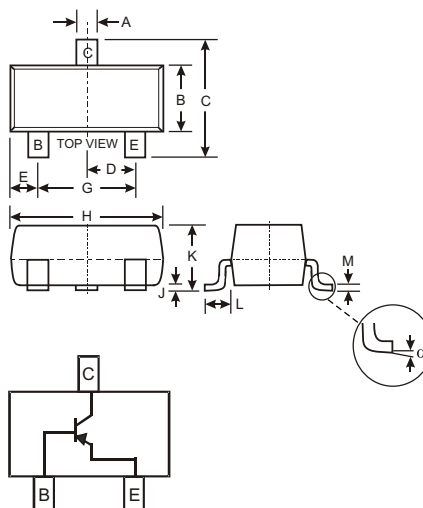


Features

Epitaxial Planar Die Construction
Complementary NPN Type Available (MMBT3904)
Ideal for Medium Power Amplification and Switching
Lead Free/RoHS Compliant (Note 2)
Qualified to AEC-Q101 Standards for High Reliability

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): K3N
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_A = 25 °C unless otherwise specified

Characteristic	Symbol	MMBT3906	Unit
Collector-Base Voltage	V _{CB0}	-40	V
Collector-Emitter Voltage	V _{CE0}	-40	V
Emitter-Base Voltage	V _{EB0}	-5.0	V
Collector Current - Continuous (Note 1)	I _C	-200	mA
Power Dissipation (Note 1)	P _d	300	mW
Thermal Resistance, Junction to Ambient (Note 1)	R _{JA}	417	°C/W
Operating and Storage and Temperature Range	T _J , T _{STG}	-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.

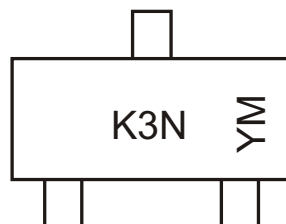
Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Symbol	Min	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 3)				
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-40	V	$I_C = -10\text{ A}, I_E = 0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-40	V	$I_C = -1.0\text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-5.0	V	$I_E = -10\text{ A}, I_C = 0$
Collector Cutoff Current	I_{CEX}	-50	nA	$V_{CE} = -30\text{V}, V_{EB(OFF)} = -3.0\text{V}$
	I_{CBO}	-50	nA	$V_{CB} = -30\text{V}, I_E = 0$
Base Cutoff Current	I_{BL}	-50	nA	$V_{CE} = -30\text{V}, V_{EB(OFF)} = -3.0\text{V}$
ON CHARACTERISTICS (Note 3)				
DC Current Gain	h_{FE}	60 80 100 60 30	300	$I_C = -100\mu\text{A}, V_{CE} = -1.0\text{V}$ $I_C = -1.0\text{mA}, V_{CE} = -1.0\text{V}$ $I_C = -10\text{mA}, V_{CE} = -1.0\text{V}$ $I_C = -50\text{mA}, V_{CE} = -1.0\text{V}$ $I_C = -100\text{mA}, V_{CE} = -1.0\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	-0.25 -0.40	V	$I_C = -10\text{mA}, I_B = -1.0\text{mA}$ $I_C = -50\text{mA}, I_B = -5.0\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	-0.65 -0.85 -0.95	V	$I_C = -10\text{mA}, I_B = -1.0\text{mA}$ $I_C = -50\text{mA}, I_B = -5.0\text{mA}$
SMALL SIGNAL CHARACTERISTICS				
Output Capacitance	C_{obo}	4.5	pF	$V_{CB} = -5.0\text{V}, f = 1.0\text{MHz}, I_E = 0$
Input Capacitance	C_{ibo}	10	pF	$V_{EB} = -0.5\text{V}, f = 1.0\text{MHz}, I_C = 0$
Input Impedance	h_{ie}	2.0	k	$V_{CE} = 10\text{V}, I_C = 1.0\text{mA}, f = 1.0\text{kHz}$
Voltage Feedback Ratio	h_{re}	0.1	$\times 10^{-4}$	
Small Signal Current Gain	h_{fe}	100	400	
Output Admittance	h_{oe}	3.0	S	
Current Gain-Bandwidth Product	f_T	250	MHz	$V_{CE} = -20\text{V}, I_C = -10\text{mA}, f = 100\text{MHz}$
Noise Figure	NF	4.0	dB	$V_{CE} = -5.0\text{V}, I_C = -100\text{ A}, R_S = 1.0\text{k}, f = 1.0\text{kHz}$
SWITCHING CHARACTERISTICS				
Delay Time	t_d	35	ns	$V_{CC} = -3.0\text{V}, I_C = -10\text{mA}, V_{BE(off)} = 0.5\text{V}, I_{B1} = -1.0\text{mA}$
Rise Time	t_r	35	ns	
Storage Time	t_s	225	ns	$V_{CC} = -3.0\text{V}, I_C = -10\text{mA}, I_{B1} = I_{B2} = -1.0\text{mA}$
Fall Time	t_f	75	ns	

Ordering Information (Note 4)

Device	Packaging	Shipping
MMBT3906 -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


K3N = Product Type Marking Code
 YM = Date Code Marking
 Y = Year ex: N = 2002
 M = Month ex: 9 = September

Date Code Key

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Code	J	K	L	M	N	P	R	S	T	U	V	W

Month	Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

查询"MMBT3906-7-F"供应商

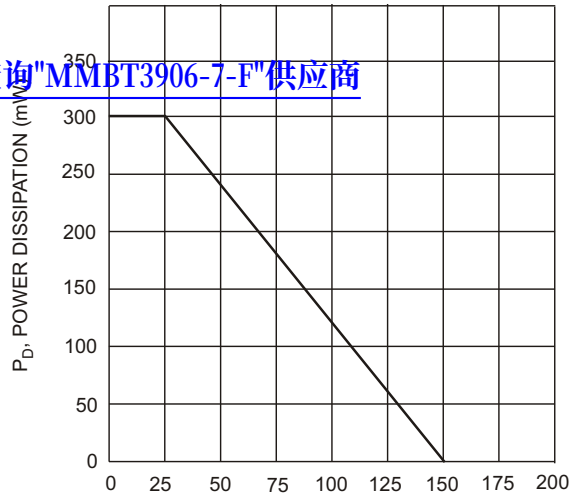


Fig. 1, Max Power Dissipation vs Ambient Temperature

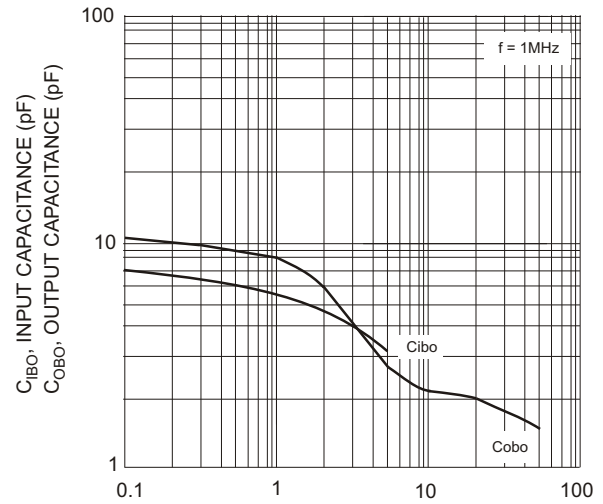


Fig. 2, Input and Output Capacitance vs. Collector-Base Voltage

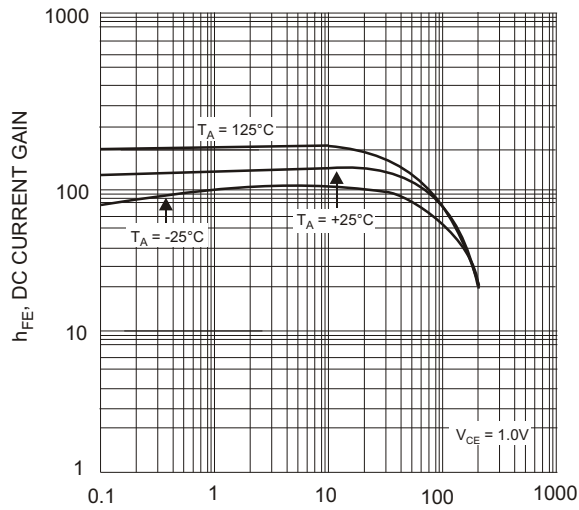


Fig. 3, Typical DC Current Gain vs Collector Current

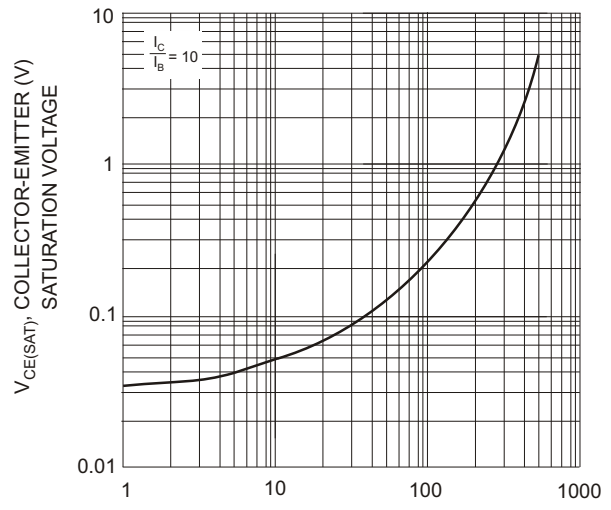


Fig. 4, Typical Collector-Emitter Saturation Voltage vs. Collector Current

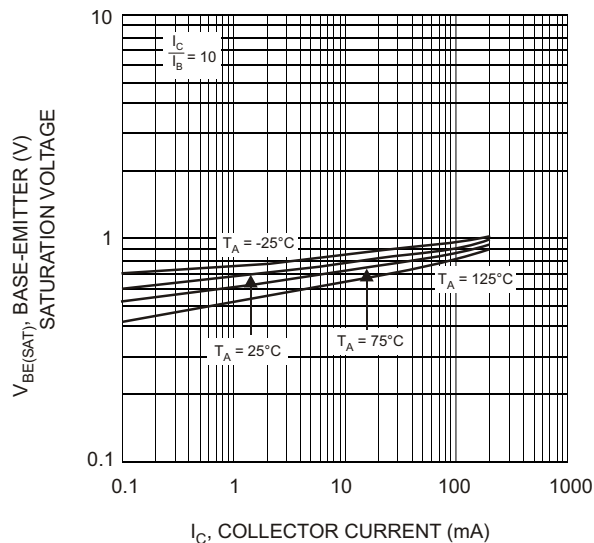


Fig. 5, Typical Base-Emitter Saturation Voltage vs. Collector Current

[查询"MMBT3906-7-F"供应商](#)**IMPORTANT NOTICE**

Diodes, Inc. and its subsidiaries reserve the right to make changes without further notice to any product herein to make corrections, modifications, enhancements, improvements, or other changes. Diodes, Inc. does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights, nor the rights of others. The user of products in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on our website, harmless against all damages.

LIFE SUPPORT

The products located on our website at **www.diodes.com** are not recommended for use in life support systems where a failure or malfunction of the component may directly threaten life or cause injury without the expressed written approval of Diodes Incorporated.