

Rev.F Apr.-2017

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

High  $f_T$ , small NF.

High frequency amplifier applications.

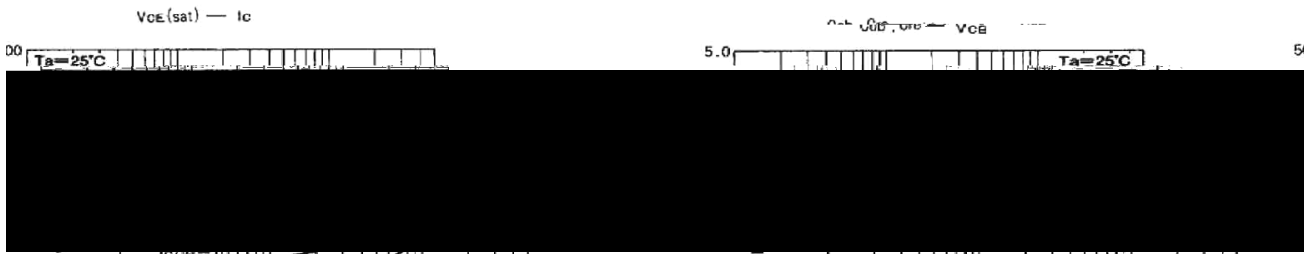


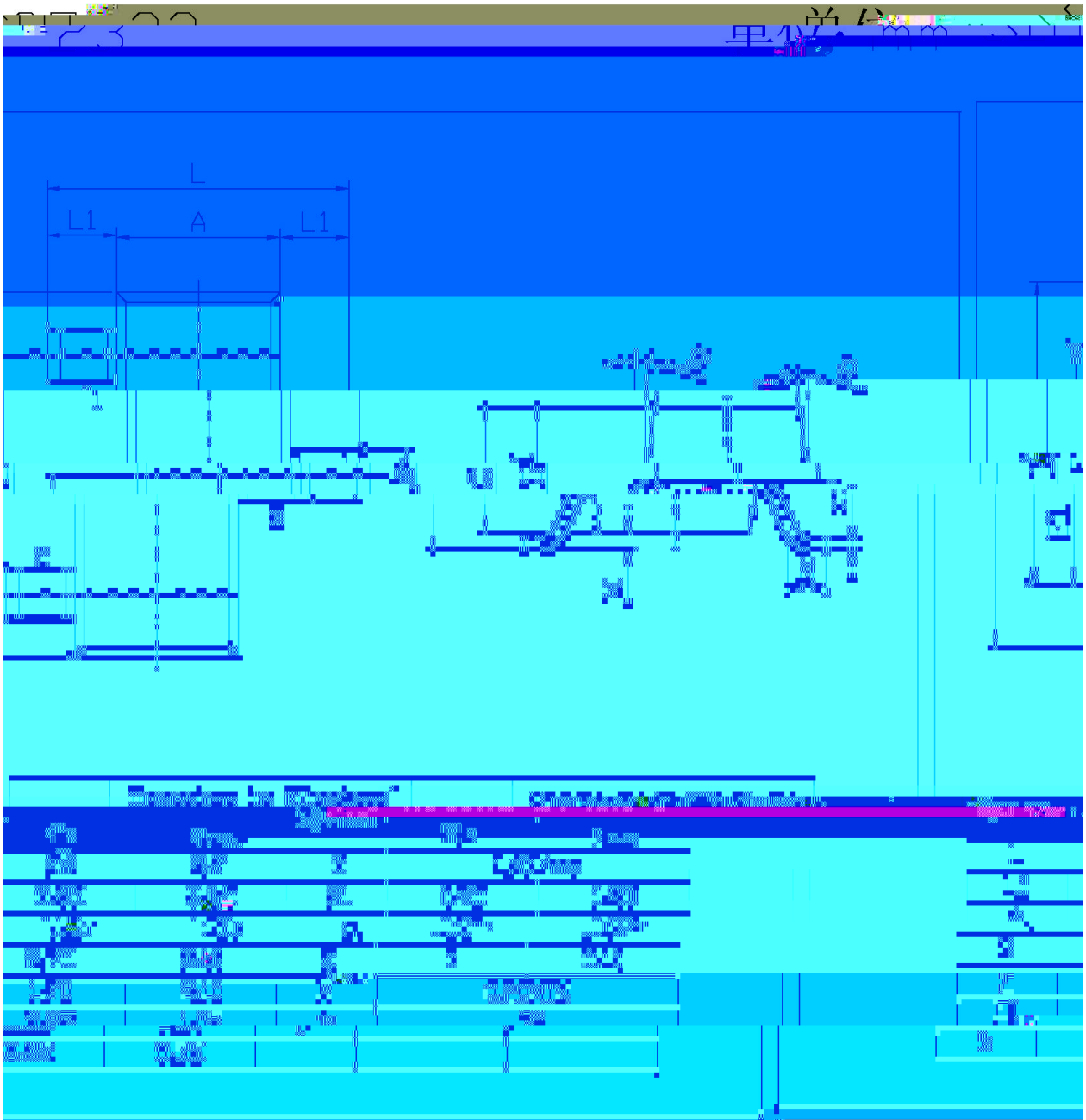
PIN1 Base          PIN 2 Emitter          PIN 3 Collector

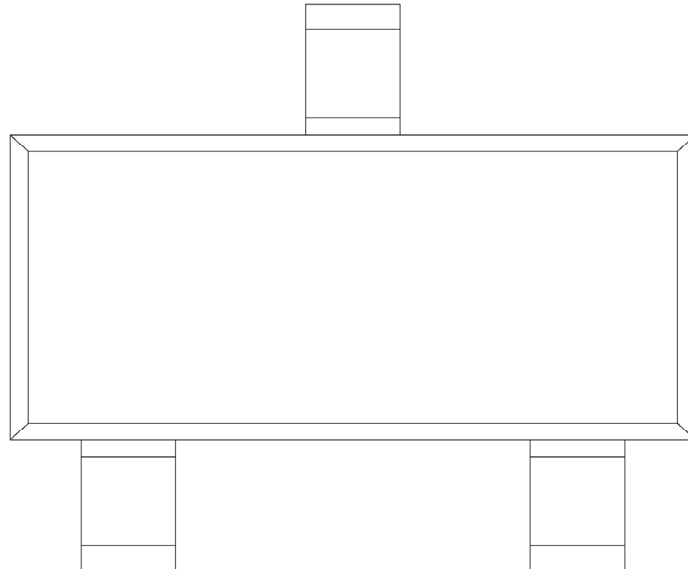
$h_{FE}$ Classifications Symbol	N	P
$h_{FE}$ Range	56 120	82 180
Marking	HADN	HADP

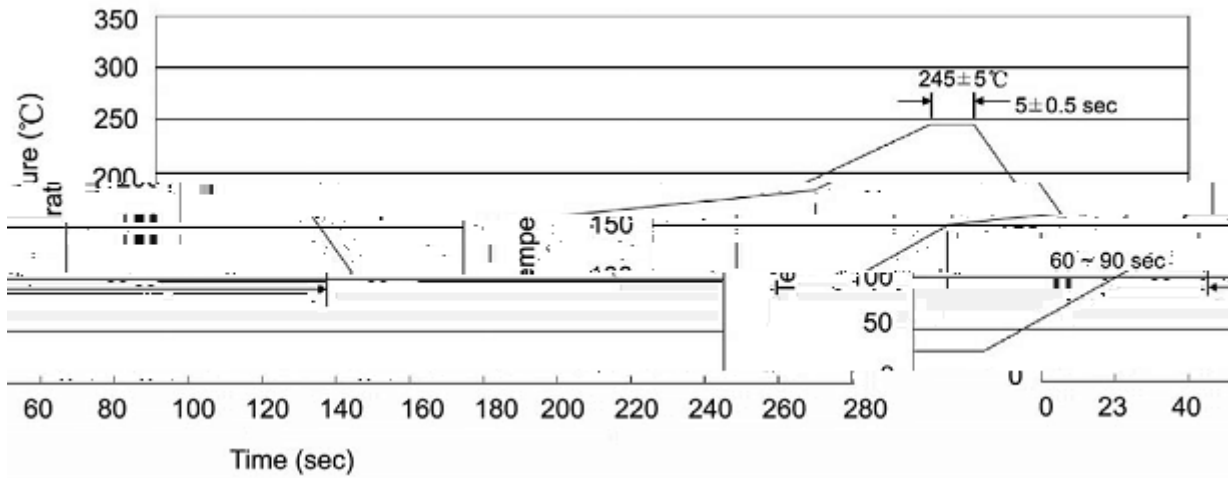
Parameter	Symbol	Rating	Unit
Collector to Base Voltage	$V_{CBO}$	20	V
Collector to Emitter Voltage	$V_{CEO}$	11	V
Emitter to Base Voltage	$V_{EBO}$	3.0	V
Collector Current	$I_C$	50	mA
Collector Power Dissipation	$P_C$	200	mW
Junction Temperature	$T_j$	150	
Storage Temperature Range	$T_{stg}$	-55 150	

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector to Base Breakdown Voltage	$V_{CBO}$	$I_C=10\mu A$	20			V
Collector to Emitter Breakdown Voltage	$V_{CEO}$	$I_C=1.0mA$	11			V
Emitter to Base Breakdown Voltage	$V_{EBO}$	$I_E=10\mu A$	3.0			V
Collector Cut-Off Current	$I_{CBO}$	$V_{CB}=10V$			0.5	$\mu A$
Emitter Base Cut-Off Current	$I_{EBO}$	$V_{EB}=2.0V$			0.5	$\mu A$
DC Current Gain	$h_{FE}$	$V_{CE}=10V$ $I_C=5.0mA$	56		180	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=10mA$ $I_B=5.0mA$			0.5	V
Transition Frequency	$f_T$	$V_{CE}=10V$ $I_C=10mA$ $f=500MHz$	1.4	3.2		GHz
Collector output capacitance	$C_{ob}$	$V_{CB}=10V$ $I_E=0$ $f=1.0MHz$		0.8	1.5	pF
Collector to Base Time Constant	$C_{C.rbb'}$	$V_{CB}=10V$ $I_C=10mA$ $f=31.8MHz$		4.0	12	pS
Noise Figure	NF	$V_{CB}=6.0V$ $I_C=2.0mA$ $f=500MHz$ $R_g=50$		3.5		dB







**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.            |

260±5

10±1 sec.

Temp.:260±5

Time:10±1 sec

/ 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 ×8	180×120×180	390×385×205