



**DESCRIPTION**

The MMBT2222AL is available in SOT-23 package.

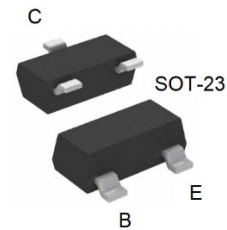
**FEATURES**

- Epitaxial planar die construction
- Complementary PNP Type available (MMBT2907A)
- Available in SOT-23 package

**ORDERING INFORMATION**

Package Type	Part Number
SOT-23	MMBT2222AL
Note	SPQ: 3,000pcs/Reel
AiT provides all RoHS Compliant Products	

**PIN DESCRIPTION**



PIN#	DESCRIPTION
B	BASE
E	EMITTER
C	COLLECTOR

**ABSOLUTE MAXIMUM RATINGS**

T<sub>A</sub>=25°C, unless otherwise noted

V <sub>CB0</sub> , Collector-Base Voltage	75V
V <sub>CEO</sub> , Collector-Emitter Voltage	40V
V <sub>EBO</sub> , Emitter-Base Voltage	6V
I <sub>C</sub> , Collector Current -Continuous	600mA
P <sub>C</sub> , Collector Dissipation	250mW
R <sub>θJA</sub> , Thermal Resistance, Junction to Ambient	500°C/W
T <sub>J</sub> , Junction Temperature	150°C
T <sub>STG</sub> , Storage Temperature	-55 ~ +150°C

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.



**ELECTRICAL CHARACTERISTICS**

T<sub>A</sub>=25°C, unless otherwise specified

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> = 10μA, I <sub>E</sub> =0	75	-	-	V
Collector-Emitter Breakdown Voltage	V <sub>(BR)CEO*</sub>	I <sub>C</sub> = 10mA, I <sub>B</sub> =0	40	-	-	V
Emitter-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> =10μA, I <sub>C</sub> =0	6	-	-	V
Collector Cut-Off Current	I <sub>CBO</sub>	V <sub>CB</sub> =60V, I <sub>E</sub> =0	-	-	0.01	μA
Collector Cut-Off Current	I <sub>CEX</sub>	V <sub>CE</sub> =30V, V <sub>BE (off)</sub> =3V	-	-	0.01	μA
Emitter Cut-Off Current	I <sub>EBO</sub>	V <sub>EB</sub> = 3V, I <sub>C</sub> =0	-	-	0.1	μA
DC Current Gain	h <sub>FE</sub> *	V <sub>CE</sub> =10V, I <sub>C</sub> = 150mA	100	-	300	-
	h <sub>FE</sub>	V <sub>CE</sub> =10V, I <sub>C</sub> = 0.1mA	35	-	-	
	h <sub>FE</sub> *	V <sub>CE</sub> =10V, I <sub>C</sub> = 500mA	40	-	-	
Collector-Emitter Saturation Voltage	V <sub>CE (sat)*</sub>	I <sub>C</sub> =500 mA, I <sub>B</sub> = 50mA	-	-	1.0	V
		I <sub>C</sub> =150mA, I <sub>B</sub> =15mA	-	-	0.3	
Base-Emitter Saturation Voltage	V <sub>BE (sat)*</sub>	I <sub>C</sub> =500 mA, I <sub>B</sub> = 50mA	-	-	2.0	V
		I <sub>C</sub> =150mA, I <sub>B</sub> =15mA	-	-	1.2	
Transition Frequency	f <sub>T</sub>	V <sub>CE</sub> =20V, I <sub>C</sub> = 20mA, f=100MHz	300	-	-	MHz
Delay Time	t <sub>d</sub>	V <sub>CC</sub> =30V, V <sub>BE (off)</sub> =-0.5V I <sub>C</sub> =150mA, I <sub>B1</sub> = 15mA	-	-	10	ns
Rise Time	t <sub>r</sub>		-	-	25	
Storage Time	t <sub>s</sub>	V <sub>CC</sub> =30V, I <sub>C</sub> =150mA I <sub>B1</sub> =-I <sub>B2</sub> =15mA	-	-	225	ns
Fall Time	t <sub>f</sub>		-	-	60	

\*pulse test: Pulse Width ≤300μs, Duty Cycles ≤ 2.0%.



## TYPICAL CHARACTERISTICS

Figure 1.  $P_D - T_A$

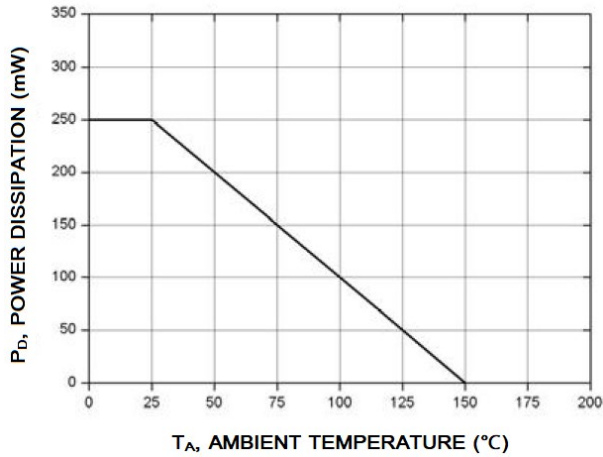


Figure 2.  $V_{CE(sat)} - I_C$

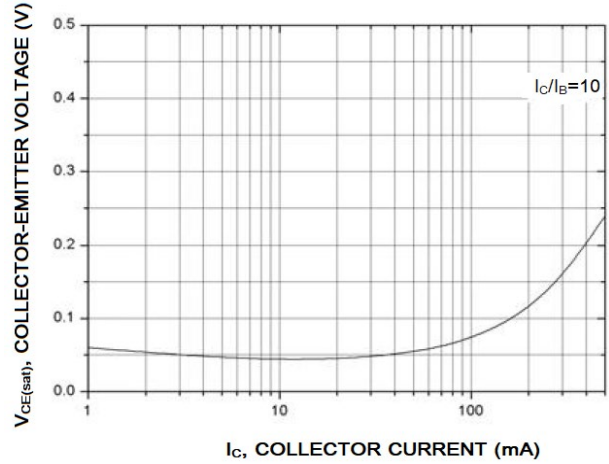
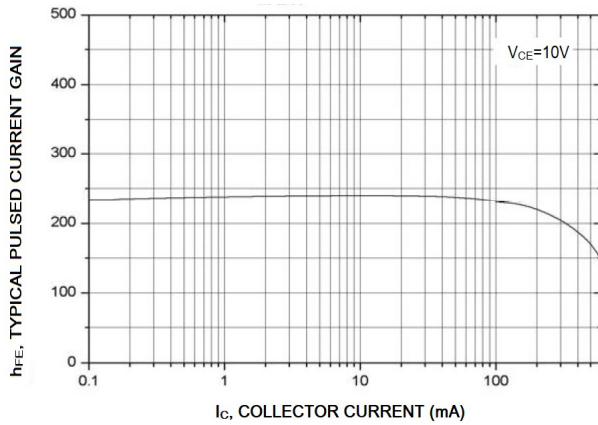


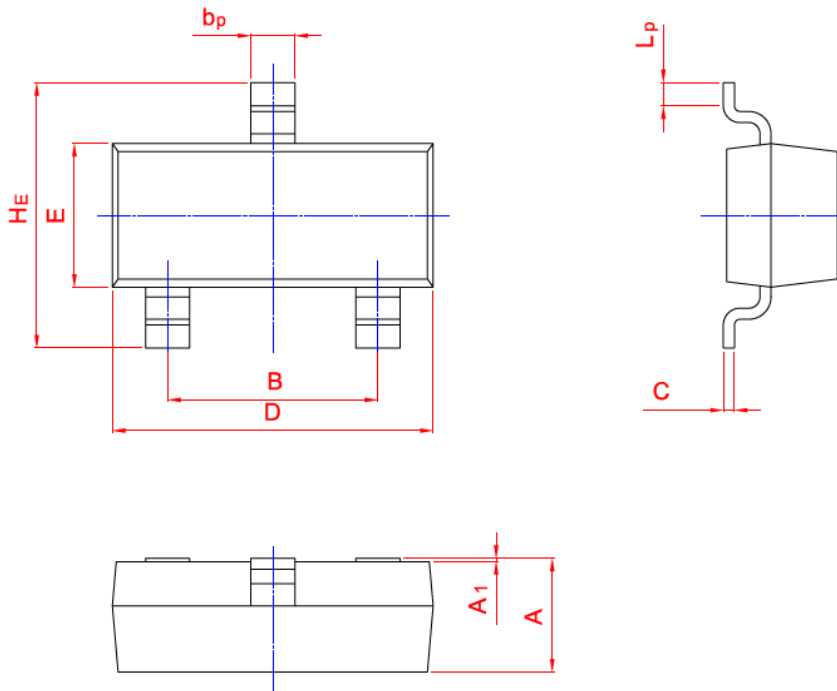
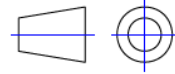
Figure 3.  $h_{FE} - I_C$





## PACKAGE INFORMATION

Dimension in SOT-23 Package (Unit: mm)



Symbol	Min.	Max.
A	0.900	1.400
B	1.780	2.050
b <sub>p</sub>	0.350	0.510
C	0.080	0.190
D	2.700	3.100
E	1.200	1.650
H <sub>E</sub>	2.100	3.000
A <sub>1</sub>	0.013	0.100
L <sub>p</sub>	0.200	0.500



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