

MMBT2222

Rev.G Aug.-2018

/ Descriptions

SOT-23 NPN Silicon NPN transistor in a SOT-23 Plastic Package.

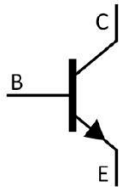
/ Features

600mA
Collector currents up to 600mA.

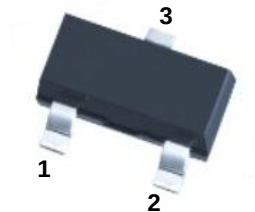
/ Applications

General purpose amplifier.

/ Equivalent Circuit



/ Pinning



PIN 1 Base PIN 2 Emitter PIN 3 Collector

/ h_{FE} Classifications & Marking

h_{FE} Range	100 300
Marking	1BH

/ Absolute Maximum Ratings(Ta=25)

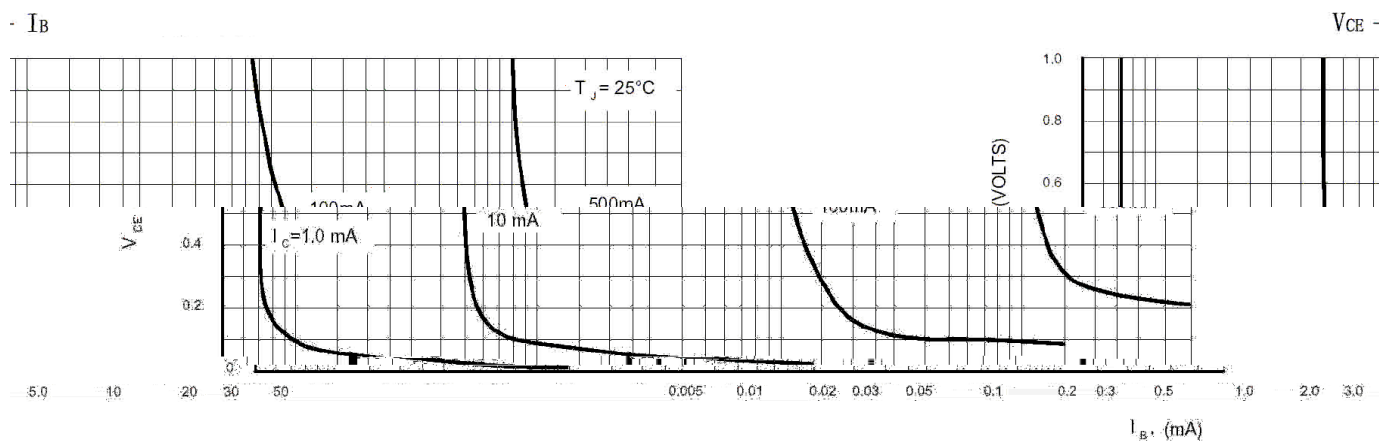
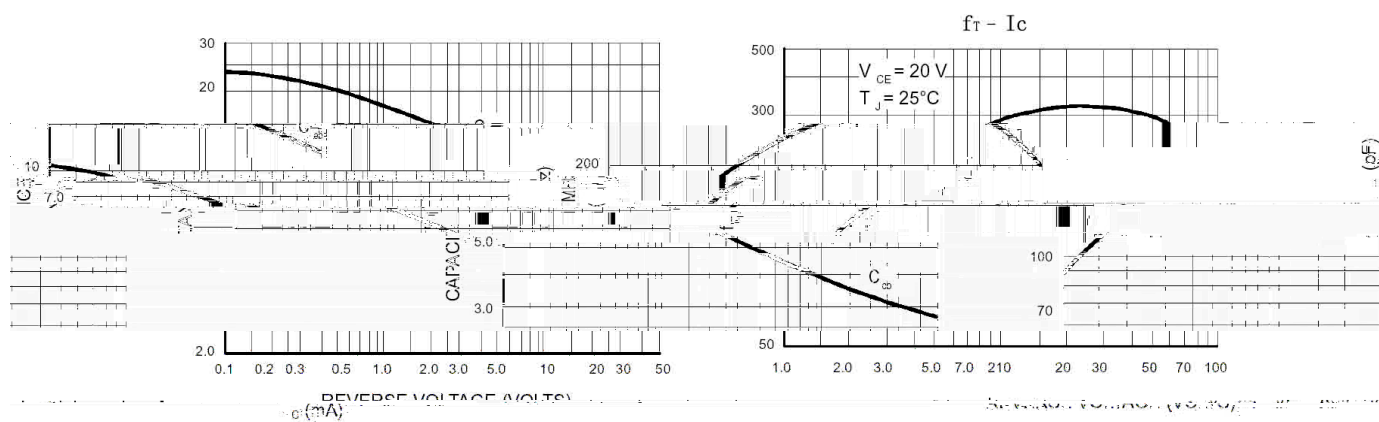
Parameter	Symbol	Rating	Unit
Collector to Base Voltage	V_{CBO}	60	V
Collector to Emitter Voltage	V_{CEO}	30	V
Emitter to Base Voltage	V_{EBO}	5.0	V
Collector Current	I_C	600	mA
Collector Power Dissipation	P_C	350	mW
Junction Temperature	T_j	150	
Storage Temperature Range	T_{stg}	-55 150	

/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector to Base Breakdown Voltage	V_{CBO}	$I_C=10\text{ A}$ $I_E=0$	60			V
Collector to Emitter Breakdown Voltage	V_{CEO}	$I_C=10\text{mA}$ $I_B=0$	30			V
Emitter to Base Breakdown Voltage	V_{EBO}	$I_E=10\text{ A}$ $I_C=0$	5.0			V
Collector Cut-Off Current	I_{CBO}	$V_{CB}=50\text{V}$ $I_E=0$			0.01	A
Base Cut-Off Current	I_{EBO}	$V_{EB}=5.0\text{V}$ $I_C=0$			0.1	A
DC Current Gain	$h_{FE(1)}$	$V_{CE}=10\text{V}$ $I_C=150\text{mA}^*$	100		300	
	$h_{FE(2)}$	$V_{CE}=10\text{V}$ $I_C=0.1\text{mA}$	35			
	$h_{FE(3)}$	$V_{CE}=10\text{V}$ $I_C=1.0\text{mA}$	50			
	$h_{FE(4)}$	$V_{CE}=10\text{V}$ $I_C=10\text{mA}$	75			
	$h_{FE(5)}$	$V_{CE}=10\text{V}$ $I_C=500\text{mA}^*$	30			
Collector-Emitter Saturation Voltage	$V_{CE(sat) (1)}$	$I_C=150\text{mA}$ $I_B=15\text{mA}$			0.4	V
	$V_{CE(sat) (2)}$	$I_C=500\text{mA}$ $I_B=50\text{mA}$			1.6	V
Base-Emitter Saturation Voltage	$V_{BE(sat) (1)}$	$I_C=150\text{mA}$ $I_B=15\text{ mA}$			1.3	V
	$V_{BE(sat) (2)}$	$I_C=500\text{mA}$ $I_B=50\text{mA}$			2.6	V
Output Capacitance	C_{ob}	$V_{CB}=10\text{V}$ $f=1.0\text{MHz}$			8.0	pF
Transition Frequency	f_T	$I_C=20\text{mA}$ $V_{CE}=20\text{V}$ $f=100\text{MHz}$	250			MHz
Turn-On Time	t_{on}	$V_{CC}=30\text{V}$ $V_{BE}=0.5\text{V}$ $I_C=150\text{mA}$ $I_{B1}=15\text{mA}$			35	ns
Turn-Off Time	t_{off}	$V_{CC}=30\text{V}$ $I_C=150\text{mA}$ $I_{B1}=I_{B2}=15\text{mA}$			285	ns

*Pulse Test: Pulse Width $\leq 300\text{ }\mu\text{s}$, Duty Cycle $\leq 2.0\%$

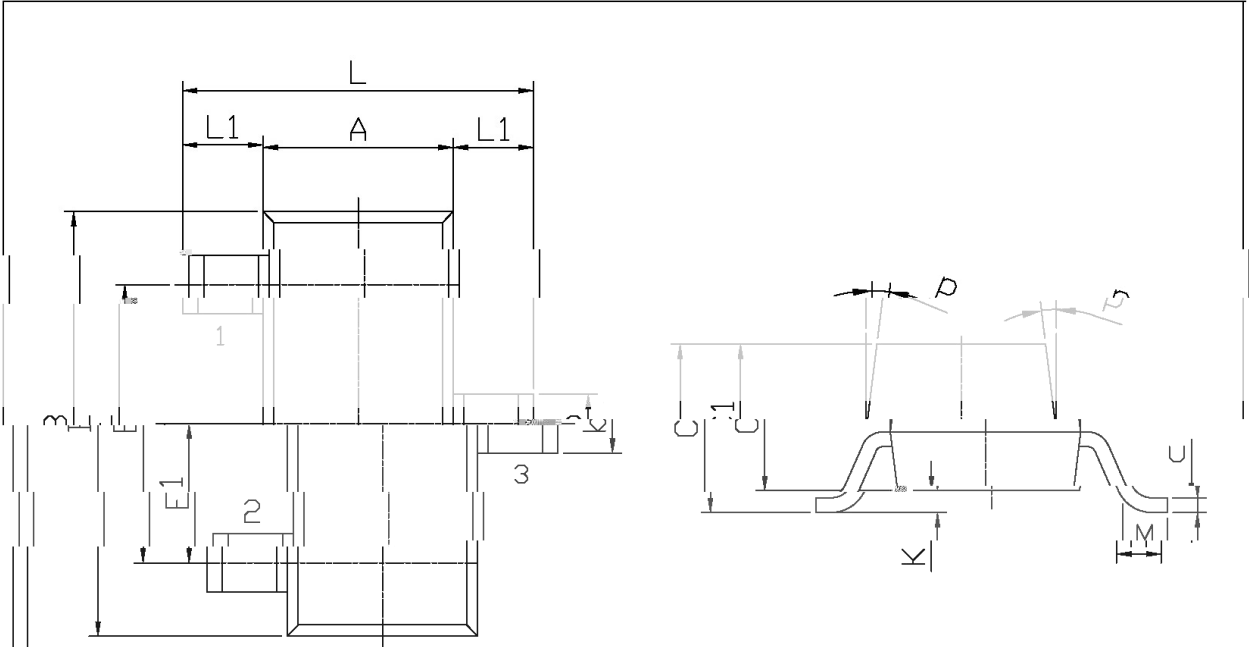
/ Electrical Characteristic Curve



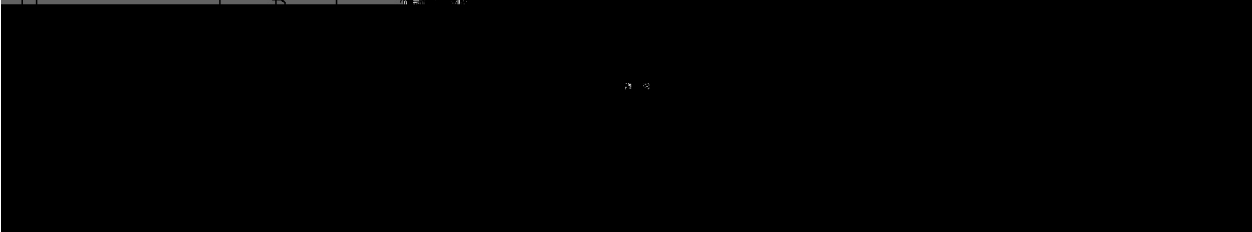
/ Package Dimensions

SOT-23

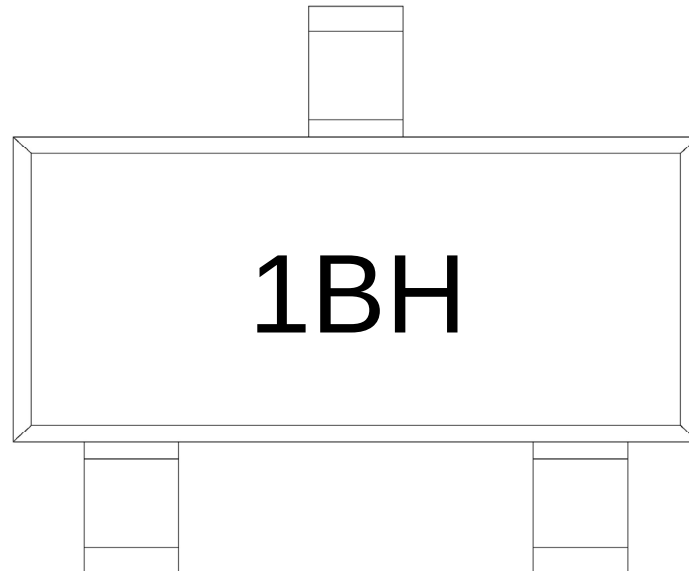
单位：mm



Symbol	Dimensions In. Millimeters		Symbol	Dimensions In. Millimeters	
	Min	Max		Min	Max
L	2.2	2.7	U	1.30Max	
L1	0.45	0.65	C1	0.90	1.20
A	1.15	1.50	c	0.05	0.20
D	0.95	1.25			



/ Marking Instructions



1B

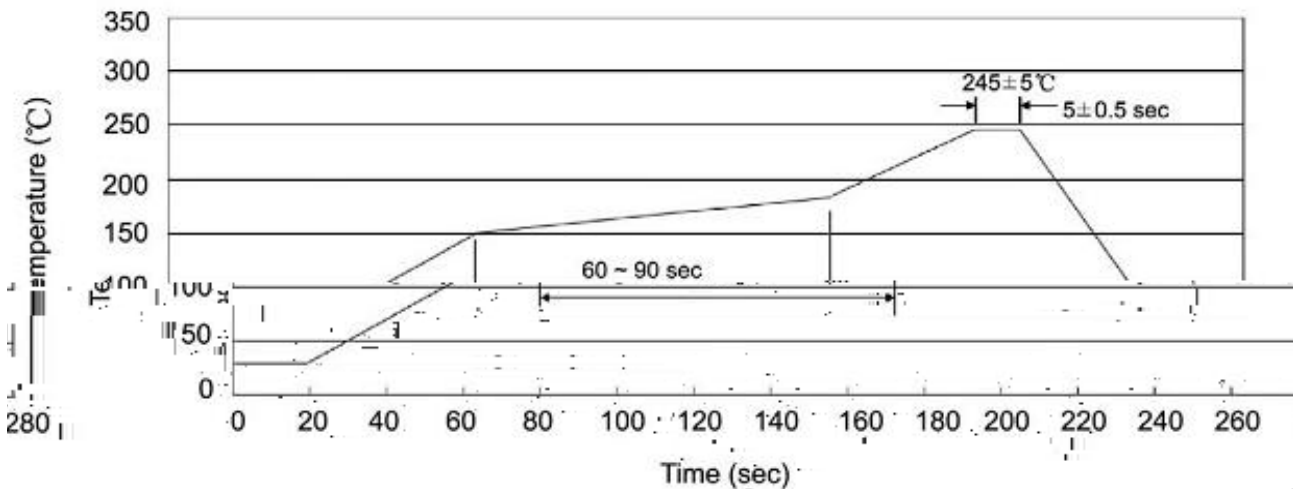
H

Note:

1B Product Type Code

H Company Code

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Note:

- | | | | | | |
|---|-------|-----|----|-----------|---|
| 1 | 150 | 180 | 60 | 90sec; | 1.Preheating:150~180 , Time:60~90sec. |
| 2 | 245±5 | | | 5±0.5sec; | 2.Peak Temp.:245±5 , Duration:5±0.5sec. |
| 3 | | | 2 | 10 /sec. | 3. Cooling Speed: 2~10 /sec. |

/ Resistance to Soldering Heat Test Conditions

260±5 10±1 sec. Temp.:260±5 Time:10±1 sec

/ Packaging SPEC.

/ REEL

Package Type	Units					Dimension (unit mm ³)		
	Units/Reel	Reels/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Reel	Inner Box	Outer Box
SOT-23	3,000	10	30,000	6	180000	7 ×8	180×120×180	390×385×205

/ Notices