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MMBTA06

Silicon NPN Transistor General Purpose Amplifier SOT-23 Type Surface Mount Package

Description:

The MMBTA06 is a silicon NPN transistor in an SOT-23 type surface mount case designed for use in general purpose applications at collector currents to 300mA.

Absolute Maximum Ratings: ($T_A = +25^\circ\text{C}$, Note 1, Note 2 unless otherwise specified)

Collector-Emitter Voltage, V_{CEO}	80V
Collector-Base Voltage, V_{CBO}	80V
Emitter-Base Voltage, V_{EBO}	4V
Continuous Collector Current, I_C	500mA
Total Power Dissipation (Note 3), P_D	350mW
Derate Above 25°C	2.8mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient, R_{thJA}	357 $^\circ\text{C}/\text{mW}$
Operating Junction Temperature Range, T_J	-55° to $+150^\circ\text{C}$
Storage Temperature Range, T_{stg}	-55° to $+150^\circ\text{C}$

Note 1. Stresses exceeding the Absolute Maximum Ratings may damage the device. The device may not function or be operated above the Recommended Operating Conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the Recommended Operation Conditions may affect device reliability. The Absolute maximum ratings are stress ratings only.

Note 2. These are steady-state limits and are based on a maximum junction temperature of $+150^\circ\text{C}$.

Note 3. Device is mounted on FR-4 PCB 1.6 inch x 1.6 inch x 0.06 inch.

Electrical Characteristics: ($T_A = +25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 1\text{mA}$, $I_B = 0$, Note 4	80	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 100\mu\text{A}$, $I_C = 0$	4	-	-	V
Collector Cutoff Current	I_{CEO}	$V_{CE} = 60\text{V}$, $I_B = 0$	-	-	0.1	μA
	I_{CBO}	$V_{CB} = 80\text{V}$, $I_E = 0$	-	-	0.1	μA

Note 4. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

Electrical Characteristics (Cont'd): ($T_A = +25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
ON Characteristics						
DC Current Gain	h_{FE}	$I_C = 10\text{mA}, V_{CE} = 1\text{V}$	100	-	-	
		$I_C = 100\text{mA}, V_{CE} = 1\text{V}$	100	-	-	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 100\text{mA}, I_B = 10\text{mA}$	-	-	0.25	V
Base-Emitter ON Voltage	$V_{BE(on)}$	$I_C = 100\text{mA}, V_{CE} = 1\text{V}$	-	-	1.2	V
Small-Signal Characteristics						
Current Gain-Bandwidth Product	f_T	$I_C = 10\text{mA}, V_{CE} = 2\text{V}, f = 100\text{MHz}$	100	-	-	MHz

Note 4. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

