

MMBT5089

RevF Apr.-2017

/ Descriptions

SOT-23

NPN

Silicon NPN transistor in a SOT-23 Plastic Package.

/ Features

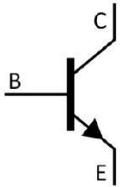
Low noise, high gain.

/ Applications

1 μ A 50mA

General purpose amplifier applications at collector currents from 1 μ A to 50mA.

/ Equivalent Circuit



/ Pinning



PIN 1 Base

PIN 2 Emitter

PIN 3 Collector

/ h_{FE} Classifications & Marking

h_{FE} Range	400 1200
Marking	H1R

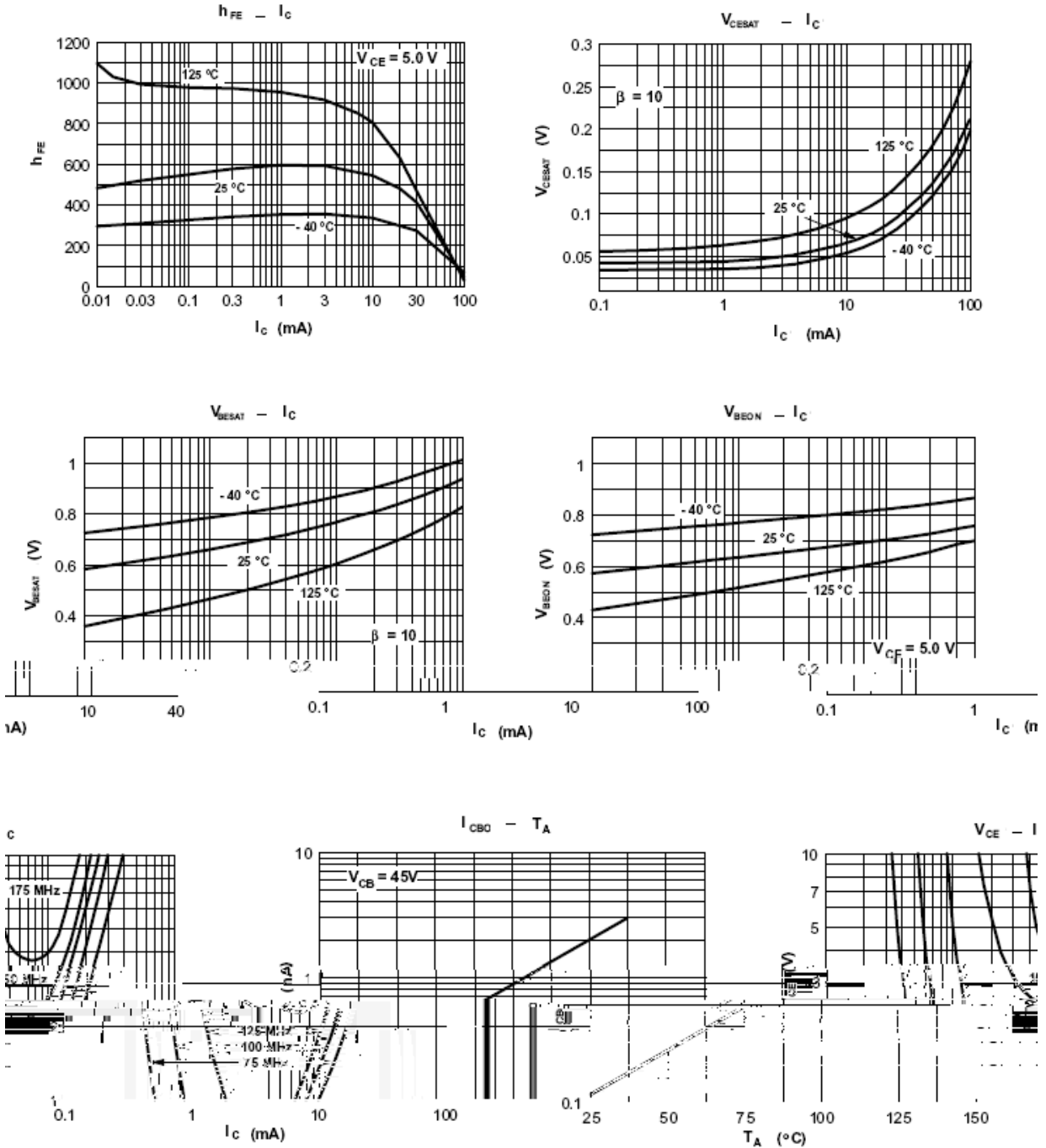
/ Absolute Maximum Ratings(Ta=25)

Parameter	Symbol	Rating	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	
Storage Temperature Range	T_{stg}	30	V

/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	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}	$V_{CB}=5.0V$ $I_E=0$ $f=100kHz$			4.0	pF
Emitter-Base Capacitance	C_{eb}	$V_{eb}=0.5V$ $I_E=0$ $f=100kHz$			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}	$I_C=1.0mA$ $V_{CE}=5.0V$ $f=1.0MHz$	450		1800	

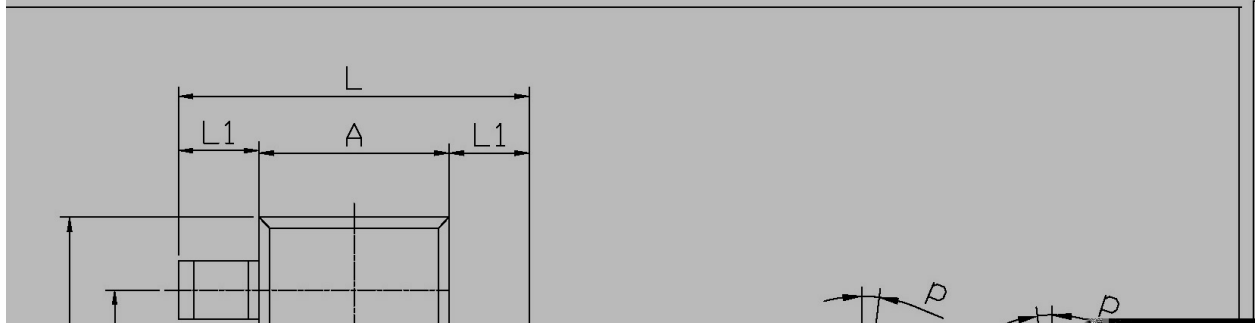
/ Electrical Characteristic Curve



/ Package Dimensions

SOT-23

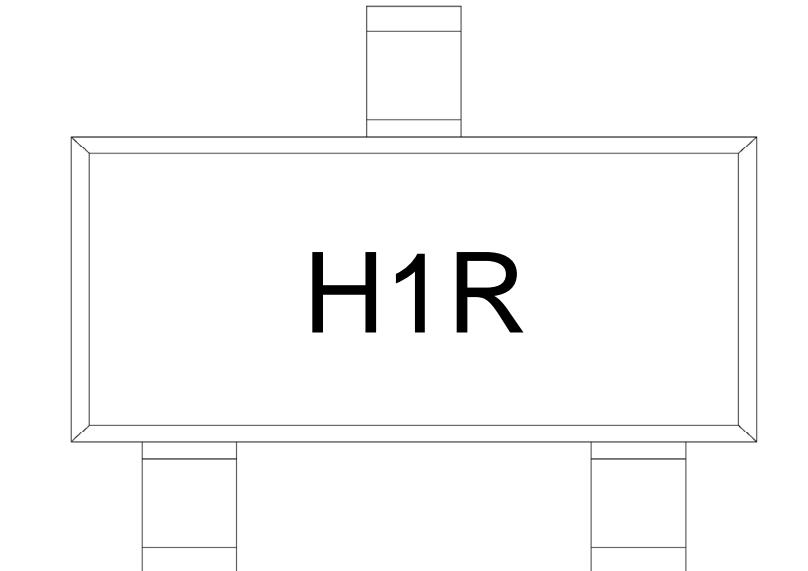
单位: mm



	Min	Max		Min	Max
L	2.2	2.7	C	1.30	Max



/ Marking Instructions



H

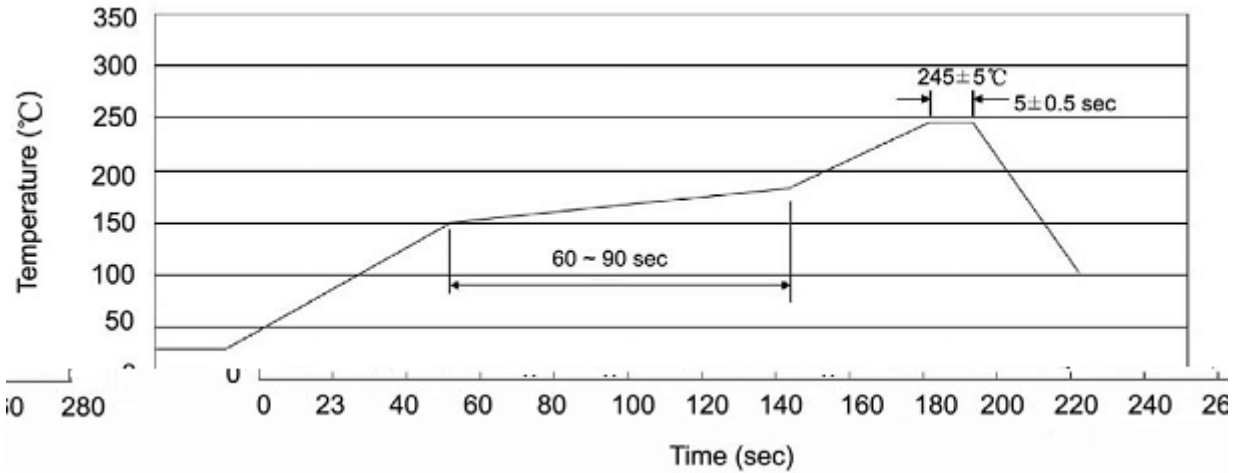
1R

Note:

H Company Code

1R Product Type

() / Temperature Profile for IR Reflow Soldering(Pb-Free)



Note:

- | | | | | | |
|---|-------|-----|----|-----------|---|
| 1 | 25 | 150 | 60 | 90sec; | 1.Preheating:25~150 , 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 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm ³)		
	只 卷盘	卷盘 盒	只 盒	盒 箱	只 箱	盒	箱	