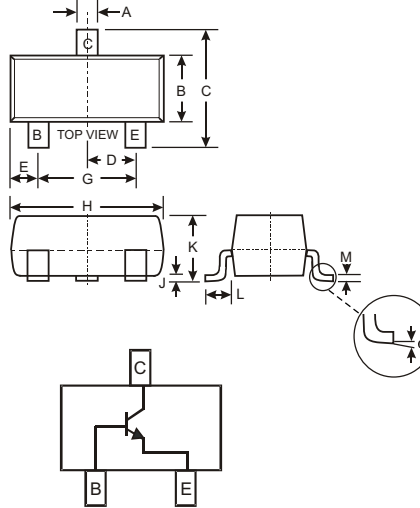


**Features**

Epitaxial Planar Die Construction  
Complementary PNP Type Available (MMBT5401)  
Ideal for Medium Power Amplification and Switching  
**Lead Free/RoHS Compliant (Note 2)**

**Mechanical Data**

Case: SOT-23  
Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0  
Moisture Sensitivity: Level 1 per J-STD-020C  
Terminal Connections: See Diagram  
Terminals: Solderable per MIL-STD-202, Method 208  
Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).  
Marking (See Page 2): K4N  
Ordering & Date Code Information: See Page 2  
Weight: 0.008 grams (approximate)



SOT-23		
Dim	Min	Max
A	0.37	0.51
B	1.20	1.40
C	2.30	2.50
D	0.89	1.03
E	0.45	0.60
G	1.78	2.05
H	2.80	3.00
J	0.013	0.10
K	0.903	1.10
L	0.45	0.61
M	0.085	0.180
	0	8
All Dimensions in mm		

**Maximum Ratings** @ T<sub>A</sub> = 25 C unless otherwise specified

Characteristic	Symbol	MMBT5551	Unit
Collector-Base Voltage	V <sub>CB0</sub>	180	V
Collector-Emitter Voltage	V <sub>CEO</sub>	160	V
Emitter-Base Voltage	V <sub>EB0</sub>	6.0	V
Collector Current - Continuous (Note 1)	I <sub>C</sub>	200	mA
Power Dissipation (Note 1)	P <sub>d</sub>	300	mW
Thermal Resistance, Junction to Ambient (Note 1)	R <sub>JA</sub>	417	C/W
Operating and Storage and Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	C

Notes: 1. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.  
2. No purposefully added lead.

## Electrical Characteristics @ T<sub>A</sub> = 25 C unless otherwise specified

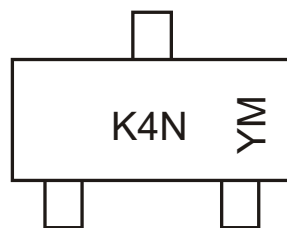
Characteristic	Symbol	Min	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 3)</b>					
Collector-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	180		V	I <sub>C</sub> = 100 A, I <sub>E</sub> = 0
Collector-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	160		V	I <sub>C</sub> = 1.0mA, I <sub>B</sub> = 0
Emitter-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	6.0		V	I <sub>E</sub> = 10 A, I <sub>C</sub> = 0
Collector Cutoff Current	I <sub>CBO</sub>		50	nA A	V <sub>CB</sub> = 120V, I <sub>E</sub> = 0 V <sub>CB</sub> = 120V, I <sub>E</sub> = 0, T <sub>A</sub> = 100 C
Emitter Cutoff Current	I <sub>EBO</sub>		50	nA	V <sub>EB</sub> = 4.0V, I <sub>C</sub> = 0
<b>ON CHARACTERISTICS (Note 3)</b>					
DC Current Gain	h <sub>FE</sub>	80 80 30	250		I <sub>C</sub> = 1.0mA, V <sub>CE</sub> = 5.0V I <sub>C</sub> = 10mA, V <sub>CE</sub> = 5.0V I <sub>C</sub> = 50mA, V <sub>CE</sub> = 5.0V
Collector-Emitter Saturation Voltage	V <sub>CE(SAT)</sub>		0.15 0.20	V	I <sub>C</sub> = 10mA, I <sub>B</sub> = 1.0mA I <sub>C</sub> = 50mA, I <sub>B</sub> = 5.0mA
Base-Emitter Saturation Voltage	V <sub>BE(SAT)</sub>		1.0	V	I <sub>C</sub> = 10mA, I <sub>B</sub> = 1.0mA I <sub>C</sub> = 50mA, I <sub>B</sub> = 5.0mA
<b>SMALL SIGNAL CHARACTERISTICS</b>					
Output Capacitance	C <sub>obo</sub>		6.0	pF	V <sub>CB</sub> = 10V, f = 1.0MHz, I <sub>E</sub> = 0
Small Signal Current Gain	h <sub>fe</sub>	50	250		V <sub>CE</sub> = 10V, I <sub>C</sub> = 1.0mA, f = 1.0kHz
Current Gain-Bandwidth Product	f <sub>T</sub>	100	300	MHz	V <sub>CE</sub> = 10V, I <sub>C</sub> = 10mA, f = 100MHz
Noise Figure	nF		8.0	dB	V <sub>CE</sub> = 5.0V, I <sub>C</sub> = 200 A, R <sub>S</sub> = 1.0k f = 1.0kHz

## Ordering Information (Note 4)

Device	Packaging	Shipping
MMBT5551-7-F	SOT-23	3000/Tape & Reel

- Notes: 3. Short duration test pulse used to minimize self-heating effect.  
4. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

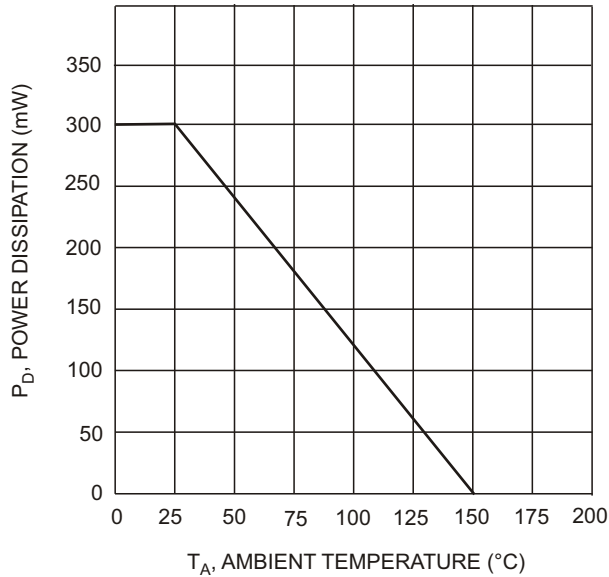
## Marking Information



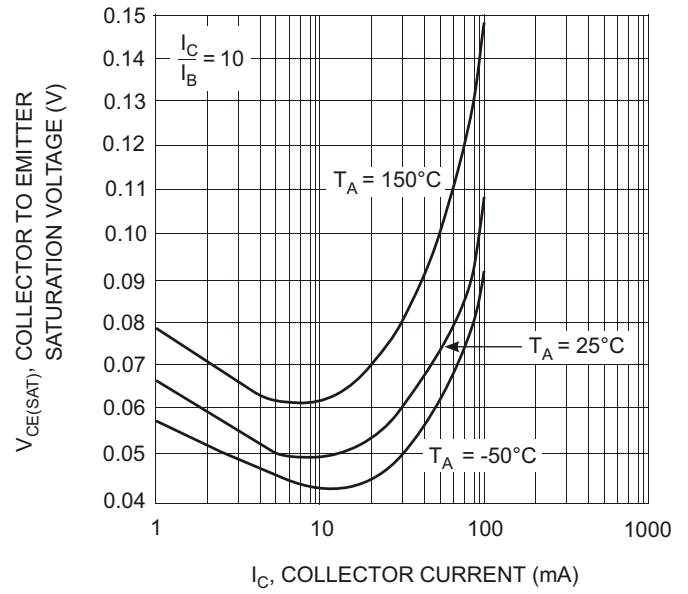
K4N = Product Type Marking Code  
YM = Date Code Marking  
Y = Year ex: N = 2002  
M = Month ex: 9 = September

Date Code Key

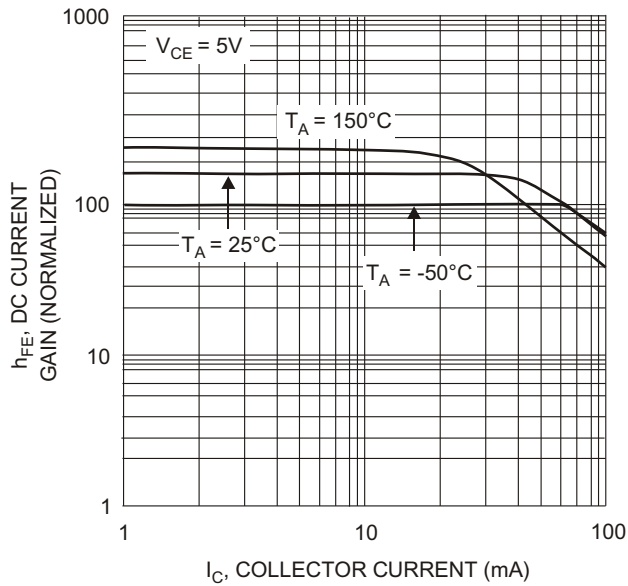
<b>Year</b>	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
<b>Code</b>	J	K	L	M	N	P	R	S	T	U	V	W
<b>Month</b>	Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Code</b>	1	2	3	4	5	6	7	8	9	O	N	D



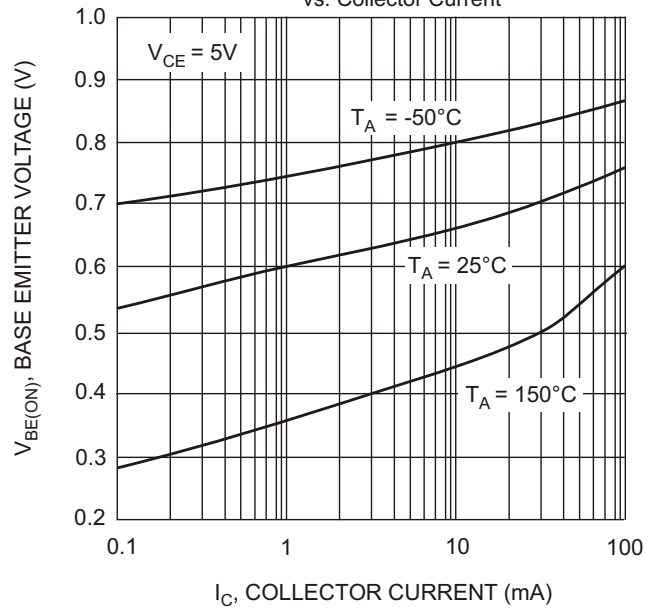
$T_A$ , AMBIENT TEMPERATURE (°C)  
Fig. 1, Max Power Dissipation vs Ambient Temperature



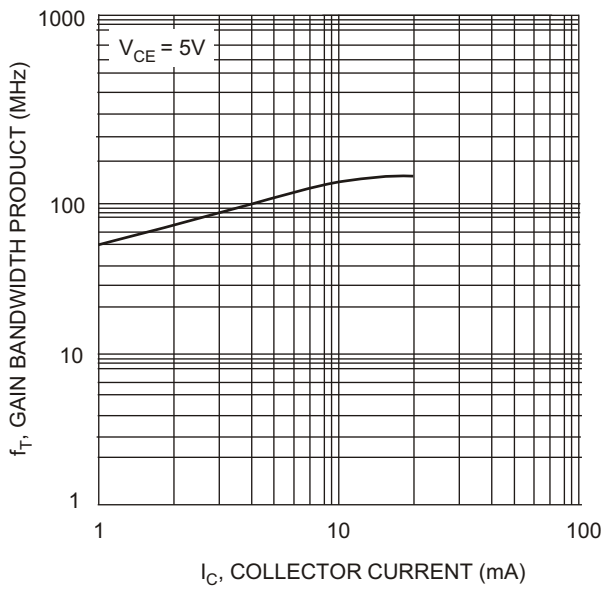
$I_C$ , COLLECTOR CURRENT (mA)  
Fig. 2, Collector Emitter Saturation Voltage vs. Collector Current



$I_C$ , COLLECTOR CURRENT (mA)  
Fig. 3, DC Current Gain vs Collector Current



$I_C$ , COLLECTOR CURRENT (mA)  
Fig. 4, Base Emitter Voltage vs. Collector Current



$I_C$ , COLLECTOR CURRENT (mA)  
Fig. 5, Gain Bandwidth Product vs. Collector Current

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