Ordering number:EN1766C

PNP/NPN Epitaxial Planar Silicon Transistors

2SA1407/2SC3601

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}≥200V.
- Small reverse transfer capacitance and excellent high-frequency characteristic
  : C_{re}=2.0pF (NPN), 2.5pF (PNP).
- Complementary PNP and NPN types.
- Adoption of FBET process.

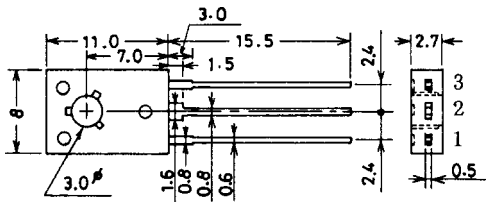
( ) : 2SA1407

Package Dimensions

unit:mm

2009B

[2SA1407/2SC3601]



JEDEC : TO-126

1 : Emitter
2 : Collector
3 : Base

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	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

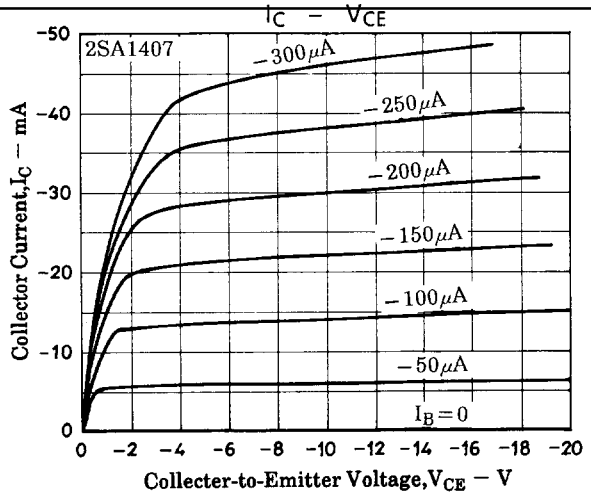
Electrical Characteristics at Ta = 25˚C

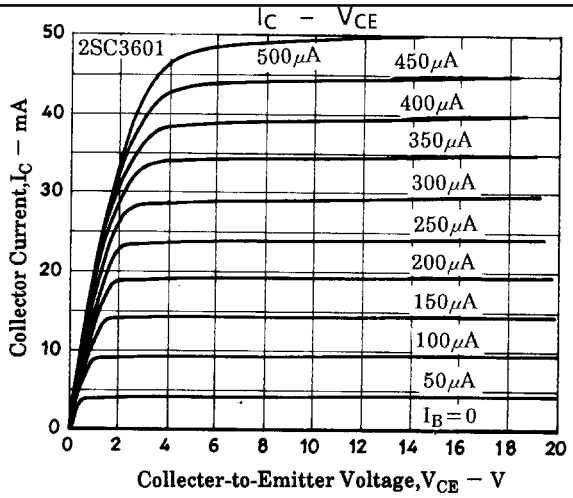
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=(–)150V, I_E=0			(–)0.1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(–)2V, I_C=0			(–)1.0	μA
DC Current Gain	$h_{FE}1$	V_{CE}=(–)10V, I_C=(–)10mA	40*		320*	
	$h_{FE}2$	V_{CE}=(–)10V, I_C=(–)100mA	20			
Gain-Bandwidth Product	f_T	V_{CE}=(–)30V, I_C=(–)50mA		400		MHz
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)50mA, I_B=(–)5mA			0.6	V
					(–0.8)	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=50mA, I_B=(–)5mA			(–)1.0	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)10μA, I_E=0	(–)200			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)1mA, R_{BE}=∞	(–)200			V
Emitter-to-Base Breakdown Votage	$V_{(BR)EBO}$	I_E=(–)100μA, I_C=0	(–)4			V
Output Capacitance	C_{ob}	V_{CB}=(–)30V, f=1MHz		2.5		pF
				(3.0)		pF
Reverse Transfer Capacitance	C_{re}	V_{CB}=(–)30V, f=1MHz		2.0		pF
				(2.5)		pF

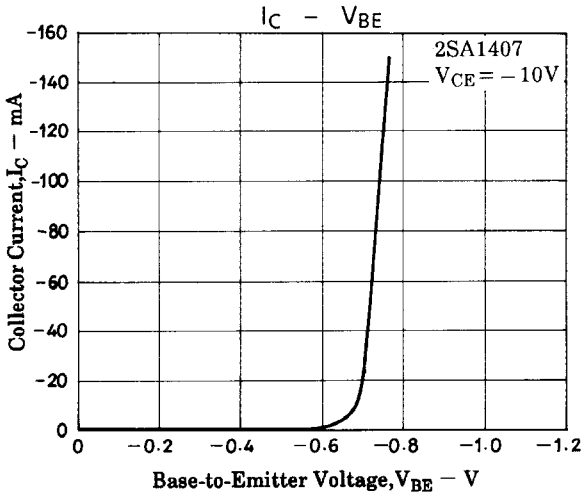
* : The 2SA1407/2SC3601 are classified by 10mA h_{FE} as follows :

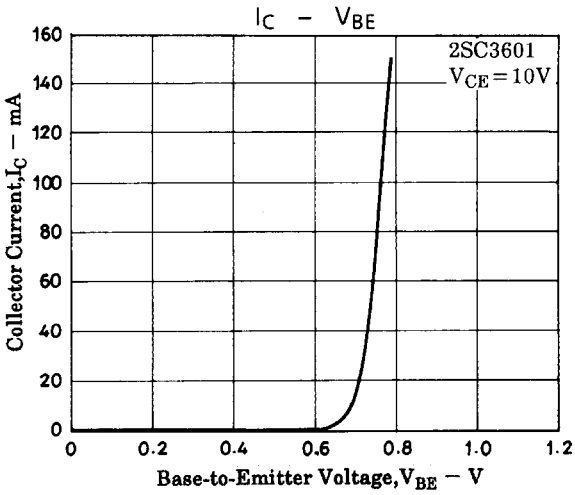
40	C	80	60	D	120	100	E	200	160	F	320

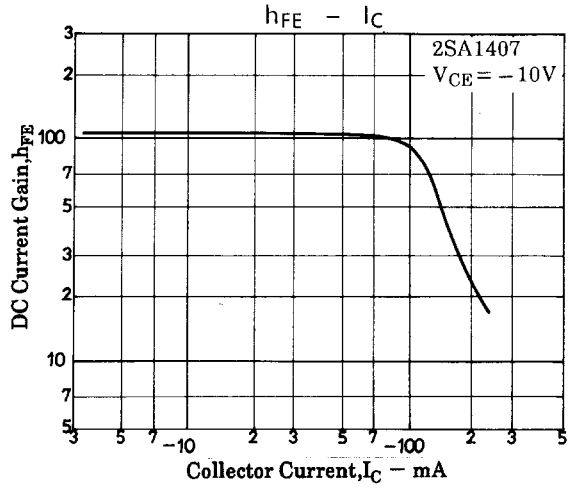
SANYO Electric Co.,Ltd. Semiconductor Bussiness Headquaters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

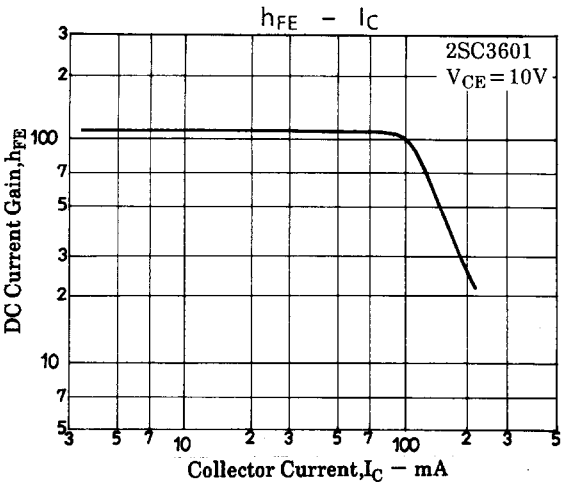

I_C – V_{CE}
2SA1407
–300μA
–250μA
–200μA
–150μA
–100μA
–50μA
I_B=0
Collector Current,I_C – mA
Collecter-to-Emitter Voltage,V_{CE} – V

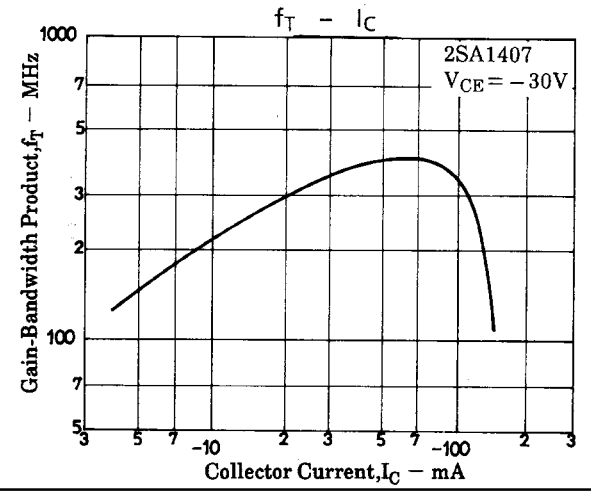

I_C – V_{CE}
2SC3601
500μA
450μA
400μA
350μA
300μA
250μA
200μA
150μA
100μA
50μA
I_B=0
Collector Current,I_C – mA
Collecter-to-Emitter Voltage,V_{CE} – V

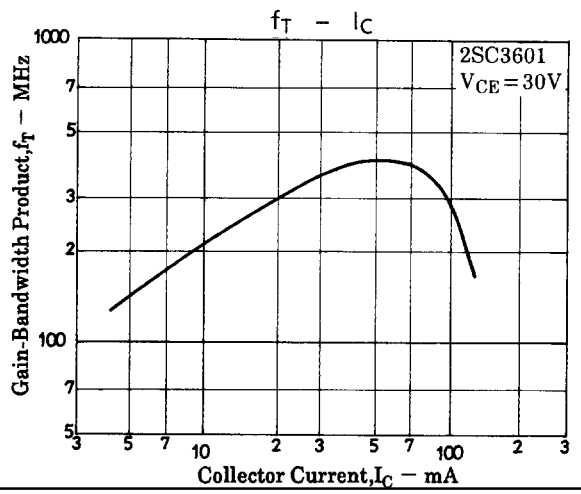

I_C – V_{BE}
2SA1407
V_{CE}=–10V
Collector Current,I_C – mA
Base-to-Emitter Voltage,V_{BE} – V

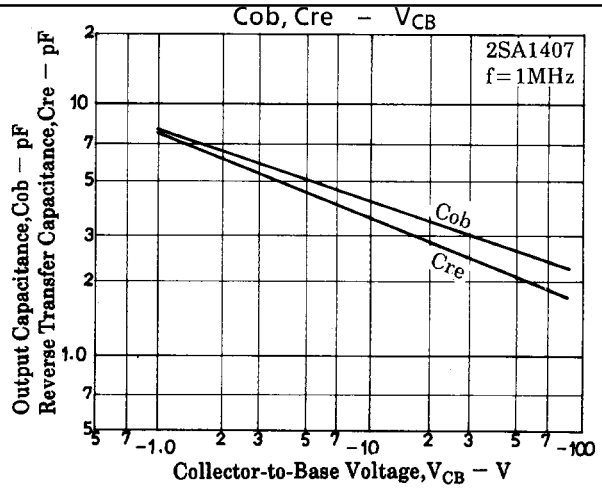

I_C – V_{BE}
2SC3601
V_{CE}=10V
Collector Current,I_C – mA
Base-to-Emitter Voltage,V_{BE} – V

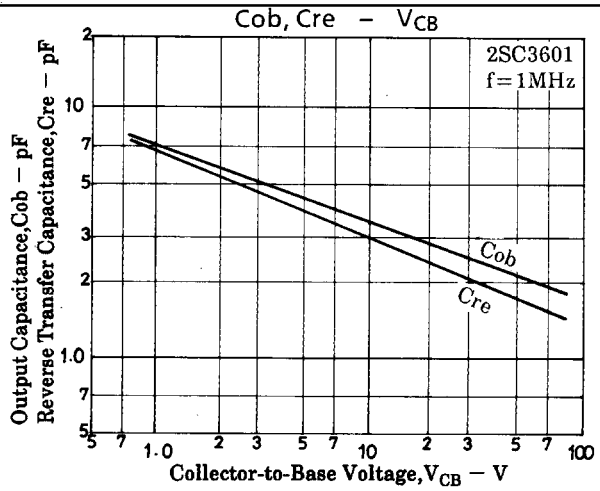

h_{FE} – I_C
2SA1407
V_{CE}=–10V
DC Current Gain,h_{FE}
Collector Current,I_C – mA

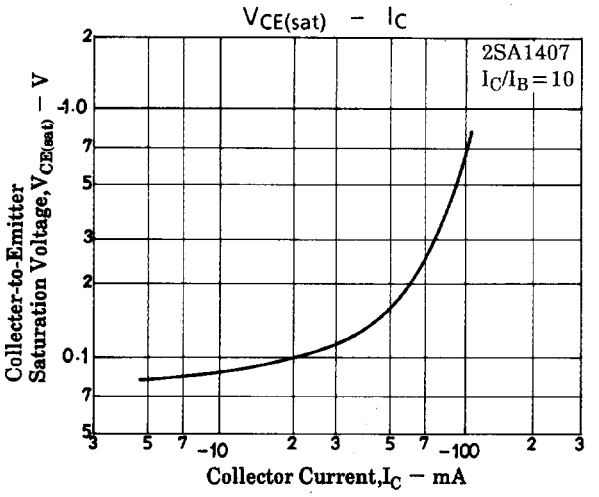

h_{FE} – I_C
2SC3601
V_{CE}=10V
DC Current Gain,h_{FE}
Collector Current,I_C – mA

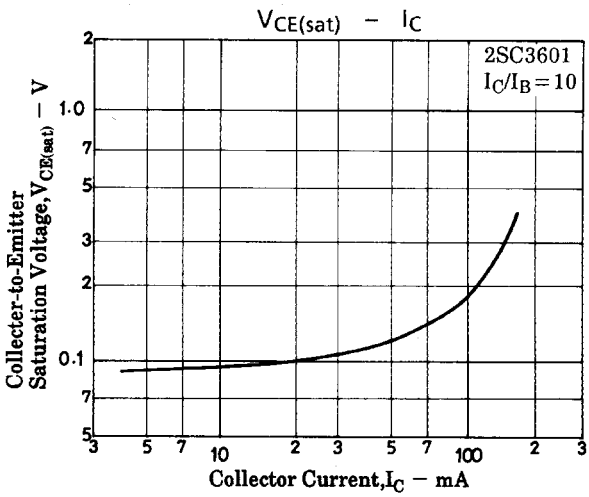

f_T – I_C
2SA1407
V_{CE}=–30V
Gain-Bandwidth Product,f_T – MHz
Collector Current,I_C – mA

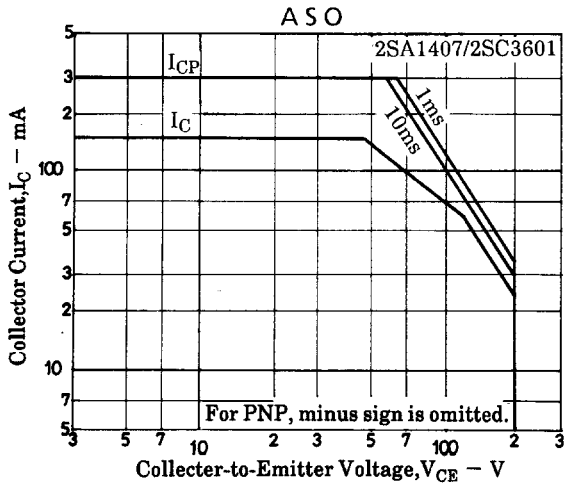

f_T – I_C
2SC3601
V_{CE}=30V
Gain-Bandwidth Product,f_T – MHz
Collector Current,I_C – mA

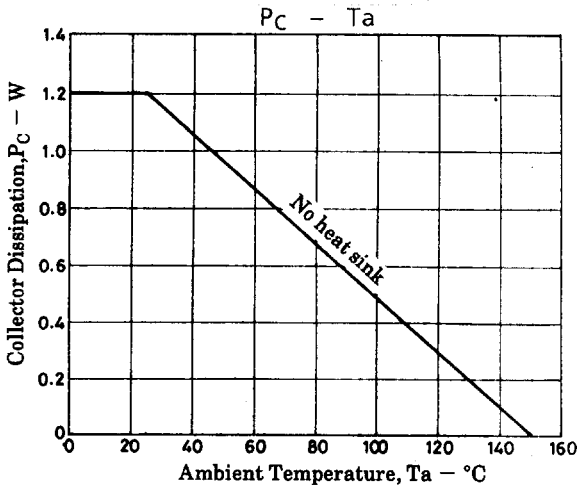

Cob, Cre – VCB
2SA1407
f=1MHz
Cob
Cre
Output Capacitance,Cob – pF
Reverse Transfer Capacitance,Cre – pF
Collector-to-Base Voltage,VCB – V

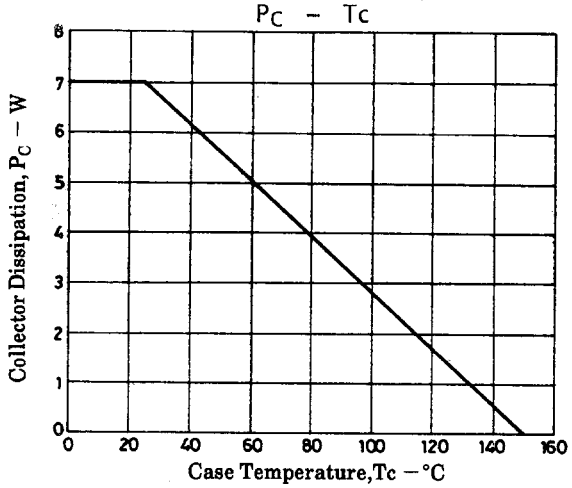

Cob, Cre – VCB
2SC3601
f=1MHz
Cob
Cre
Output Capacitance,Cob – pF
Reverse Transfer Capacitance,Cre – pF
Collector-to-Base Voltage,VCB – V


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


PC – Tc
Collector Dissipation, PC – W
Case Temperature,Tc – °C