

/ Descriptions

SOT-23 M M E NPN M II 1 Silicon NPN transistor in a SOT-23 Plastic Package.

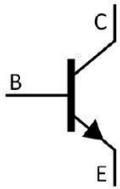
/ Features

Excellent h_{FE} linearity, high h_{FE} , low noise. HF Product.

/ Applications

General amplifier and switching application.

/ Equivalent Circuit



/ Pinning



PIN 1 Base PIN 2 Emitter PIN 3 Collector

/ h_{FE} Classifications & Marking

h_{FE} Classifications Symbol	O	Y	GR	BL
h_{FE} Range	70 140	120 240	200 400	350 700
Marking	HALO	HALY	HALG	HALB

Parameter	Symbol	Rating	Unit
Collector to Base Voltage	V_{CBO}	60	V
Collector to Emitter Voltage	V_{CEO}	50	V
Emitter to Base Voltage	V_{EBO}	5.0	V
Collector Current	I_C	150	mA
Base Current	I_B	30	mA
Collector Power Dissipation	P_C	150	mW
Junction Temperature	T_j	150	
Storage Temperature Range	T_{stg}	-55 150	

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector to Emitter Breakdown Voltage	V_{CBO}	I_C $I_E=0$	60			V
Collector to Base Breakdown Voltage	V_{CEO}	I_C $I_B=0$	50			V
Emitter to Base Breakdown Voltage	V_{EBO}	I_E $I_C=0$	5.0			V
Collector Cut-Off Current	I_{CBO}	$V_{CB}=60V$ $I_E=0$			0.1	
Emitter Cut-Off Current	I_{EBO}	$V_{EB}=5.0V$ $I_C=0$			0.1	
DC Current Gain	h_{FE}	$V_{CE}=6.0V$ $I_C=2.0mA$	70		700	
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=100mA$ $I_B=10mA$		0.1	0.25	V
Transition Frequency	f_T	$V_{CE}=10V$ $I_C=1.0mA$	80			MHz
Collector output capacitance	C_{ob}	V_C				

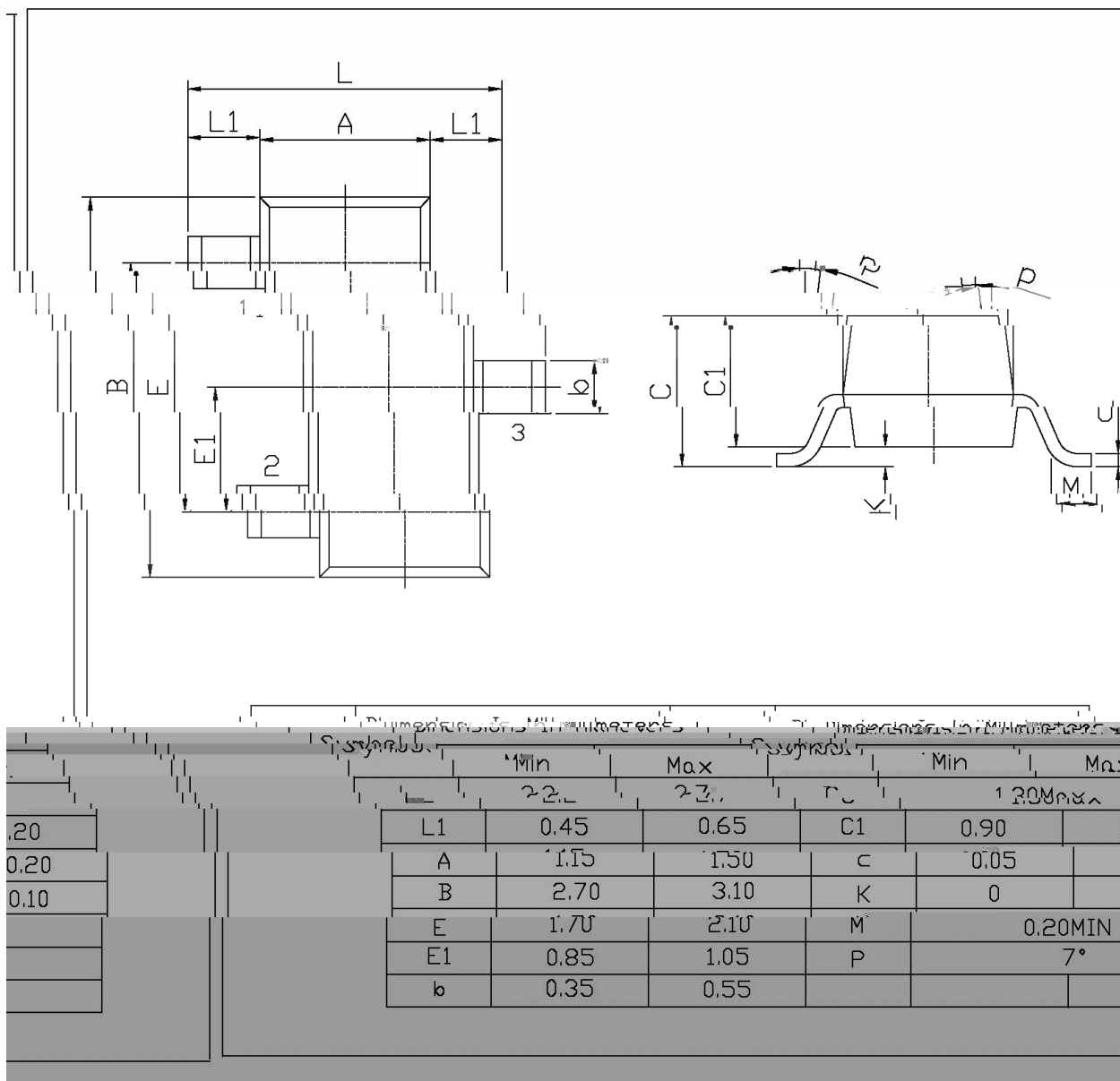
/ Electrical Characteristic Curve



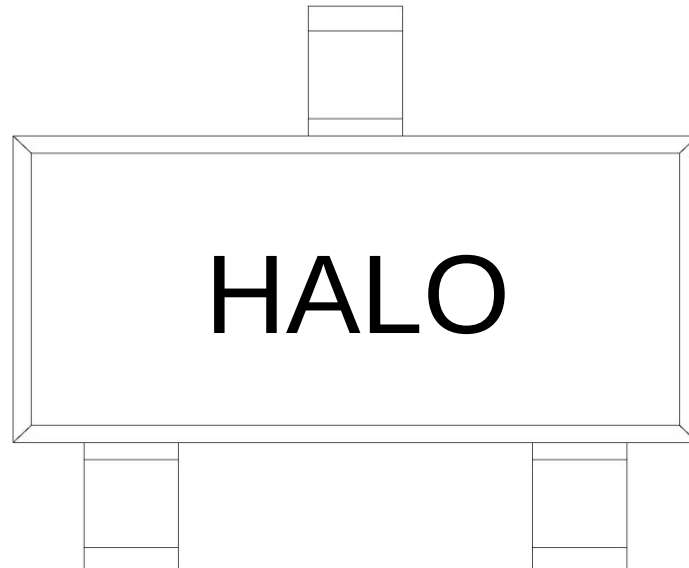
/ Package Dimensions

SOT-23

单位: mm



/ Marking Instructions



“

H

AL

O

3

$h_{FE} \geq 100$

Note:

H

Company Code

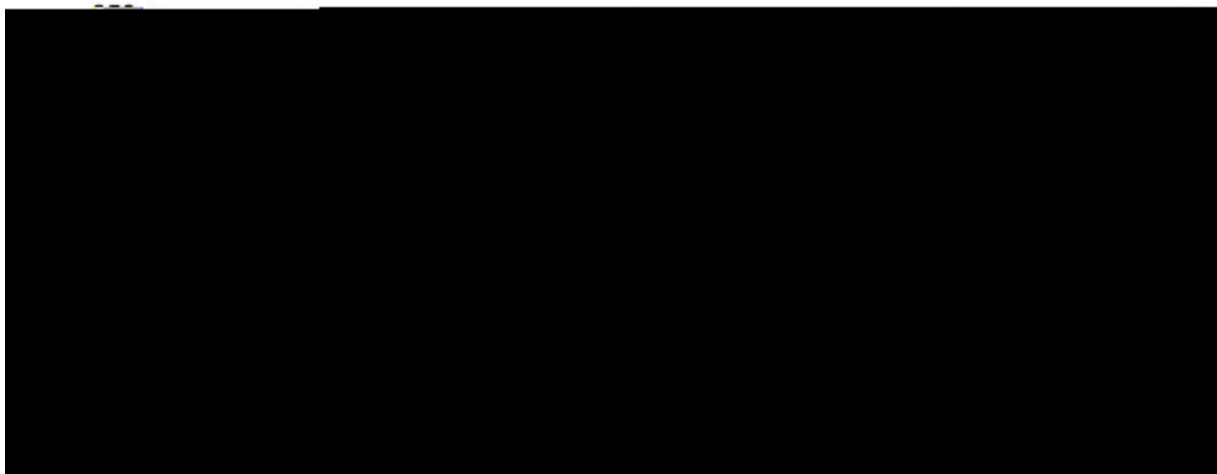
AL

Product Type

O

h_{FE} Classifications Symbol

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



ب ”

- 1 ٲ □ ٲ 25 150 `H ٲ 60 90sec;
- 2 Š □ ٲ 245±5 `H ٲ `Y ٲ 5±0.5sec;
- 3 ٲ ٲ ٲ ٲ 2 10 /sec.

Note:

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

/ Resistance to Soldering Heat Test Conditions

□ ٲ 260±5 `H ٲ 10±1 sec. Temp.:260±5 Time:10±1 sec

/ Packaging SPEC.

ٲ ٲ / REEL

Package Type								
	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	180,000	7 x 8	180x 120x 180	390x 385x 205

/ Notices