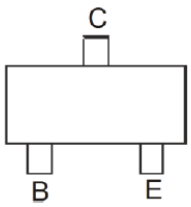
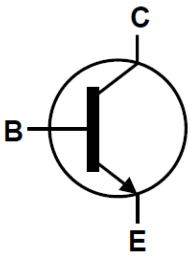
MMBT5551
Surface-Mount NPN Transistor

FEATURES AND BENEFITS

Product Summary		
I_C	600mA	@25 °C
BV_{CBO}	180V	@I_C=100μA
BV_{CEO}	160V	@I_C=1.0mA
BV_{EBO}	6V	@I_E=10μA

SOT-23





- For General Purpose NPN Amplifier
- RoHS Compliant / Green EMC UL Flammability Classification Rating 94V-0
- Matte Tin (Sn) Lead finish Solderable per MIL-STD-202, Method 208
- Moisture Sensitivity: Level 1 per J-STD-020
- Weight: 0.008 grams (Approximate)

Maximum Ratings (TA = 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	I_C	600	mA
Collector Power Dissipation	P_T	300	mW
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55 to +150	°C

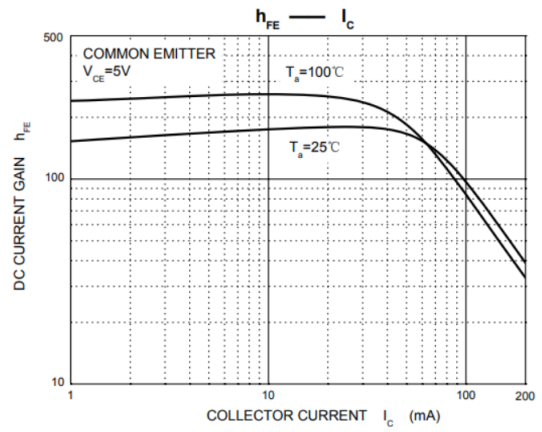
THERMAL CHARACTERISTICS (TA = 25 °C unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Thermal Resistance from Junction to Ambient*	$R_{\theta JA}$	416	°C/W

* Device mounted on 1"x1" FR4 PCB

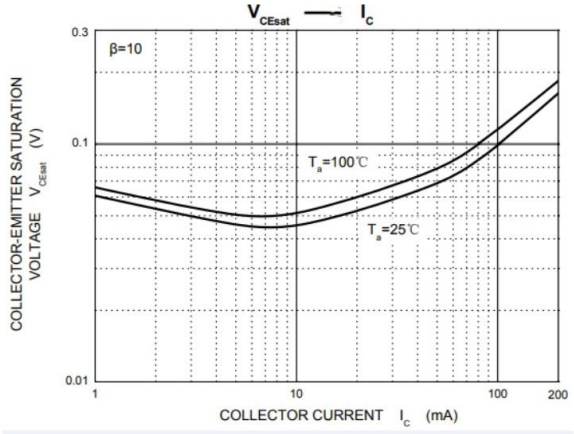
ELECTRICAL CHARACTERISTICS (TA = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	CONDITION	MIN	MAX	UNIT
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 1.0mA, I_B=0	160		V
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 100μA, I_E=0	180		V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 10μA, I_C=0	6.0		V
Collector Cutoff Current	I_{CBO}	V_{CB}=120V, I_E=0		50	nA
Emitter Cutoff Current	I_{EBO}	V_{EB}=4V, I_C=0		50	nA
DC Current Gain*	h_{FE}	I_C=1mA, V_{CE}=5V	80	300	
		I_C=10mA, V_{CE}=5V	100		
		I_C=50mA, V_{CE}=5V	50		
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=10mA, I_B=1.0mA		0.15	V
		I_C=50mA, I_B=5.0mA		0.2	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C=10mA, I_B=1.0mA		1.0	V
		I_C=50mA, I_B=5.0mA		1.0	V
Transition Frequency	f_T	I_C=10mA, V_{CE} =10V, f=100MHz	100	300	MHz
Output Capacitance	C_{ob}	V_{CB}=10V, I_E=0, f=1MHz		6	pF

*Pulse Width ≤ 300μs, Duty Cycle≤2.0%

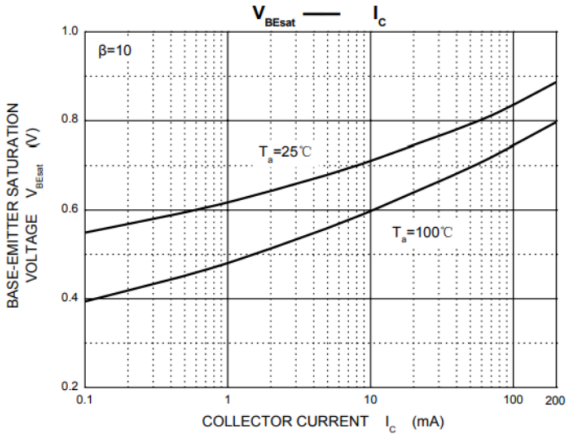
RATING AND CHARACTERISTICS CURVES



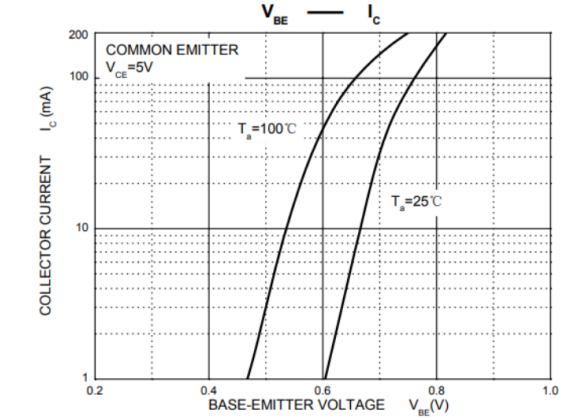
DC Current Gain (h_{FE}) vs Collector Current (I_C)



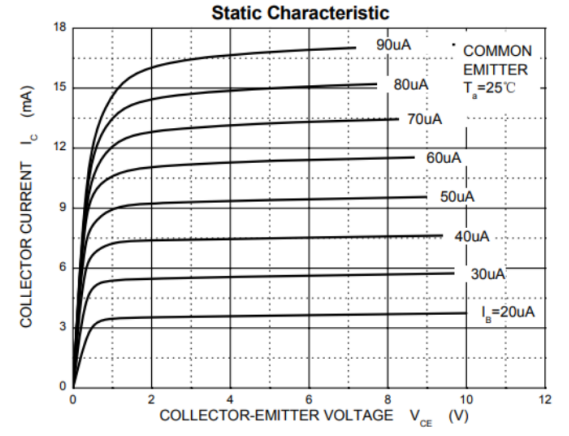
Collector-Emitter Saturation Voltage vs. Collector Current (I_C)



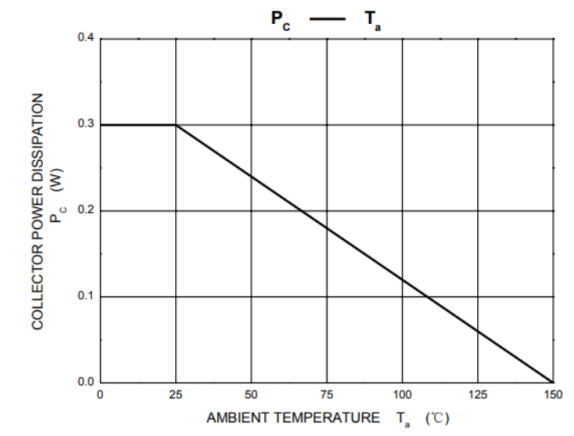
Base-Emitter Saturation Voltage vs. Collector Current (I_C)



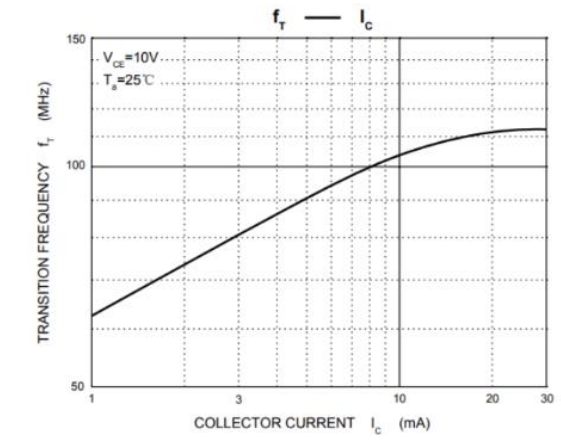
Base-Emitter Voltage Characteristics



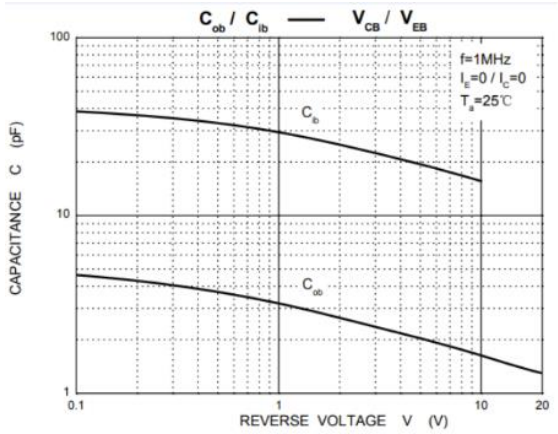
Static Characteristics



Power Derating Curve



Transition Frequency (f_T) vs Collector Current (I_C)



Capacitance vs. Reverse Voltage

PACKAGE OUTLINE DIMENSIONS

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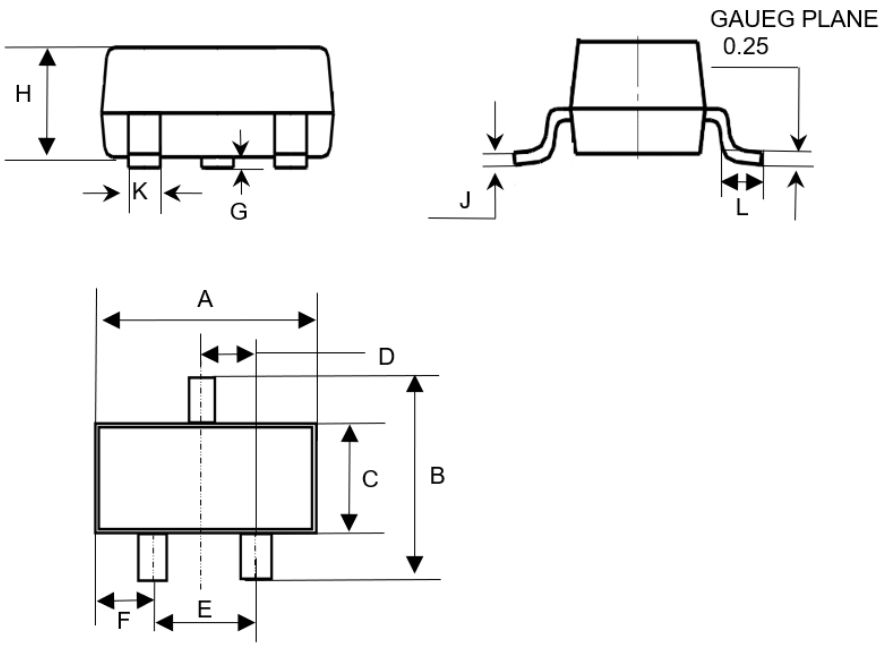
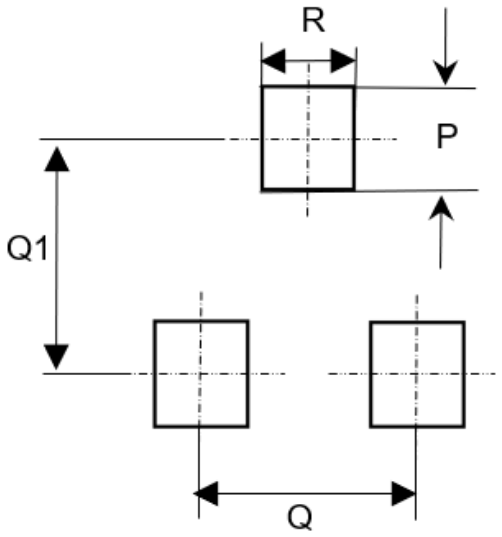


Symbol	MIN	MAX
A	2.800	3.040
B	2.100	2.640
C	1.200	1.400
D	0.890	1.030
E	1.780	2.050
F	0.450	0.600
G	0.013	0.100
H	0.900	1.110
J	0.090	0.180
K	0.370	0.510
Unit: mm		

SUGGESTED PAD LAYOUT



Land Pattern Recommendation

Symbol	Type
Q	1.900
Q1	2.000
P	0.900
R	0.800
Unit: mm	

DEVICE MARKING AND ORDERING INFORMATION

DEVICE	Marking	Quantity	Packing
MMBT5551	G1	3000/Reel	Tape & Reel