

**2SC3142**

## High-Frequency General-Purpose Amplifier Applications

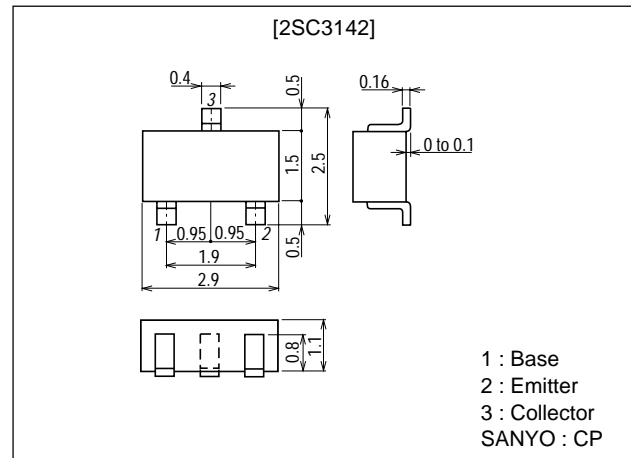
### Features

- FBET series.
- Compact package enabling compactness of sets.
- High  $f_T$  and small  $c_{re}$  ( $f_T=750\text{MHz}$  typ,  $c_{re}=0.6$  typ).

### Package Dimensions

unit:mm

2018B



### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CBO}$		25	V
Collector-to-Emitter Voltage	$V_{CEO}$		20	V
Emitter-to-Base Voltage	$V_{EBO}$		3	V
Collector Current	$I_C$		30	mA
Collector Dissipation	$P_C$		150	mW
Junction Temperature	$T_J$		125	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-40 to +125	$^\circ\text{C}$

#### Electrical Characteristics at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=10\text{V}, I_E=0$			0.1	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=3\text{V}, I_C=0$			0.1	$\mu\text{A}$
DC Current Gain	$h_{FE}$	$V_{CE}=6\text{V}, I_C=1\text{mA}$	40*		180*	
Gain-Bandwidth Product	$f_T$	$V_{CE}=6\text{V}, I_C=4\text{mA}$	450	750		MHz
Feedback Capacitance	$C_{re}$	$V_{CB}=6\text{V}, f=1\text{MHz}$		0.6	0.9	pF
Base-to-Collector Time Constant	$r_{bb}C_C$	$V_{CE}=6\text{V}, I_C=1\text{mA}, f=31.9\text{MHz}$			19	ps
Noise Figure	NF	$V_{CE}=6\text{V}, I_C=1\text{mA}, f=100\text{MHz}$		2.2		dB
Power Gain	PG	$V_{CE}=6\text{V}, I_C=1\text{mA}, f=100\text{MHz}$		28		dB

\* : The 2SC3142 are classified as follows according to  $h_{FE}$  at 1mA :

(Note) Marking : J

 $h_{FE}$  rank : 2, 3, 4

Rank	2	3	4
$h_{FE}$	40 to 80	60 to 120	90 to 180

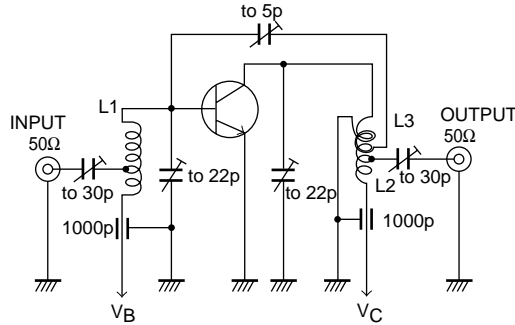
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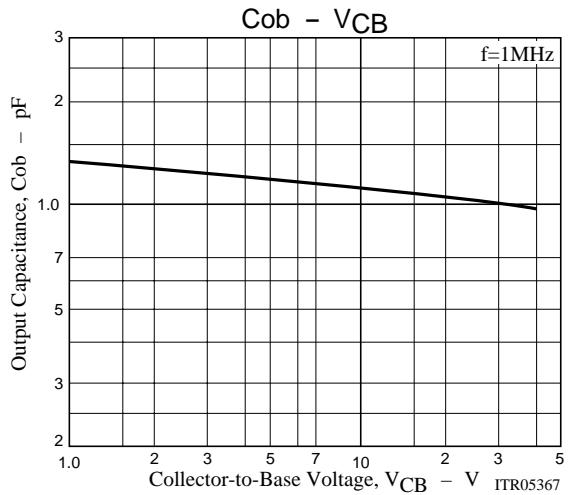
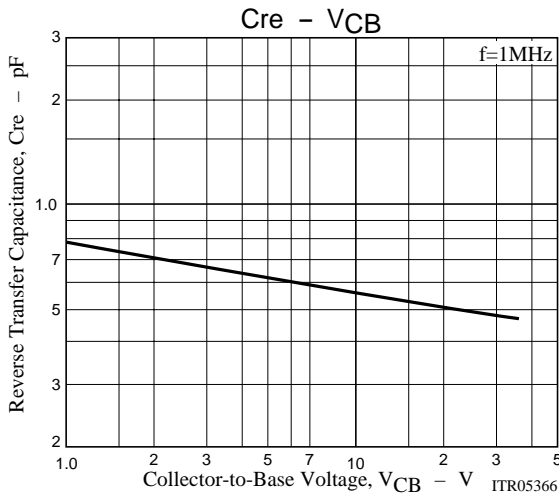
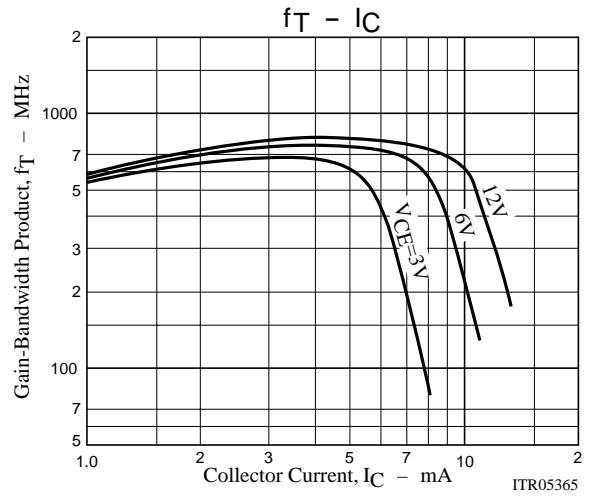
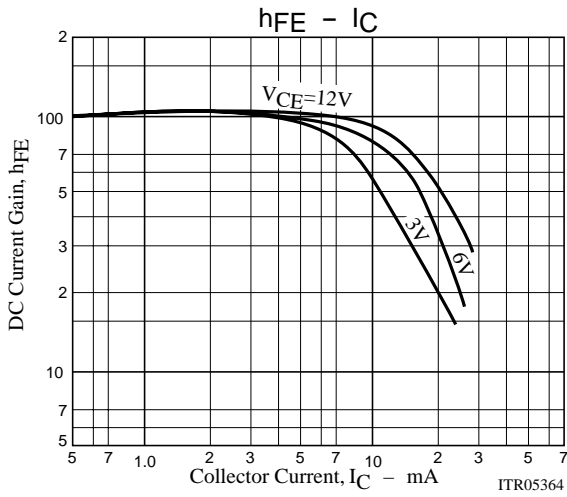
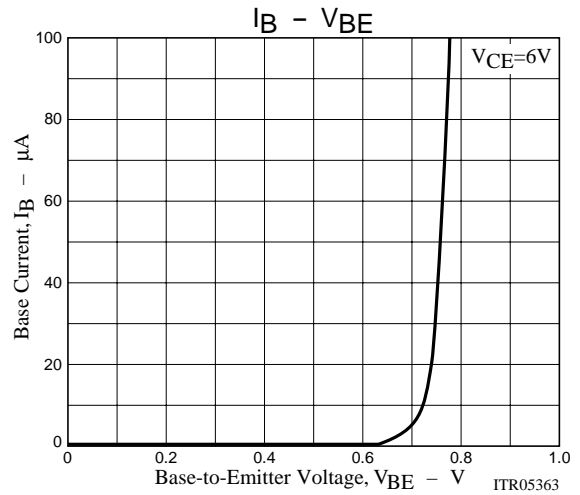
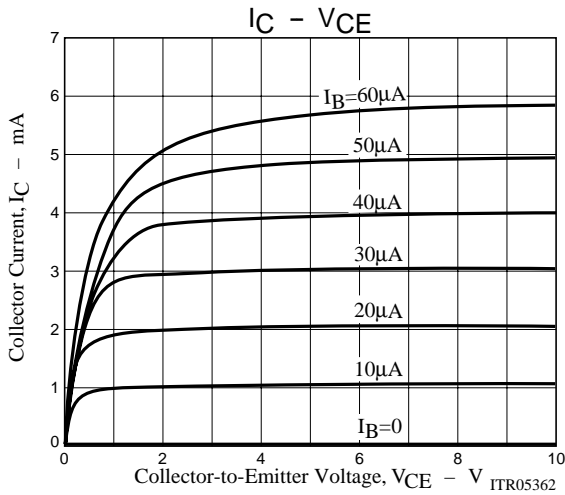
NF, PG Test Circuit



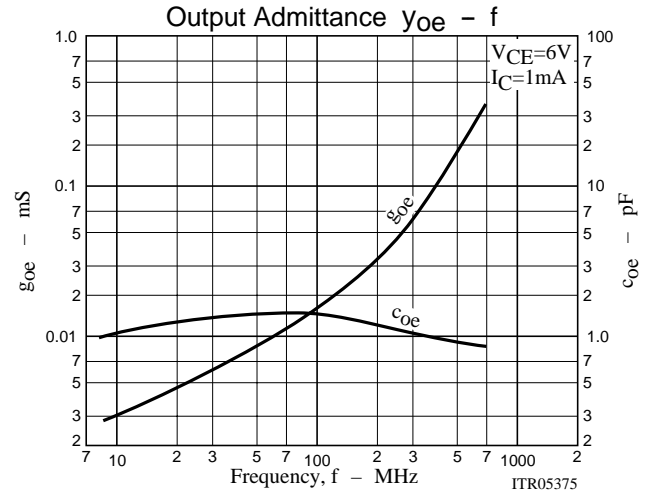
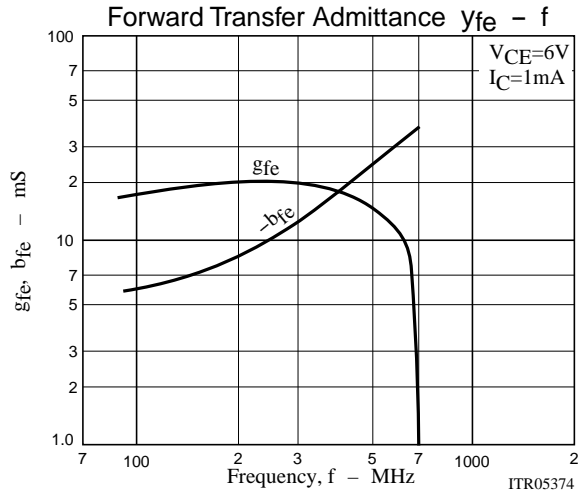
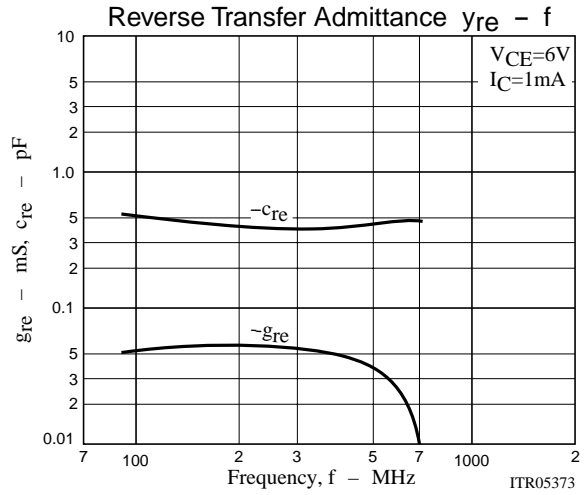
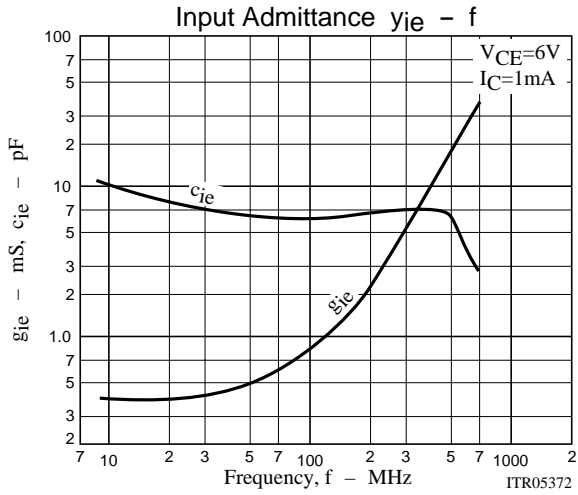
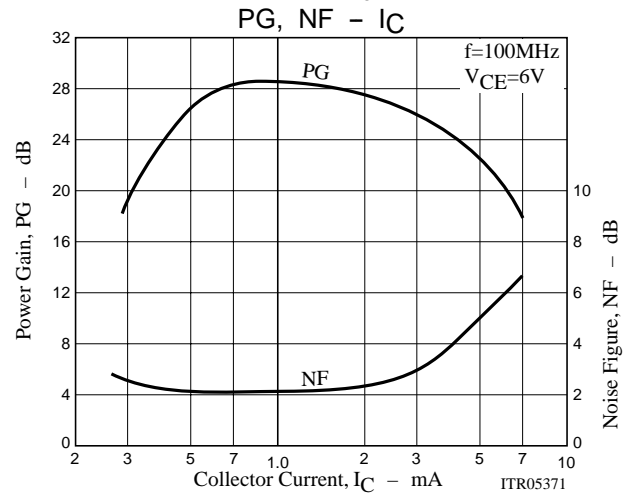
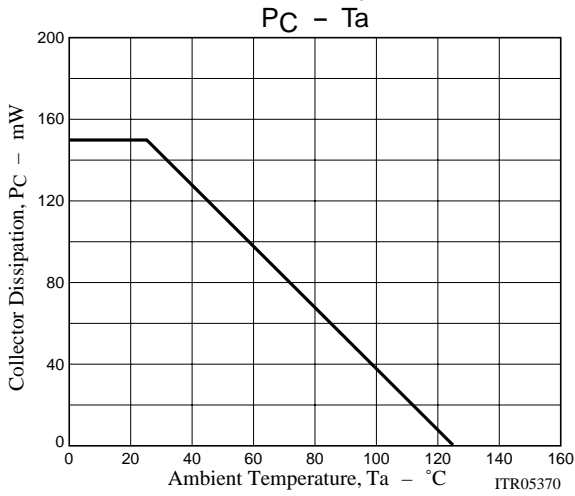
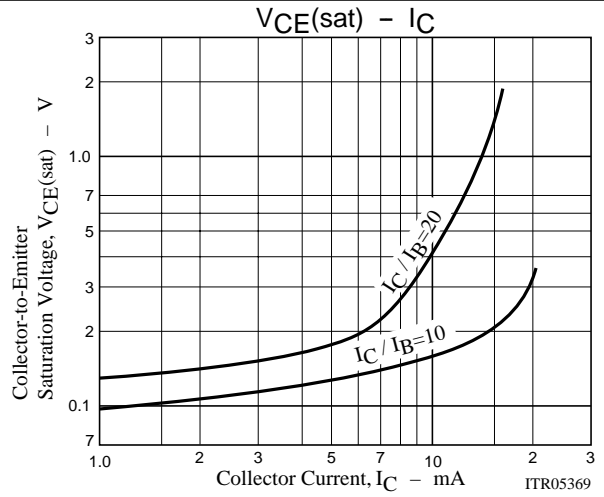
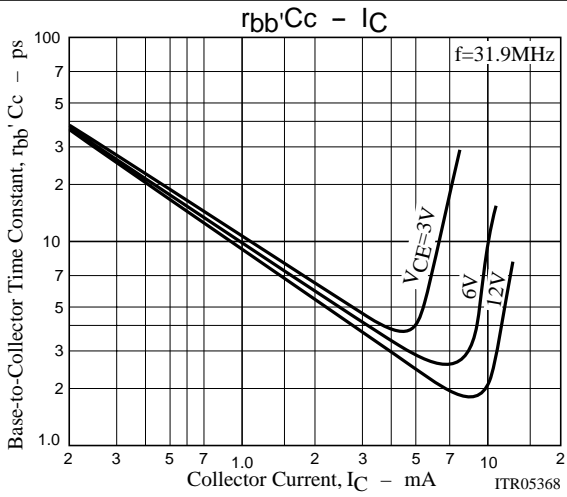
L1 : 1mm $\phi$  plated wire 10mm $\phi$  5T, pitch 15mm, tap : 2T from base.

L2 : 1mm $\phi$  plated wire 10mm $\phi$  7T, pitch 10mm, tap : 2T from V<sub>C</sub>.

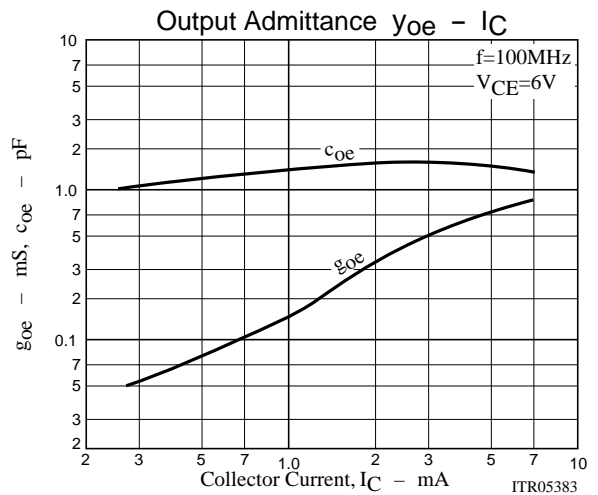
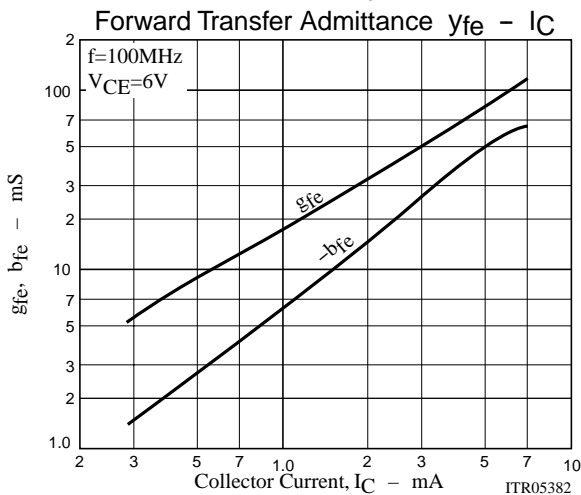
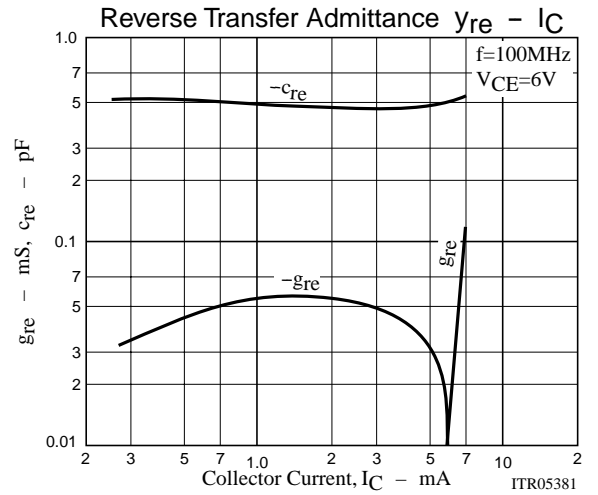
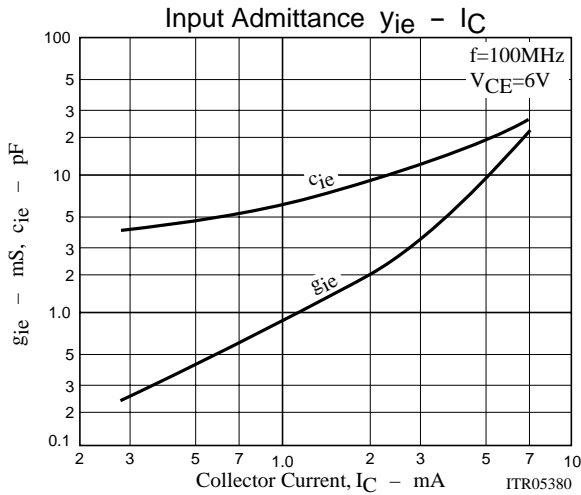
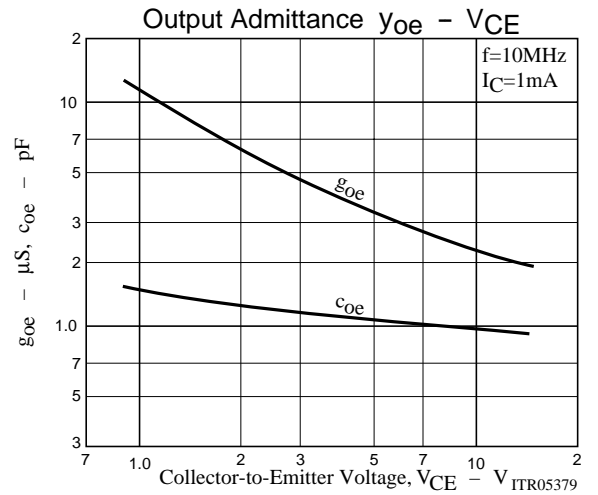
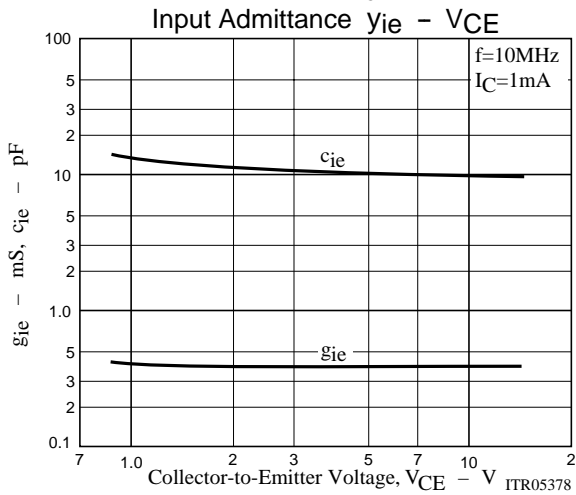
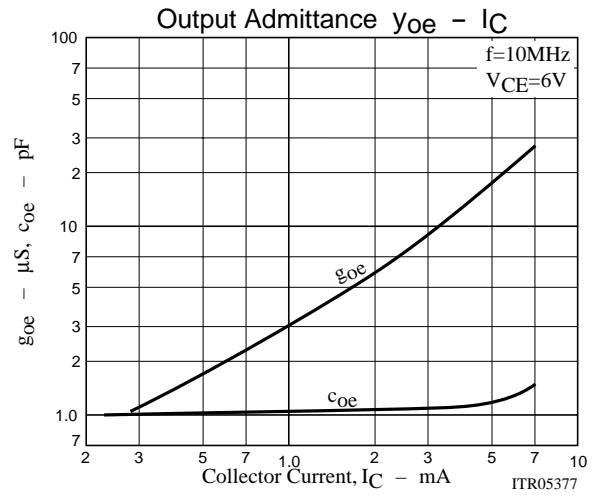
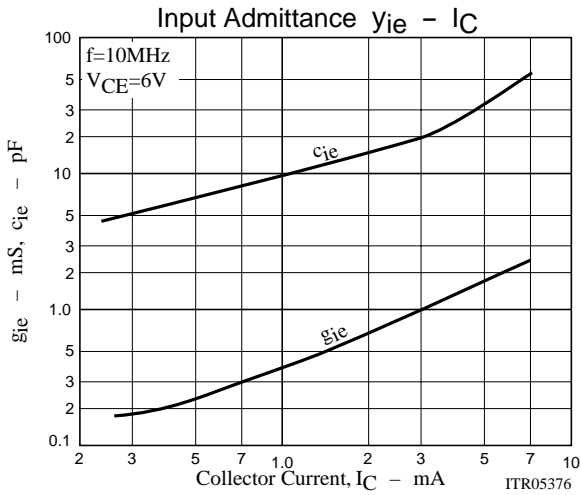
L3 : 1mm $\phi$  enameled wire 10mm $\phi$  3T, pitch 10mm.

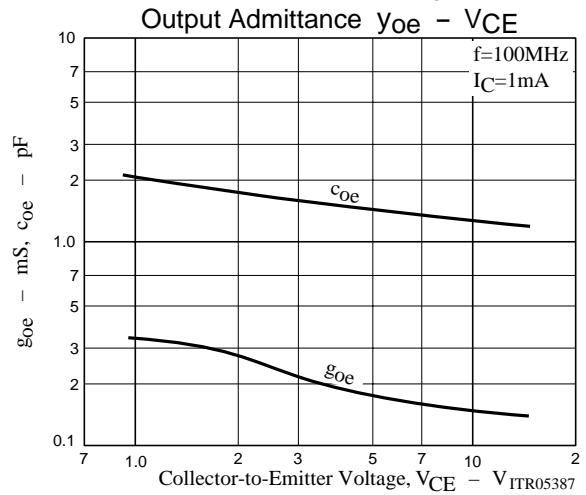
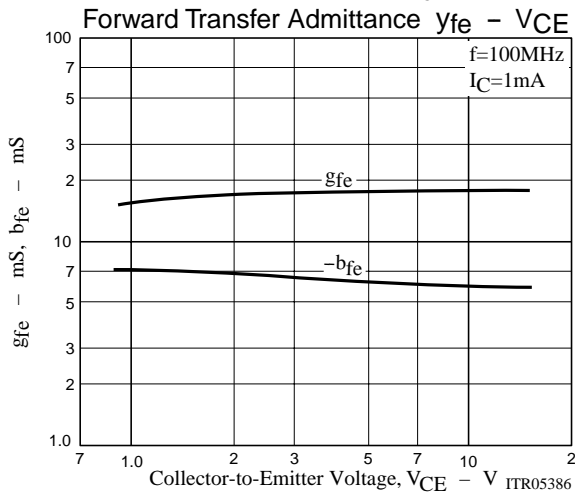
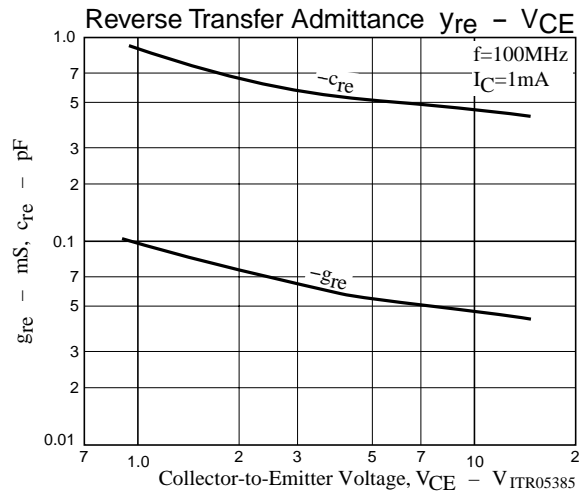
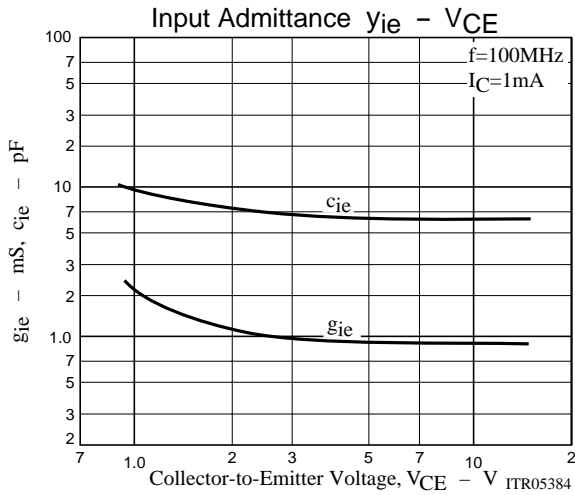


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