



MMBT2907A

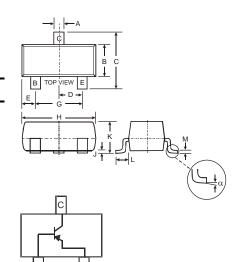
PNP SMALL SIGNAL SURFACE MOUNT TRANSISTOR

Features

- **Epitaxial Planar Die Construction**
- Complementary NPN Type Available (MMBT2222A)
- Ideal for Low 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 4): K2F
- Ordering & Date Code Information: See Page 4
- Weight: 0.008 grams (approximate)



SOT-23									
Dim	Min	Max							
Α	0.37	0.51							
В	1.20	1.40							
С	2.30	2.50							
D	0.89	1.03 0.60							
E	0.45								
G	1.78	2.05							
Н	2.80	3.00							
J	0.013	0.10							
K	0.903	1.10							
L	0.45	0.61							
М	0.085	0.180							
α	0°	8°							
All Dimensions in mm									

Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit	
Collector-Base Voltage	V _{CBO}	-60	V	
Collector-Emitter Voltage	V _{CEO}	-60	V	
Emitter-Base Voltage	V _{EBO}	-5.0	V	
Collector Current - Continuous (Note 1)	I _C	-600	mA	
Peak Collector Current	I _{CM}	-800	mA	
Power Dissipation (Note 1)	P _d	300	mW	
Thermal Resistance, Junction to Ambient (Note 1)	$R_{ hetaJA}$	417	°C/W	
Operating and Storage and Temperature Range	T _i , 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.

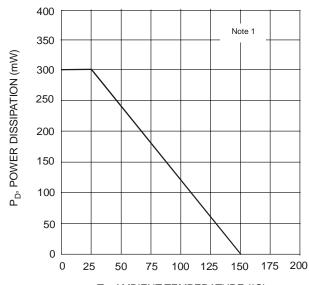
^{2.} No purposefully added lead.



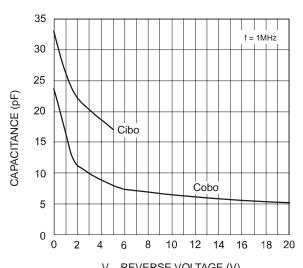
Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 3)					
Collector-Base Breakdown Voltage	V _{(BR)CBO}	-60	_	V	$I_C = -10\mu A, I_E = 0$
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	-60		V	$I_C = -10 \text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	-5.0		V	$I_E = -10\mu A, I_C = 0$
Collector Cutoff Current	I _{CBO}	_	-10	nA	$V_{CB} = -50V, I_E = 0$
Collector Cutoff Current				μΑ	$V_{CB} = -50V, I_E = 0, T_A = 125^{\circ}C$
Collector Cutoff Current	I _{CEX}	_	-50	nA	$V_{CE} = -30V, V_{EB(OFF)} = -0.5V$
Base Cutoff Current	I_{BL}	_	-50	nA	$V_{CE} = -30V, V_{EB(OFF)} = -0.5V$
ON CHARACTERISTICS (Note 3)	,			1	
		75	_		$I_C = -100\mu A, V_{CE} = -10V$
		100	_		$I_C = -1.0 \text{mA}, V_{CE} = -10 \text{V}$
DC Current Gain	h _{FE}	100	_	_	$I_C = -10 \text{mA}, V_{CE} = -10 \text{V}$
		100 50	300		$I_C = -150 \text{mA}, V_{CE} = -10 \text{V}$
		30			$I_C = -500 \text{mA}, V_{CE} = -10 \text{V}$
Collector-Emitter Saturation Voltage	V _{CE(SAT)}	_	-0.4 -1.6	V	$I_C = -150 \text{mA}, I_B = -15 \text{mA}$
Consider Entition Saturation Voltage					$I_C = -500 \text{mA}, I_B = -50 \text{mA}$
Base-Emitter Saturation Voltage	V _{BE(SAT)}	_	-1.3	V	$I_C = 150 \text{mA}, I_B = 15 \text{mA}$
Ü	VBE(SAT)		-2.6	, ,	$I_C = 500 \text{mA}, I_B = 50 \text{mA}$
SMALL SIGNAL CHARACTERISTICS	T 7			ı	
Output Capacitance	C _{obo}		8.0	pF	$V_{CB} = -10V, f = 1.0MHz, I_E = 0$
Input Capacitance	C _{ibo}		30	pF	$V_{EB} = -2.0V$, $f = 1.0MHz$, $I_C = 0$
Current Gain-Bandwidth Product	f _T	200		MHz	$V_{CE} = -20V, I_{C} = -50mA,$ f = 100MHz
SWITCHING CHARACTERISTICS					
Turn-On Time	t _{off}	_	45	ns	
Delay Time	t _d	_	10	ns	$V_{CC} = -30V, I_{C} = -150mA,$
Rise Time	t _r		40	ns	I _{B1} = -15mA
Turn-Off Time	t _{off}		100	ns	V 6.0V I 450mA
Storage Time	ts		80	ns	$V_{CC} = -6.0V, I_{C} = -150mA,$
Fall Time	t _f	_	30	ns	$I_{B1} = I_{B2} = -15\text{mA}$

Notes: 3. Short duration pulse test used to minimize self-heating effect.



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



 $\rm V_R,\,REVERSE\,VOLTAGE\,(V)$ Fig. 2, Typical Capacitance Characteristics



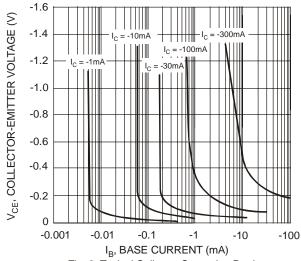
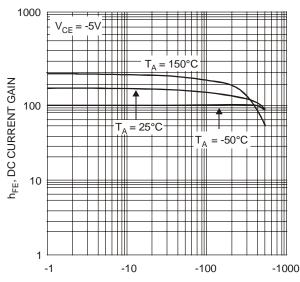
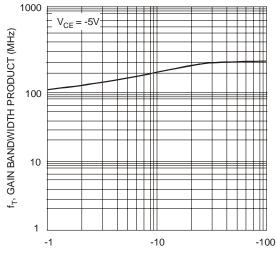


Fig. 3, Typical Collector Saturation Region



I_C, COLLECTOR CURRENT (mA) Fig. 5, DC Current Gain vs Collector Current



I_C, COLLECTOR CURRENT (mA) Fig. 7, Gain Bandwidth Product vs. Collector Current

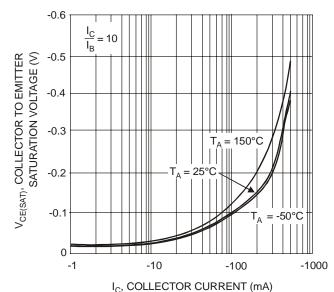
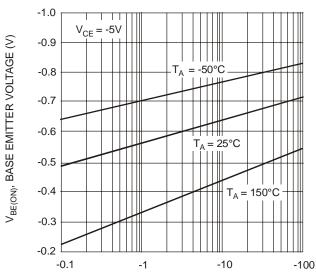


Fig. 4, Collector-Emitter Saturation Voltage vs.
Collector Current



I_C, COLLECTOR CURRENT (mA) Fig. 6, Base-Emitter Voltage vs. Collector Current

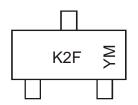


Ordering Information (Note 4)

Device	Packaging	Shipping			
MMBT2907A-7-F	SOT-23	3000/Tape & Reel			

Notes: 4. For Packaging Details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information



K2F = Product Type Marking Code YM = Date Code Marking Y = Year ex: N = 2002M = Month ex: 9 = September

Date Code Key

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Code	J	K	L	М	N	Р	R	S	Т	J	V	W	Х	Υ	Z
N	Month		Jan	Feb	Mar	Apr	May	Jun	Ju	ΙΑι	ıg	Sep	Oct	Nov	Dec
Code			1	2	3	4	5	6	7	8	3	9	0	Ν	D

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