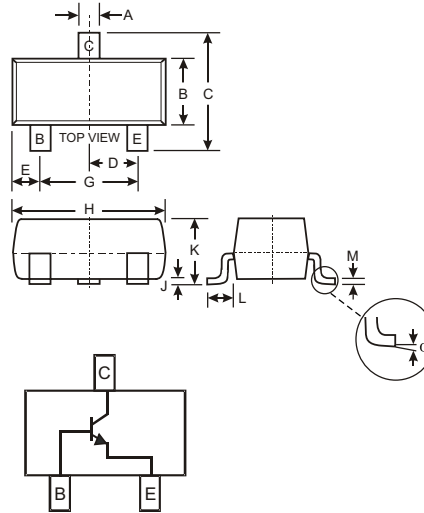


Features

- Epitaxial Planar Die Construction
- Complementary PNP Type Available (MMBT2907A)
- Ideal for Medium Power Amplification and Switching

Mechanical Data

- Case: SOT-23, Molded Plastic
- Case material - UL Flammability Rating 94V-0
- Moisture sensitivity: Level 1 per J-STD-020A
- Terminals: Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Marking (See Page 2): K1P
- Ordering & Date Code Information: See Page 2
- Weight: 0.008 grams (approx.)



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
α	0°	8°
All Dimensions in mm		

Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	MMBT2222A	Unit
Collector-Base Voltage	V_{CB0}	75	V
Collector-Emitter Voltage	V_{CE0}	40	V
Emitter-Base Voltage	V_{EB0}	6.0	V
Collector Current - Continuous (Note 1)	I_C	600	mA
Power Dissipation (Note 1)	P_d	300	mW
Thermal Resistance, Junction to Ambient (Note 1)	$R_{\theta JA}$	417	$^\circ\text{C}/\text{W}$
Operating and Storage and Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

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>.

Electrical Characteristics @ T_A = 25°C unless otherwise specified

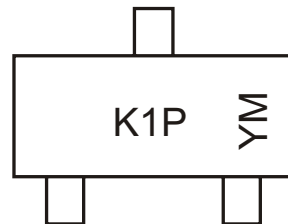
Characteristic	Symbol	Min	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 2)					
Collector-Base Breakdown Voltage	V _{(BR)CBO}	75	—	V	I _C = 10μA, I _E = 0
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	40	—	V	I _C = 10mA, I _B = 0
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	6.0	—	V	I _E = 10μA, I _C = 0
Collector Cutoff Current	I _{CBO}	—	10	nA μA	V _{CB} = 60V, I _E = 0 V _{CB} = 60V, I _E = 0, T _A = 150°C
Collector Cutoff Current	I _{CEX}	—	10	nA	V _{CE} = 60V, V _{EB(OFF)} = 3.0V
Emitter Cutoff Current	I _{EBO}	—	10	nA	V _{EB} = 3.0V, I _C = 0
Base Cutoff Current	I _{BL}	—	20	nA	V _{CE} = 60V, V _{EB(OFF)} = 3.0V
ON CHARACTERISTICS (Note 2)					
DC Current Gain	h _{FE}	35	—	—	I _C = 100μA, V _{CE} = 10V I _C = 1.0mA, V _{CE} = 10V I _C = 10mA, V _{CE} = 10V I _C = 150mA, V _{CE} = 10V I _C = 500mA, V _{CE} = 10V I _C = 10mA, V _{CE} = 10V, T _A = -55°C I _C = 150mA, V _{CE} = 1.0V
		50	—		
		75	—		
		100	300		
		40	—		
		50	—		
35	—				
Collector-Emitter Saturation Voltage	V _{CE(SAT)}	—	0.3 1.0	V	I _C = 150mA, I _B = 15mA I _C = 500mA, I _B = 50mA
Base- Emitter Saturation Voltage	V _{BE(SAT)}	0.6 —	1.2 2.0	V	I _C = 150mA, I _B = 15mA I _C = 500mA, I _B = 50mA
SMALL SIGNAL CHARACTERISTICS					
Output Capacitance	C _{obo}	—	8	pF	V _{CB} = 10V, f = 1.0MHz, I _E = 0
Input Capacitance	C _{ibo}	—	25	pF	V _{EB} = 0.5V, f = 1.0MHz, I _C = 0
Current Gain-Bandwidth Product	f _T	300	—	MHz	V _{CE} = 20V, I _C = 20mA, f = 100MHz
Noise Figure	NF	—	4.0	dB	V _{CE} = 10V, I _C = 100μA, R _S = 1.0kΩ, f = 1.0kHz
SWITCHING CHARACTERISTICS					
Delay Time	t _d	—	10	ns	V _{CC} = 30V, I _C = 150mA, V _{BE(off)} = - 0.5V, I _{B1} = 15mA
Rise Time	t _r	—	25	ns	
Storage Time	t _s	—	225	ns	V _{CC} = 30V, I _C = 150mA, I _{B1} = I _{B2} = 15mA
Fall Time	t _f	—	60	ns	

Ordering Information (Note 3)

Device	Packaging	Shipping
MMBT2222A-7	SOT-23	3000/Tape & Reel

- Note: 2. Short duration test pulse used to minimize self-heating effect.
3. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



K1P = 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

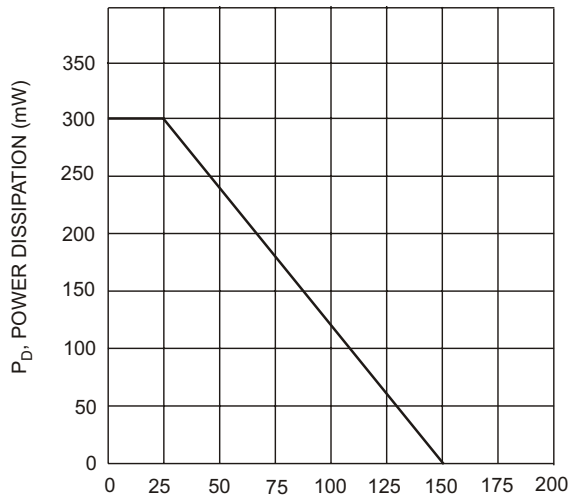


Fig. 1, Max Power Dissipation vs Ambient Temperature

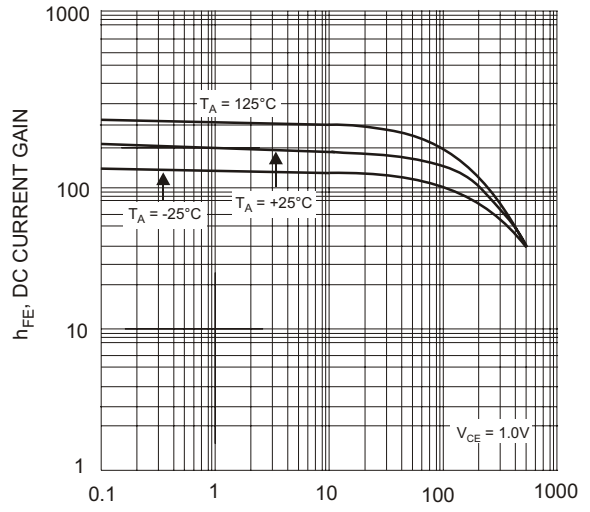


Fig. 2, Typical DC Current Gain vs Collector Current

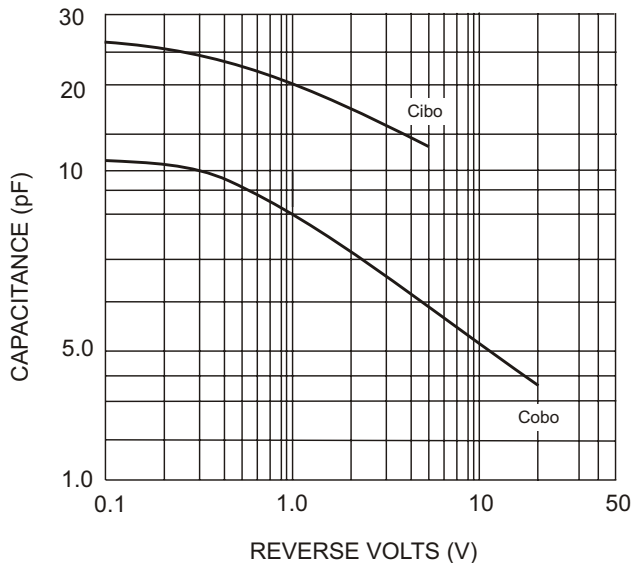


Fig. 3 Typical Capacitance

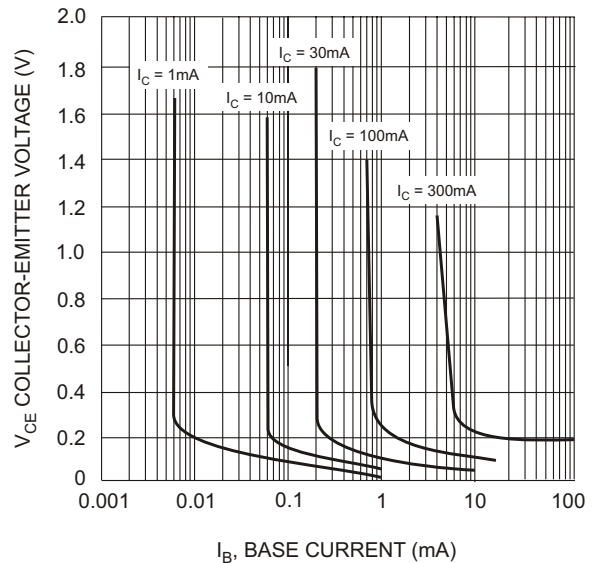


Fig. 4 Typical Collector Saturation Region