

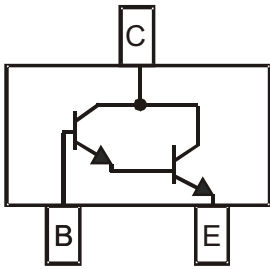


MMBTA13 MMBTA14 NPN Darlington Transistor

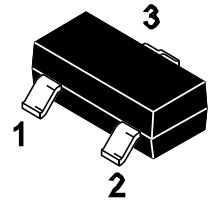
Features

- 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_{CB0}	30	V
Collector Emitter Voltage	V_{CEO}	30	V
Emitter Base Voltage	V_{EBO}	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



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Electrical Characteristics

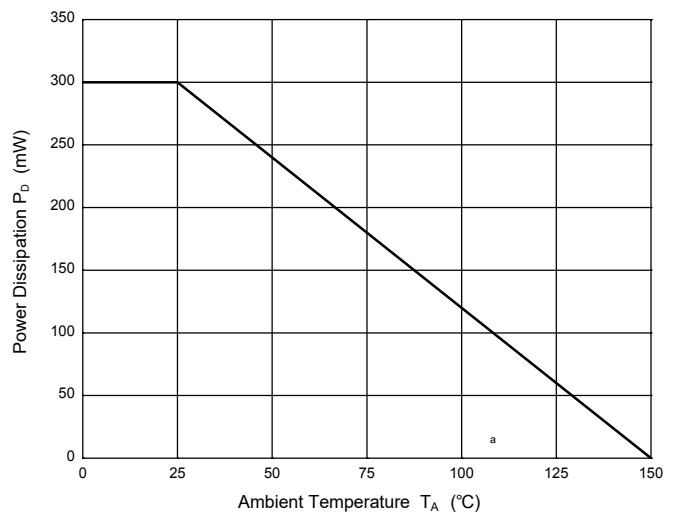
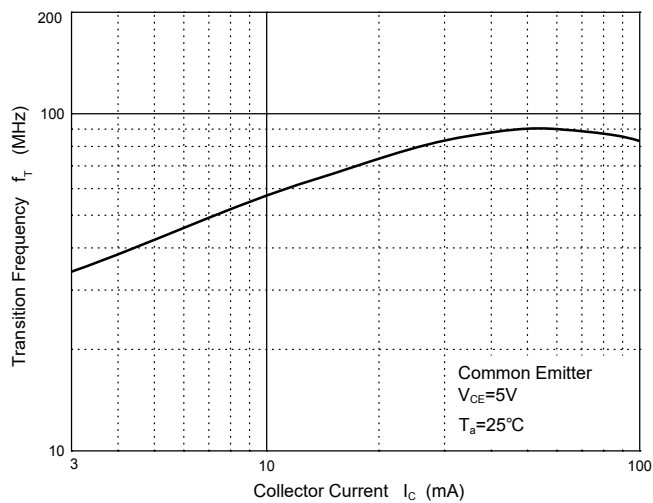
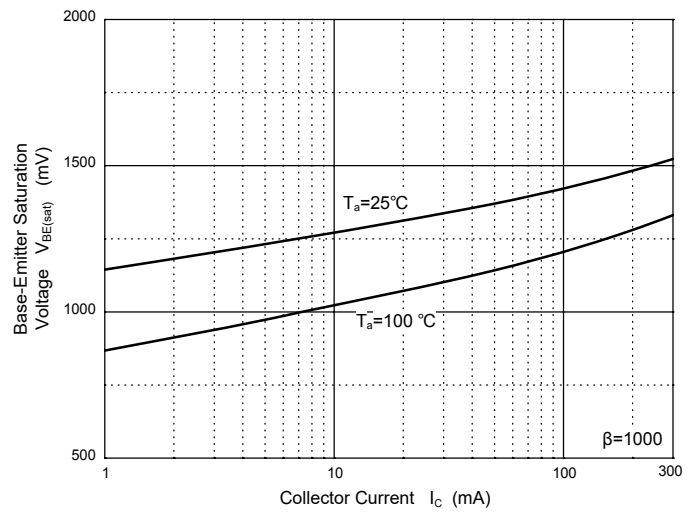
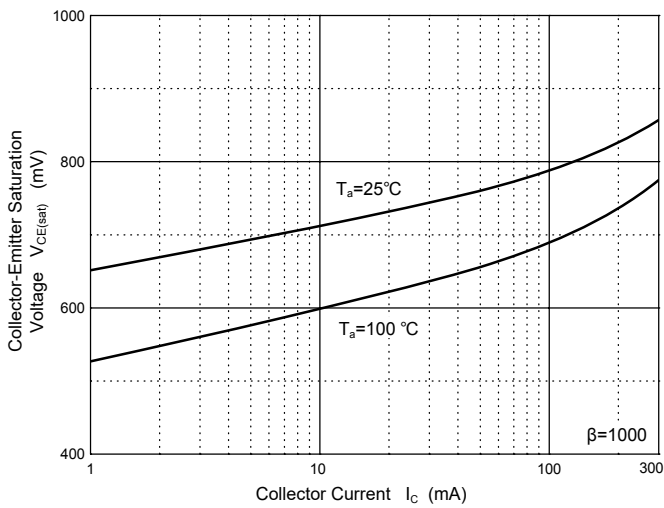
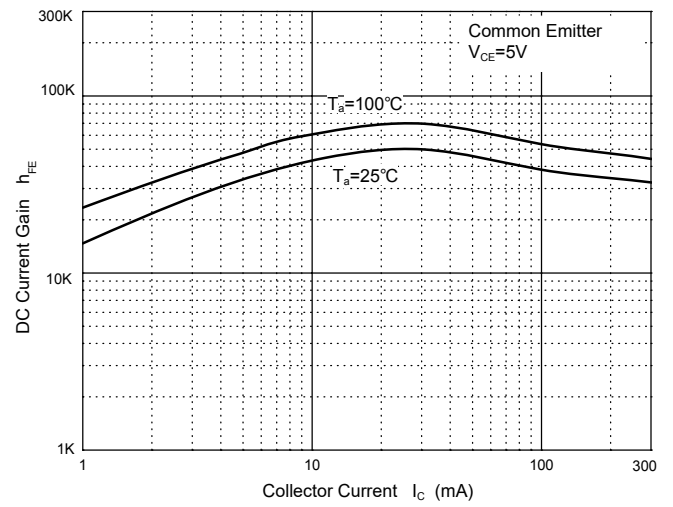
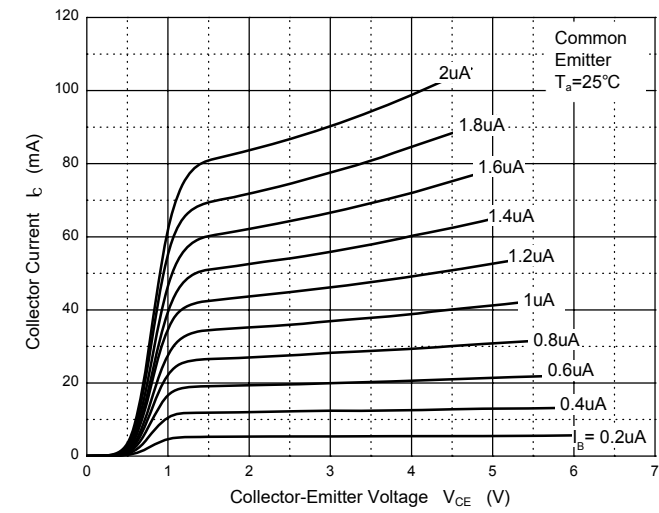
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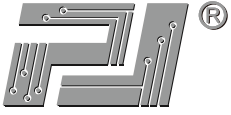
Parameter	Symbol	Min.	Max.	Unit
DC Current Gain at $V_{CE} = 5\text{ V}$, $I_C = 10\text{ mA}$	H_{FE}	5000	--	--
MMBTA13		10000	--	
MMBTA14		10000	--	
at $V_{CE} = 5\text{ V}$, $I_C = 100\text{ mA}$		20000	--	
Collector Base Cutoff Current at $V_{CB} = 30\text{ V}$	I_{CBO}	--	100	nA
Emitter Base Cutoff 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



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Typical Characteristic Curves



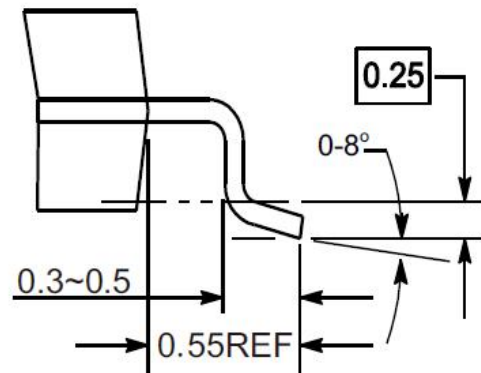
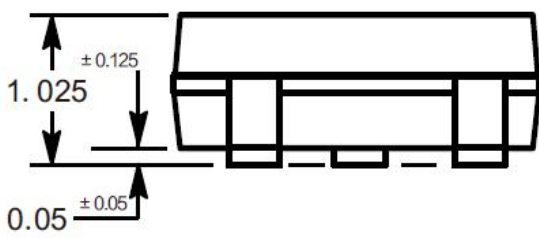
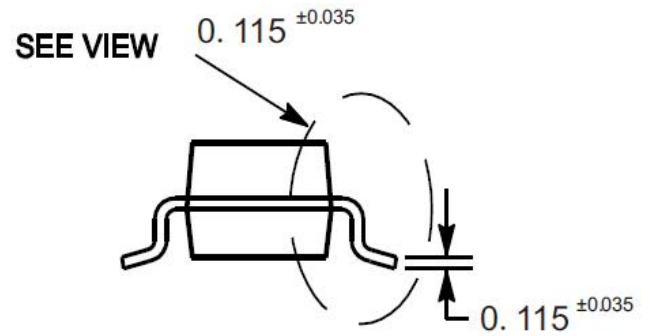
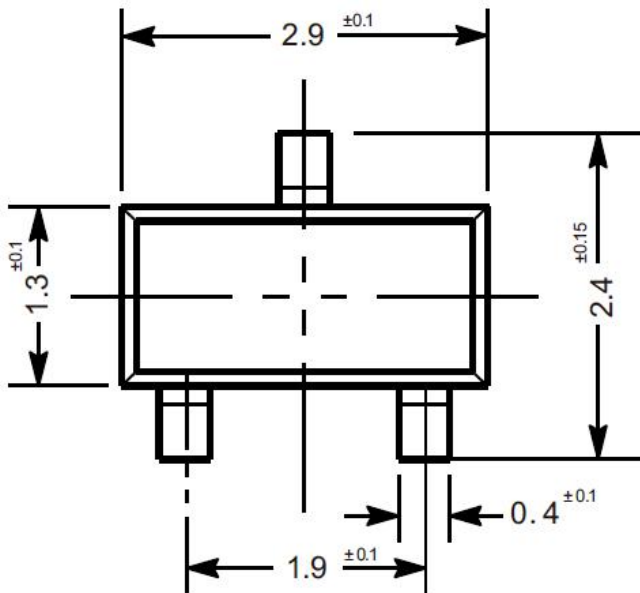


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Package Outline

SOT-23

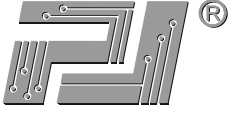
Dimensions in mm



VIEW C

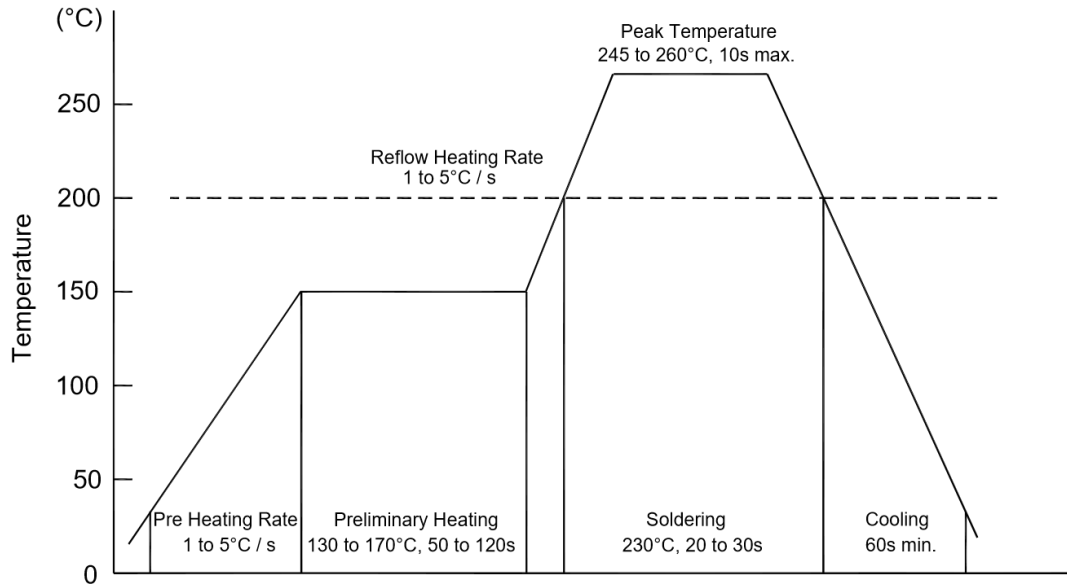
Ordering Information

Device	Package	Shipping
MMBTA13,MMBTA14	SOT-23	3,000PCS/Reel&7inches



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:

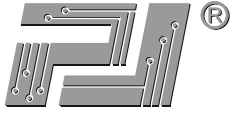
- Time length of peak temperature (longer)
- Time length of soldering (longer)
- Thickness of solder paste (thicker)

◆ Conditions of hand soldering

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

◆ Storage conditions

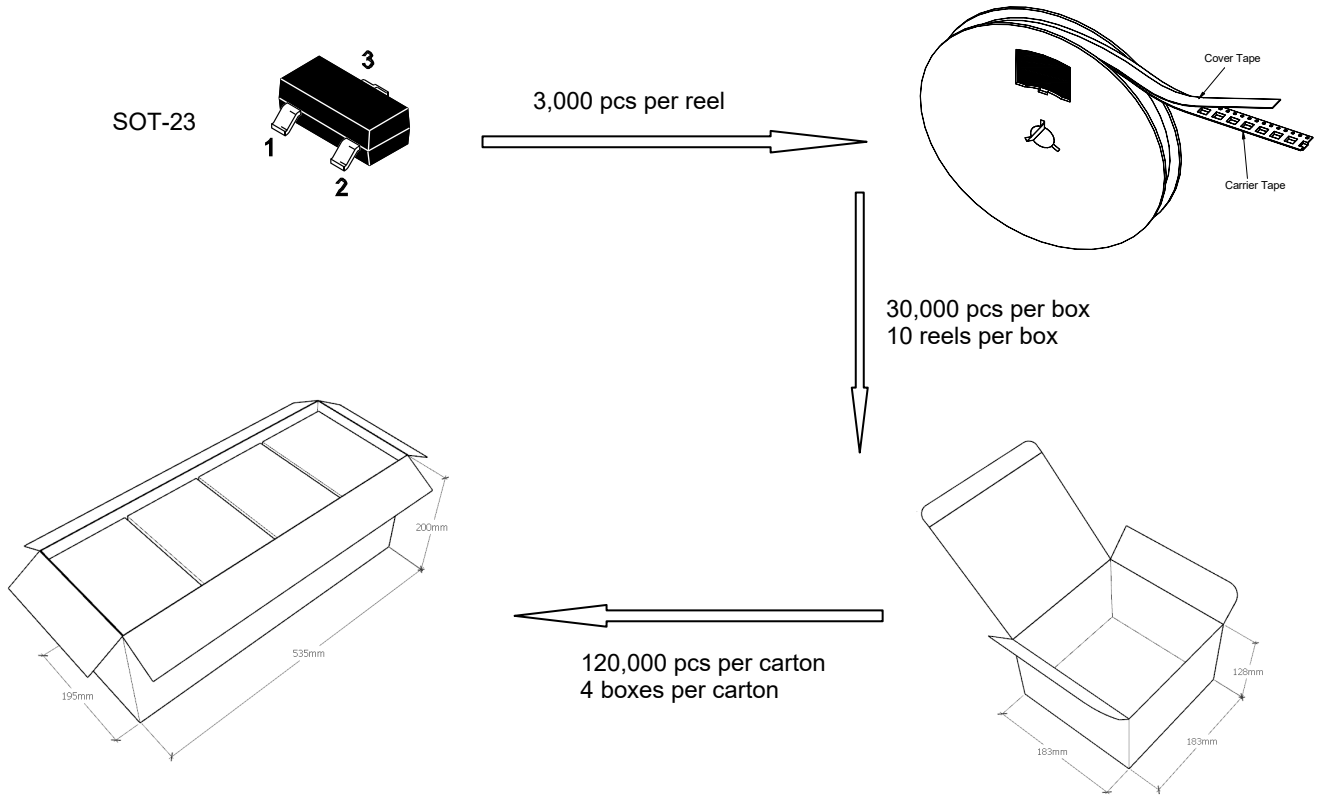
- **Temperature**
5 to 40 °C
- **Humidity**
30 to 80% RH
- **Recommended period**
One year after manufacturing



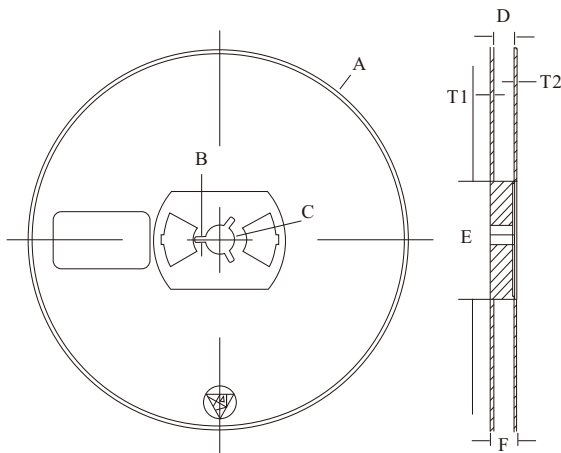
MMBTA13 MMBTA14 NPN Darlington Transistor

Package Specifications

- The method of packaging



◆ Embossed tape and reel data



Symbol	Value (unit: mm)
A	Ø 177.8±1
B	2.7±0.2
C	Ø 13.5±0.2
E	Ø 54.5±0.2
F	12.3±0.3
D	9.6+2/-0.3
T1	1.0±0.2
T2	1.2±0.2

Reel (7")

