

**/ Descriptions**

SOT-89          PNP          Silicon PNP transistor in a SOT-89 Plastic Package.

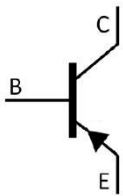
**/ Features**

Low  $V_{CE(sat)}$ , excellent DC current gain characteristics.

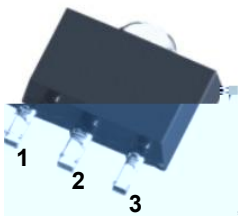
**/ Applications**

General purpose amplifier.

**/ Equivalent Circuit**



**/ Pinning**



PIN1 Base          PIN 2 Collector          PIN 3 Emitter

**/ Marking**

$h_{FE}$ Classifications Symbol	Q	R
$h_{FE}$ Range	120 270	180 390
Marking	HAEQ <sup>※</sup>	HAER <sup>※</sup>

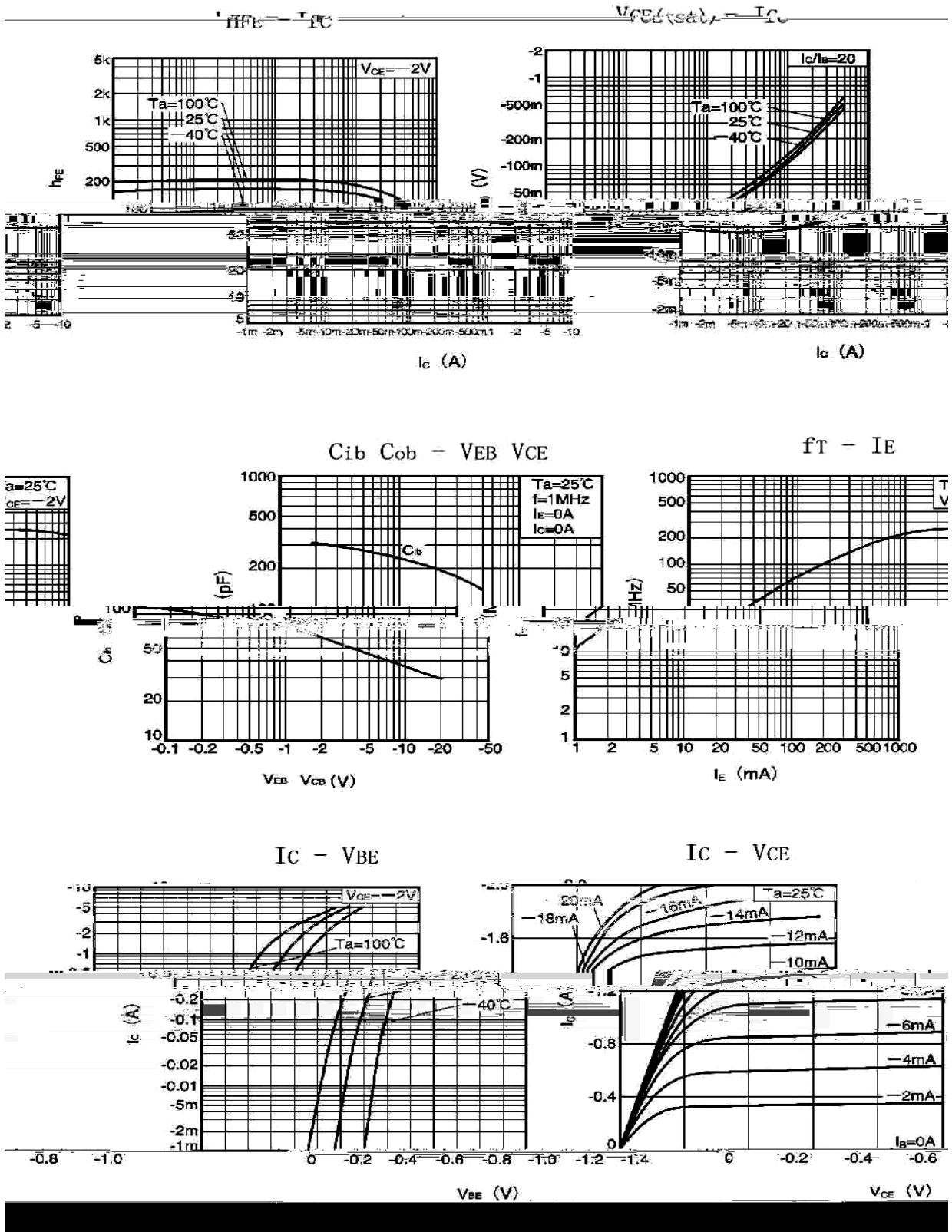
**/ Absolute Maximum Ratings(Ta=25 )**

Parameter	Symbol	Rating	Unit
Collector to Base Voltage	$V_{CBO}$	-20	V
Collector to Emitter Voltage	$V_{CEO}$	-20	V
Emitter to Base Voltage	$V_{EBO}$	-6.0	V
Collector Current-Continuous	$I_C$	-3.0	A
Collector Current -Continuous(Pulse)	$I_{CP}$	-5.0	A
Collector Power Dissipation	$P_C$	0.6	W
Junction Temperature	$T_j$	150	°C
Storage Temperature Range	$T_{stg}$	-55 150	°C

**/ Electrical Characteristics(Ta=25 )**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector to Base Breakdown Voltage	$V_{CBO}$	$I_C=-50\mu A$ $I_E=0$	-20			V
Collector to Emitter Breakdown Voltage	$V_{CEO}$	$I_C=-1.0mA$ $I_B=0$	-20			V
Emitter to Base Breakdown Voltage	$V_{EBO}$	$I_E=-50\mu A$ $I_C=0$	-6.0			V
Collector Cut-Off Current	$I_{CBO}$	$V_{CB}=-20V$ $I_E=0$			-0.1	$\mu A$
Emitter Base Cut-Off Current	$I_{EBO}$	$V_{EB}=-5.0V$ $I_C=0$			-0.1	$\mu A$
DC Current Gain	$h_{FE}$	$V_{CE}=-2.0V$ $I_C=-0.1A$	120		390	
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=-2.0A$ $I_B=-0.1A$			-0.5	V
Transition Frequency	$f_T$	$V_{CE}=-2.0V$ $f=100MHz$ $I_C=-0.5A$		240		MHz
Collector Output Capacitance	$C_{ob}$	$V_{CB}=-10V$ $f=1.0MHz$ $I_E=0$		35		pF

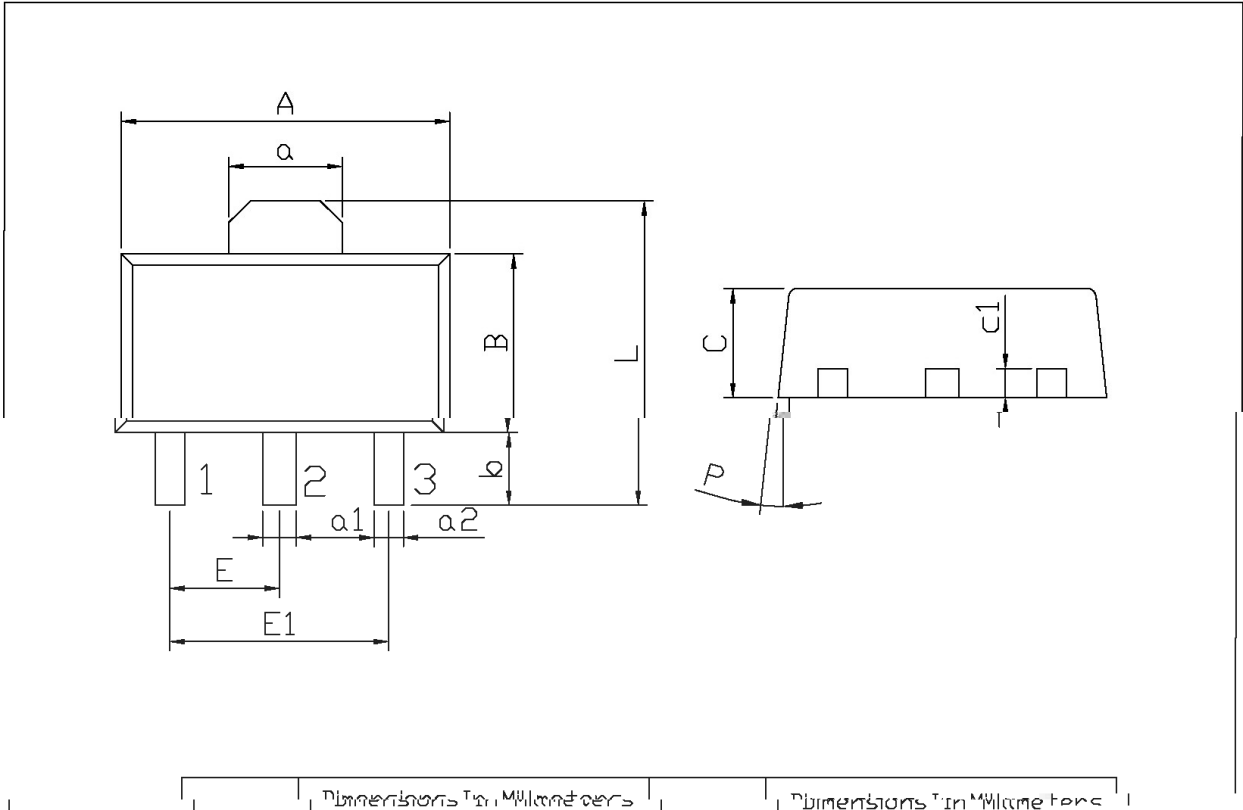
/ Electrical Characteristic Curve



/ Package Dimensions

SOT-89

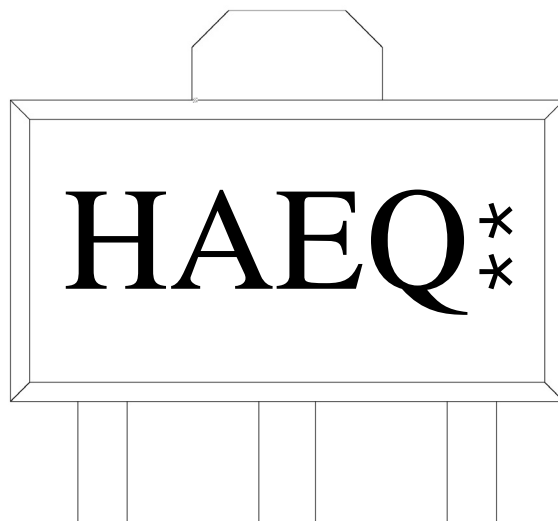
单位: mm



Dimensions in Millimeters | Dimensions in Millimeters

	2.35	4.7	a1	0.30	0.50
L	3.878	4.478	C	1.40	1.70
a	1.45	1.65	c1	0.35	0.50
E	1.40	1.60	P	6°	
E1	2.80	3.20			
b	0.80	1.20			

/ Marking Instructions



H

AE

Q:  $h_{FE}$

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Note:

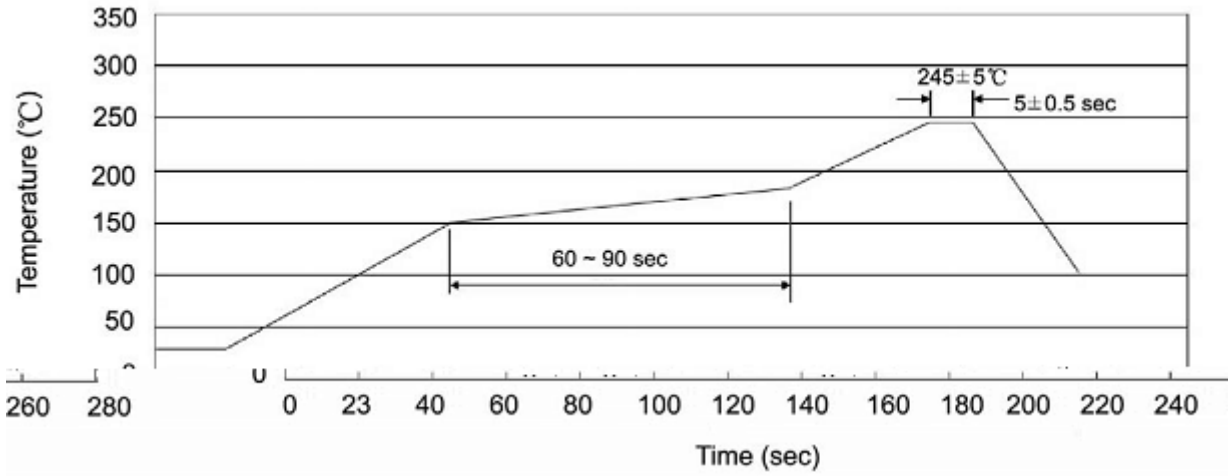
H: Company Code.

AE: Product Type.

Q:  $h_{FE}$  Classifications Symbol

\*\* : Lot No. Code, code change with Lot No.

( ) /



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°C                      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 <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-89	1,000	7	7,000	8	56,000	7 ×12	180×120×180	385×257×392

**/ Notices**