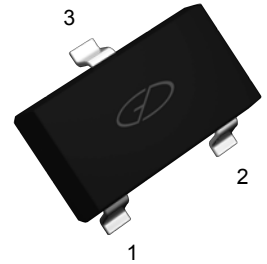


Features

- Switching transistor
- Ultra-small surface mount package
- Plastic-Encapsulate transistor



Package: SOT-23

1. BASE
2. EMITTER
3. COLLECTOR

Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

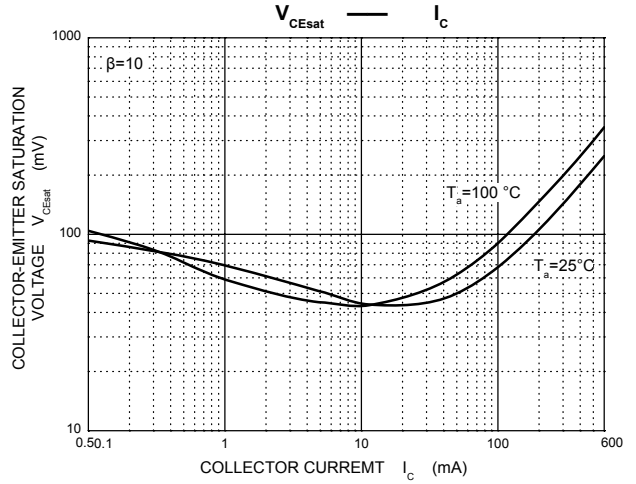
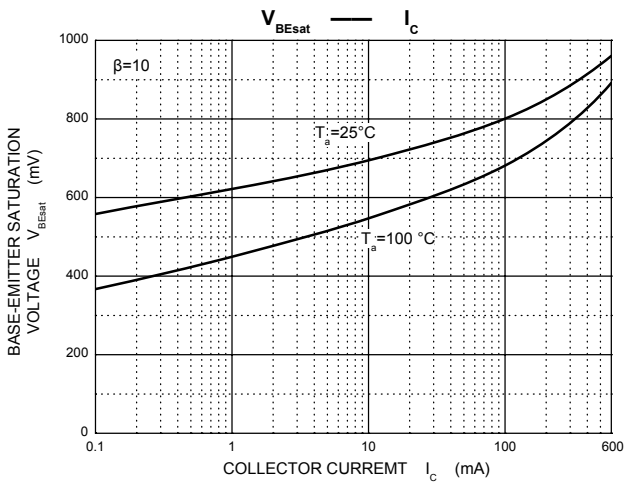
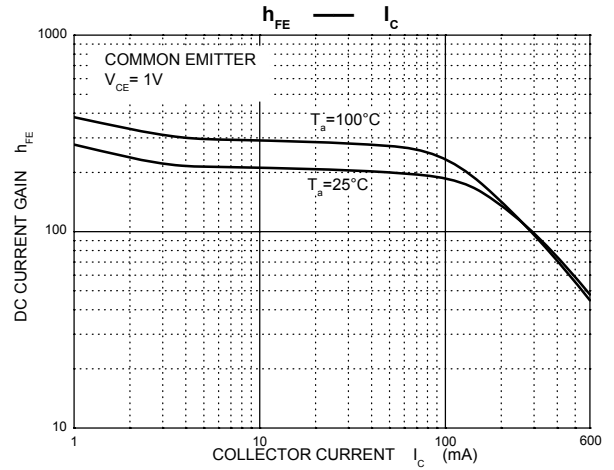
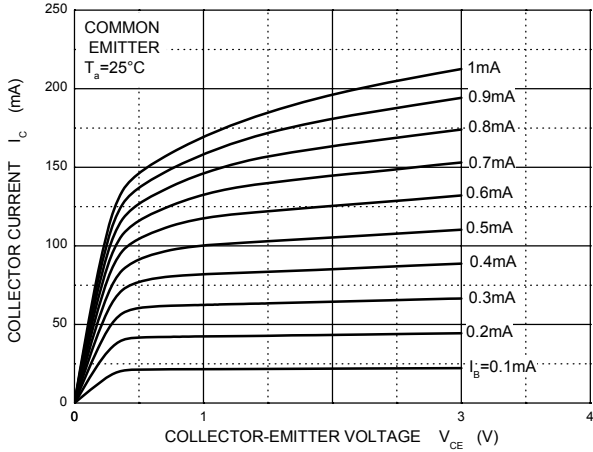
Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CB0}	60	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current	I_C	600	mA
Collector Power Dissipation	P_C	300	mW
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	417	$^{\circ}\text{C}/\text{W}$
Junction Temperature	T_J	-55 to +150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55 to +150	$^{\circ}\text{C}$

Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

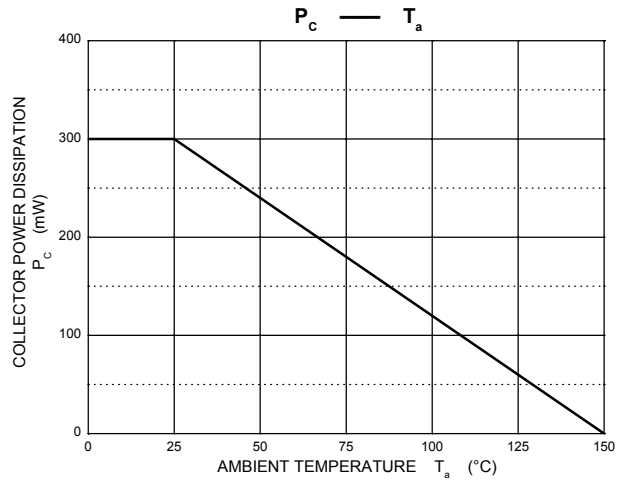
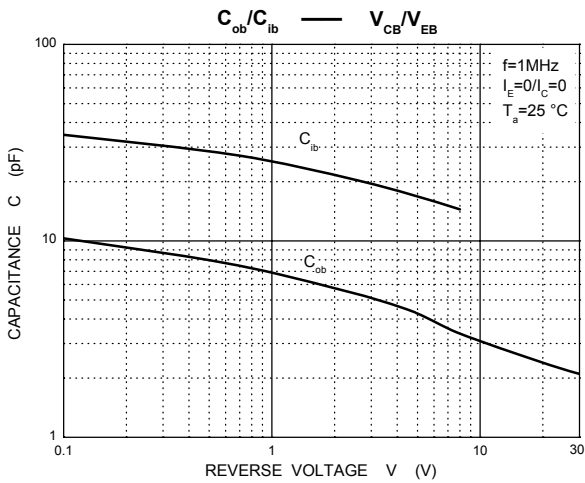
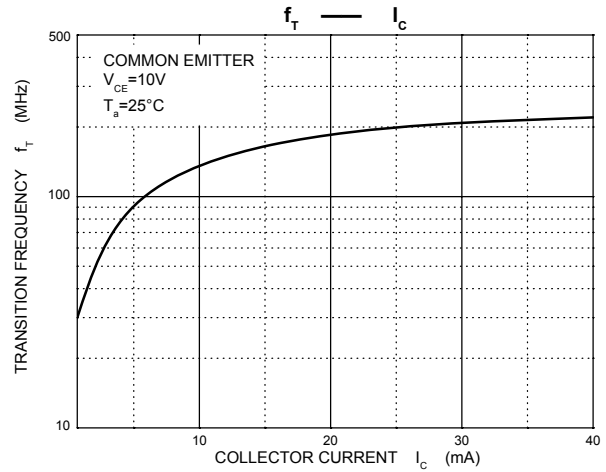
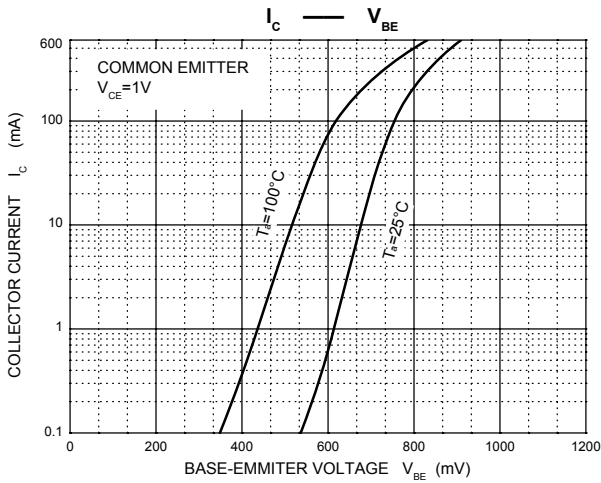
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=100\mu\text{A}, I_E=0$	60	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=1\text{mA}, I_B=0$	40	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=100\mu\text{A}, I_C=0$	6	-	-	V
Collector Cut-off Current	I_{CBO}	$V_{CB}=50\text{V}, I_E=0$	-	-	0.1	μA
Collector Cut-off Current	I_{CEX}	$V_{CE}=35\text{V}, V_{EB}=0.4\text{V}$	-	-	0.1	μA
Emitter Cut-off Current	I_{EBO}	$V_{EB}=5\text{V}, I_C=0$	-	-	0.1	μA
DC Current Gain	h_{FE1}	$V_{CE}=1\text{V}, I_C=0.1\text{mA}$	20	-	-	
	h_{FE2}	$V_{CE}=1\text{V}, I_C=1\text{mA}$	40	-	-	
	h_{FE3}	$V_{CE}=1\text{V}, I_C=10\text{mA}$	80	-	-	
	h_{FE4}	$V_{CE}=1\text{V}, I_C=150\text{mA}$	100	-	300	
	h_{FE5}	$V_{CE}=2\text{V}, I_C=500\text{mA}$	40	-	-	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=150\text{mA}, I_B=15\text{mA}$	-	-	0.4	V
		$I_C=500\text{mA}, I_B=50\text{mA}$	-	-	0.75	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=150\text{mA}, I_B=15\text{mA}$	-	-	0.95	V
		$I_C=500\text{mA}, I_B=50\text{mA}$	-	-	1.2	V
Transition Frequency	f_T	$V_{CE}=10\text{V}, I_C=20\text{mA}, f=100\text{MHz}$	250	-	-	MHz
Delay Time	t_d	$V_{CC}=30\text{V}, V_{BE(off)}=-2\text{V}$	-	-	15	nS
Rise Time	t_r	$I_C=150\text{mA}, I_B=15\text{mA}$	-	-	20	nS
Storage Time	t_s	$V_{CC}=30\text{V}, I_C=150\text{mA}$	-	-	225	nS
Fall Time	t_f	$I_B=I_{B2}=15\text{mA}$	-	-	60	nS

Typical Characteristics Curves ($T_A = 25^\circ\text{C}$ unless otherwise noted)

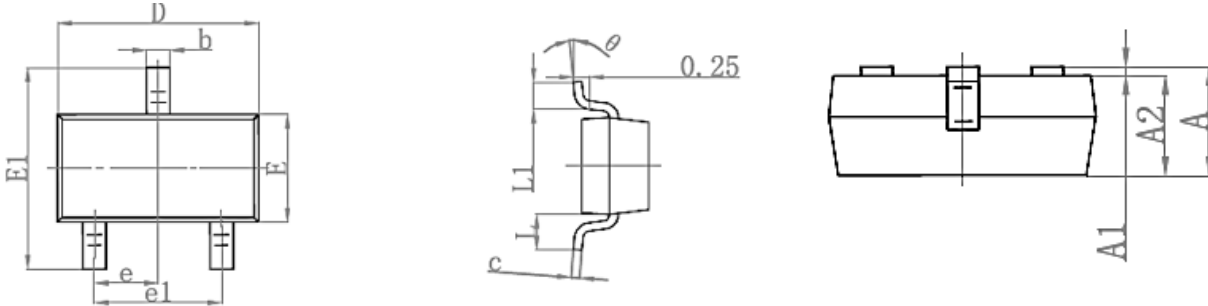
Static Characteristic



Typical Characteristics Curves ($T_A = 25^\circ\text{C}$ unless otherwise noted)

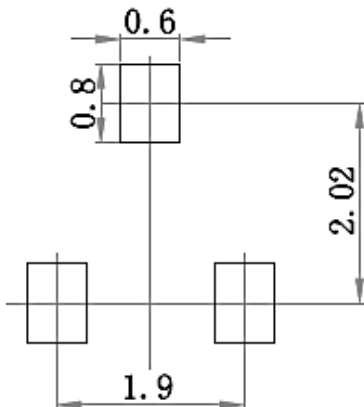


Package Outline Dimensions SOT-23



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

Suggested Pad Layout



- Note:
1. Controlling dimension: in millimeters
 2. General tolerance: ±0.05mm
 3. The pad layout is for reference purpose only

Ordering Information

Device	Package	Marking	Quantity	HSF Status
MMBT4401	SOT-23	2X	3000pcs / Reel	RoHS Compliant