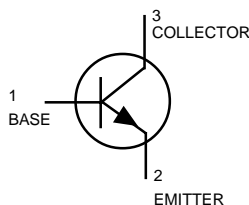
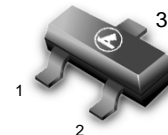


Driver Transistors

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°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°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 | μAdc |
| Emitter Cutoff Current ($V_{CB} = 60\text{Vdc}, I_E = 0$) | I_{CBO} | — | 0.1 | μAdc |
| ($V_{CB} = 80\text{Vdc}, I_E = 0$) | | — | 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 ($I_C = 10\text{ mAdc}$, $V_{CE} = 1.0\text{ Vdc}$) ($I_C = 100\text{ mAdc}$, $V_{CE} = 1.0\text{ Vdc}$) | 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 ($I_C = 100\text{ mAdc}$, $V_{CE} = 1.0\text{ Vdc}$) | $V_{BE(sat)}$ | — | 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.