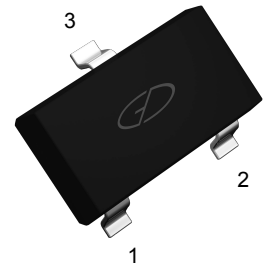


Features

- Ideal for medium power amplification and switching
- Complementary PNP MMBT5401

Applications

- General Purpose Amplifier
- Switching



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_{CBO}	180	V
Collector-Emitter Voltage	V_{CEO}	160	V
Emitter-Base Voltage	V_{EBO}	6.0	V
Collector Current-Continuous	I_{C}	600	mA
Collector Power Dissipation	P_{C}	300	mW
Thermal Resistance, Junction to Ambient	$R_{\theta\text{JA}}$	416	$^{\circ}\text{C}/\text{W}$
Operating Temperature	T_{J}	-55 to +150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 to +150	$^{\circ}\text{C}$

Pulse test: pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2.0\%$.

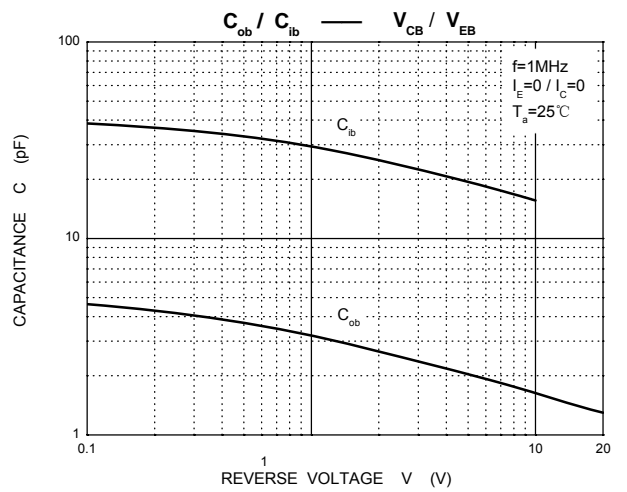
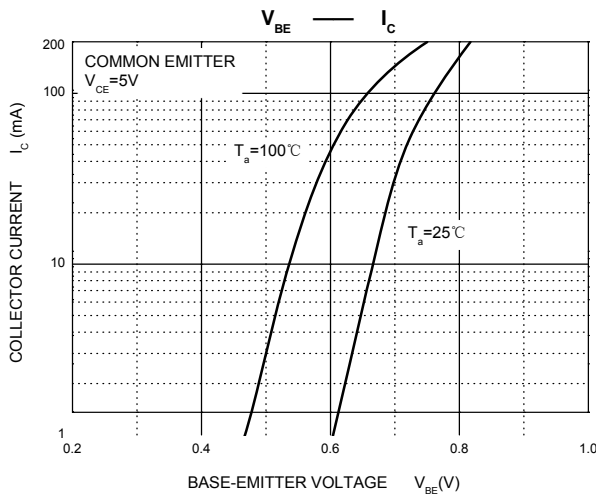
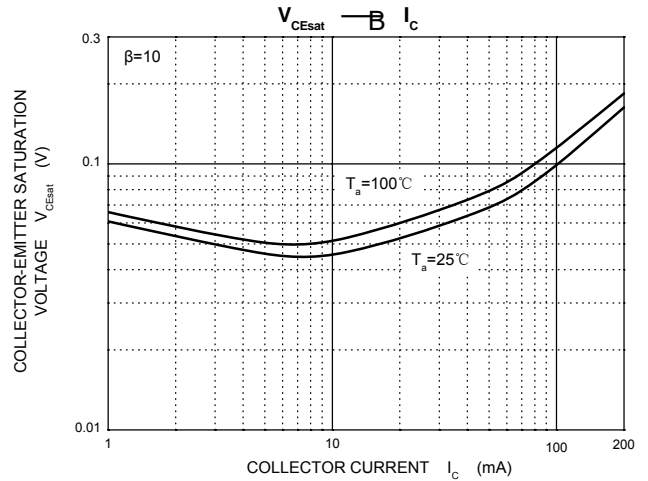
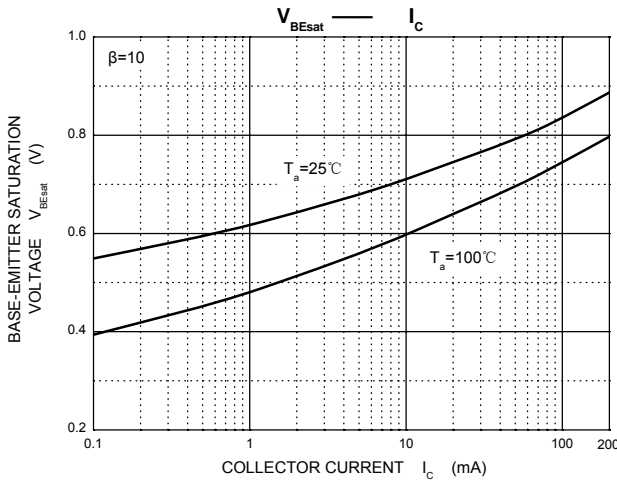
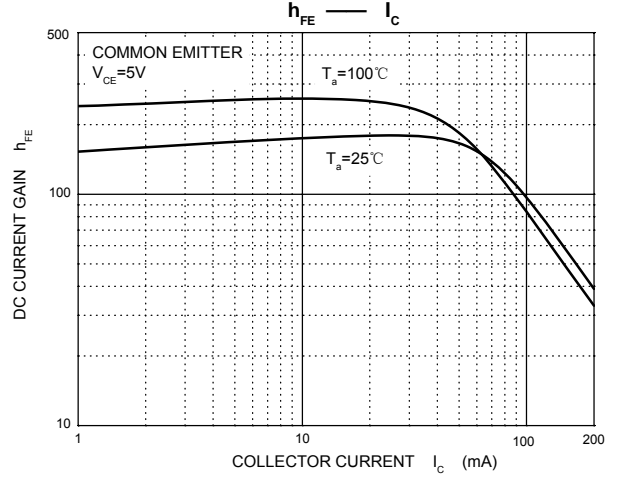
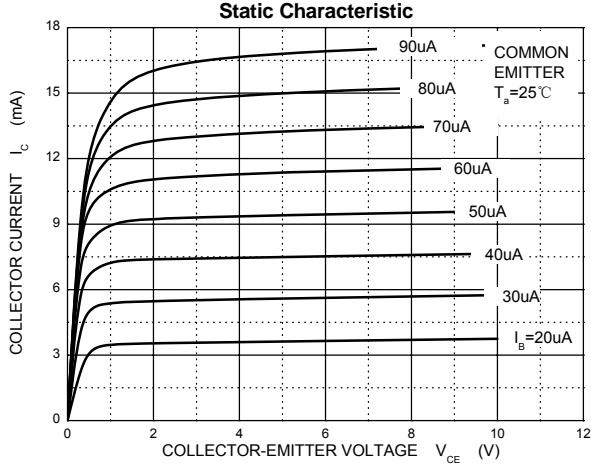
Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Max	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=100\mu\text{A}, I_E=0$	180	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}^*$	$I_C=1\text{mA}, I_B=0$	160	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=10\mu\text{A}, I_C=0$	6	-	V
Collector Cut-off Current	I_{CBO}	$V_{CB}=120\text{V}, I_E=0$	-	50	nA
Emitter Cut-off Current	I_{EBO}	$V_{EB}=4\text{V}, I_C=0$	-	50	nA
DC Current Gain	$h_{FE(1)}^*$	$V_{CE}=5\text{V}, I_C=1\text{mA}$	80	-	-
	$h_{FE(2)}^*$	$V_{CE}=5\text{V}, I_C=10\text{mA}$	100	300	
	$h_{FE(3)}^*$	$V_{CE}=5\text{V}, I_C=50\text{mA}$	50	-	
Collector-Emitter Saturation Voltage	$V_{CE(sat)1}^*$	$I_C=10\text{mA}, I_B=1\text{mA}$	-	0.15	V
	$V_{CE(sat)2}^*$	$I_C=50\text{mA}, I_B=5\text{mA}$	-	0.2	V
Base-Emitter Saturation Voltage	$V_{BE(sat)1}^*$	$I_C=10\text{mA}, I_B=1\text{mA}$	-	1	V
	$V_{BE(sat)2}^*$	$I_C=50\text{mA}, I_B=5\text{mA}$	-	1	V
Transition Frequency	f_T	$V_{CE}=10\text{V}, I_C=10\text{mA}, f=100\text{MHz}$	100	300	MHz
Collector Output Capacitance	C_{ob}	$V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$	-	6	pF

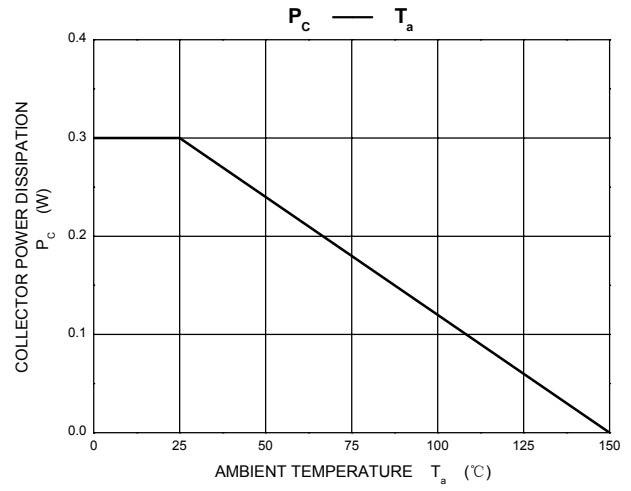
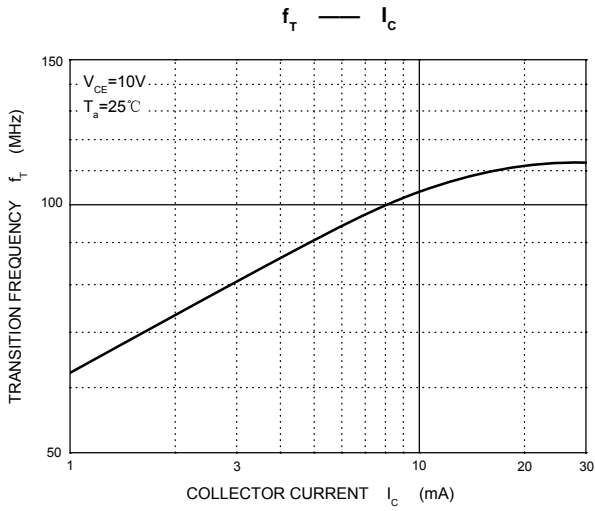
Classifications Of $h_{FE(2)}$

Rank	L	H
Range	100-200	200-300

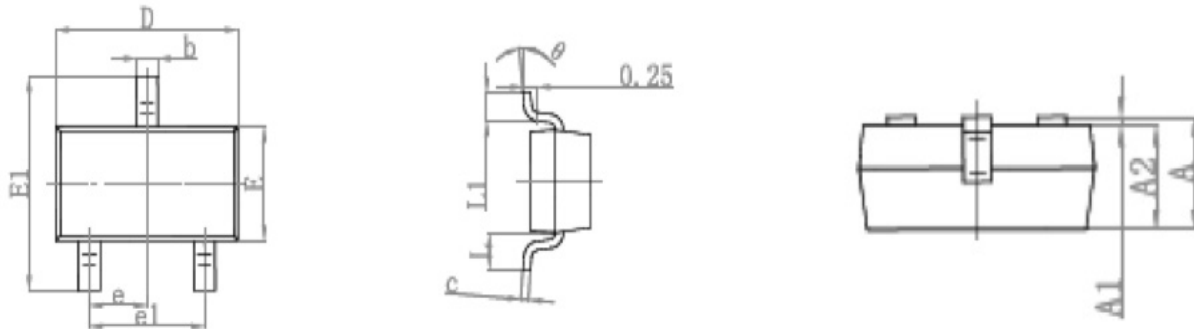
Electrical Characteristic Curves



Electrical Characteristic Curves

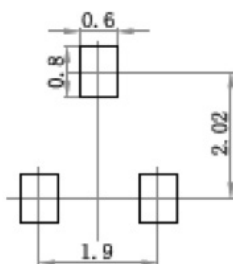


Package Outline Dimensions (SOT-23)



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: ± 0.05 mm.
3. The pad layout is for reference purposes only.