

## Descriptions

Silicon NPN transistor in a SOT-23 Plastic Package

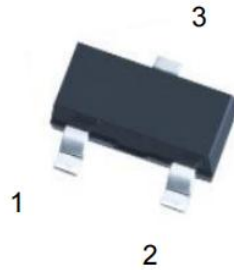
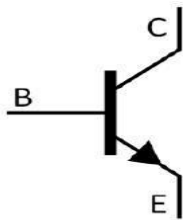
## Features

- Small reverse transfer capacitance
- low noise figure
- Halogen-free Product

## Applications

High frequency low noise amplifier

## Equivalent Circuit & Pinning



PIN1: Base

PIN 2: Emitter

PIN 3: Collector

## hFE Classifications & Marking

h <sub>FE</sub> Classifications Symbol	R	O	Y
h <sub>FE</sub> Range	40~80	70~140	100~200
Marking	HAQR	HAQO	HAQY

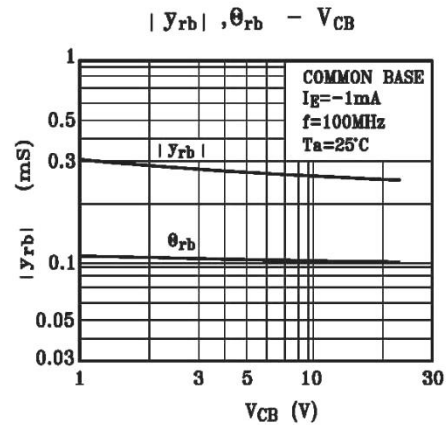
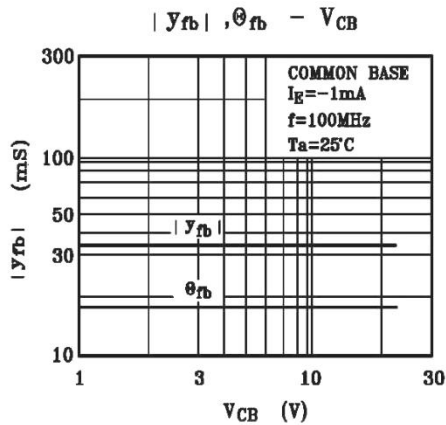
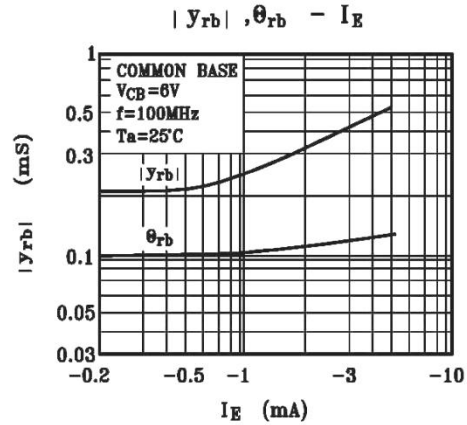
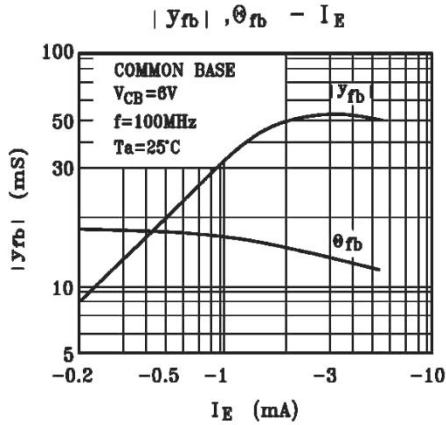
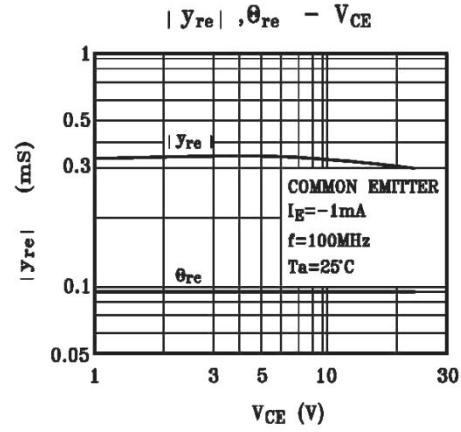
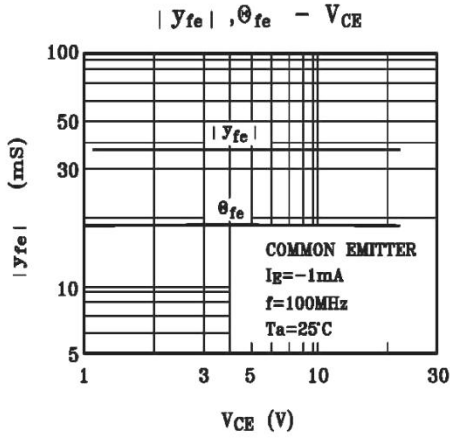
## Absolute Maximum Ratings(Ta=25°C)

Parameter	Symbol	Rating	Unit
Collector to Base Voltage	$V_{CBO}$	40	V
Collector to Emitter Voltage	$V_{CEO}$	30	V
Emitter to Base Voltage	$V_{EBO}$	4.0	V
Collector Current	$I_C$	20	mA
Emitter Current	$I_E$	-20	mA
Collector Power Dissipation	$P_C$	150	mW
Junction Temperature	$T_j$	150	°C
Storage Temperature Range	$T_{stg}$	-55~150	°C

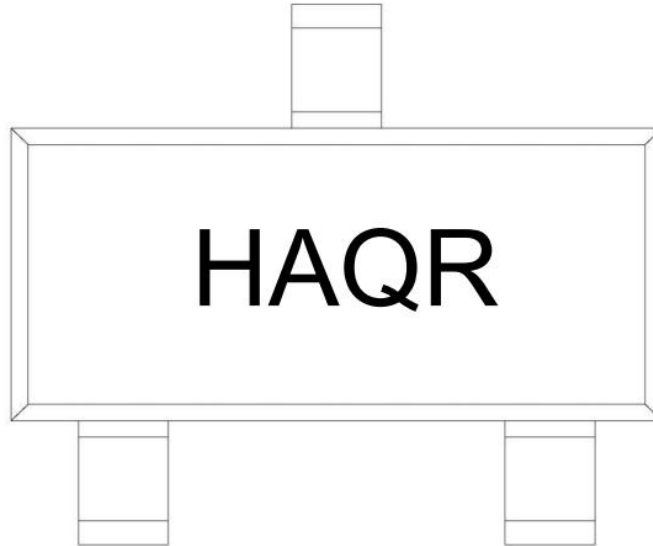
## Electrical Characteristics(Ta=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector Cut-Off Current	$I_{CBO}$	$V_{CB}=18V$ $I_E=0$			0.5	$\mu A$
Emitter Cut-Off Current	$I_{EBO}$	$V_{EB}=4.0V$ $I_C=0$			0.5	$\mu A$
DC Current Gain	$h_{FE}$	$V_{CE}=6.0V$ $I_C=1.0mA$	40		200	
Reverse Transfer Capacitance	$C_{re}$	$V_{CE}=6.0V$ $f=1.0MHz$		0.7		pF
Transition Frequency	$f_T$	$V_{CE}=6.0V$ $I_C=1.0mA$		550		MHz
Collector- Base Time Constant	$C_{c.rbb}$	$V_{CE}=6.0V$ $I_E=1.0mA$ $f=30MHz$			30	pS
Noise Figure	NF	$V_{CE}=6.0V$ $I_C=0.1mA$ $f=100MHz$		2.5	5.0	dB
Power Gain	$G_{pe}$	$V_{CE}=6.0V$ $I_C=0.1mA$ $f=100MHz$	15	18		dB

Electrical Characteristic Curve



**Marking Instructions**



Note:

- H: Company Code
- AQ: Product Type
- R:  $h_{FE}$  Classifications Symbol

$h_{FE}$ Classifications Symbol	R	O	Y
$h_{FE}$ Range	40~80	70~140	100~200
Marking	HAQR	HAQO	HAQY

**Packaging SPEC**

REEL INFORMATION

Package Type	Units					Dimension (unit: mm <sup>3</sup> )		
	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" x8	180x120x180	390x385x205

**Package Outline Dimensions**

SOT-23

单位; mm

