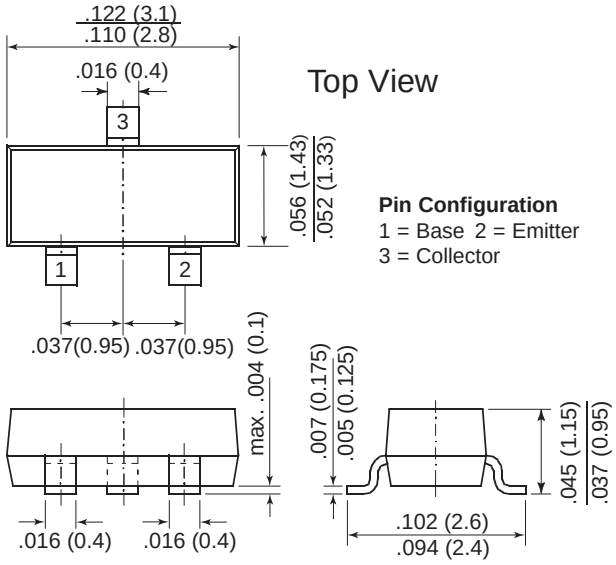
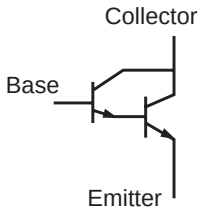
Darlington Transistors (NPN)

TO-236AB (SOT-23)

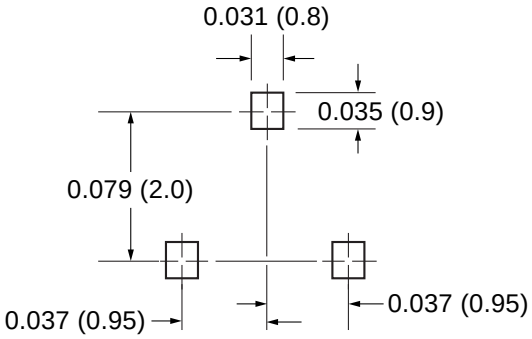


Pin Configuration
1 = Base 2 = Emitter
3 = Collector

Dimensions in inches and (millimeters)



Mounting Pad Layout



Features

- NPN Silicon Darlington Transistor for switching and amplifier applications.
- High collector current • High current gain
- These transistors are also available in the TO-92 case with the type designation MPSA13 & MPSA14

Mechanical Data

Case: SOT-23 Plastic Package
Weight: approx. 0.008g
Marking Code:
1M for MMBTA13
1N for MMBTA14
Packaging Codes/Options:
E8/10K per 13” reel (8mm tape), 30K/box
E9/3K per 7” reel (8mm tape), 30K/box

Maximum Ratings and Thermal Characteristics (TC = 25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	30	V
Collector-Emitter Voltage	V_{CES}	30	V
Emitter-Base Voltage	V_{EBO}	10	V
Collector Current	I_C	300	mA
Power Dissipation at T_A = 25°C(3)	P_{tot}	225(1) 300(2)	mW
Thermal Resistance Junction to Ambient Air(3)	$R_{\Theta JA}$	556(1) 417(2)	°C/W
Maximum Junction Temperature	T_j	150	°C
Storage Temperature Range	T_S	–55 to +150	°C

Notes:
(1) On FR-5 board
(2) On alumina substrate
(3) Valid provided that leads are kept at ambient temperature

Electrical Characteristics (T_C = 25°C unless otherwise noted)

Parameter		Symbol	Minimum	Maximum	Unit
Collector-Emitter Breakdown Voltage at I_C = 100 µA, I_B = 0		$V_{(BR)CEO}$	30	–	V
Emitter Cutoff Current V_{EB} = 10 V, I_C = 0		I_{EBO}	–	100	nA
Collector Cutoff Current V_{CB} = 30 V, I_E = 0		I_{CBO}	–	100	nA
Collector-Emitter Saturation Voltage at I_C = 100 mA, I_B = 0.1 mA		V_{CEsat}	–	1.5	V
Base-Emitter On Voltage at I_C = 100 mA, V_{CE} = 5.0V		$V_{BE(on)}$	–	2.0	V
DC Current Gain					
at V_{CE} = 5.0 V, I_C = 10 mA	MMBTA13	h_{FE}	5000	–	–
	MMBTA14		10000	–	–
at V_{CE} = 5.0 V, I_C = 100 mA	MMBTA13		10000	–	–
	MMBTA14		20000	–	–
Gain-Bandwidth Product at V_{CE} = 5.0 V, I_C = 10 mA, f = 100 MHz		f_T	125	–	MHz