Ordering number:EN3026

PNP/NPN Epitaxial Planar Silicon Transistors

2SA1706/2SC4486

High-Current Switching Applications

Applications

· Voltage regulators, relay drivers, lamp drivers.

Features

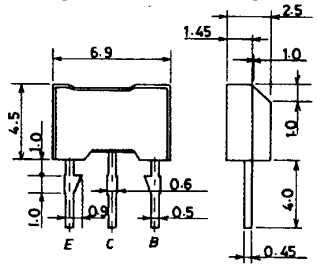
· Adoption of FBET, MBIT processes.
· Large current capacity and wide ASO.
· Fast switching speed.

Package Dimensions

unit:mm

2064

[2SA1706/2SC4486]



E : Emitter
C : Collector
B : Base

SANYO : NMP

( ) : 2SA1706

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–)60	V
Collector-to-Emitter Voltage	V_{CEO}		(–)50	V
Emitter-to-Base Voltage	V_{EBO}		(–)6	V
Collector Current	I_C		(–)2	A
Collector Current (Pulse)	I_{CP}		(–)4	A
Collector Dissipation	P_C		1	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}=(–)50V, I_E=0			(–)100	nA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(–)4V, I_C=0			(–)100	nA
DC Current Gain	$h_{FE}1$	V_{CE}=(–)2V, I_C=(–)100mA	100*		400*	
	$h_{FE}2$	V_{CE}=(–)2V, I_C=(–)1.5A	40			
Gain-Bandwidth Product	f_T	V_{CE}=(–)10V, I_C=(–)50mA		150		MHz

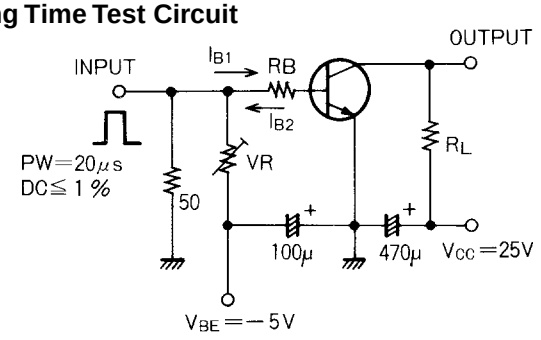
* : The 2SA1706/2SC4486 are classified by 100mA h_{FE} as follows :

100	R	200	140	S	280	200	T	400

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)1A, I_B=(–)50mA		(–0.3)	(–0.7)	V
				0.15	0.4	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=(–)1A, I_B=(–)50mA		(–)0.9	(–)1.2	V
Output Capacitance	C_{ob}	V_{CB}=(–)10V, f=1MHz		(22)12		pF
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)10μA, I_E=0	(–)60			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)1mA, R_{BE}=∞	(–)50			V
Emitter-to-Base Breakdown Votage	$V_{(BR)EBO}$	I_E=(–)10μA, I_C=0	(–)6			V
Turn-ON TIme	t_{on}	See specified Test Circuit		60		ns
Storage Time	t_{stg}	See specified Test Circuit		(450)		ns
				550		ns
Fall Time	t_f	See specified Test Circuit		30		ns

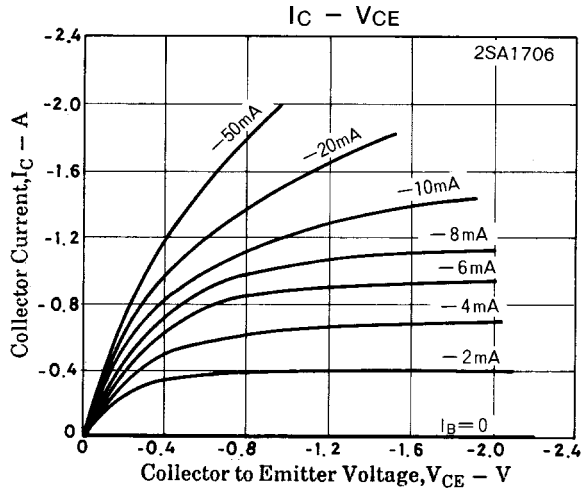
Switching Time Test Circuit

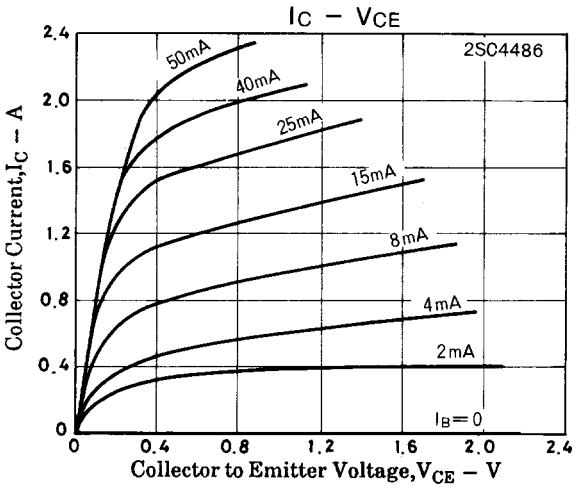


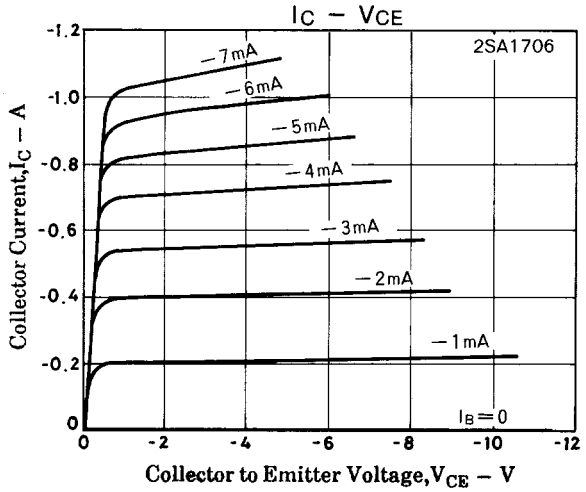
$10I_{B1}=-10I_{B2}=I_C=500mA$

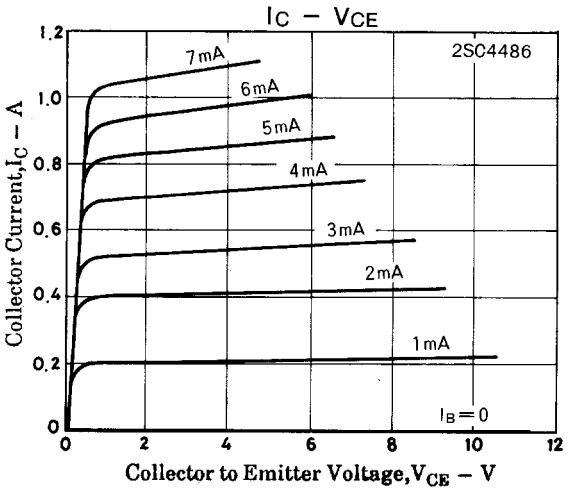
(For PNP, the polarity is reversed.)

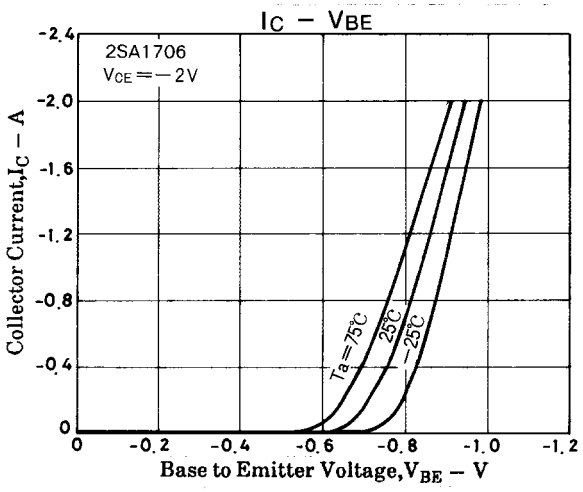
Unit (resistance : Ω, capacitance : F)

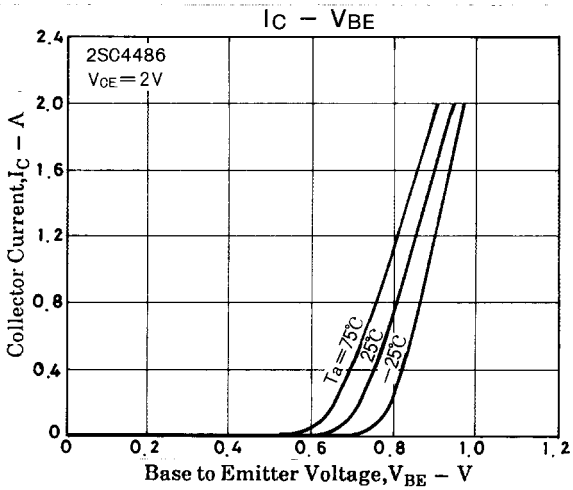


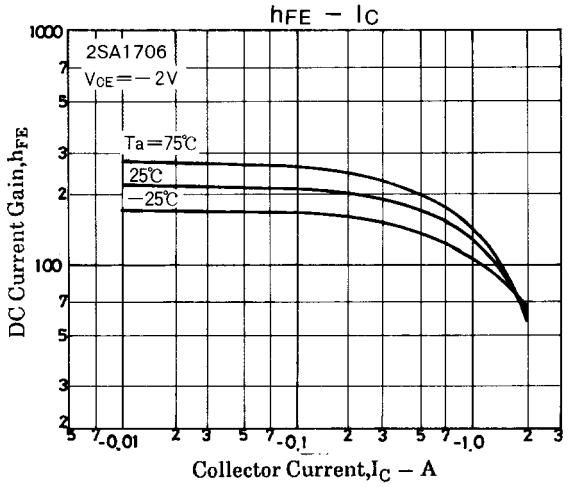


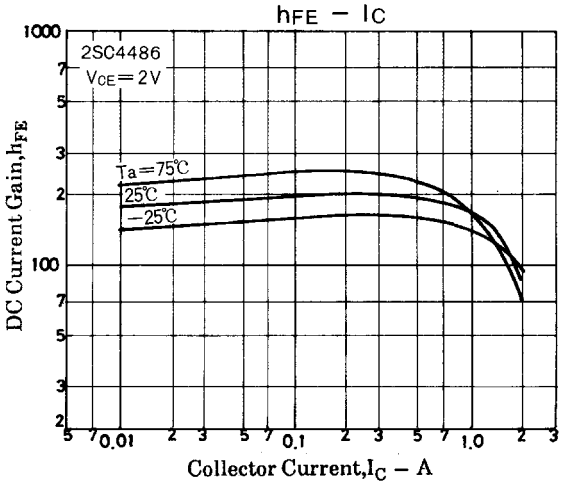


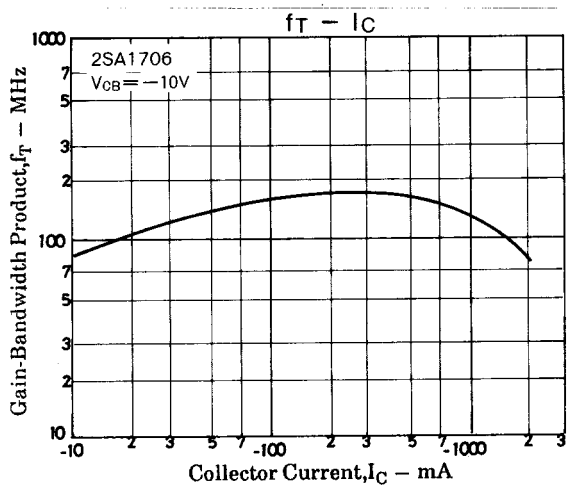


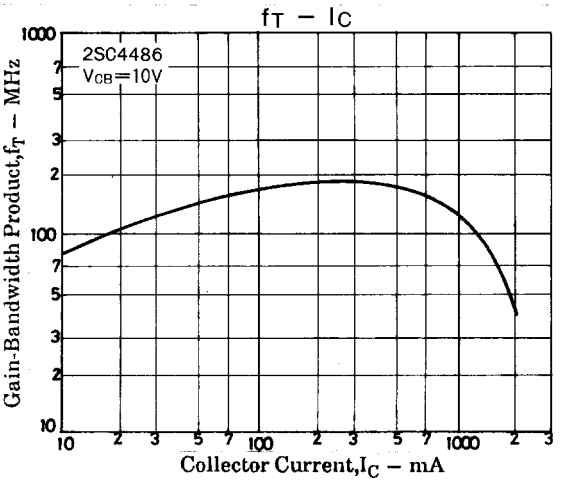

IC – VBE
2SA1706
VCE=–2V
Ta=75℃
25℃
–25℃
Collector Current,IC – A
Base to Emitter Voltage,VBE – V

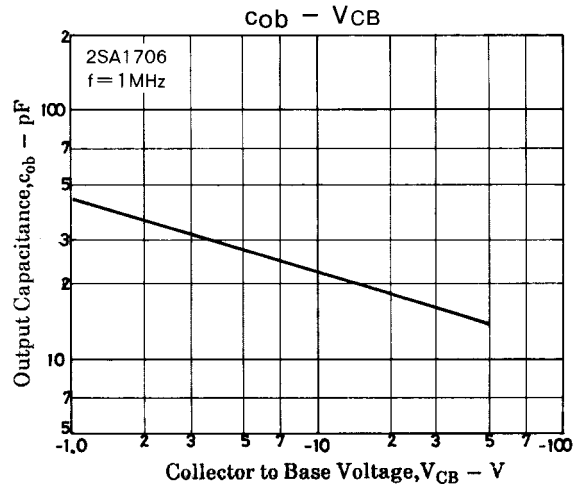

IC – VBE
2SC4486
VCE=2V
Ta=75℃
25℃
–25℃
Collector Current,IC – A
Base to Emitter Voltage,VBE – V

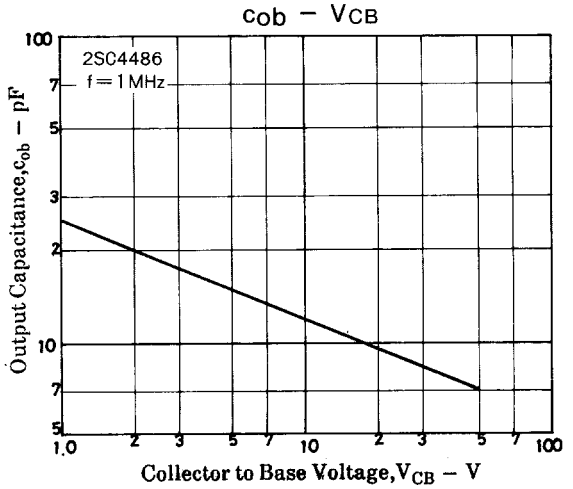

hFE – IC
2SA1706
VCE=–2V
Ta=75℃
25℃
–25℃
DC Current Gain,hFE
Collector Current,IC – A

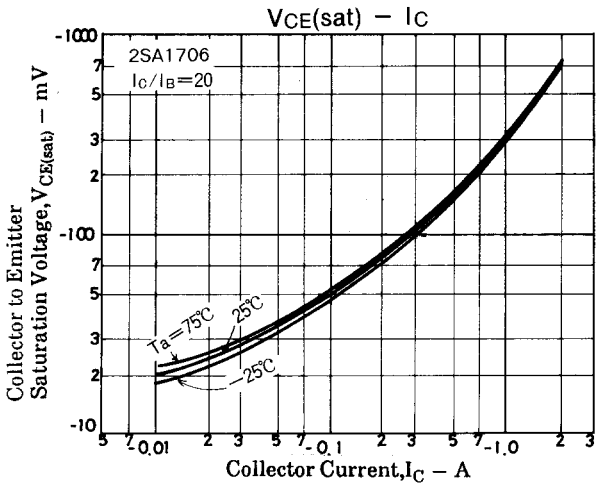

hFE – IC
2SC4486
VCE=2V
Ta=75℃
25℃
–25℃
DC Current Gain,hFE
Collector Current,IC – A

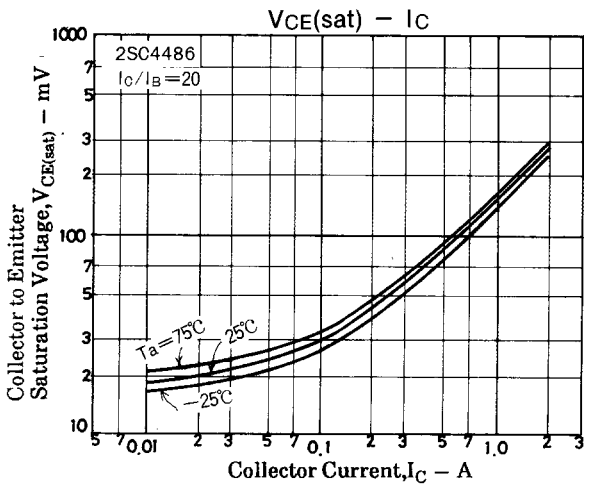

fT – IC
2SA1706
VCB=–10V
Gain-Bandwidth Product,fT – MHz
Collector Current,IC – mA

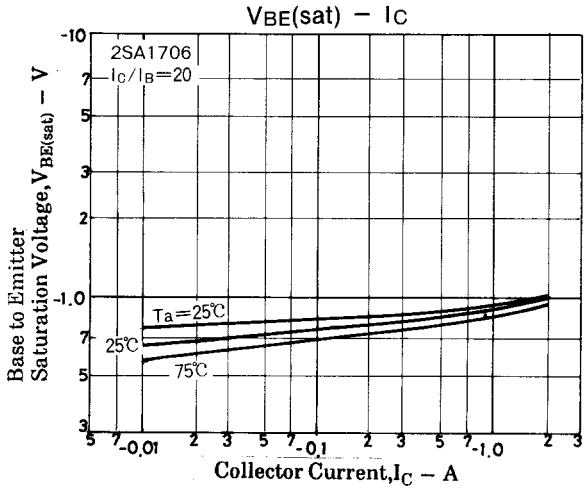

fT – IC
2SC4486
VCB=10V
Gain-Bandwidth Product,fT – MHz
Collector Current,IC – mA

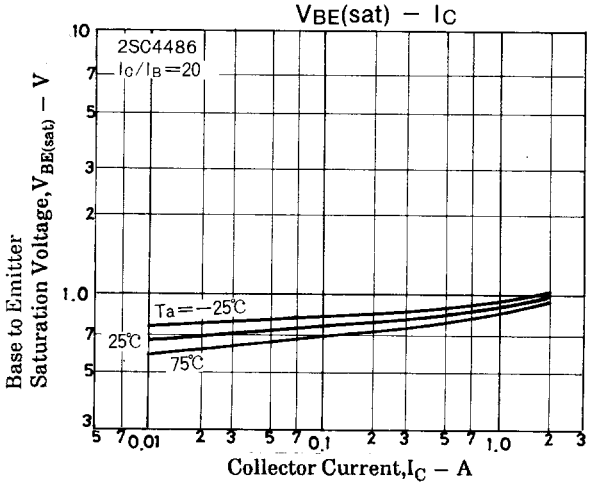

Cob – VCB
2SA1706
f=1MHz
Output Capacitance,Cob – pF
Collector to Base Voltage,VCB – V

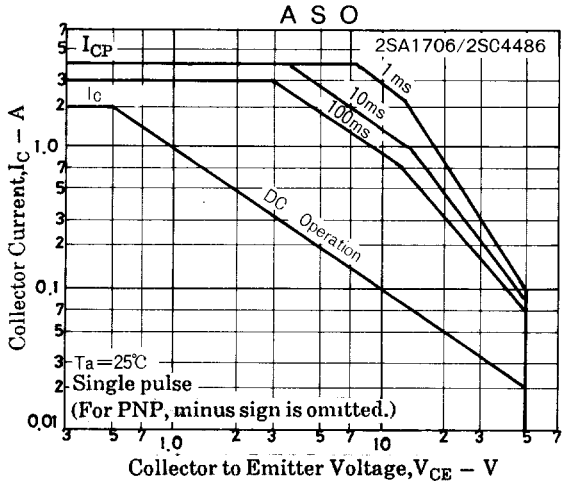

Cob – VCB
2SC4486
f=1MHz
Output Capacitance,Cob – pF
Collector to Base Voltage,VCB – V

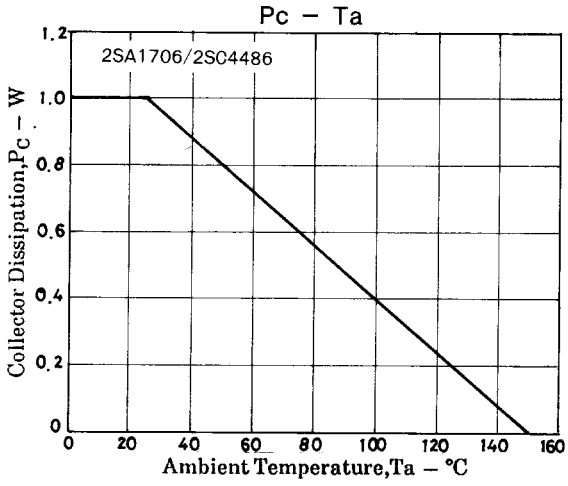

VCE(sat) – IC
2SA1706
IC/IB=20
Ta=75℃
25℃
–25℃
Collector to Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A


VCE(sat) – IC
2SC4486
IC/IB=20
Ta=75℃
25℃
–25℃
Collector to Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A


VBE(sat) – IC
2SA1706
IC/IB=20
Ta=25℃
25℃
75℃
Base to Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A


VBE(sat) – IC
2SC4486
IC/IB=20
Ta=–25℃
25℃
75℃
Base to Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A


A S O
2SA1706/2SC4486
ICP
IC
1 ms
10ms
100ms
DC Operation
Ta=25℃
Single pulse
(For PNP, minus sign is omitted.)
Collector Current, IC – A
Collector to Emitter Voltage, VCE – V


PC – Ta
2SA1706/2SC4486
Collector Dissipation, PC – W
Ambient Temperature, Ta – °C