

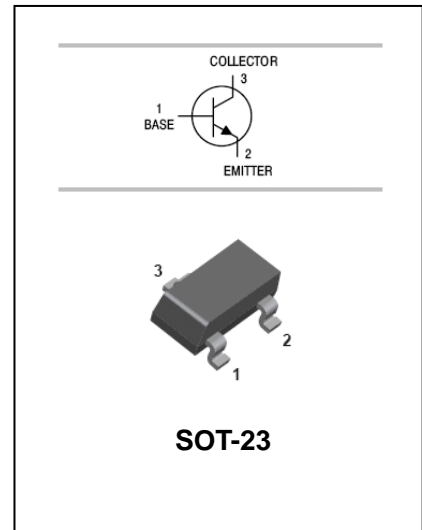
NPN SWITCHING TRANSISTOR

FEATURES

- Epitaxial planar die construction.
- Complementary PNP type available (MMBT3906).
- Collector Current Capability $I_{CM} = 200\text{mA}$.
- Collector-emitter Voltage $V_{CEO} = 40\text{V}$.
- MSL 3



Lead-free



APPLICATIONS

- General switching and amplification

ORDERING INFORMATION

Type No.	Marking	Package Code
MMBT3904	1AM	SOT-23

MAXIMUM RATING @ $T_a = 25^\circ\text{C}$ unless otherwise specified

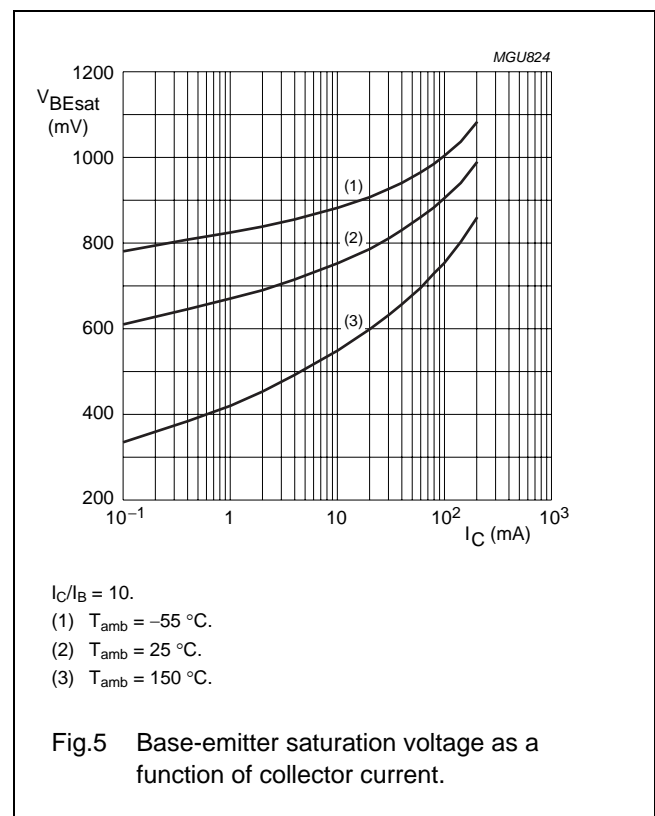
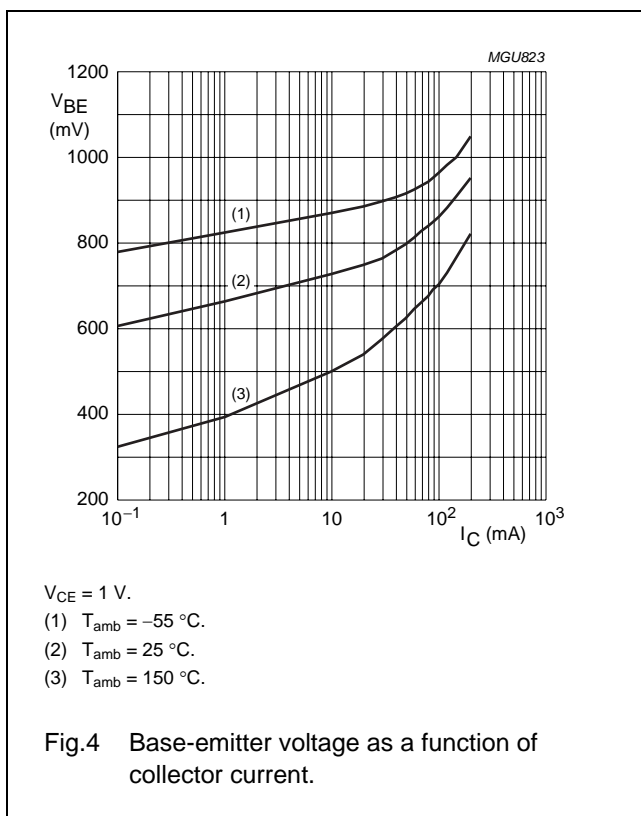
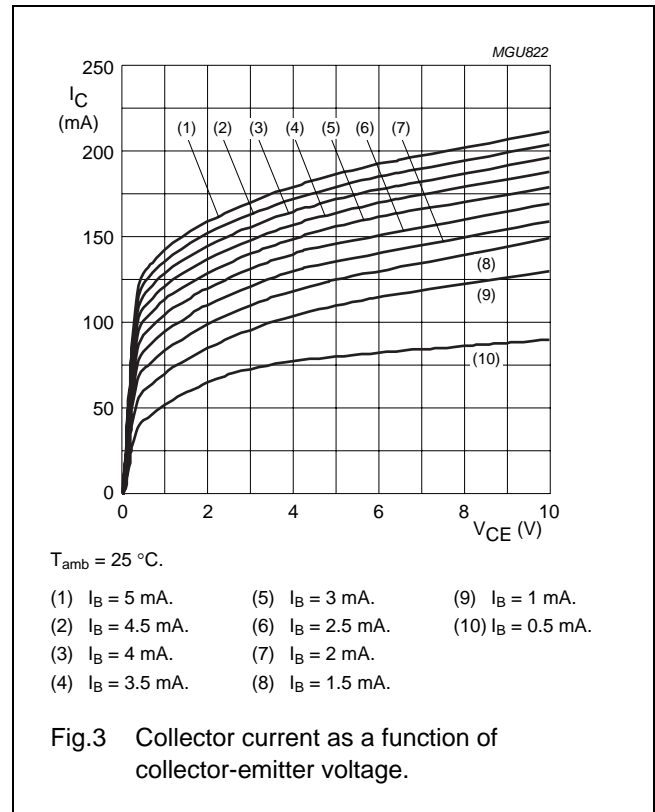
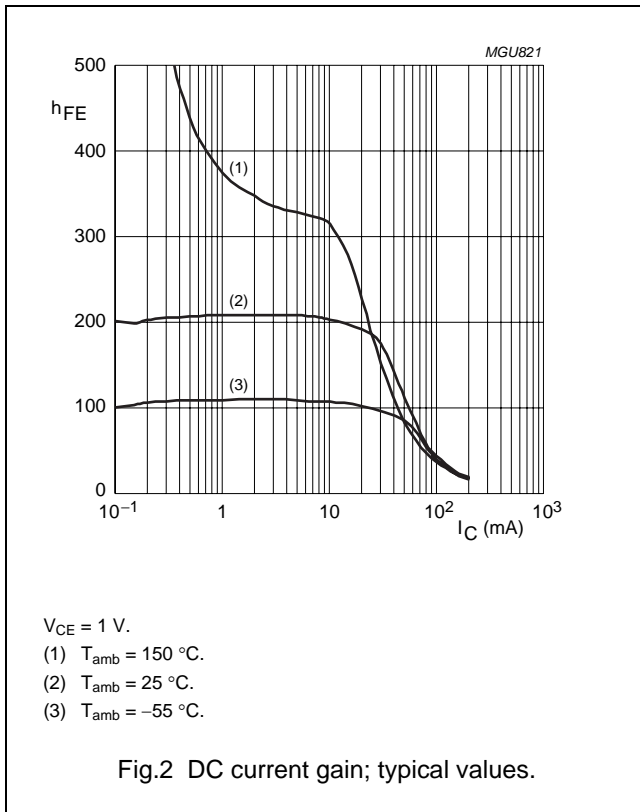
SYMBOL	PARAMETER	CONDITIONS	Value	UNIT
V_{CBO}	collector-base voltage	open emitter	60	V
V_{CEO}	collector-emitter voltage	open base	40	V
V_{EBO}	emitter-base voltage	open collector	6	V
I_C	collector current (DC)		200	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25^\circ\text{C}$	200	mW
T_{stg}	storage temperature		-55 to +150	$^\circ\text{C}$
T_j	junction temperature		150	$^\circ\text{C}$
T_{amb}	operating ambient temperature		-55 to +150	$^\circ\text{C}$

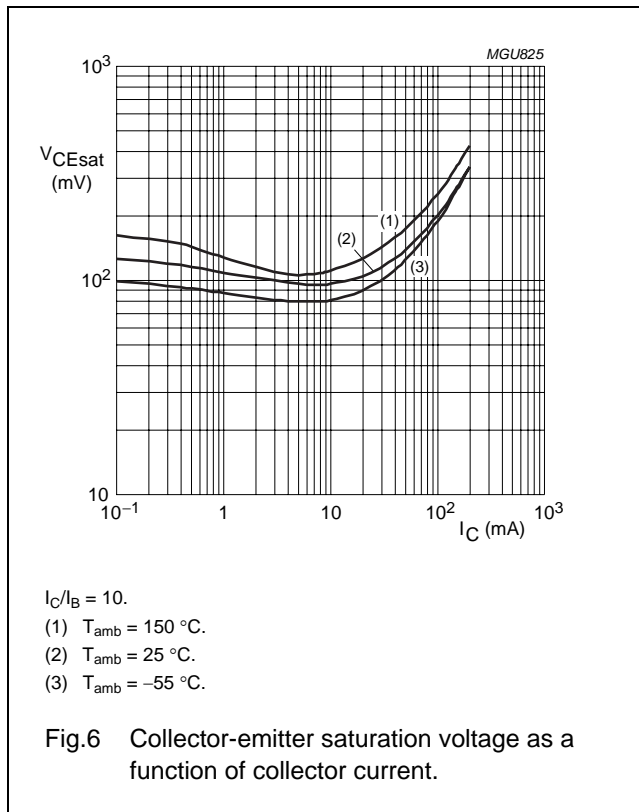
NPN SWITCHING TRANSISTOR
ELECTRICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_{CBO}	collector cut-off current	$I_E = 0; V_{CB} = 60 V$	-	0.1	μA
I_{EBO}	emitter cut-off current	$I_C = 0; V_{EB} = 5 V$	-	0.1	μA
h_{FE}	DC current gain	$V_{CE} = 1 V;$ $I_C = 10mA$ $I_C = 50mA$ $I_C = 100mA$	100 60 30	- 300 -	
$V_{CE(sat)}$	collector-emitter saturation voltage	$I_C = 10mA; I_B = 1mA$	-	200	mV
		$I_C = 50mA; I_B = 5mA$	-	300	mV
$V_{BE(sat)}$	base-emitter saturation voltage	$I_C = 10mA; I_B = 1mA$	650	850	mV
		$I_C = 50mA; I_B = 5mA$	-	950	mV
f_T	transition frequency	$I_C = 10mA; V_{CE} = 20V;$ $f = 100MHz$	300	-	MHz
Switching times (between 10% and 90% levels);					
t_d	delay time	$V_{CC} = 3V_{dc}, V_{BE} = -0.5V_{dc}$	-	35	ns
t_r	rise time	$I_C = 10mA_{dc}, I_B = 1mA_{dc}$	-	35	ns
t_s	storage time	$V_{CC} = 3V_{dc}, I_C = 10mA_{dc}$	-	200	ns
t_f	fall time	$I_B = I_{B2} = 1mA_{dc}$	-	50	ns

 Note Pulse test: $t_p \leq 300 ms; d \leq 0.02$.

NPN SWITCHING TRANSISTOR

 TYPICAL CHARACTERISTICS @ $T_a=25^\circ\text{C}$ unless otherwise specified


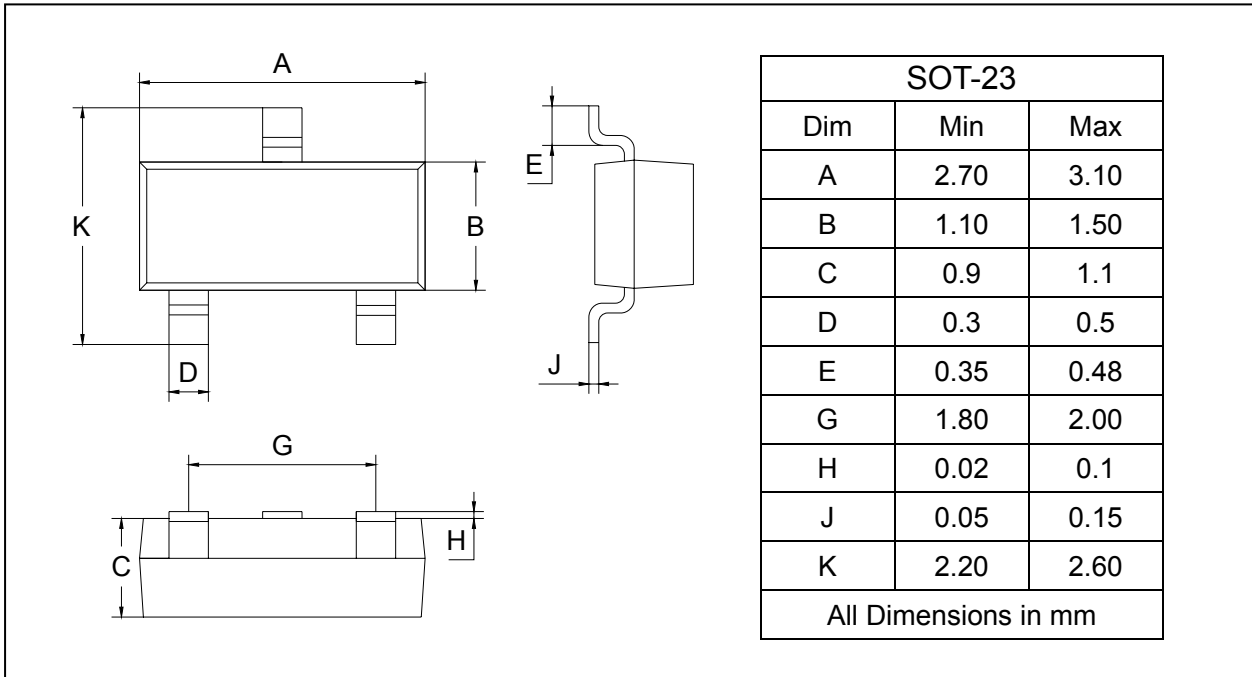
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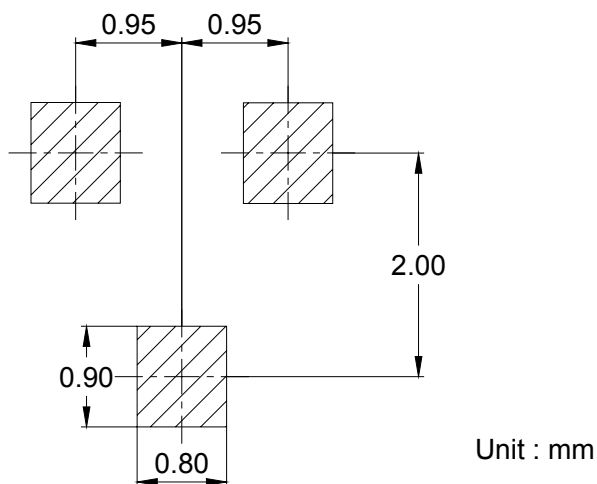
PACKAGE OUTLINE

Plastic surface mounted package

SOT-23



SOLDERING FOOTPRINT



PACKAGE INFORMATION

Device	Package	Shipping
MMBT3904	SOT-23	3000/Tape&Reel