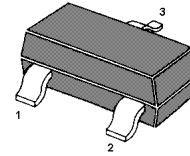


## MMBT2369 / MMBT2369A

### NPN Silicon Switching Transistor



1. Base 2. Emitter 3. Collector  
SOT-23 Plastic Package

#### Absolute Maximum Ratings ( $T_a = 25\text{ }^\circ\text{C}$ )

	Symbol	Value	Unit
Collector Base Voltage	$V_{CBO}$	40	V
Collector Emitter Voltage	$V_{CEO}$	15	V
Collector Emitter Voltage	$V_{CES}$	40	V
Emitter Base Voltage	$V_{EBO}$	4.5	V
Collector Current Continuous	$I_C$	200	mA
Total Device Dissipation FR-5 Board <sup>1)</sup>	$P_{tot}$	200	mW
Derate above 25 °C		1.8	mW/°C
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	556	°C/W
Junction and Storage Temperature Range	$T_J, T_{Stg}$	-55 to +150	°C

<sup>1)</sup> FR-5=1×0.75×0.062 in.

**Characteristics at  $T_{amb}=25\text{ }^{\circ}\text{C}$**

		Symbol	Min.	Max.	Unit
DC Current Gain					
at $V_{CE}=1\text{V}$ , $I_C=10\text{mA}$	MMBT2369	$h_{FE}$	40	120	-
at $V_{CE}=1\text{V}$ , $I_C=10\text{mA}$	MMBT2369A	$h_{FE}$	-	120	-
at $V_{CE}=0.35\text{V}$ , $I_C=10\text{mA}$	MMBT2369A	$h_{FE}$	40	-	-
at $V_{CE}=0.35\text{V}$ , $I_C=10\text{mA}$ , $T_A=-55\text{ }^{\circ}\text{C}$	MMBT2369A	$h_{FE}$	20	-	-
at $V_{CE}=0.4\text{V}$ , $I_C=30\text{mA}$	MMBT2369A	$h_{FE}$	30	-	-
at $V_{CE}=2.0\text{V}$ , $I_C=100\text{mA}$	MMBT2369	$h_{FE}$	20	-	-
at $V_{CE}=1.0\text{V}$ , $I_C=100\text{mA}$	MMBT2369A	$h_{FE}$	20	-	-
Collector Emitter Saturation Voltage					
at $I_C=10\text{mA}$ , $I_B=1\text{mA}$	MMBT2369	$V_{CEsat}$	-	0.25	V
at $I_C=10\text{mA}$ , $I_B=1\text{mA}$	MMBT2369A	$V_{CEsat}$	-	0.2	V
at $I_C=10\text{mA}$ , $I_B=1\text{mA}$ , $T_A=+125\text{ }^{\circ}\text{C}$	MMBT2369A	$V_{CEsat}$	-	0.3	V
at $I_C=30\text{mA}$ , $I_B=3.0\text{mA}$	MMBT2369A	$V_{CEsat}$	-	0.25	V
at $I_C=100\text{mA}$ , $I_B=10\text{mA}$	MMBT2369A	$V_{CEsat}$	-	0.5	V
Base Emitter Saturation Voltage					
at $I_C=10\text{mA}$ , $I_B=1\text{mA}$	MMBT2369A	$V_{BEsat}$	0.7	0.85	V
at $I_C=10\text{mA}$ , $I_B=1\text{mA}$ , $T_A=-55\text{ }^{\circ}\text{C}$	MMBT2369A	$V_{BEsat}$	-	1.02	V
at $I_C=30\text{mA}$ , $I_B=3\text{mA}$	MMBT2369A	$V_{BEsat}$	-	1.15	V
at $I_C=100\text{mA}$ , $I_B=10\text{mA}$	MMBT2369A	$V_{BEsat}$	-	1.60	V
Collector Cutoff Current					
at $V_{CE}=20\text{V}$	MMBT2369A	$I_{CES}$	-	0.4	$\mu\text{A}$
Collector Cutoff Current					
at $V_{CB}=20\text{V}$		$I_{CBO}$	-	0.4	$\mu\text{A}$
at $V_{CB}=20\text{V}$ , $T_A=150\text{ }^{\circ}\text{C}$		$I_{CBO}$	-	30	$\mu\text{A}$
Collector Emitter Breakdown Voltage					
at $I_C=10\text{mA}$		$V_{(BR)CEO}$	15	-	V
Collector Base Breakdown Voltage					
at $I_C=10\mu\text{A}$		$V_{(BR)CBO}$	40	-	V
Collector Emitter Breakdown Voltage					
at $I_C=10\mu\text{A}$		$V_{(BR)CES}$	40	-	V
Emitter Base Breakdown Voltage					
at $I_E=10\mu\text{A}$		$V_{(BR)EBO}$	4.5	-	V

**Characteristics at  $T_{amb}=25\text{ }^{\circ}\text{C}$**

	Symbol	Min.	Typ.	Max.	Unit
Output Capacitance at $V_{CB}=5\text{V}$ , $f=1\text{MHz}$	$C_{obo}$	-	-	4	pF
Small Signal Current Gain at $I_C=10\text{mA}$ , $V_{CE}=10\text{V}$ , $f=100\text{MHz}$	$H_{fe}$	5.0	-	-	-
Storage Time $I_{B1}=I_{B2}=I_C=10\text{mA}$	$t_s$	-	5.0	13	ns
Turn-On Time $V_{CC}=3\text{V}$ , $I_C=10\text{mA}$ , $I_{B1}=3\text{mA}$	$t_{on}$	-	8.0	12	ns
Turn-Off Time $V_{CC}=3\text{V}$ , $I_C=10\text{mA}$ , $I_{B1}=3.0\text{mA}$ , $I_{B2}=1.5\text{mA}$	$t_{off}$	-	10	18	ns