MTS102
MTS103
MTS105

SILICON
TEMPERATURE SENSOR

TO-92 CASE

www.centralsemi.com

DESCRIPTION:
The CENTRAL SEMICONDUCTOR MTS102 Series types are Silicon Temperature Sensors designed for temperature sensing applications.

MARKING: FULL PART NUMBER

MAXIMUM RATINGS (T_A=25°C)

	SYMBOL		UNITS
Emitter-Base Voltage	V_{EBO}	4.0	V
Continuous Collector Current	I_C	100	mA
Operating and Storage Junction Temperature	T_J,T_{stg}	-55 to +150	°C
Thermal Resistance	Θ_{JA}	200	°C/W

ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted)

SYMBOL	TEST CONDITIONS	MIN	MAX	UNITS
BV_{EBO}	I_E=100μA	4.0		V
V_{BE}	I_C=100μA	580	620	mV
ΔV_{BE} (1)	I_C=100μA,T_A=25°±0.05°C (MTS102)	-3.0	3.0	mV
ΔV_{BE} (1)	I_C=100μA,T_A=25°±0.05°C (MTS103)	-4.0	4.0	mV
ΔV_{BE} (1)	I_C=100μA,T_A=25°±0.05°C (MTS105)	-7.0	7.0	mV
ΔT (2)	T1=40°C, T2=150°C, T_A=25°±0.05°C (MTS102)	-3.0	3.0	°C
ΔT (2)	T1=40°C, T2=150°C, T_A=25°±0.05°C (MTS103)	-3.0	3.0	°C
ΔT (2)	T1=40°C, T2=150°C, T_A=25°±0.05°C (MTS105)	-5.0	5.0	°C
T_C (3,4)	V_{BE}=595mV, I_C=0.1mA	-2.28	-2.26	mV/°C

1. All devices within any one group will be matched for V_{BE} to the tolerance identified in the electrical characteristics table. Each device will be labeled with the mean V_{BE} value for that group.
2. All devices within an individual group, as described in Note 1, will track within the specified temperature accuracy. This includes variations in T_C, V_{BE}, and nonlinearity in the range -40 to +150°C. Nonlinearity is typically less than ± 1°C in this range.
3. The T_C as defined by at least-square linear regression for V_{BE} versus temperature over the range -40 to +150°C for a nominal V_{BE} of 595mV at 25°C. For other nominal V_{BE} values the value of the T_C must be adjusted for the dependence of the T_C on V_{BE} (See Note 4).
4. For nominal V_{BE} at 25°C other than 595mV, the T_C must be corrected using the equation T_C=-2.265+0.003(V_{BE}-595) where V_{BE} is in mV and T_C is in mV/°C. The accuracy of this is typically ±0.01 mV/°C.
5. For maximum temperature accuracy, I_C should not exceed 2 mA (See Figure 1)

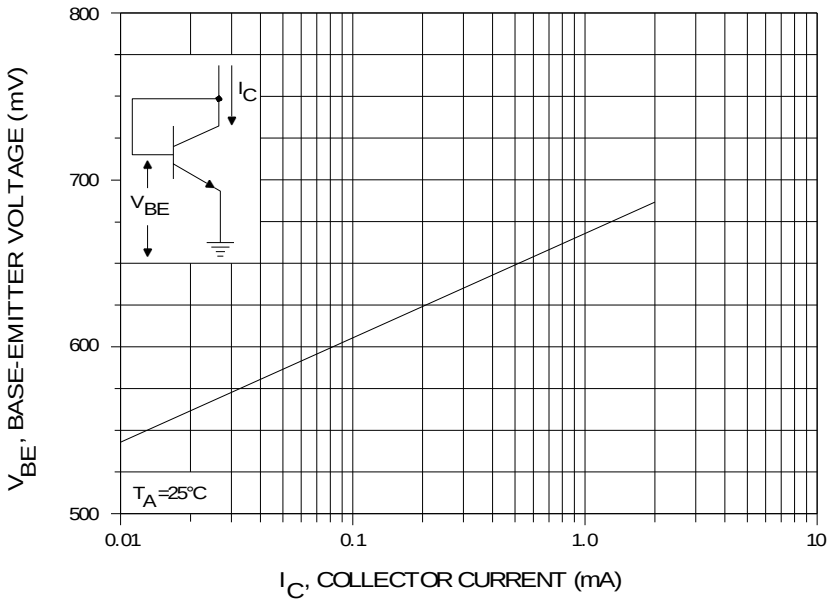
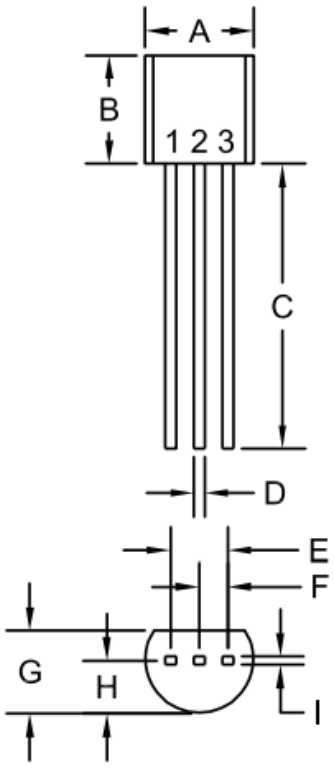


Figure 1. Base-Emitter Voltage versus Collector-Emitter Current

TO-92 CASE - MECHANICAL OUTLINE



R1

DIMENSIONS				
	INCHES		MILLIMETERS	
SYMBOL	MIN	MAX	MIN	MAX
A (DIA)	0.175	0.205	4.45	5.21
B	0.170	0.210	4.32	5.33
C	0.500	-	12.70	-
D	0.016	0.022	0.41	0.56
E	0.100		2.54	
F	0.050		1.27	
G	0.125	0.165	3.18	4.19
H	0.080	0.105	2.03	2.67
I	0.015		0.38	

TO-92 (REV: R1)

LEAD CODE:
1) Emitter
2) Base
3) Collector

MARKING:
FULL PART NUMBER

R0 (9-NOV-2021)