Ordering number: EN1766C

SANYO

No.1766C

2SA1407/2SC3601

PNP/NPN Epitaxial Planar Silicon Transistors

Ultrahigh-Definition CRT Display Video Output Applications

Applications

- Ultrahigh-definition CRT display.
- Video output.
- Color TV chroma output.
- Wide-band amp.

Features

- High f_T : f_T typ=400MHz.
- High breakdown voltage : $V_{CEO} \geqq 200V$.
- Small reverse transfer capacitance and excellent high-frequency characteristic : Cre=2.0pF (NPN), 2.5pF (PNP).
- Complementary PNP and NPN types.
- Adoption of FBET process.

( ) : 2SA1407

Absolute Maximum Ratings at Ta=25°C

				unit
Collector-to-Base Voltage	V_{CBO}		(−)200	V
Collector-to-Emitter Voltage	V_{CEO}		(−)200	V
Emitter-to-Base Voltage	V_{EBO}		(−)4	V
Collector Current	I_C		(−)150	mA
Collector Current (Pulse)	I_{CP}		(−)300	mA
Collector Dissipation	P_C		1.2	W
		Tc=25°C	7	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		−55 to +150	°C

Electrical Characteristics at Ta=25°C

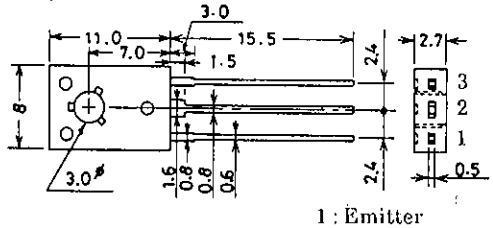
			min	typ	max	unit
Collector Cutoff Current	I_{CBO}	V_{CB}=(−)150V,I_E=0			(−)0.1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(−)2V,I_C=0			(−)1.0	μA
DC Current Gain	$h_{FE}(1)$	V_{CE}=(−)10V,I_C=(−)10mA	40※		320※	
	$h_{FE}(2)$	V_{CE}=(−)10V,I_C=(−)100mA	20			
Gain-Bandwidth Product	f_T	V_{CE}=(−)30V,I_C=(−)50mA		400		MHz
C-E Saturation Voltage	$V_{CE(sat)}$	I_C=(−)50mA,I_B=(−)5mA			0.6 (−0.8)	V

Continued on next page.

※ : The 2SA1407/2SC3601 are classified by10mA h_{FE} as follows.

40	C	80	60	D	120
100	E	200	160	F	320

Package Dimensions 2009B
(unit : mm)

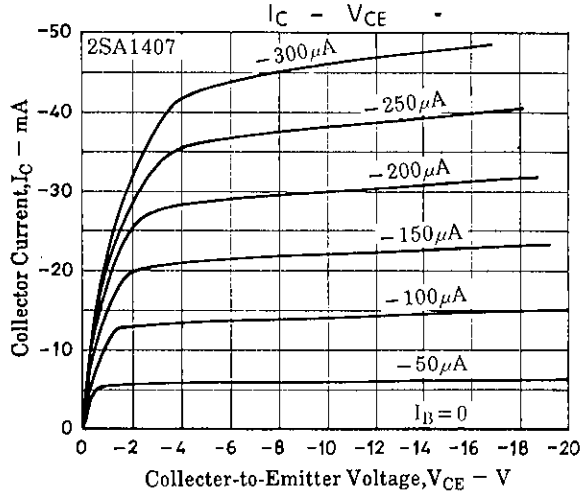


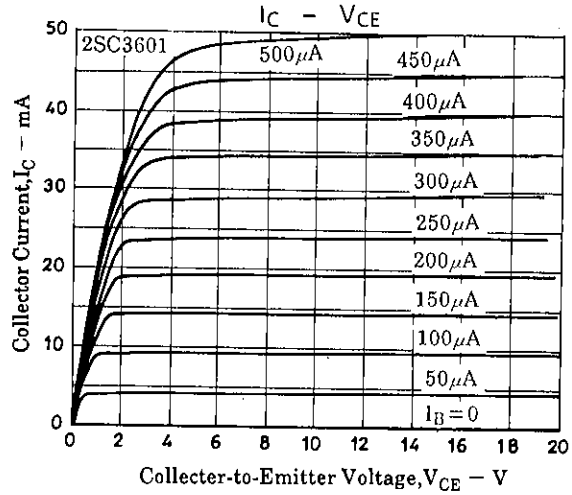
JEDEC: TO-126

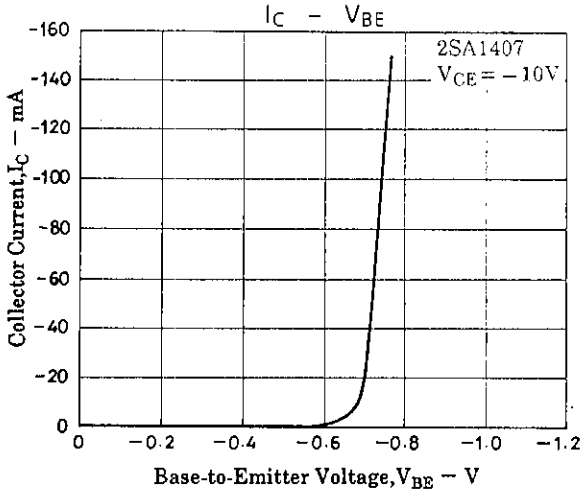
1 : Emitter
2 : Collector
3 : Base

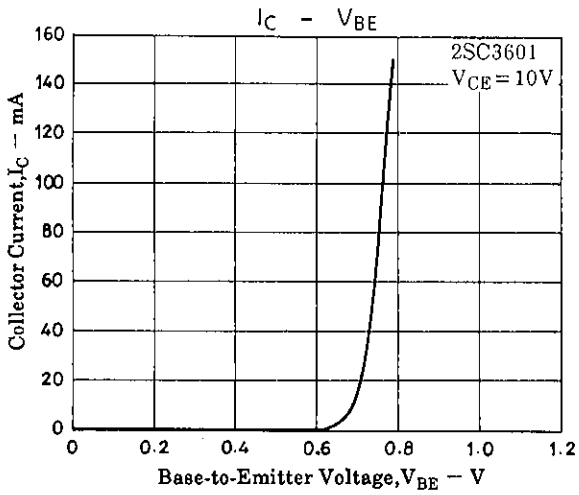
Continued from preceding page.

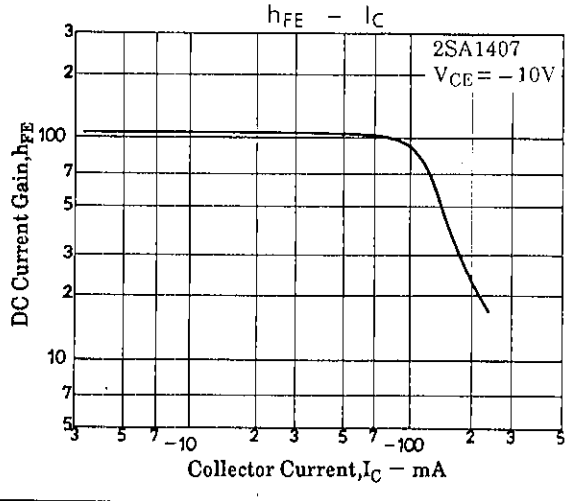
			min	typ	max	unit
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)50mA, I_B=(-)5mA$			$(-)1.0$	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0$	$(-)200$			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	$(-)200$			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)100\mu A, I_C=0$	$(-)4$			V
Output Capacitance	Cob	$V_{CB}=(-)30V$, f=1MHz		2.5		pF
				(3.0)		pF
Reverse Transfer Capacitance	Cre	$V_{CB}=(-)30V$, f=1MHz		2.0		pF
				(2.5)		pF

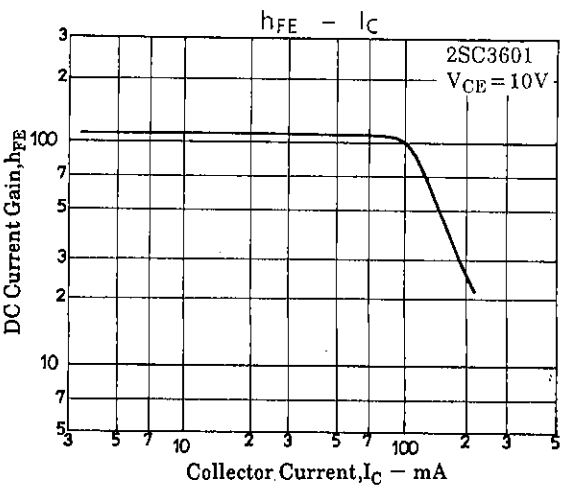


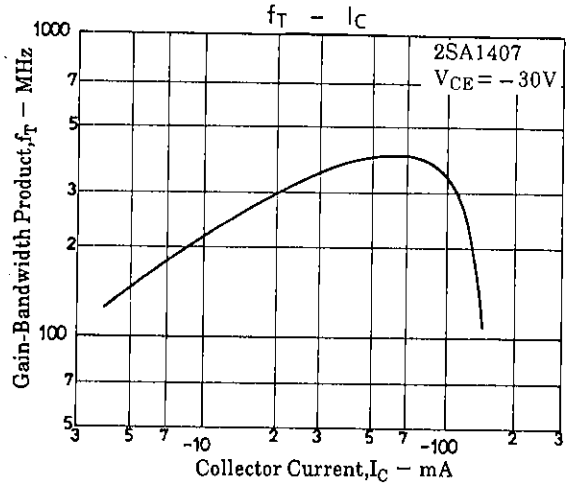


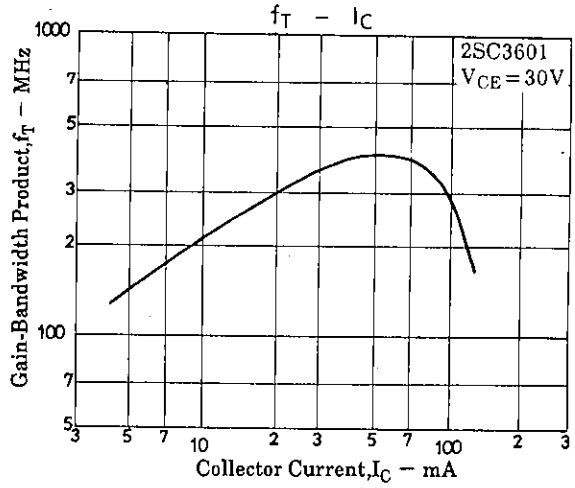


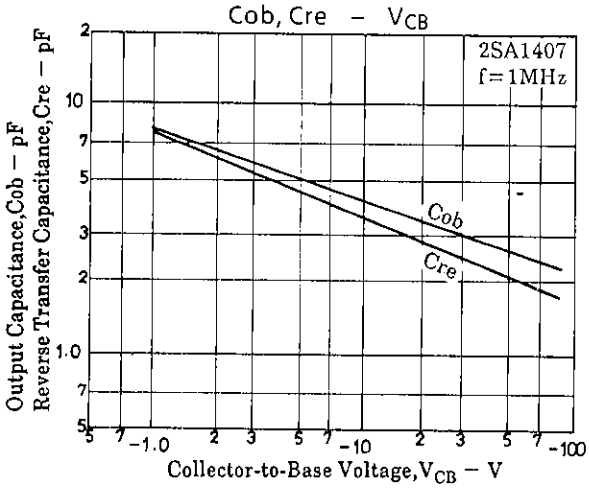


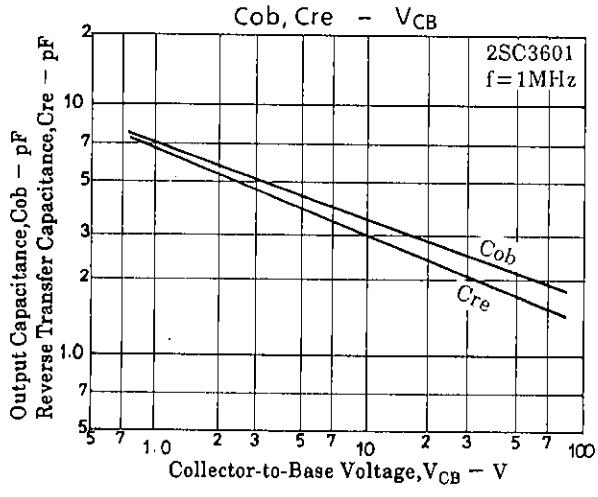


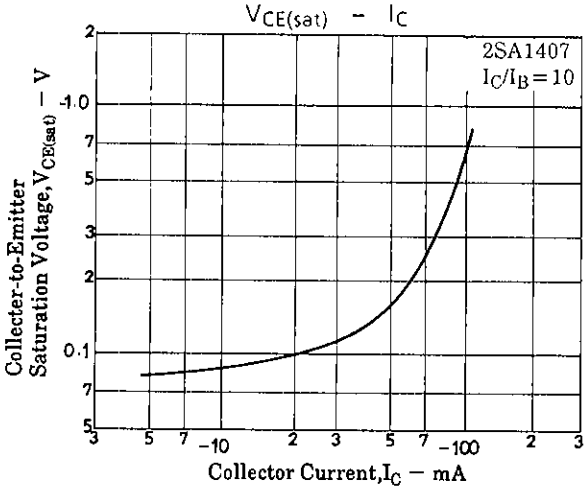


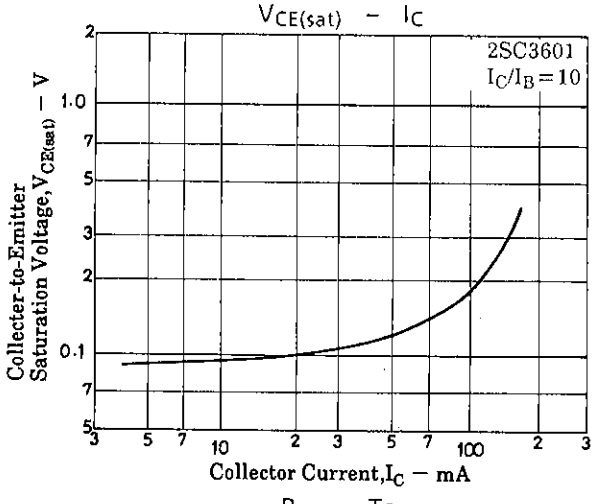

fT – IC
2SA1407
VCE = –30V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – mA

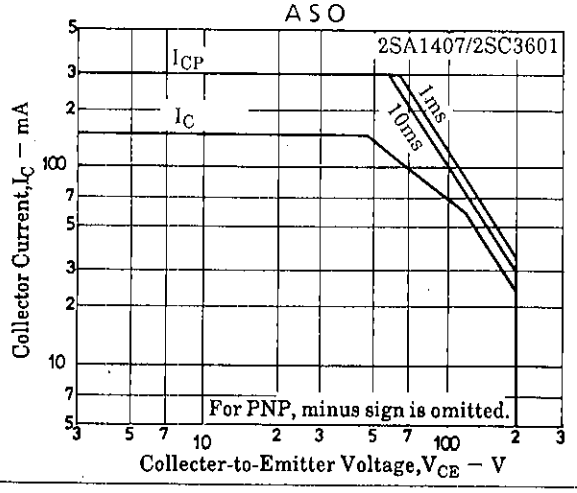

fT – IC
2SC3601
VCE = 30V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – mA

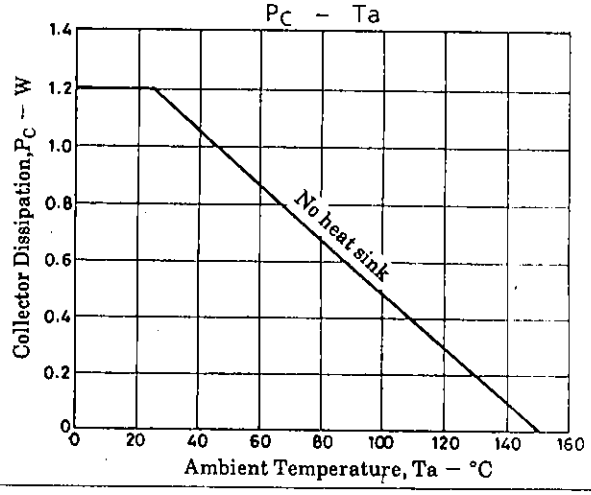

Cob, Cre – VCB
2SA1407
f = 1MHz
Cob
Cre
Output Capacitance, Cob – pF
Reverse Transfer Capacitance, Cre – pF
Collector-to-Base Voltage, VCB – V

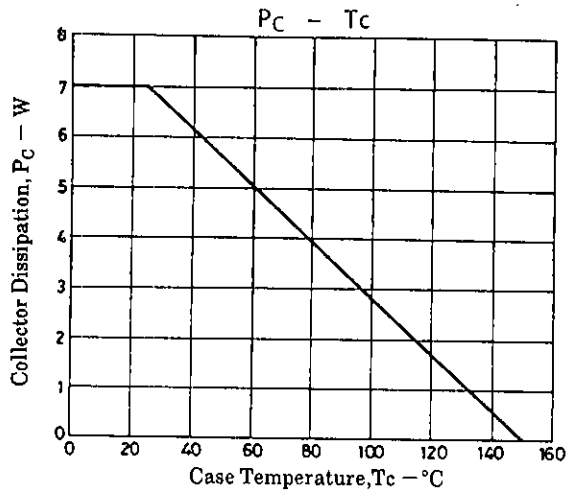

Cob, Cre – VCB
2SC3601
f = 1MHz
Cob
Cre
Output Capacitance, Cob – pF
Reverse Transfer Capacitance, Cre – pF
Collector-to-Base Voltage, VCB – V


VCE(sat) – IC
2SA1407
IC/IB = 10
Collecter-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – mA


VCE(sat) – IC
2SC3601
IC/IB = 10
Collecter-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – mA


ASO
2SA1407/2SC3601
ICP
IC
1ms
10ms
For PNP, minus sign is omitted.
Collector Current, IC – mA
Collecter-to-Emitter Voltage, VCE – V


PC – Ta
No heat sink
Collector Dissipation, PC – W
Ambient Temperature, Ta – °C



Ordering number: EN1973A

SANYO

No.1973A

2SA1469/2SC3746

PNP/NPN Epitaxial Planar Silicon Transistors

60V/5A High-Speed Switching Applications

Applications

- Various inductance lamp drivers for electrical equipment.
- Inverters, converters (strobo, flash, fluorescent lamp lighting circuit).
- Power amp (high power car stereo, motor controller).
- High-speed switching (switching regulator, driver).

Features

- Low saturation voltage.
- Excellent current dependence of h_{FE}.
- Short switching time.
- Micaless package facilitating mounting.

( ) : 2SA1469

Absolute Maximum Ratings at Ta = 25°C

				unit
Collector-to-Base Voltage	V_{CBO}		(−)80	V
Collector-to-Emitter Voltage	V_{CEO}		(−)60	V
Emitter-to-Base Voltage	V_{EBO}		(−)5	V
Collector Current	I_C		(−)5	A
Collector Current (Pulse)	I_{CP}		(−)7	A
Collector Dissipation	P_C		2	W
		Tc = 25°C	20	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		−55 to +150	°C

Electrical Characteristics at Ta = 25°C

			min	typ	max	unit
Collector Cutoff Current	I_{CBO}	V_{CB} = (−)40V, I_E = 0			(−)0.1	mA
Emitter Cutoff Current	I_{EBO}	V_{EB} = (−)4V, I_C = 0			(−)0.1	mA
DC Current Gain	h_{FE}	V_{CE} = (−)2V, I_C = (−)1A	70※		280※	
Gain-Bandwidth Product	f_T	V_{CE} = (−)5V, I_C = (−)1A		100		MHz
C-E Saturation Voltage	$V_{CE(sat)}$	I_C = (−)2.5A, I_B = (−)0.125A			(−)0.4	V

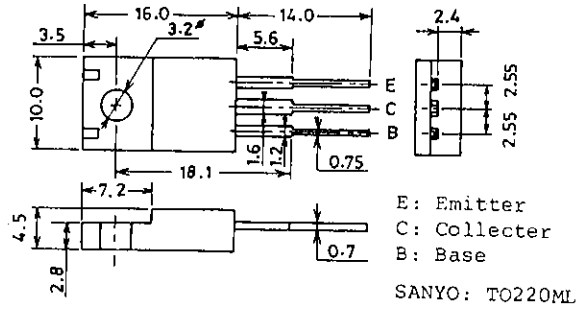
Continued on next page.

※ : The 2SA1469/2SC3746 are classified by 1A h_{FE} as follows

70 Q 140	100 R 200	140 S 280

Package Dimensions 2041

(unit : mm)

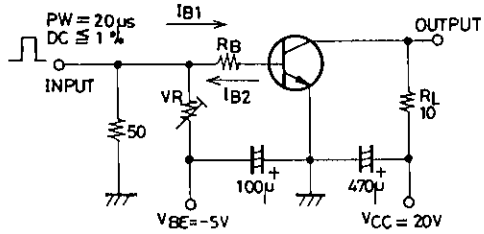


SANYO Electric Co.,Ltd. Semiconductor Business Headquarters
TOKYO OFFICE Tokyo Bldg., 1-10,1 Chome, Ueno, Taito-ku, TOKYO, 110 JAPAN

Continued from preceding page.

			min	typ	max	unit
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)1mA, I_E=0$	(−)80			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(−)60			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)1mA, I_C=0$	(−)5			V
Turn-on Time	t_{on}	See specified Test Circuit.		0.1		μs
Storage Time	t_{stg}	〃		0.5		μs
Fall Time	t_f	〃		0.1		μs

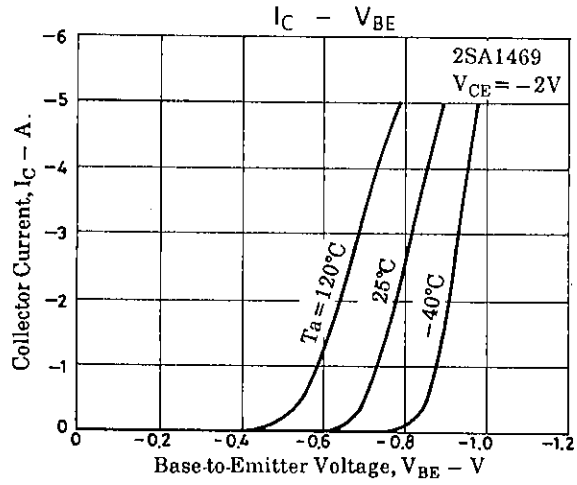
Switching Time Test Circuit

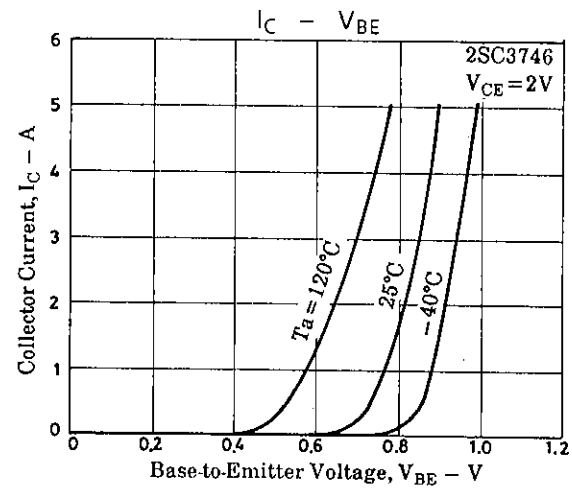


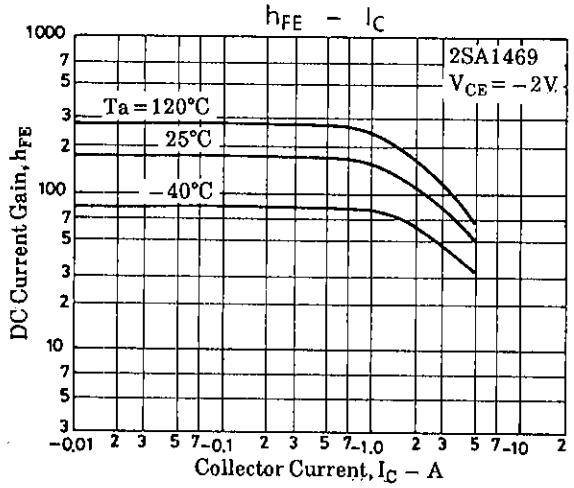
$20I_B1=-20I_B2=I_C=2A$

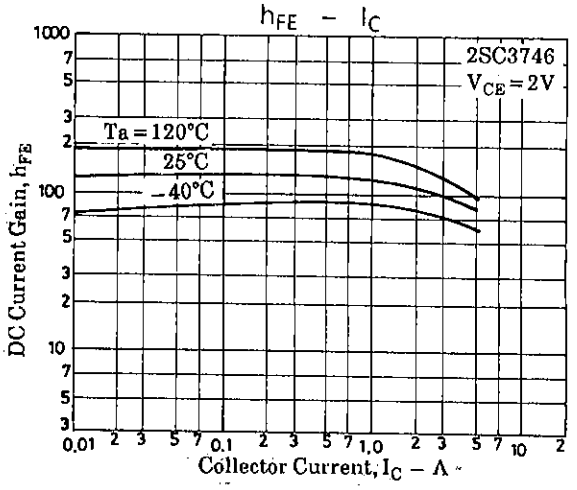
(For PNP, the polarity is reversed).

Unit (Resistance : Ω, Capacitance : F)

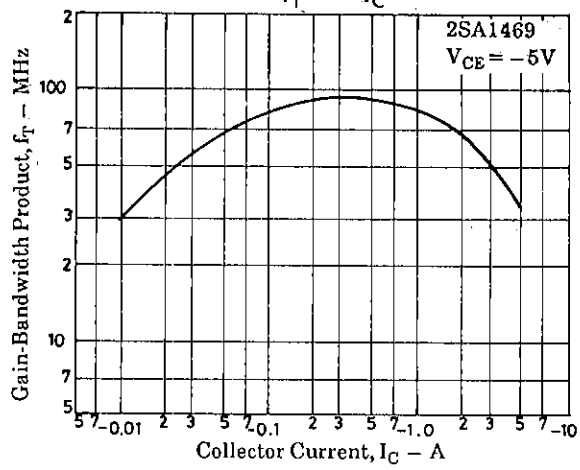




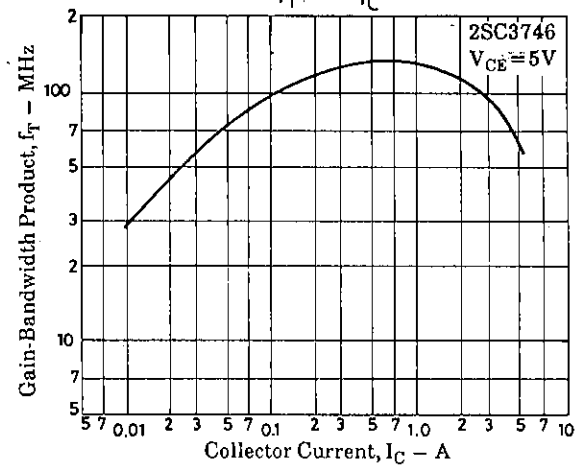




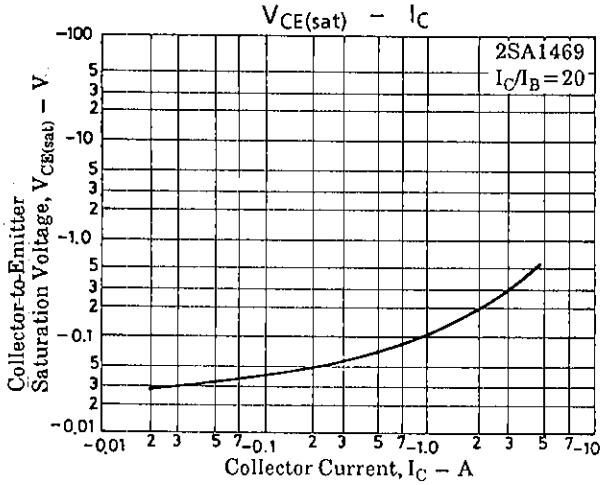
f_T – I_C



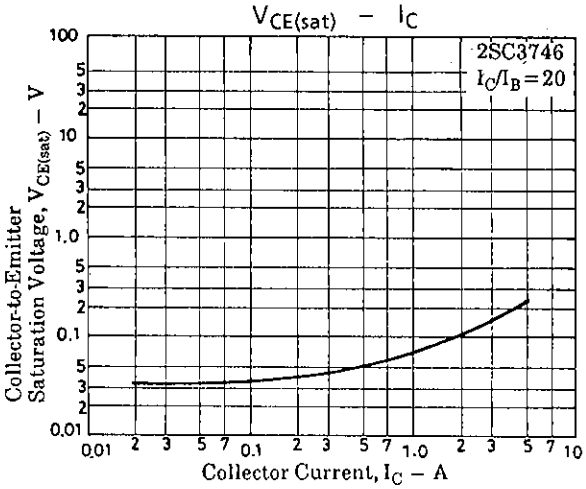
f_T – I_C



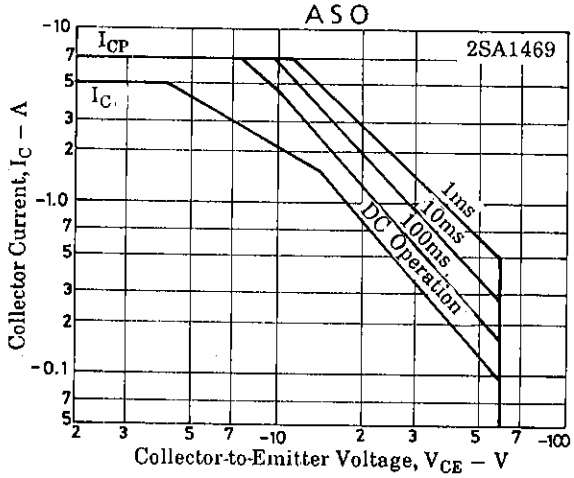
$V_{CE(sat)}$ – I_C



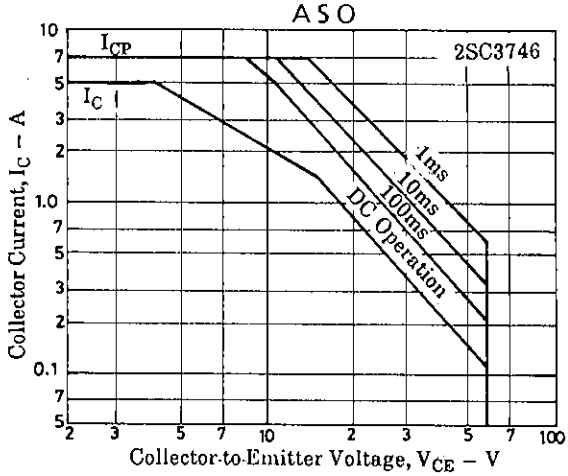
$V_{CE(sat)}$ – I_C



ASO



ASO



P_C – Ta