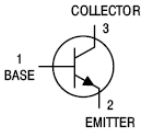
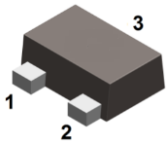
MMBT3904M

NPN Silicon Epitaxial Planar Transistor

Features

- Epitaxial planar die construction
- Complimentary to MMBT3906M
- Ultra-small surface mount package
- Compliant to Halogen-free





SOT-723

Mechanical Data

- Case: SOT-723
- Molding compound: UL flammability classification rating 94V-0
- Terminals: Tin-plated; solderability per MIL-STD-202, Method 208
- Marking code: 1N

Maximum Ratings (@ T_a = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Collector-Base Breakdown Voltage	V_{CBO}	60	V
Collector-Emitter Breakdown Voltage	V_{CEO}	40	V
Emitter-Base Breakdown Voltage	V_{EBO}	6	V
Continuous Collector Current	I_C	0.2	A
Thermal Resistance From Junction To Ambient	$R_{\theta JA}$	1250	℃/W

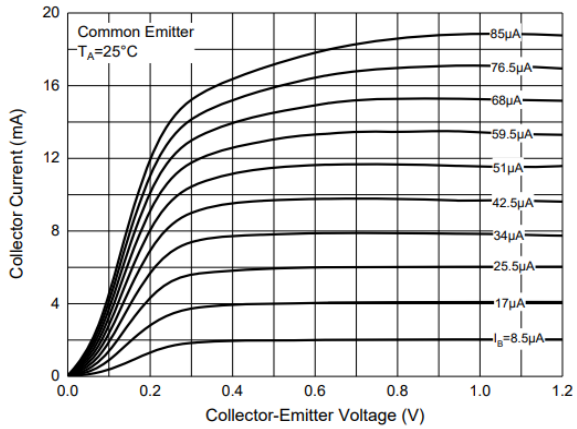
Thermal Characteristics (@ T_a = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Power Dissipation	P_D	100	mW
Operating junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	°C

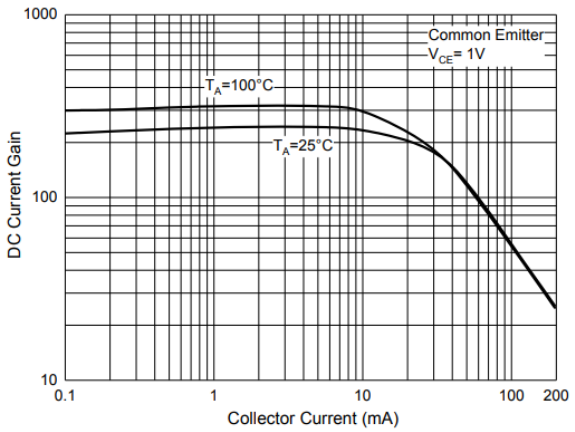
Electrical Characteristics (@ T_A = 25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 10μA, I_E = 0	60	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 1.0mA, I_B = 0	40	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 10μA, I_C = 0	6	-	-	V
Collector Cut-off Current	I_{CBO}	V_{CB} = 30V, I_E = 0	-	-	100	nA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 5V, I_C = 0	-	-	100	nA
DC Current Gain	h_{FE}	V_{CE} = 1V, I_C = 0.1mA	40	-	-	-
		V_{CE} = 1V, I_C = 1mA	70	-	-	-
		V_{CE} = 1V, I_C = 10mA	100	-	300	-
		V_{CE} = 1V, I_C = 50mA	60	-	-	-
Collector-emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 10mA, I_B = 1mA	-	-	0.2	V
		I_C = 50mA, I_B = 5mA	-	-	0.3	V
Base-emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 10mA, I_B = 1mA	0.65	-	0.85	V
		I_C = 50mA, I_B = 5mA	-	-	0.95	V
Transition Frequency	f_T	I_C = 10mA, V_{CE} = 20V,f= 100MHz	300	-	-	MHz
Delay Time	t_d	V_{CC} = 3V, I_C = 10mA $V_{BE(OFF)}$ = -0.5V, I_{B1} = 1mA	-	-	35	ns
Rise Time	t_r		-	-	35	ns
Storang Time	t_s	V_{CC} = 3V, I_C = 10mA I_{B1} = I_{B2} = 1mA	-	-	200	ns
Fall Time	t_f		-	-	50	ns

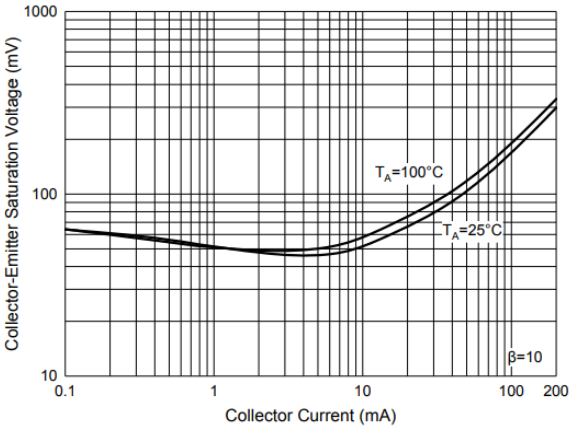
Ratings and Characteristics Curves (@ T_A = 25°C unless otherwise specified)



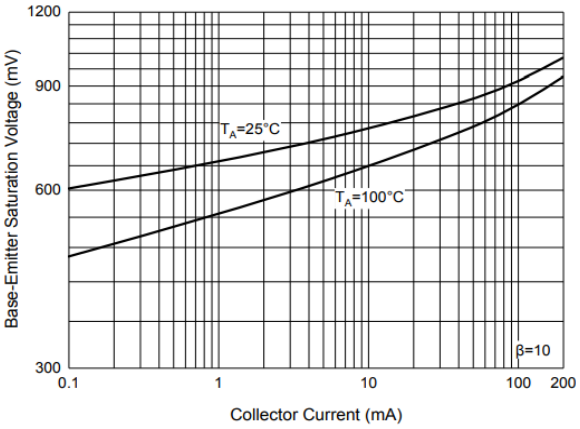
Static Characteristics



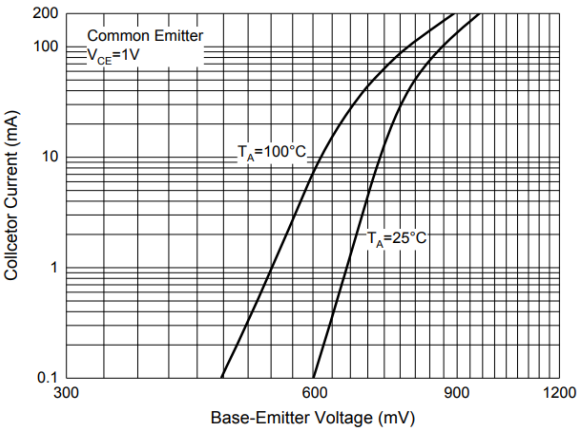
Base-Emitter Saturation Voltage Characteristics



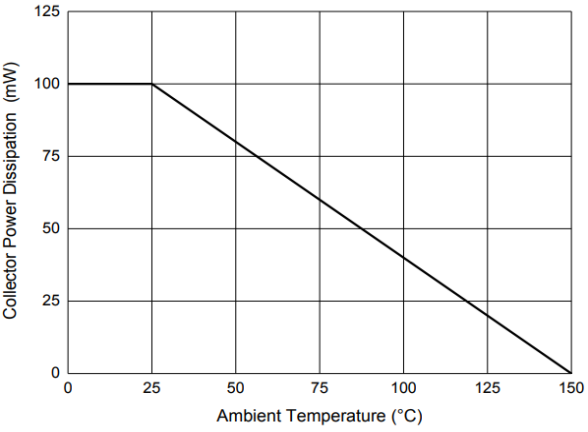
Collector-Emitter Saturation Voltage Characteristics



Base-Emitter Saturation Voltage Characteristics



Base-Emitter Voltage CharacteristicsCharacteristics



Collector Power Derating Curve

Package Outline Dimensions (Unit: mm)

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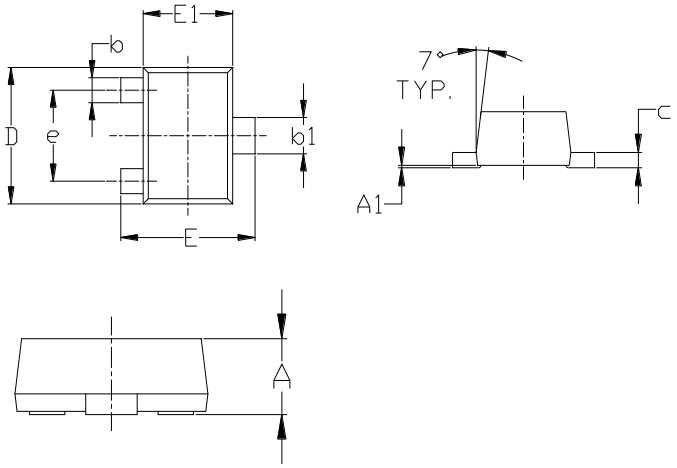

SYMBOL	DIMENSIONS IN MILLIMETER	
	MIN	MAX
A	0.430	0.500
A1	0.000	0.050
b	0.170	0.270
b1	0.270	0.370
c	0.080	0.150
D	1.150	1.250
E	1.150	1.250
E1	0.750	0.850
e	0.800 TYP.	
θ	0°	7°

Package Outline Dimensions (Unit: mm)