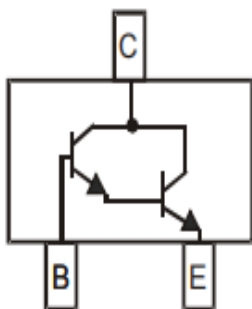


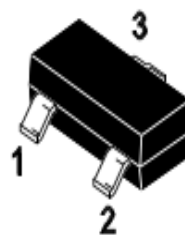
Features

- Ideal for Medium Power Amplification and Switching
- High Current Gain

Equivalent Circuit



SOT-23



1.Base 2.Emitter 3.Collector

Marking Code:

MMBTA13 : A13

MMBTA14 : A14

Absolute Maximum Ratings

Ratings at 25°C ambient temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Collector Base Voltage	V_{CBO}	30	V
Collector Emitter Voltage	V_{CEO}	30	V
Emitter Base Voltage	V_{EB0}	10	V
Collector Current	I_C	300	mA
Maximum Power Dissipation	P_D	300	mW
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Thermal Characteristics

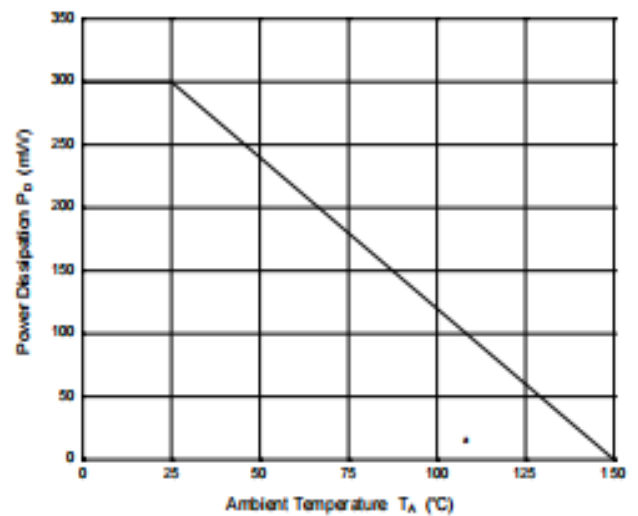
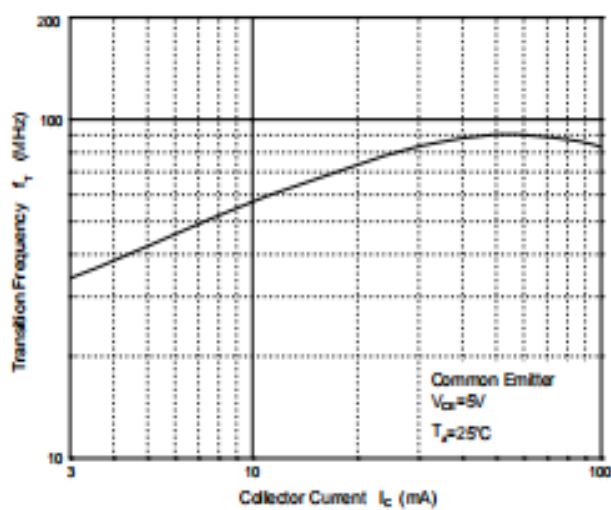
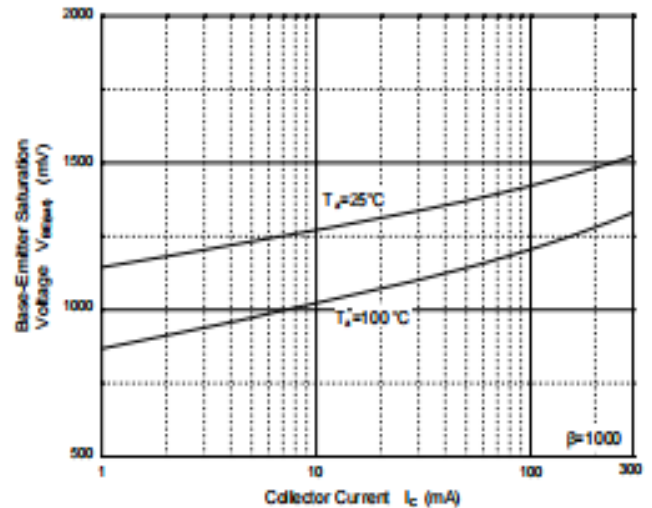
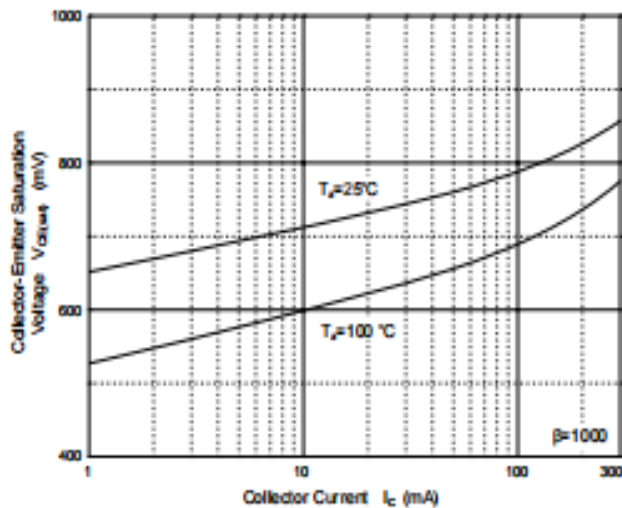
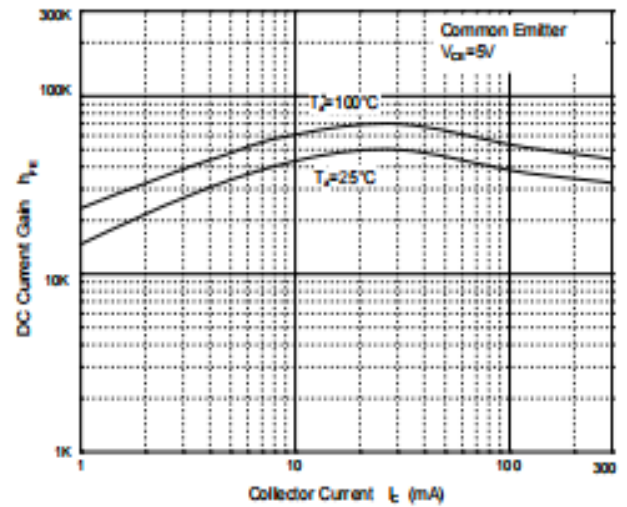
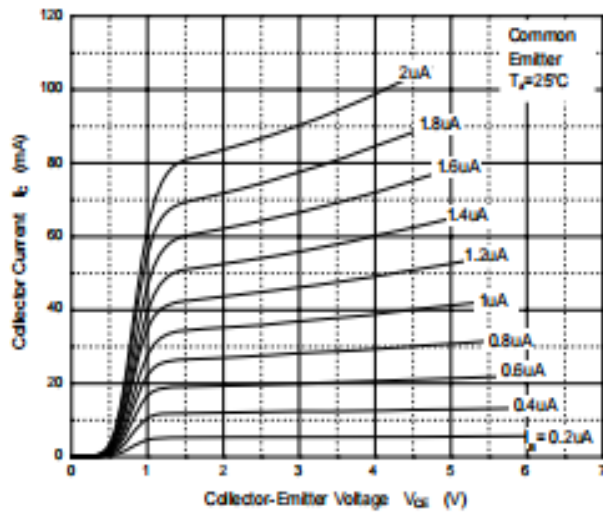
Parameter	Symbol	Value	Unit
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	417	°C/W

Electrical Characteristics

Ratings at 25°C ambient temperature unless otherwise specified.

Parameter	Symbol	Min.	Max.	Unit
DC Current Gain at $V_{CE} = 5\text{ V}$, $I_C = 10\text{ mA}$ MMBTA13 MMBTA14 at $V_{CE} = 5\text{ V}$, $I_C = 100\text{ mA}$ MMBTA13 MMBTA14	H_{FE}	5000 10000 10000 20000	-- -- -- --	--
Collector Base Cutoff Current at $V_{CB} = 30\text{ V}$	I_{CBO}	--	100	nA
Emitter Base Cutoff Current at $V_{EB} = 10\text{ V}$	I_{EBO}	--	100	nA
Collector Base Breakdown Voltage at $I_C = 100\text{ }\mu\text{A}$	$V_{(BR)CBO}$	30	--	V
Collector Emitter Breakdown Voltage at $I_C = 100\text{ }\mu\text{A}$	$V_{(BR)CEO}$	30	--	V
Emitter Base Breakdown Voltage at $I_E = 100\text{ }\mu\text{A}$	$V_{(BR)EBO}$	10	--	V
Collector Emitter Saturation Voltage at $I_C = 100\text{ mA}$, $I_B = 0.1\text{ mA}$	$V_{CE(sat)}$	--	1.5	V
Base Emitter Saturation Voltage at $I_C = 100\text{ mA}$, $I_B = 0.1\text{ mA}$	$V_{BE(sat)}$	--	2	V
Transition Frequency at $V_{CE} = 5\text{ V}$, $I_C = 10\text{ mA}$, $f = 100\text{ MHz}$	F_T	125	--	MHz
Output Capacitance at $V_{CB} = 10\text{ V}$, $f = 1\text{ MHz}$	C_{ob}	--	12	pF

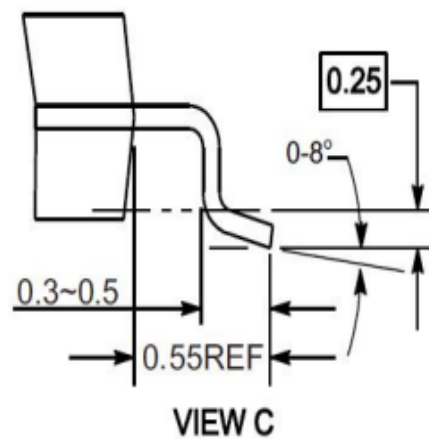
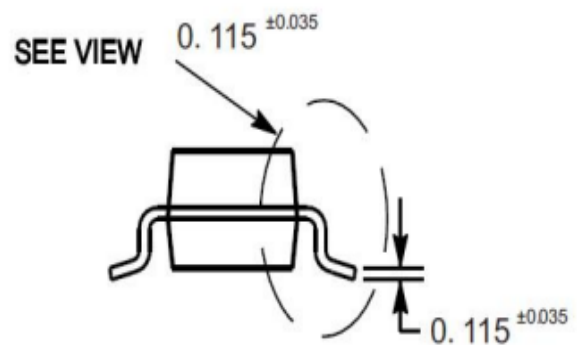
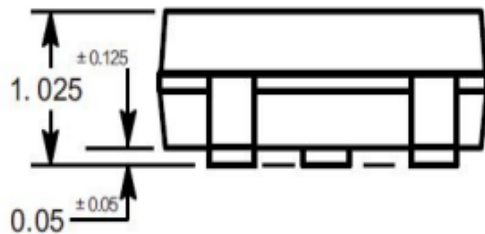
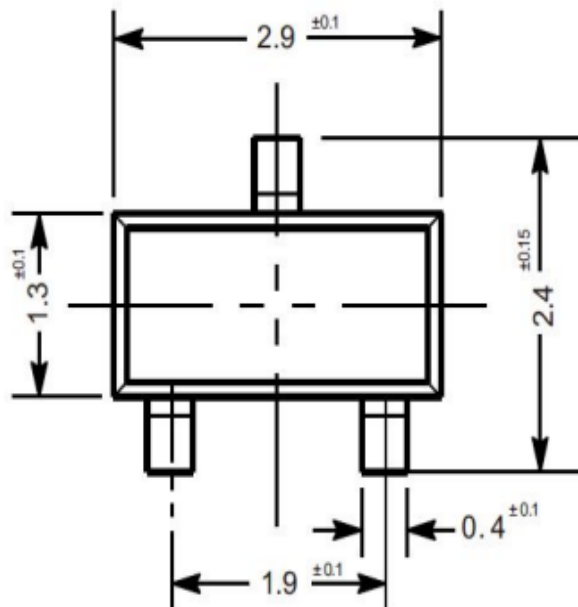
Typical Characteristic Curves



Package Outline

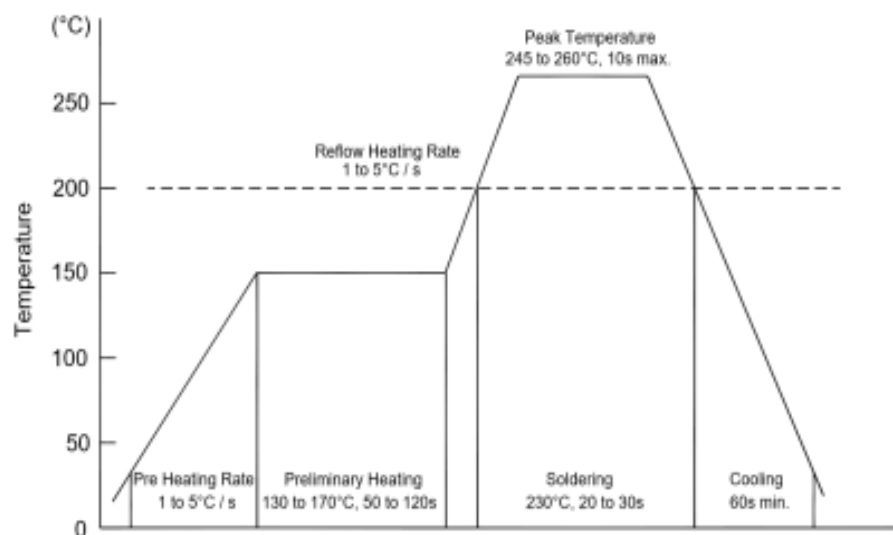
SOT-23

Dimensions in mm



Conditions of Soldering and Storage

◆ Recommended condition of reflow soldering



Recommended peak temperature is over 245 °C. If peak temperature is below 245 °C, you may adjust the following parameters:

- Time length of peak temperature (longer)
- Time length of soldering (longer)
- Thickness of solder paste (thicker)

◆ Conditions of hand soldering

- Temperature: 370 °C
- Time: 3s max.
- Times: one time

◆ Storage conditions

- Temperature
5 to 40 °C
- Humidity
30 to 80% RH
- Recommended period
One year after manufacturing