

# MMBT5089

RevF Apr.-2017

## 描述 / Descriptions

SOT-23 塑封封装 NPN 半导体三极管。Silicon NPN transistor in a SOT-23 Plastic Package.

## 特征 / Features

低噪声，高增益。

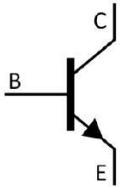
Low noise, high gain.

## 用途 / Applications

用于集电极电流在  $1\mu\text{A}$  至  $50\text{mA}$  的一般放大电路。

General purpose amplifier applications at collector currents from  $1\mu\text{A}$  to  $50\text{mA}$ .

## 内部等效电路 / Equivalent Circuit



## 引脚排列 / Pinning



PIN 1 : Base

PIN 2 : Emitter

PIN 3 : Collector

## 放大及印章代码 / $h_{FE}$ Classifications & Marking

$h_{FE}$ Range	400~1200
Marking	H1R

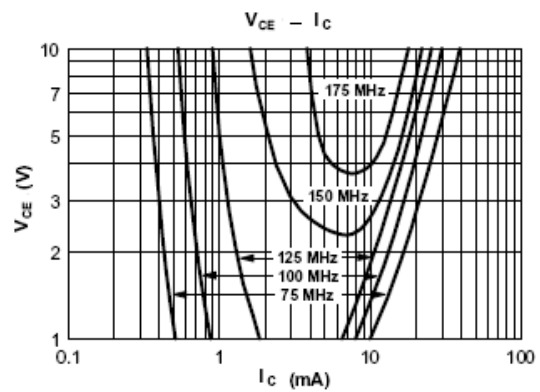
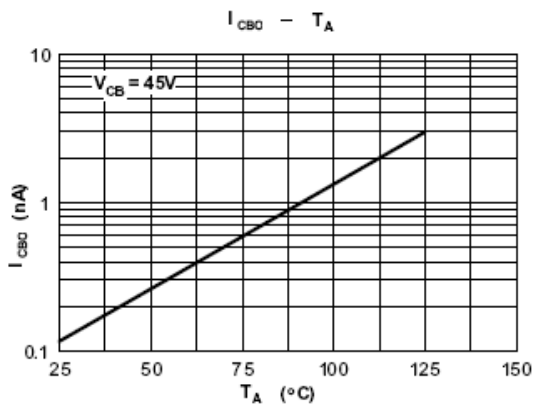
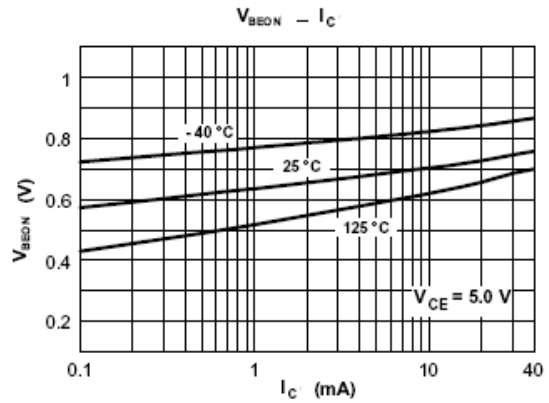
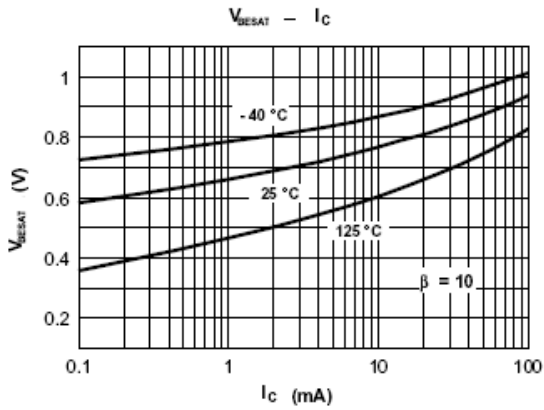
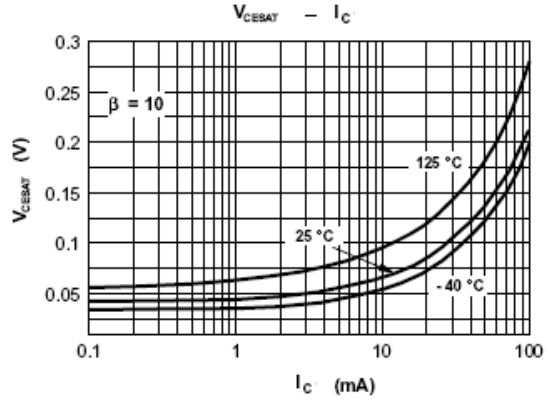
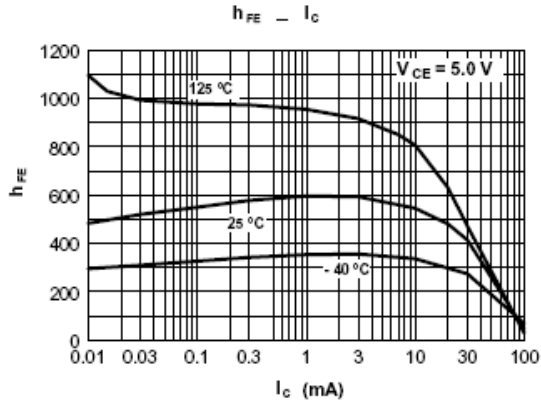
**极限参数 / Absolute Maximum Ratings(Ta=25°C)**

参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Collector to Base Voltage	$V_{CBO}$	30	V
Collector to Emitter Voltage	$V_{CEO}$	25	V
Emitter to Base Voltage	$V_{EBO}$	4.5	V
Collector Current	$I_C$	100	mA
Collector Power Dissipation	$P_C$	350	mW
Junction Temperature	$T_J$	-55~150	°C
Storage Temperature Range	$T_{stg}$	30	V

**电性能参数 / Electrical Characteristics(Ta=25°C)**

参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Collector to Base Breakdown Voltage	$V_{CBO}$	$I_C=100\mu A$ $I_E=0$	30			V
Collector to Emitter Breakdown Voltage	$V_{CEO}$	$I_C=1.0mA$ $I_B=0$	25			V
Collector Cut-Off Current	$I_{CBO}$	$V_{CB}=15V$ $I_E=0$			50	nA
Emitter Cut-Off Current	$I_{EBO}$	$V_{EB}=4.5V$ $I_C=0$			100	nA
DC Current Gain	$h_{FE(1)}$	$V_{CE}=5.0V$ $I_C=100\mu A$	400		1200	
	$h_{FE(2)}$	$V_{CE}=5.0V$ $I_C=1.0mA$	450			
	$h_{FE(3)}$	$V_{CE}=5.0V$ $I_C=10mA$	400			
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=10mA$ $I_B=1.0mA$			0.5	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=10mA$ $I_B=5.0mA$			0.8	V
Collector-Base Capacitance	$C_{cb}$	$V_{CB}=5.0V$ $f=100kHz$ $I_E=0$			4.0	pF
Emitter-Base Capacitance	$C_{eb}$	$V_{eb}=0.5V$ $f=100kHz$ $I_E=0$			10	pF
Transition Frequency	$f_T$	$I_C=500\mu A$ $V_{CE}=5.0V$ $f=20MHz$	50			MHz
Small-Signal Current Gain	$h_{fe}$	$I_C=1.0mA$ $f=1.0MHz$ $V_{CE}=5.0V$	450		1800	

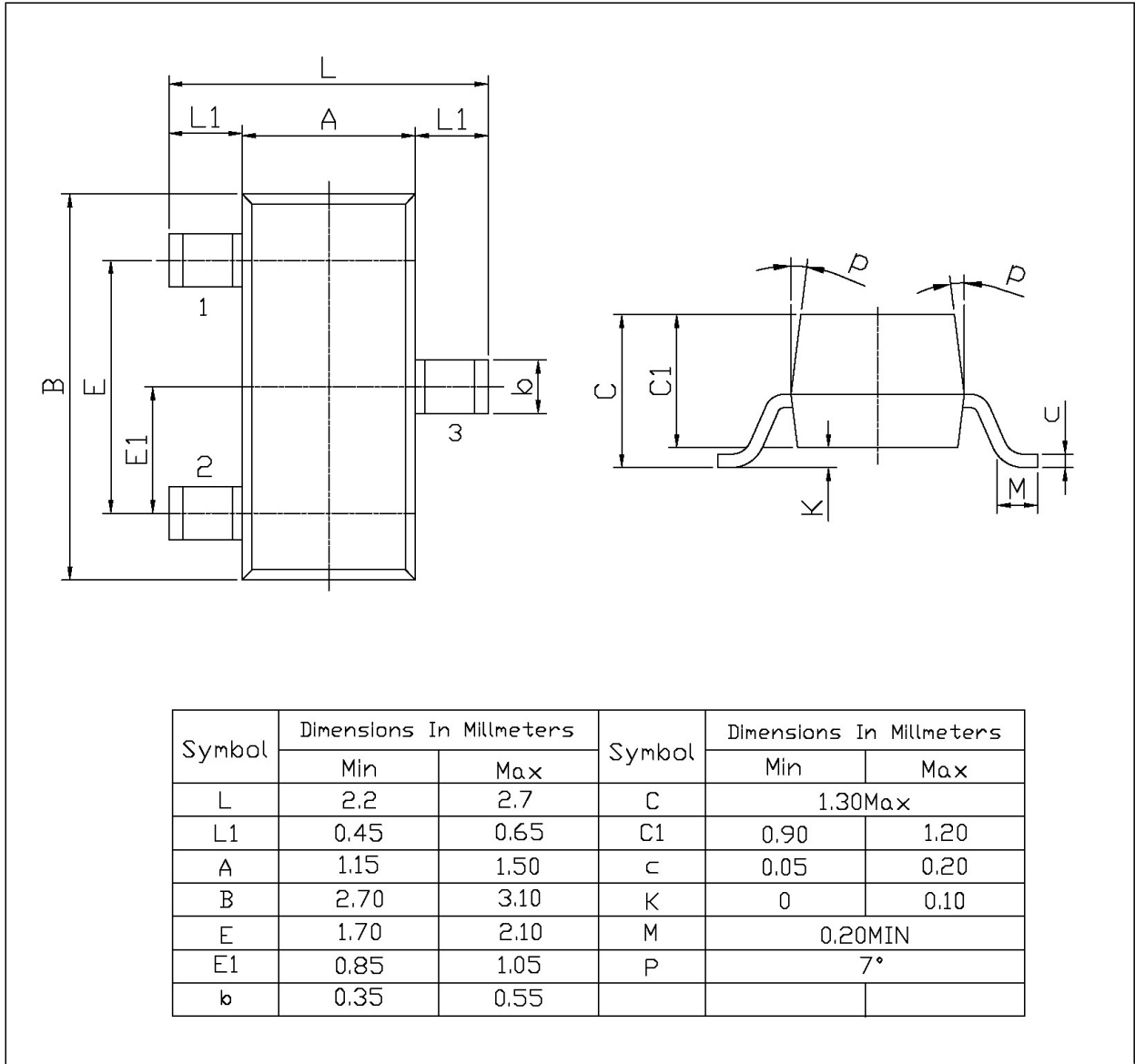
电参数曲线图 / Electrical Characteristic Curve



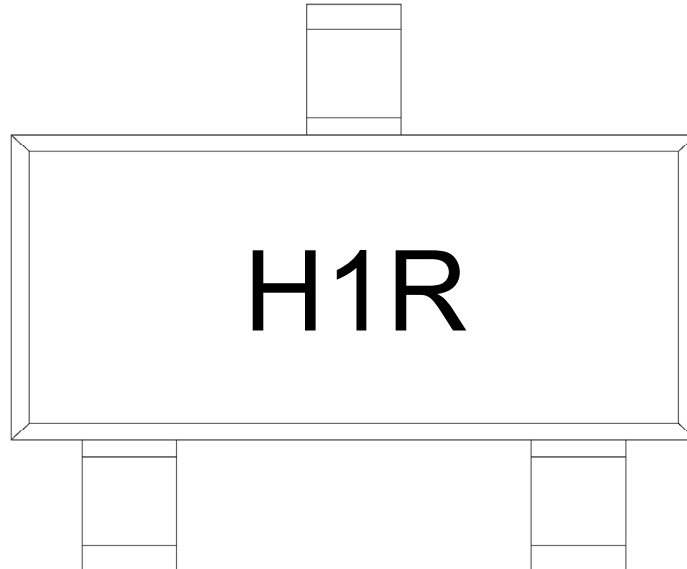
外形尺寸图 / Package Dimensions

SOT-23

单位: mm



印章说明 / Marking Instructions



说明：

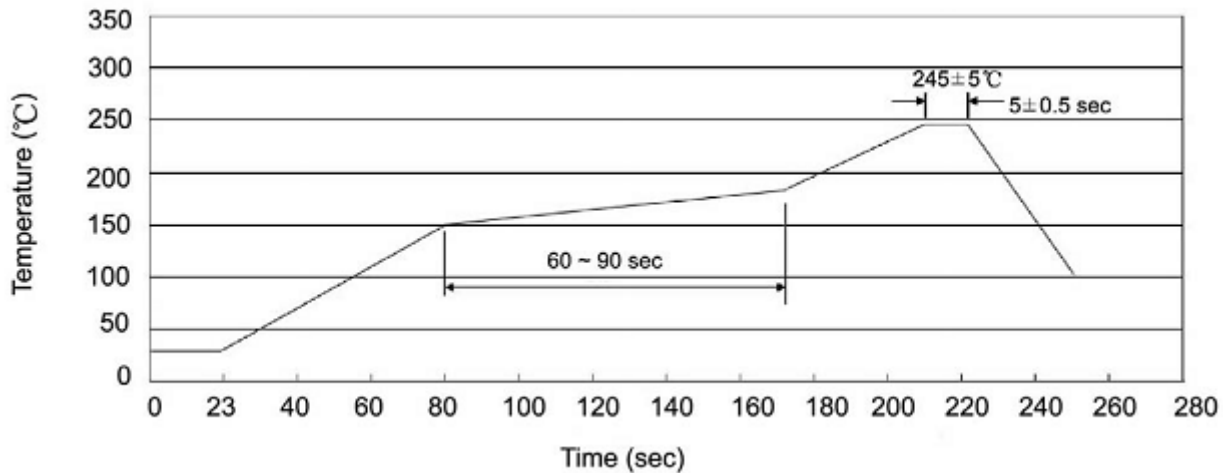
H： 为公司代码

1R： 为型号代码

Note:

H： Company Code

1R： Product Type

**回流焊温度曲线图(无铅) / Temperature Profile for IR Reflow Soldering(Pb-Free)**


说明：

- 1、预热温度 25~150°C，时间 60~90sec;
- 2、峰值温度 245±5°C，时间持续为 5±0.5sec;
- 3、焊接制程冷却速度为 2~10°C/sec.

Note:

- 1.Preheating:25~150°C, Time:60~90sec.
- 2.Peak Temp.:245±5°C, Duration:5±0.5sec.
3. Cooling Speed: 2~10°C/sec.

**耐焊接热试验条件 / Resistance to Soldering Heat Test Conditions**

温度：260±5°C      时间：10±1 sec.

Temp.:260±5°C      Time:10±1 sec

**包装规格 / Packaging SPEC.**

卷盘包装 / REEL

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm <sup>3</sup> )		
	Units/Reel 只/卷盘	Reels/Inner Box 卷盘/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Reel	Inner Box 盒	Outer Box 箱
SOT-23	3,000	10	30,000	6	180,000	7" x8	180×120×180	390×385×205

**使用说明 / Notices**