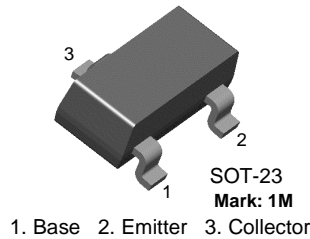


# MMBTA13

## NPN Darlington Transistor

- This device is designed for applications requiring extremely high Current gain at collector Currents to 1.0A.
- Sourced from process 05.
- See MPSA14 for characteristics.



### Absolute Maximum Ratings $T_a = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
$V_{CES}$	Collector-Emitter Voltage	30	V
$V_{CBO}$	Collector-Base Voltage	30	V
$V_{EBO}$	Emitter-Base Voltage	10	V
$I_C$	Collector Current - Continuous	1.2	A
$T_J, T_{STG}$	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ\text{C}$

### Electrical Characteristics $T_a = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Max.	Units
<b>Off Characteristics</b>					
$V_{(BR)CES}$	Collector-Emitter Breakdown Voltage	$I_C = 100\mu\text{A}, I_B = 0$	30		V
$I_{CBO}$	Collector-Cutoff Current	$V_{CB} = 30\text{V}, I_E = 0$		100	nA
$I_{EBO}$	Emitter-Cutoff Current	$V_{EB} = 10\text{V}, I_C = 0$		100	nA
<b>On Characteristics *</b>					
$h_{FE}$	DC Current Gain	$V_{CE} = 5.0\text{V}, I_C = 10\text{mA}$ $V_{CE} = 5.0, I_C = 100\text{mA}$	5,000 10,000		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 100\text{mA}, I_B = 0.1\text{mA}$		1.5	V
$V_{BE(on)}$	Base-Emitter On Voltage	$I_C = 100\text{mA}, V_{CE} = 5.0\text{V}$		2.0	V
<b>Small Signal Characteristics</b>					
$f_T$	Current Gain Bandwidth Product	$I_C = 10\text{mA}, V_{CE} = 10\text{V}, f = 100\text{MHz}$	125		pF

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

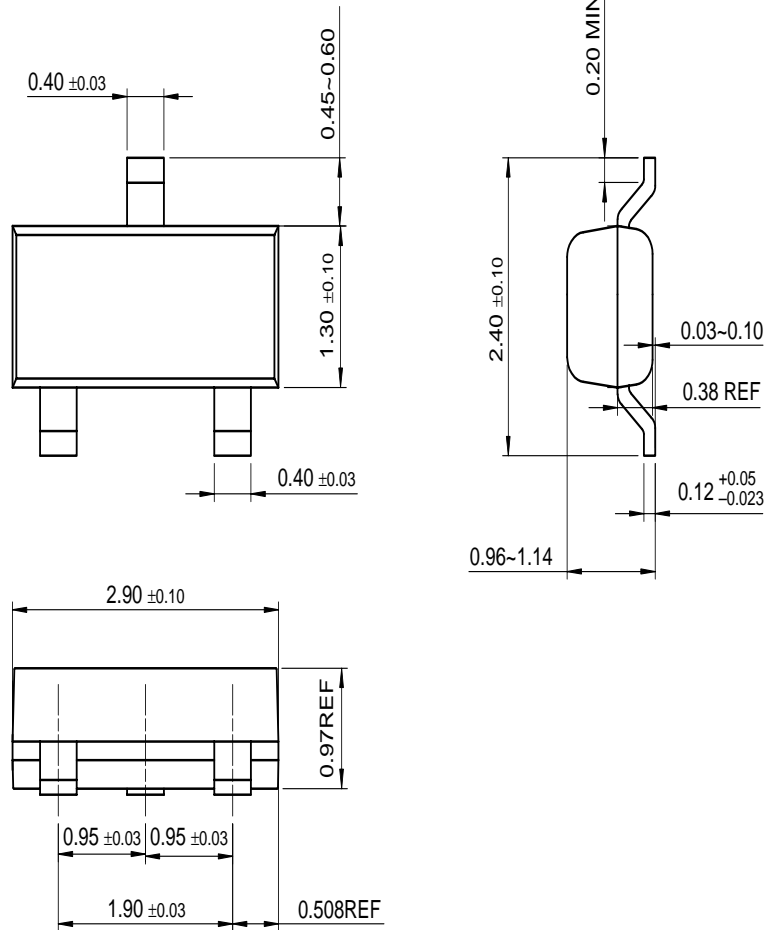
**Thermal Characteristics**  $T_a=25^{\circ}\text{C}$  unless otherwise noted

Symbol	Parameter	Max.	Units
$P_D$	Total Device Dissipation Derate above $25^{\circ}\text{C}$	350 2.8	mW mW/ $^{\circ}\text{C}$
$R_{\theta JC}$	Thermal Resistance, Junction to Case		$^{\circ}\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	357	$^{\circ}\text{C}/\text{W}$

\* Device mounted on FR-4PCB  $1.6'' \times 1.6'' \times 0.06''$ .

Mechanical Dimensions

SOT-23



Dimensions in Millimeters

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Rev. I15

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