



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

TR : NPN Epitaxial Planar Silicon Transistor

FET : N-Channel Silicon Junction FET

CPH5901 — High-Frequency Amplifier. AM Amplifier. Low-Frequency Amplifier Applications

Features

- Composite type with J-FET and NPN transistors contained in the CPH5 package, improving the mounting efficiency greatly.
- The CPH5901 is formed with two chips, being equivalent to the 2SK932 and the other the 2SC4639, placed in one package.
- Common drain and emitter.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
[FET]				
Drain-to-Source Voltage	V _{DSX}		15	V
Gate-to-Drain Voltage	V _{GD}		-15	V
Gate Current	I _G		10	mA
Drain Current	I _D		50	mA
Allowable Power Dissipation	P _D	Mounted on a ceramic board (600mm ² ×0.8mm)	350	mW
[TR]				
Collector-to-Base Voltage	V _{CB}		55	V
Collector-to-Emitter Voltage	V _{CE}		50	V
Emitter-to-Base Voltage	V _{EB}		6	V
Collector Current	I _C		150	mA
Collector Current (Pulse)	I _{CP}		300	mA
Base Current	I _B		30	mA
Collector Dissipation	P _C	Mounted on a ceramic board (600mm ² ×0.8mm)	350	mW
[Common Ratings]				
Total Dissipation	P _T	Mounted on a ceramic board (600mm ² ×0.8mm)	500	mW
Junction Temperature	T _J		150	°C
Storage Temperature	T _{stg}		-55 to +150	°C

Marking : 1A

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CPH5901

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[FET]						
Gate-to-Drain Breakdown Voltage	$V_{(BR)GDS}$	$I_G=-10\mu A, V_{DS}=0V$	-15			V
Gate Cutoff Current	I_{GSS}	$V_{GS}=-10V, V_{DS}=0V$			-1.0	nA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=5V, I_D=100\mu A$	-0.2	-0.6	-1.4	V
Drain Current	I_{DSS}	$V_{DS}=5V, V_{GS}=0V$	6.0*		20.0*	mA
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=5V, V_{GS}=0V, f=1kHz$	25	50		mS
Input Capacitance	C_{iss}	$V_{DS}=5V, V_{GS}=0V, f=1MHz$		10		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS}=5V, V_{GS}=0V, f=1MHz$		3.0		pF
Noise Figure	NF	$V_{DS}=5V, R_g=1k\Omega, I_D=1mA, f=1kHz$		1.5		dB
[TR]						
Collector Cutoff Current	I_{CBO}	$V_{CB}=35V, I_E=0A$			0.1	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=4V, I_C=0A$			0.1	μA
DC Current Gain	h_{FE}	$V_{CE}=6V, I_C=1mA$	135		400	
Gain-Bandwidth Product	f_T	$V_{CE}=6V, I_C=10mA$		200		MHz
Output Capacitance	C_{ob}	$V_{CB}=6V, f=1MHz$		1.7		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=50mA, I_B=5mA$		0.08	0.4	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=50mA, I_B=5mA$		0.8	1.0	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=10\mu A, I_E=0A$	55			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=1mA, R_{BE}=\infty$	50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=10\mu A, I_C=0A$	6			V
Turn-ON Time	t_{on}	See specified Test Circuit.		0.15		μs
Storage Time	t_{stg}	See specified Test Circuit.		0.75		μs
Fall Time	t_f	See specified Test Circuit.		0.20		μs

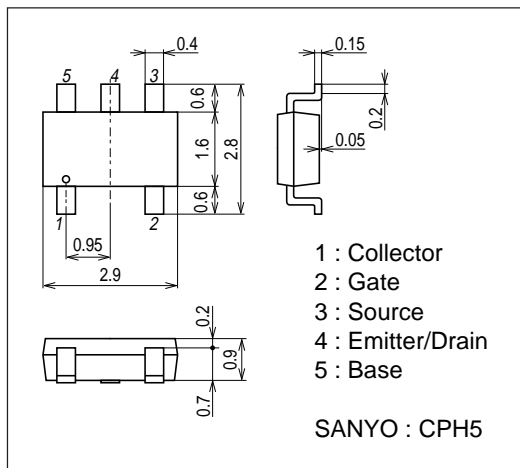
* : The CPH5901 is classified by I_{DSS} as follows : (unit : mA)

Rank	F	G
I_{DSS}	6.0 to 12.0	10.0 to 20.0

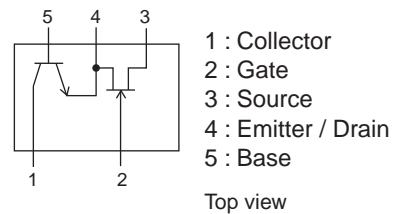
Package Dimensions

unit : mm

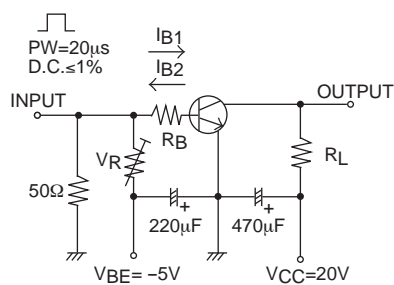
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Electrical Connection

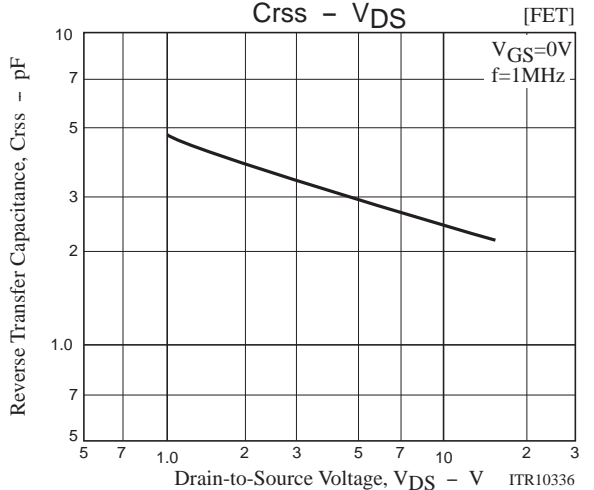
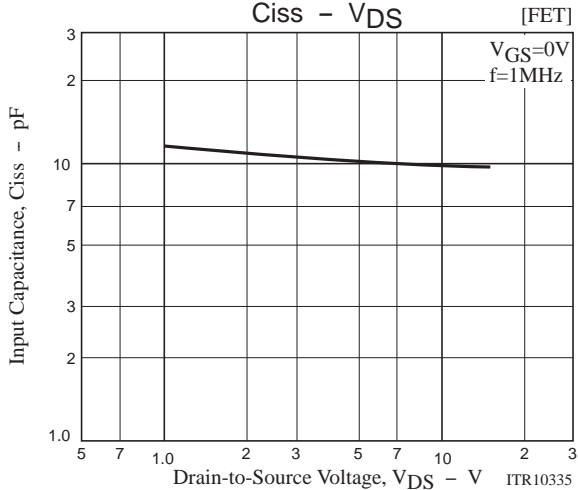
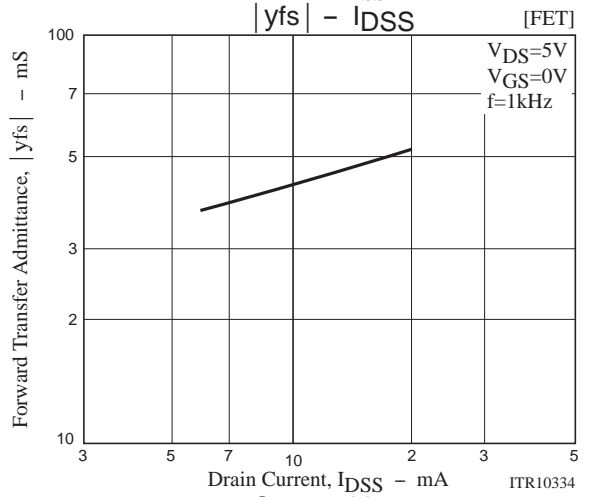
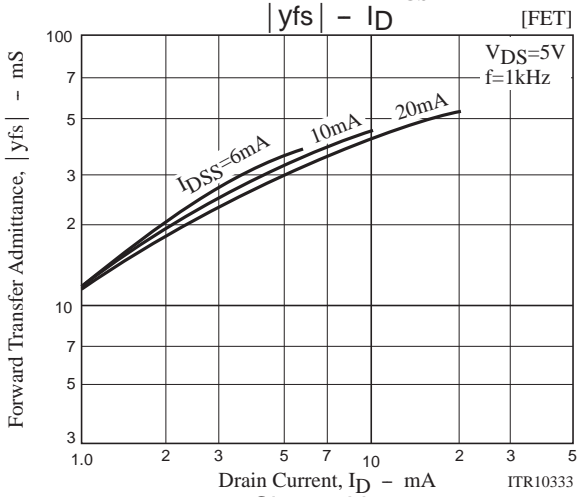
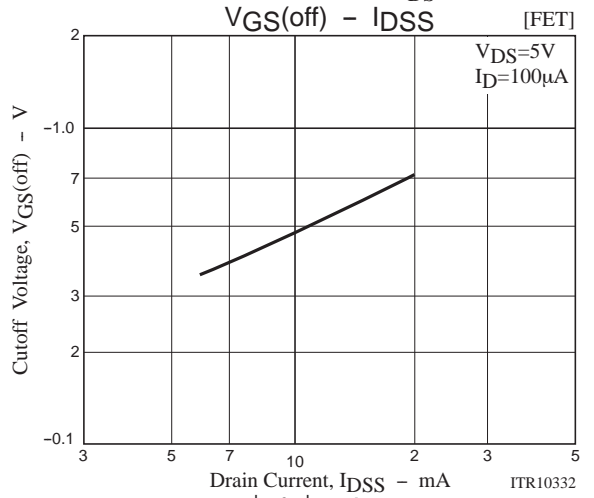
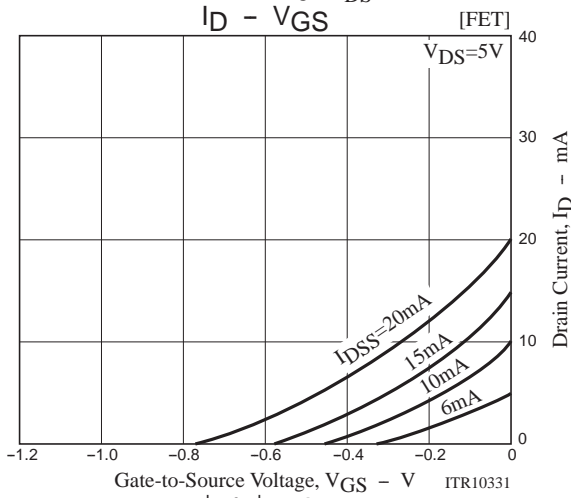
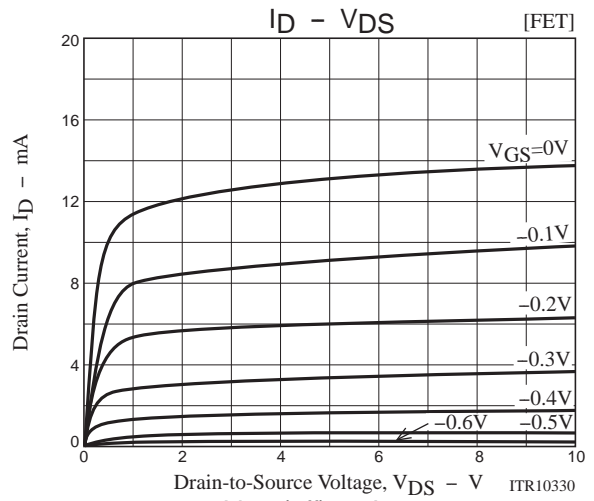
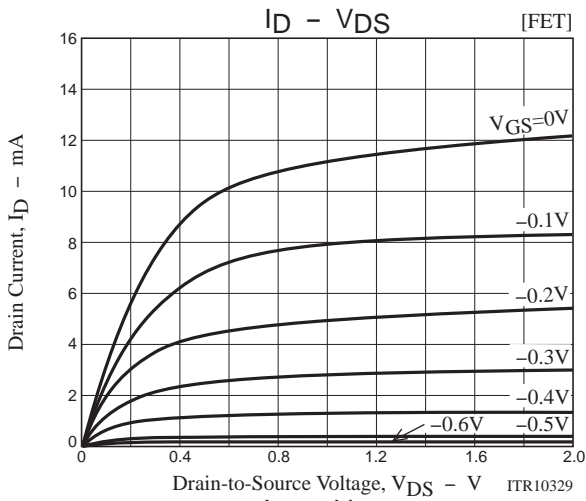


Switching Time Test Circuit

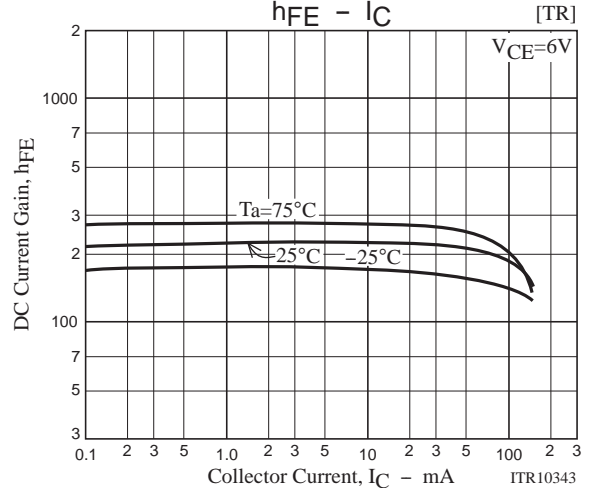
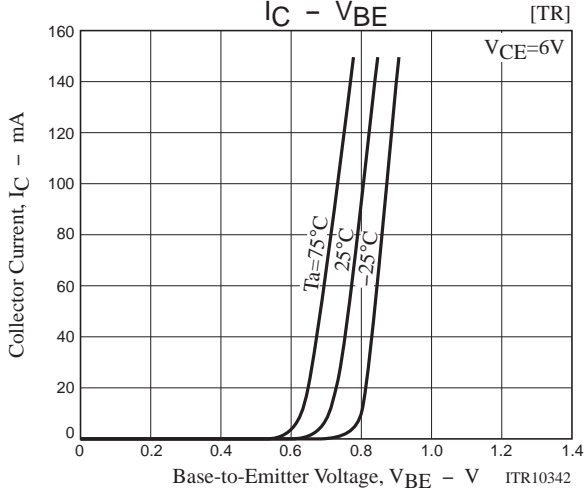
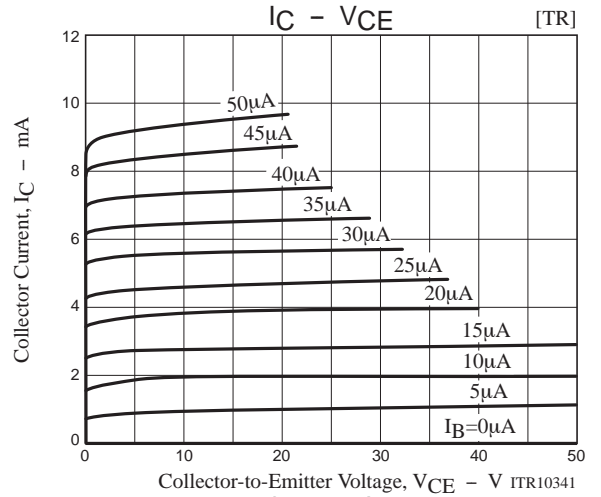
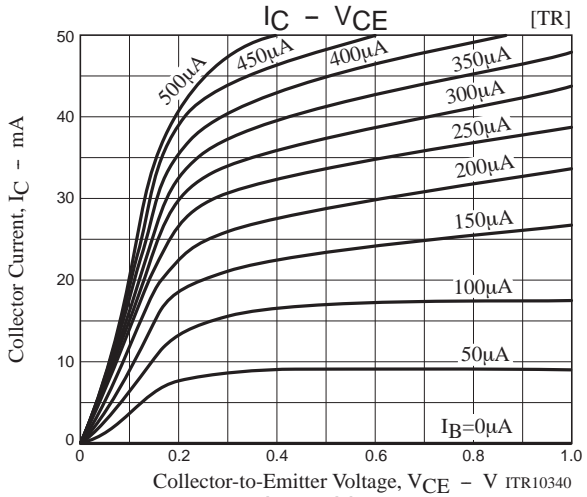
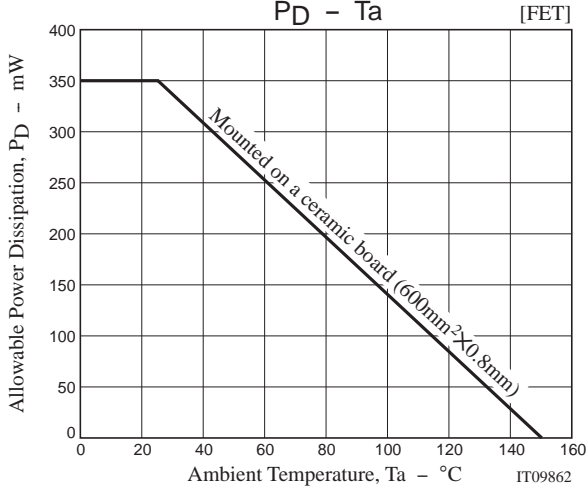
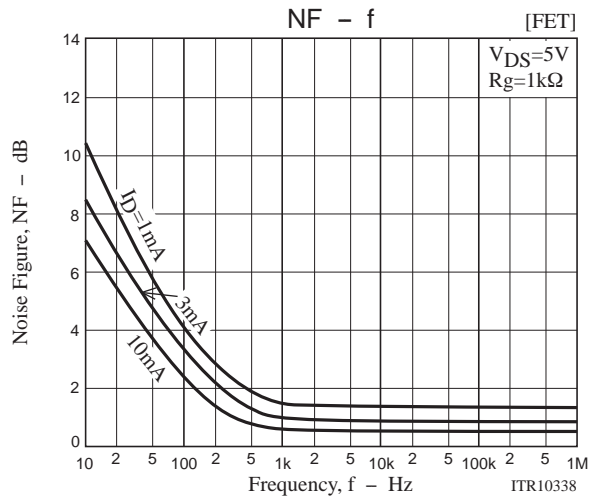
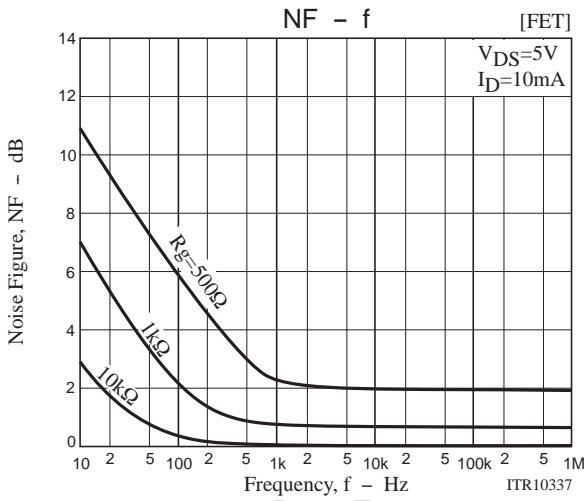


$$10I_{B1} = -10I_{B2} = I_C = 10mA$$

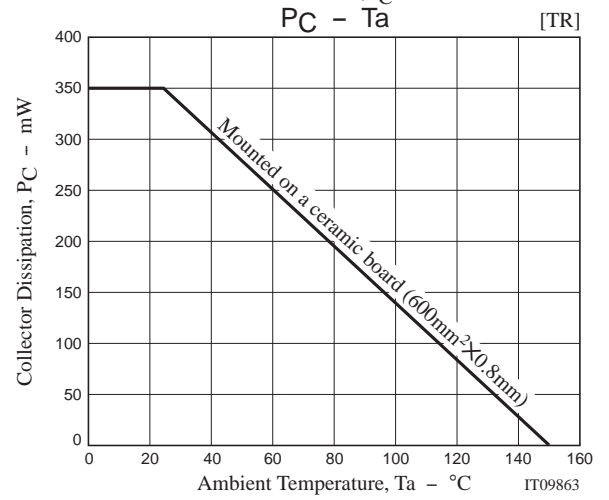
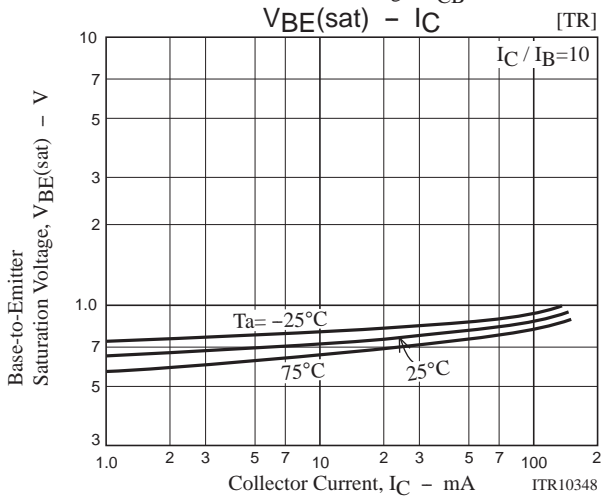
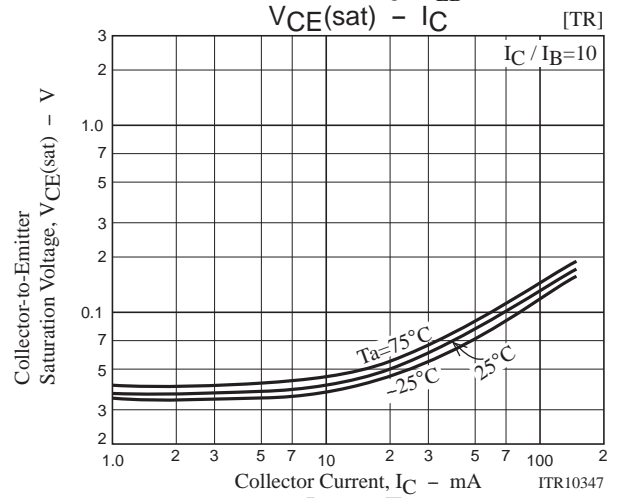
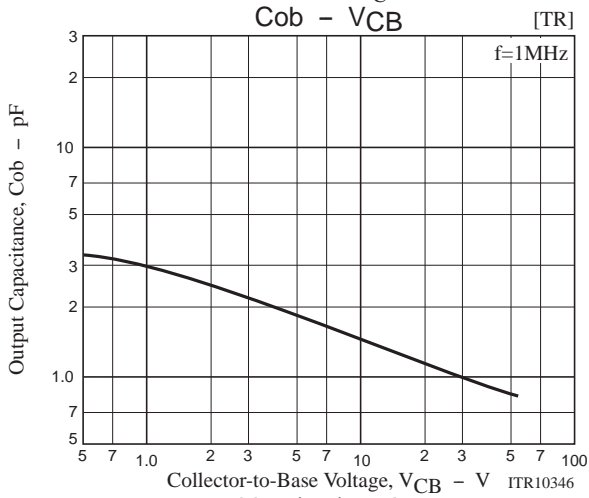
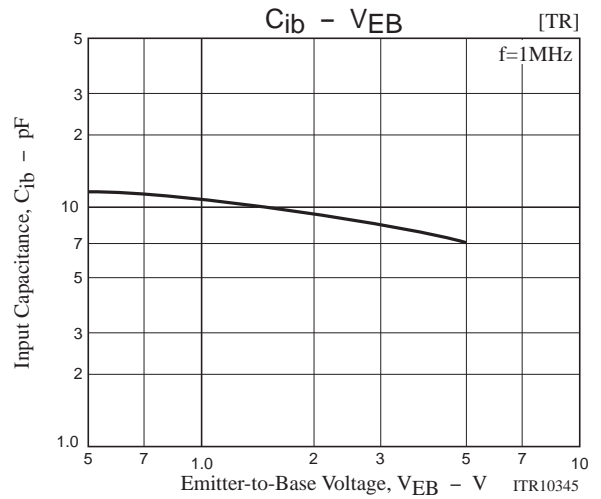
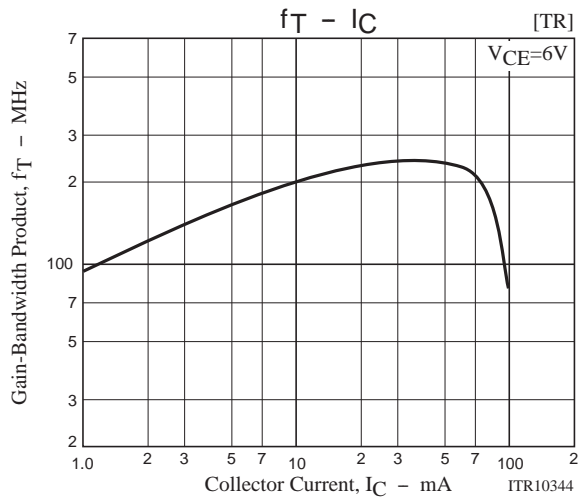
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