

# ST 2SC1923

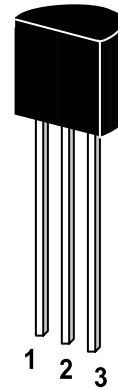
## NPN Silicon Epitaxial Planar Transistor

for high frequency amplifier applications

FM, RF, MIX, IF amplifier applications.

The transistor is subdivided into three groups, R, O and Y, according to its DC current gain.

On special request, these transistors can be manufactured in different pin configurations.



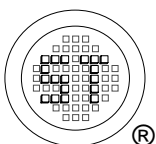
1. Emitter 2. Collector 3. Base

TO-92 Plastic Package

Weight approx. 0.19g

## Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

	Symbol	Value	Unit
Collector Base Voltage	$V_{CBO}$	40	V
Collector Emitter Voltage	$V_{CEO}$	20	V
Emitter Base Voltage	$V_{EBO}$	4	V
Collector Current	$I_C$	20	mA
Base Current	$I_B$	4	mA
Power Dissipation	$P_{tot}$	100	mW
Junction Temperature	$T_j$	125	$^\circ\text{C}$
Storage Temperature Range	$T_s$	-55 to +125	$^\circ\text{C}$



**SEMTECH ELECTRONICS LTD.**

(Subsidiary of Sino-Tech International Holdings Limited, a company listed on the Hong Kong Stock Exchange, Stock Code: 724)



ISO/TS 16949 : 2002  
Certificate No. 05103



ISO 14001:2004  
Certificate No. 71116



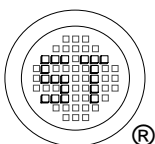
ISO 9001:2000  
Certificate No. 0506098

Dated : 07/12/2002

# ST 2SC1923

## Characteristics at $T_{amb}=25\text{ }^{\circ}\text{C}$

	Symbol	Min.	Typ.	Max.	Unit	
DC Current Gain at $V_{CE}=6\text{V}$ , $I_C=1\text{mA}$  Current Gain Group	R	$h_{FE}$	40	-	80	-
	O	$h_{FE}$	70	-	140	-
	Y	$h_{FE}$	100	-	200	-
Collector Cutoff Current at $V_{CB}=18\text{V}$		$I_{CBO}$	-	-	0.5	$\mu\text{A}$
Emitter Cutoff Current at $V_{EB}=4\text{V}$		$I_{EBO}$	-	-	0.5	$\mu\text{A}$
Reverse Transfer Capacitance at $V_{CE}=6\text{V}$ , $f=1\text{MHz}$		$C_{re}$	-	0.70	-	pF
Gain Bandwidth Product at $V_{CE}=6\text{V}$ , $I_C=1\text{mA}$		$f_T$	-	550	-	MHz
Collector-Base Time Constant at $V_{CE}=6\text{V}$ , $I_E=-1\text{mA}$ , $f=30\text{MHz}$		$C_r, r_{bb'}$	-	-	30	ps
Noise Figure at $V_{CE}=6\text{V}$ , $I_E=-1\text{mA}$ , $f=100\text{MHz}$		NF	-	2.5	4	dB
Power Gain at $V_{CE}=6\text{V}$ , $I_E=-1\text{mA}$ , $f=100\text{MHz}$		$G_{pe}$	15	18	-	dB



## SEMTECH ELECTRONICS LTD.

(Subsidiary of Sino-Tech International Holdings Limited, a company listed on the Hong Kong Stock Exchange, Stock Code: 724)



ISO/TS 16949 : 2002  
Certificate No. 05103



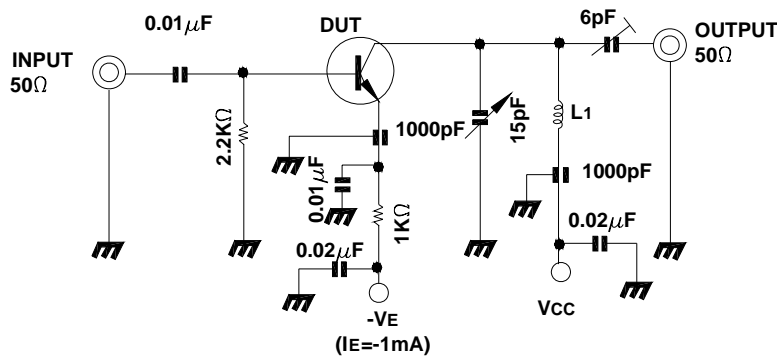
ISO 14001:2004  
Certificate No. 7116



ISO 9001:2000  
Certificate No. 0506098

Dated : 07/12/2002

# ST 2SC1923



L1:0.8mmφ SILVER PLATED COPPER WIRE, 4T,10ID,8 LENGTH

Fig. 1 NF, Gpe TEST CIRCUIT

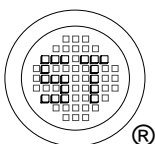
PARAMETER(Typ.)

(1) COMMON EMITTER ( $V_{CE}=6V, I_E=-1mA, f=100MHz$ )

CHARACTERISTIC	SYMBOL	TYP.	UNIT
Input Conductance	$g_{ie}$	2.9	mS
Input Capacitance	$C_{ie}$	10.2	pF
Reverse Transfer Admittance	$ y_{re} $	0.33	$\mu S$
Phase Angle of Reverse Transfer Admittance	$-Y_{re}$	90	$^{\circ}$
Forward Transfer Admittance	$ y_{fe} $	40	mS
Phase Angle of Forward Transfer Admittance	$-Y_{fe}$	20	$^{\circ}$
Output Conductance	$g_{oe}$	45	$\mu S$
Output Capacitance	$C_{oe}$	1.1	pF

(2) COMMON BASE ( $V_{CE}=6V, I_E=-1mA, f=100MHz$ )

CHARACTERISTIC	SYMBOL	TYP.	UNIT
Input Conductance	$g_{ib}$	34	mS
Input Capacitance	$-C_{ib}$	10	pF
Reverse Transfer Admittance	$ y_{rb} $	0.27	$\mu S$
Phase Angle of Reverse Transfer Admittance	$-Y_{rb}$	105	$^{\circ}$
Forward Transfer Admittance	$ y_{fb} $	34	mS
Phase Angle of Forward Transfer Admittance	$Y_{fb}$	165	$^{\circ}$
Output Conductance	$g_{ob}$	45	$\mu S$
Output Capacitance	$C_{ob}$	1.1	pF



**SEMTECH ELECTRONICS LTD.**

(Subsidiary of Sino-Tech International Holdings Limited, a company listed on the Hong Kong Stock Exchange, Stock Code: 724)



ISO/TS 16949 : 2002  
Certificate No. 05103



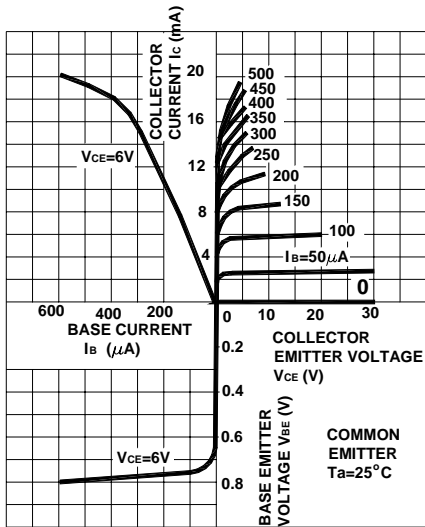
ISO 14001:2004  
Certificate No. 71116



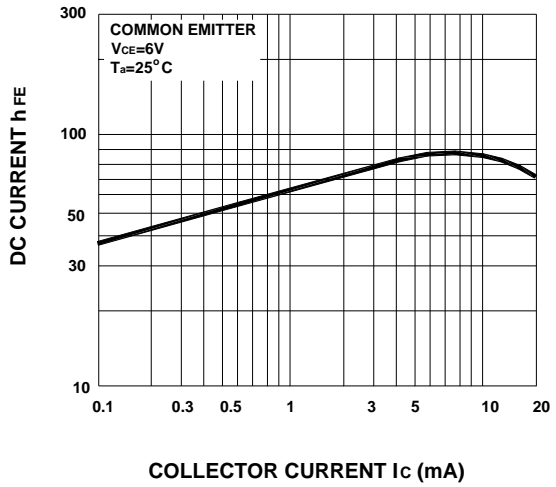
ISO 9001:2000  
Certificate No. 0506098

Dated : 07/12/2002

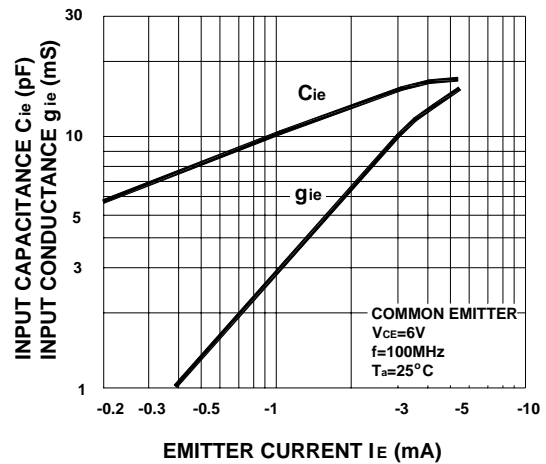
## STATIC CHARACTERISTICS



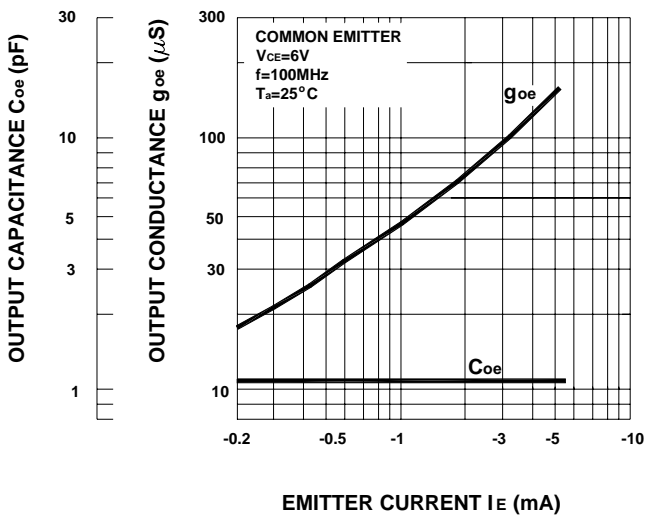
## $h_{FE}-I_c$



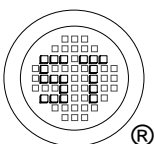
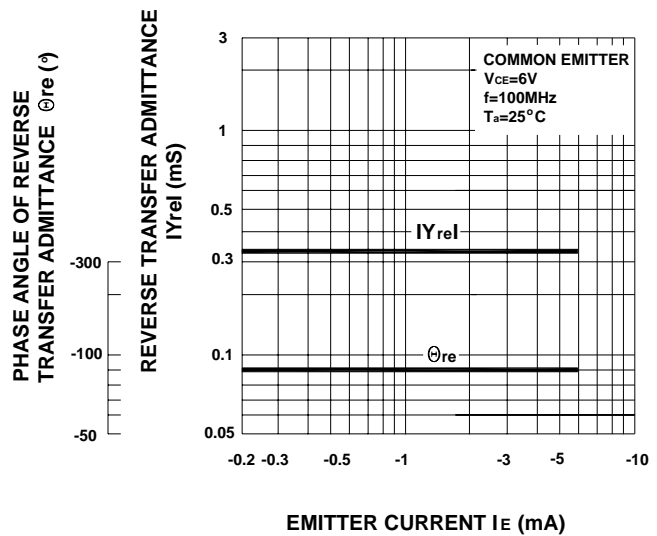
## $C_{ie}, g_{ie}-I_E$



## $C_{oe}, g_{oe}-I_E$



## $I_{Yrel}, \theta_{re}-I_E$



**SEMTECH ELECTRONICS LTD.**

(Subsidiary of Sino-Tech International Holdings Limited, a company listed on the Hong Kong Stock Exchange, Stock Code: 724)



ISO/TS 16949 : 2002  
Certificate No. 05103

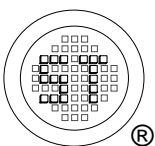
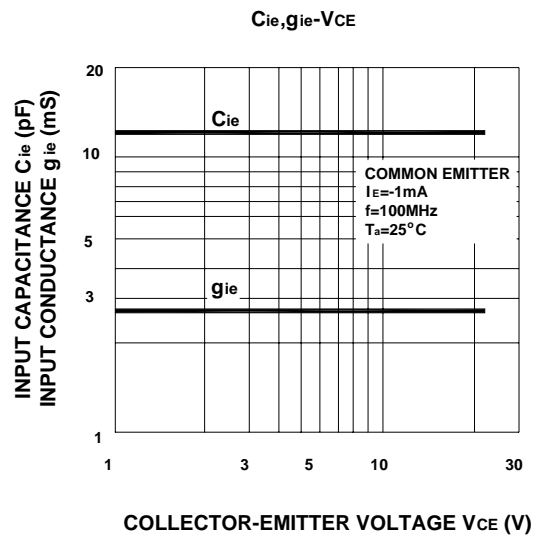
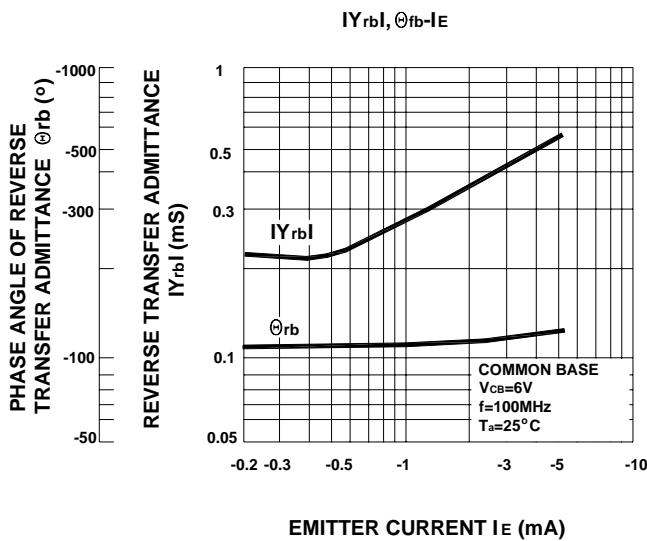
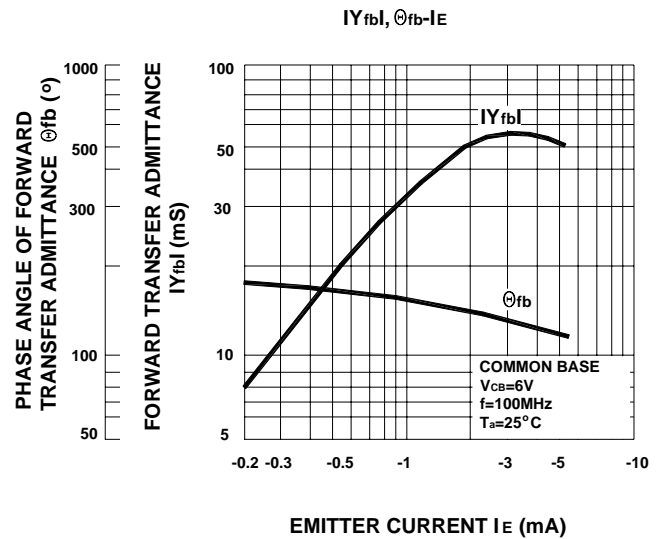
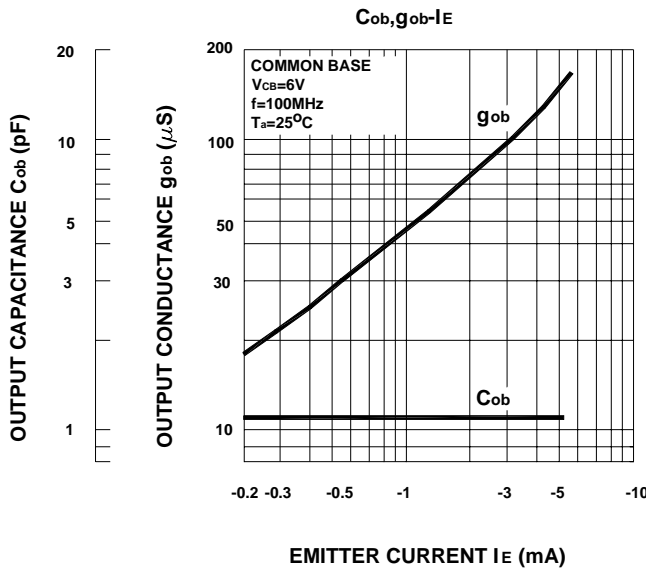
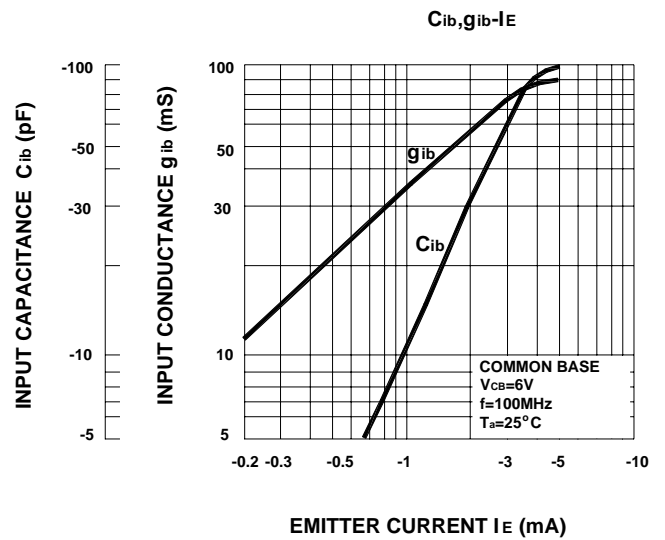
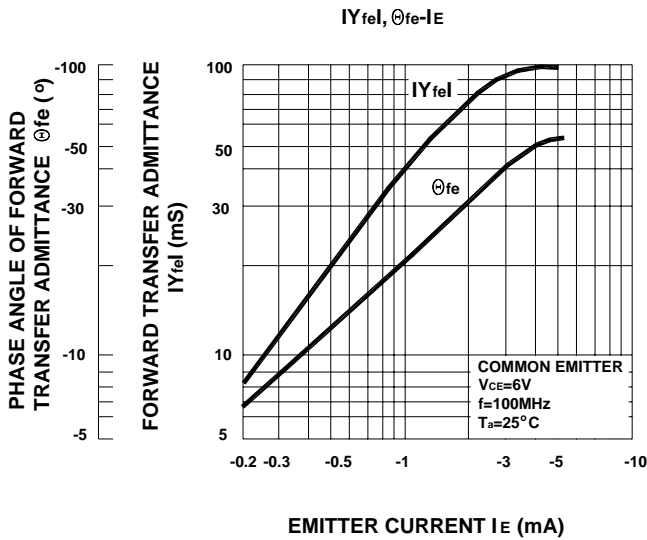


ISO 14001:2004  
Certificate No. 71116

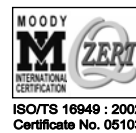


ISO 9001:2000  
Certificate No. 0500098

Dated : 07/12/2002



**SEMTECH ELECTRONICS LTD.**  
 (Subsidiary of Sino-Tech International Holdings Limited, a company listed on the Hong Kong Stock Exchange, Stock Code: 724)

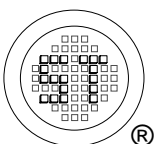
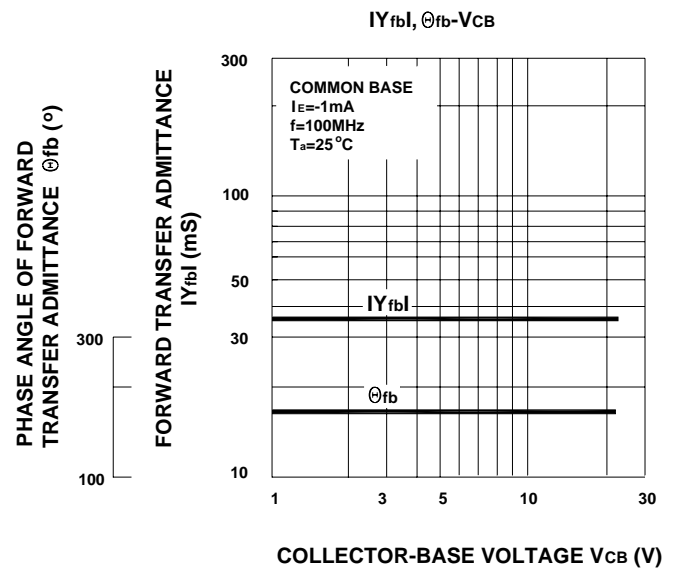
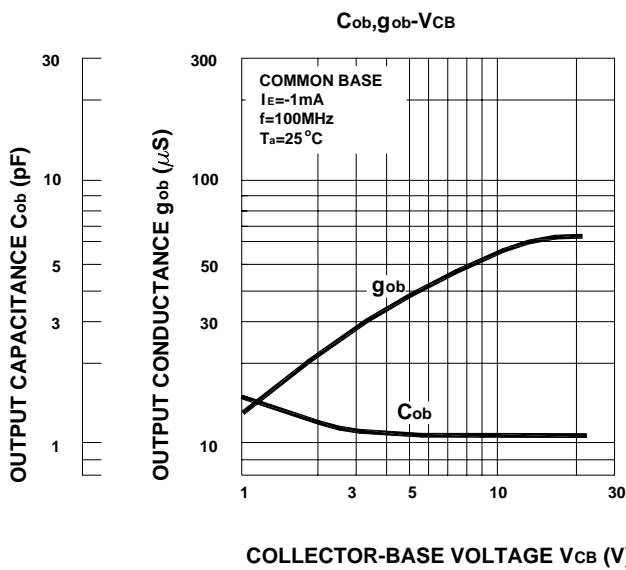
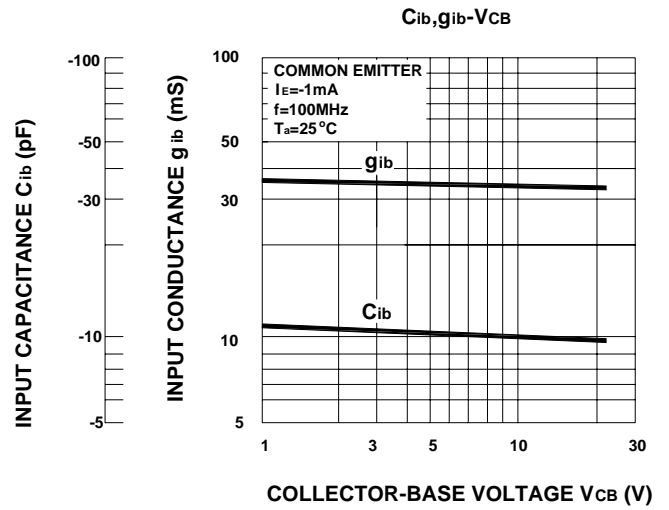
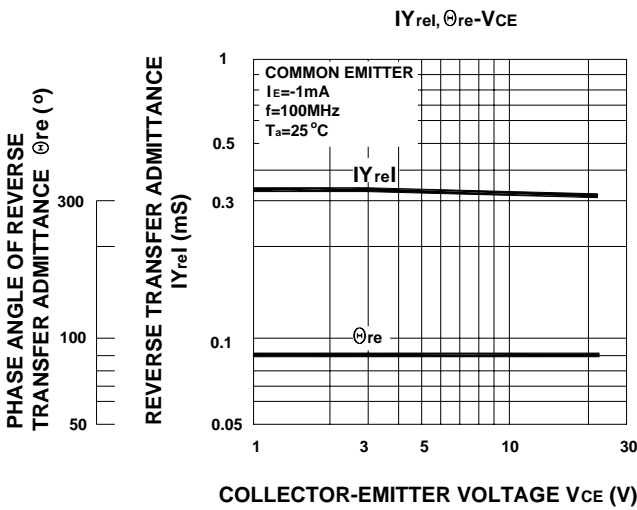
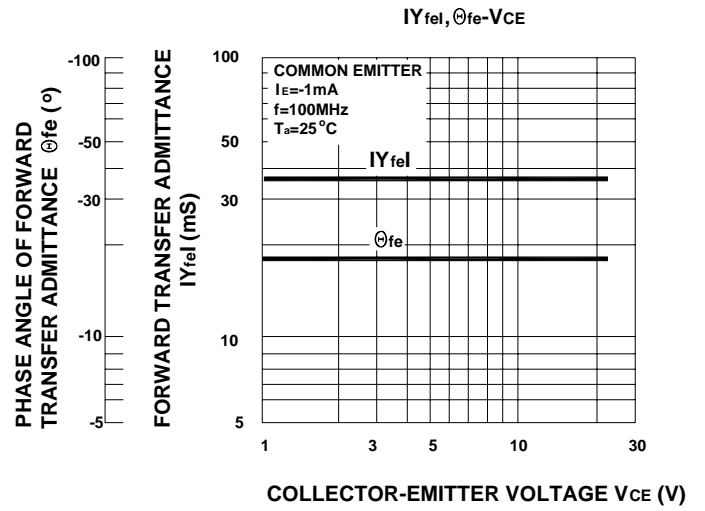
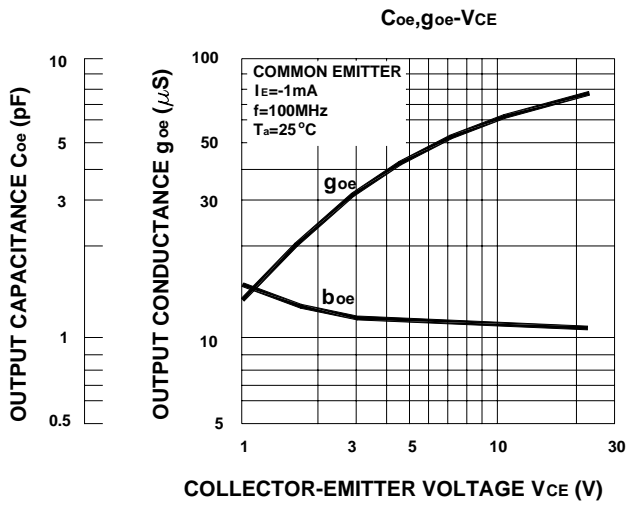


ISO/TS 16949 : 2002  
 Certificate No. 05103

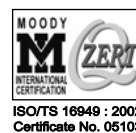
ISO 14001:2004  
 Certificate No. 71116

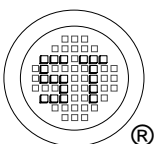
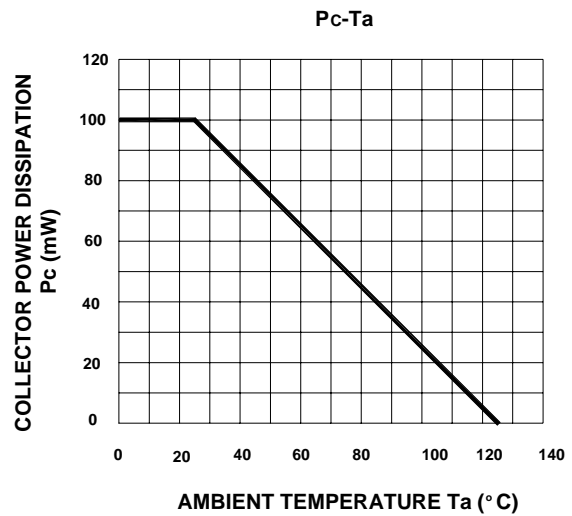
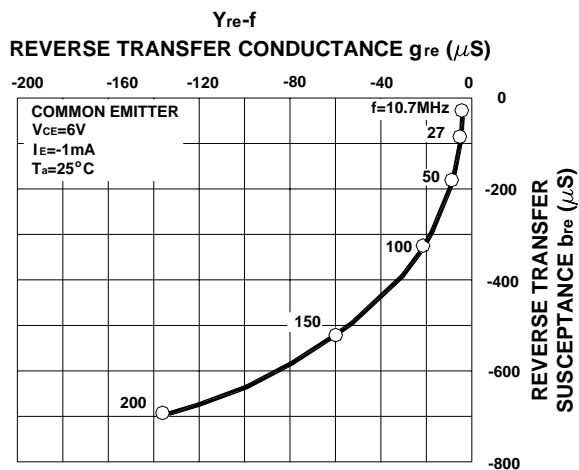
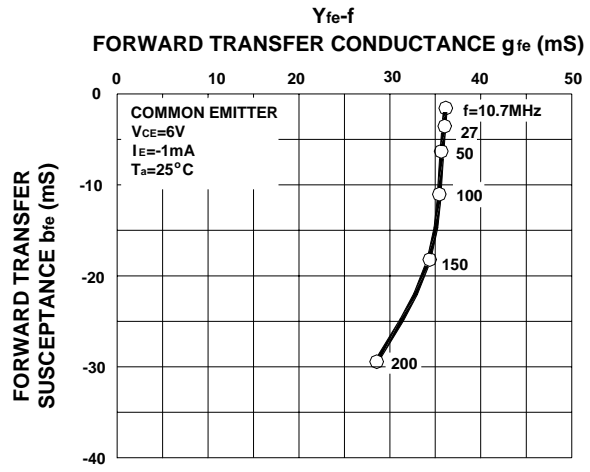
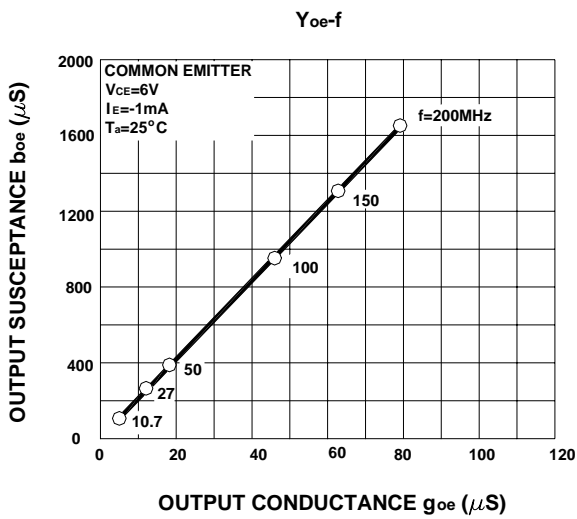
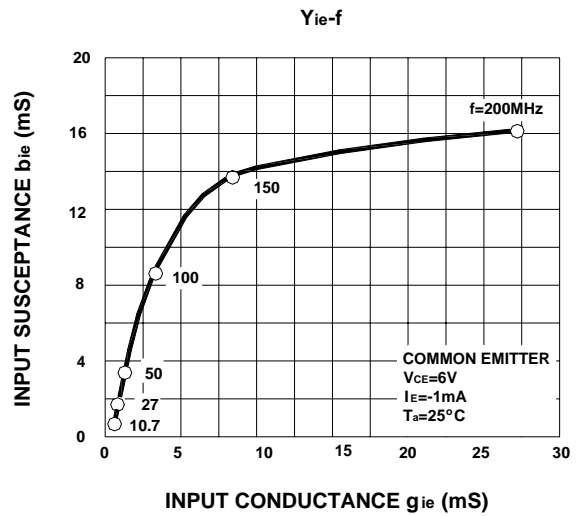
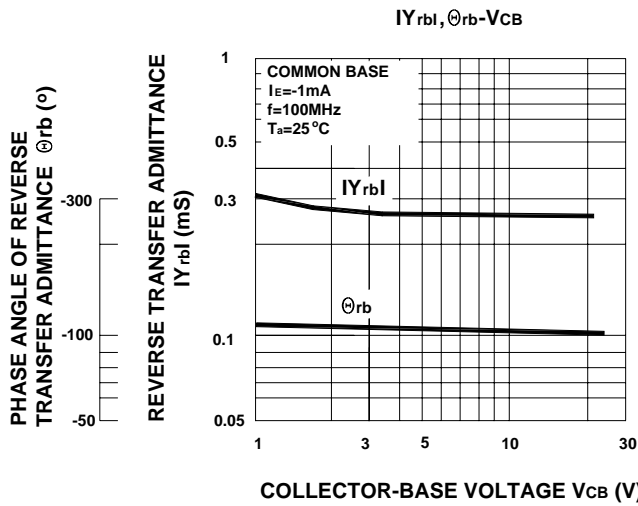
ISO 9001:2000  
 Certificate No. 0506098

Dated : 07/12/2002



**SEMTECH ELECTRONICS LTD.**  
(Subsidiary of Sino-Tech International Holdings Limited, a company listed on the Hong Kong Stock Exchange, Stock Code: 724)





**SEMTECH ELECTRONICS LTD.**

(Subsidiary of Sino-Tech International Holdings Limited, a company listed on the Hong Kong Stock Exchange, Stock Code: 724)



ISO/TS 16949 : 2002  
 Certificate No. 05103

ISO 14001:2004  
 Certificate No. 71116

ISO 9001:2000  
 Certificate No. 0506098

Dated : 07/12/2002