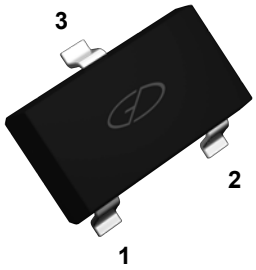
GOOD-ARK
SEMICONDUCTOR

MMBT5551
NPN Transistor

Features

- Ideal for medium power amplification and switching
- Complementary PNP MMBT5401
- Power dissipation of 300mW

1. BASE
2. EMITTER
3. COLLECTOR



SOT-23

Applications

- General purpose amplifier
- Switching

Absolute Maximum Ratings (T_A=25°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	$R_{\theta JA}$	416	°C/W
Operating Temperature	T_J	-55 to +150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Classifications Of h_{FE}

Rank	MMBT5551-L	MMBT5551-H
Range @V_{CE}=5V, I_C=10mA	100-200	200-300

Electrical Characteristics (T_A=25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Max	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=100μA, I_E=0	180	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$[1]	I_C=1mA, I_B=0	160	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=10μA, I_C=0	6	-	V
Collector Cut-off Current	I_{CBO}	V_{CB}=120V, I_E=0	-	50	nA
Emitter Cut-off Current	I_{EBO}	V_{EB}=4V, I_C=0	-	50	nA
DC Current Gain	$h_{FE(1)}$[1]	V_{CE}=5V, I_C=1mA	80	-	-
	$h_{FE(2)}$[1]	V_{CE}=5V, I_C=10mA	100	300	
	$h_{FE(3)}$[1]	V_{CE}=5V, I_C=50mA	30	-	
Collector-Emitter Saturation Voltage	$V_{CE(sat)1}$[1]	I_C=10mA, I_B=1mA	-	0.15	V
	$V_{CE(sat)2}$[1]	I_C=50mA, I_B=5mA	-	0.2	V
Base-Emitter Saturation Voltage	$V_{BE(sat)1}$[1]	I_C=10mA, I_B=1mA	-	1	V
	$V_{BE(sat)2}$[1]	I_C=50mA, I_B=5mA	-	1	V
Transition Frequency	f_T	V_{CE}=10V,I_C=10mA, f=100MHz	100	300	MHz
Collector Output Capacitance	C_{ob}	V_{CB}=10V, I_E=0, f=1MHz	-	6	pF

Note:
1. Pulse test: pulse width ≤ 300μs, duty cycle ≤ 2.0%.

Electrical Characteristic Curves

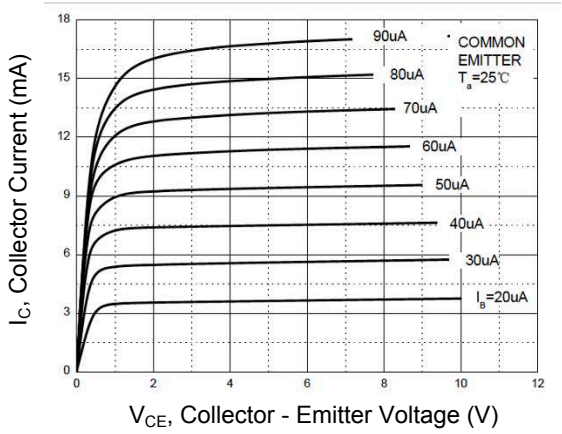


Figure 1. Static Characteristics

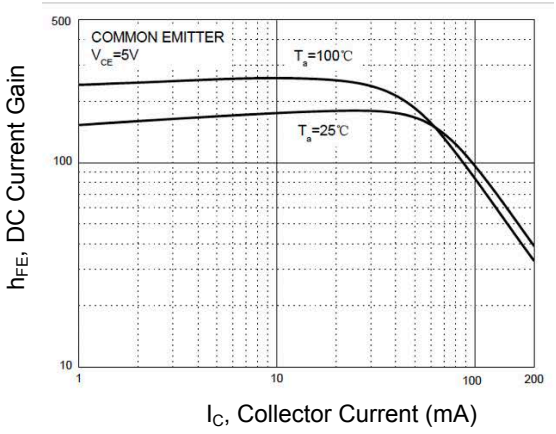


Figure 2. DC Current Gain vs. Collector Current

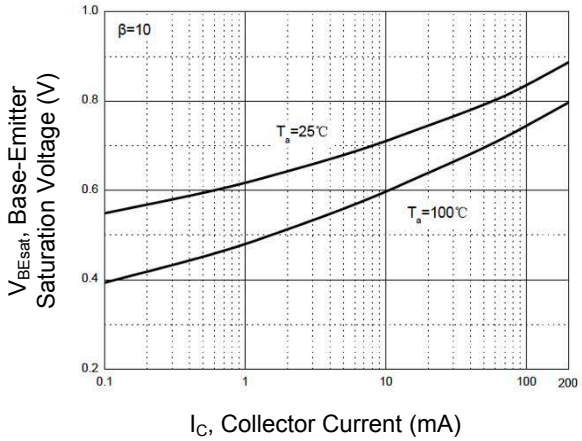


Figure 3. Base - Emitter Saturation Voltage vs. Collector Current

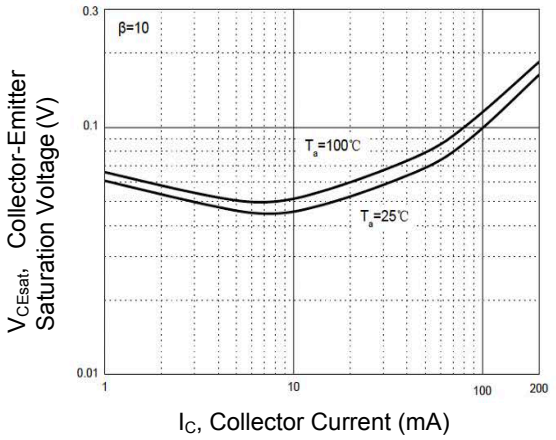


Figure 4. Collector - Emitter Saturation Voltage vs. Collector Current

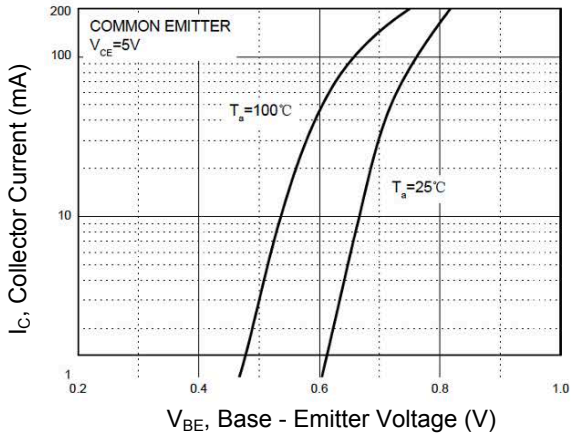


Figure 5. Collector Current vs. Base - Emitter Voltage

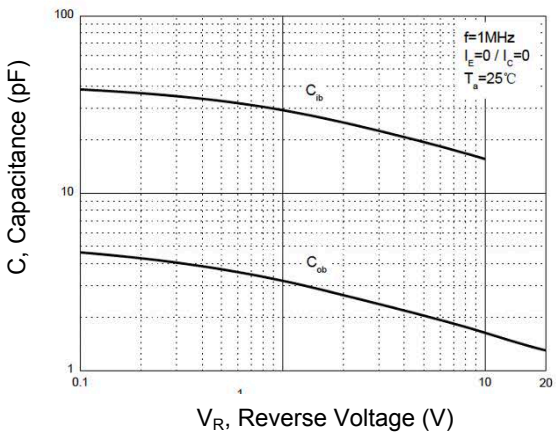


Figure 6. Capacitance Characteristics

Electrical Characteristic Curves

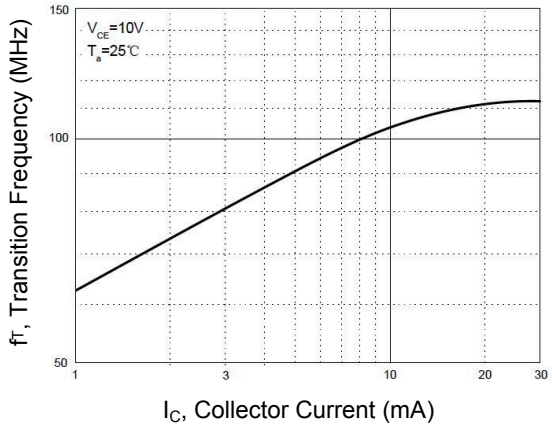


Figure 7. Transition Frequency vs. Collector Current

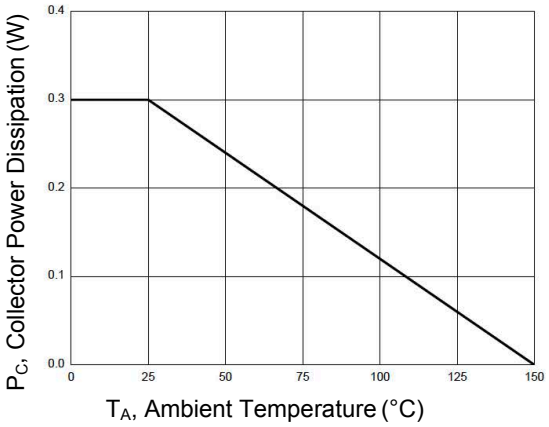
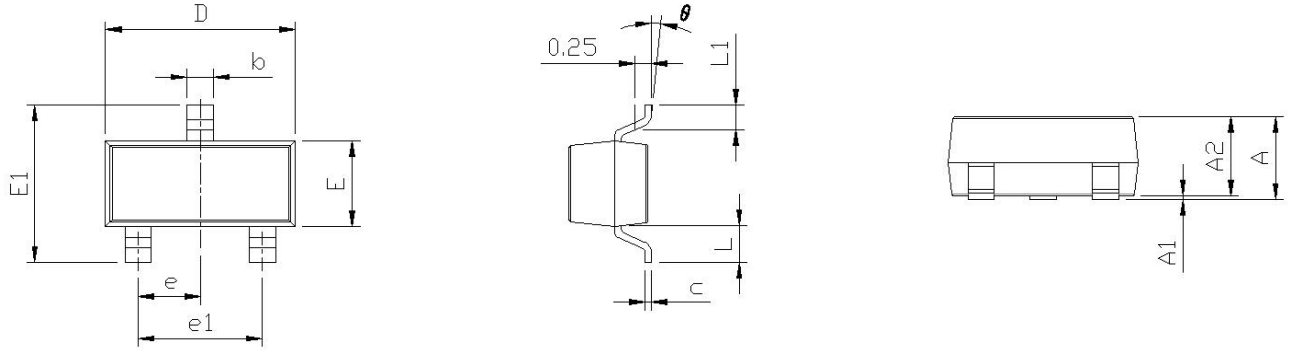


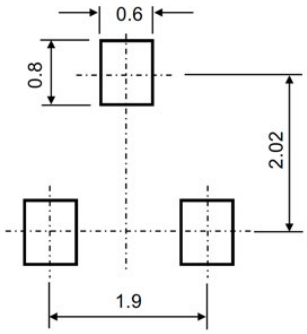
Figure 8. Power Dissipation vs Ambient Temperature

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°

Recommended Pad Layout



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

Order Information

Device	Package	Marking	Quantity	HSF Status
MMBT5551	SOT-23	G1	3,000pcs / Reel	RoHS Compliant