

### Driver Transistors

#### FEATURES

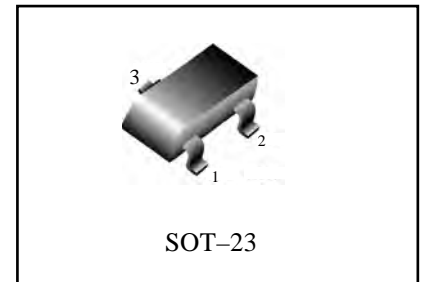
- We declare that the material of product compliance with RoHS requirements.

#### DEVICE MARKING

MMBTA05 = 1H , MMBTA06 = 1GM

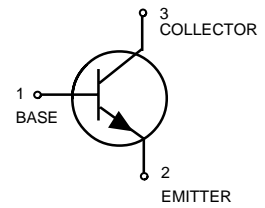
#### MAXIMUM RATINGS

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	$^\circ\text{C}$



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

Characteristic	Symbol	Min	Max	Unit
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#### 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	$\mu\text{Adc}$
( $V_{CB} = 80\text{Vdc}, I_E = 0$ )	MMBTA05	—	0.1	
	MMBTA06	—	0.1	

- FR–5 = 1.0 x 0.75 x 0.062 in.
- Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.
- Pulse Test: Pulse Width  $\leq 300 \mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

### ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted) (Continued)

Characteristic	Symbol	Min	Max	Unit
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#### ON CHARACTERISTICS

DC Current Gain (I <sub>C</sub> = 10 mA, V <sub>CE</sub> = 1.0 Vdc) (I <sub>C</sub> = 100 mA, V <sub>CE</sub> = 1.0 Vdc)	h <sub>FE</sub>	100 100	— —	—
Collector–Emitter Saturation Voltage (I <sub>C</sub> = 100 mA, I <sub>B</sub> = 10 mA)	V <sub>CE(sat)</sub>	—	0.25	Vdc
Base–Emitter On Voltage (I <sub>C</sub> = 100 mA, V <sub>CE</sub> = 1.0 Vdc)	V <sub>BE(sat)</sub>	—	1.2	Vdc

#### SMALL–SIGNAL CHARACTERISTICS

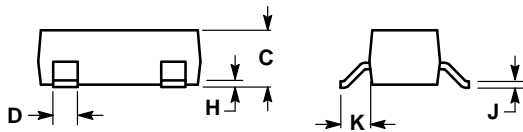
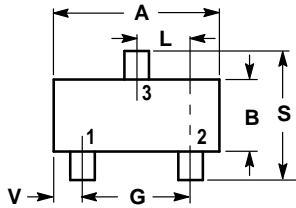
Current –Gain – Bandwidth Product(4) (V <sub>CE</sub> = 2.0 V, I <sub>C</sub> = 10mA, f = 100 MHz)	f <sub>T</sub>	100	—	MHz
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4. f<sub>T</sub> is defined as the frequency at which |h<sub>fe</sub>| extrapolates to unity.

#### ORDERING INFORMATION

Device	Marking	Shipping
MMBTA05	1H	3000/Tape & Reel
MMBTA06	1GM	3000/Tape & Reel

## SOT-23



### NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60

- PIN 1. BASE  
 2. EMITTER  
 3. COLLECTOR

