Ordering number:EN3093

PNP/NPN Epitaxial Planar Silicon Transistors

2SA1707/2SC4487

High-Current Switching Applications

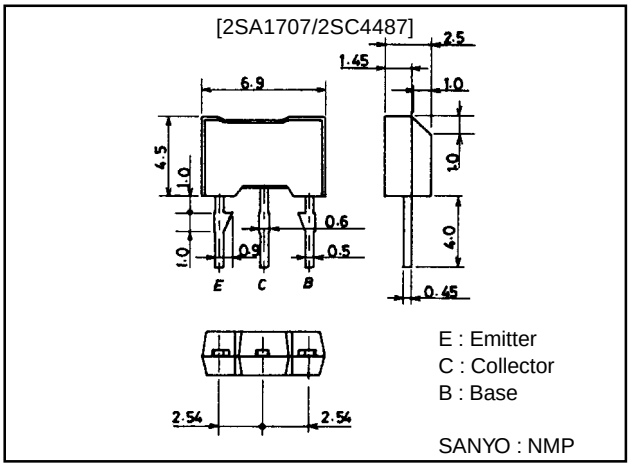
Features

- Adoption of FBET, MBIT processes.
- Large current capacity, wide ASO.
- Low collector-to-emitter saturation voltage.
- Fast switching speed.

Package Dimensions

unit:mm

2064



( ) : 2SA1707

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		(–)3	A
Collector Current (Pulse)	I_{CP}		(–)6	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}=(–)40V, I_E=0			(–)1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(–)4V, I_C=0			(–)1	μA
DC Current Gain	$h_{FE}1$	V_{CE}=(–)2V, I_C=(–)100mA	100*		400*	
	$h_{FE}2$	V_{CE}=(–)2V, I_C=(–)3A	35			
Gain-Bandwidth Product	f_T	V_{CE}=(–)10V, I_C=(–)50mA		150		MHz

* : 2SA1707/2SC4487 are classified by 100mA h_{FE} as follows :

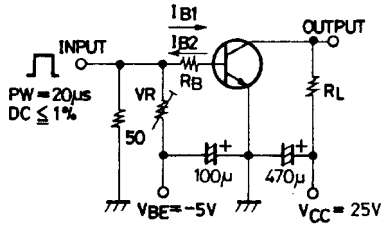
100	R	200	140	S	280	200	T	400

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=(–)2A, I_B=(–)100mA		(–0.35)	(–0.7)	V
				0.2	0.5	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=(–)2A, I_B=(–)100mA		(–)0.95	(–)1.2	V
Output Capacitance	C_{ob}	V_{CB}=(–)10V, f=1MHz		(39)25		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		70		ns
Storage Time	t_{stg}	See specified Test Circuit		(450)		ns
				650		ns
Fall Time	t_f	See specified Test Circuit		35		ns

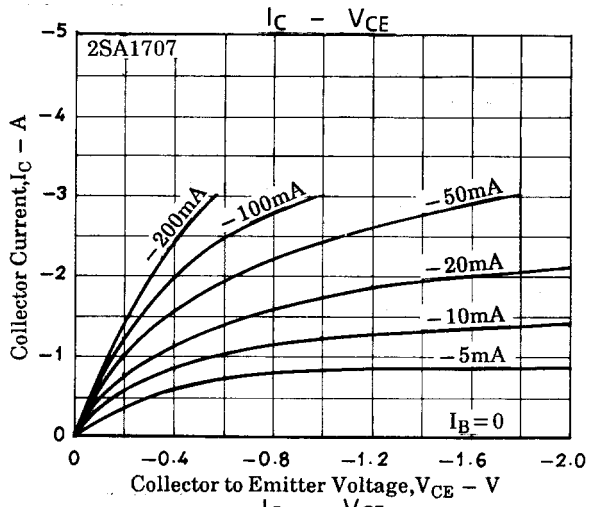
Switching Time Test Circuit

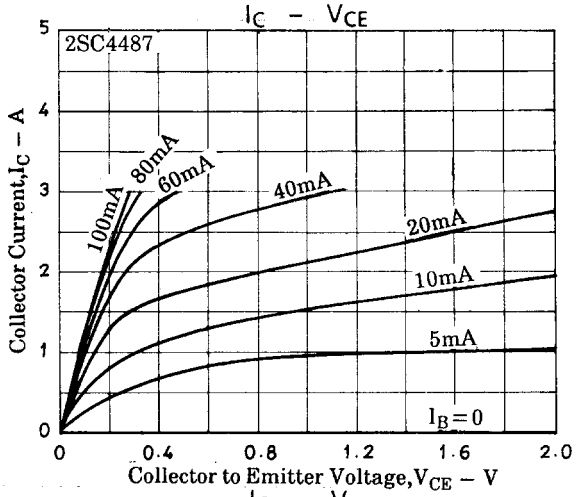


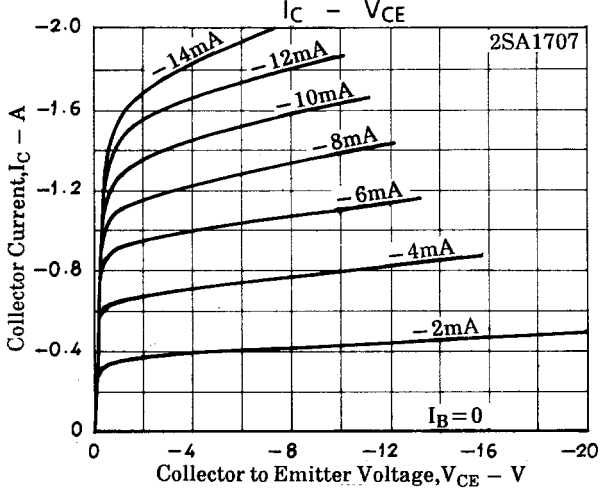
$10I_{B1} = -10I_{B2} = I_C = 1A$

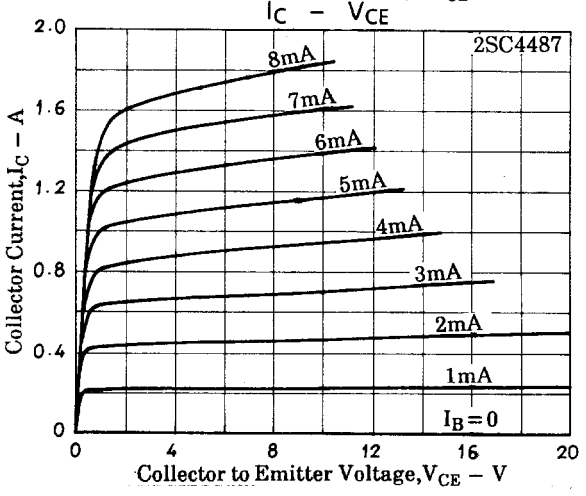
(For PNP, the polarity is reversed.)

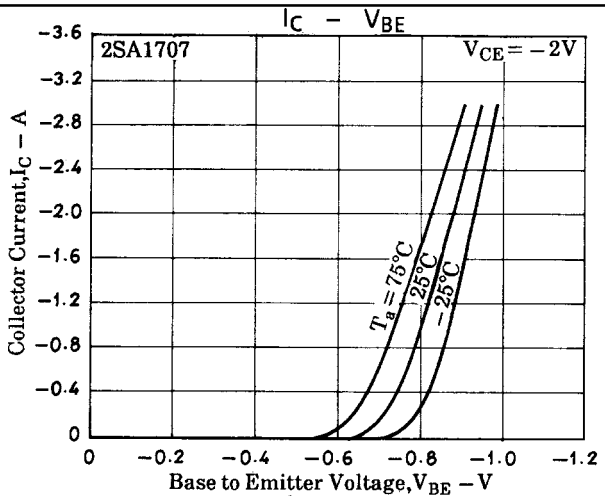
Unit (resistance : Ω, capacitance : F)

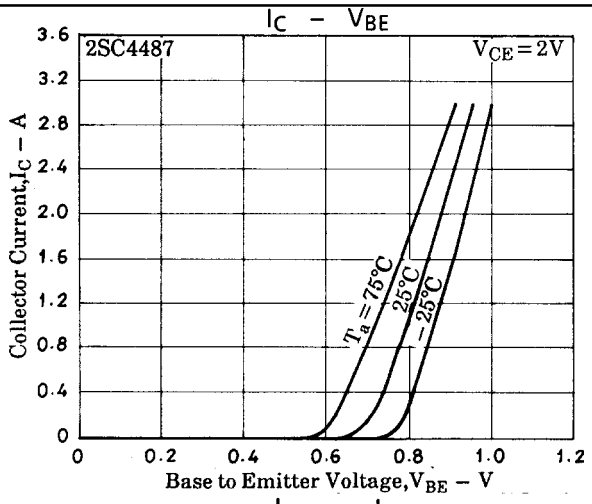


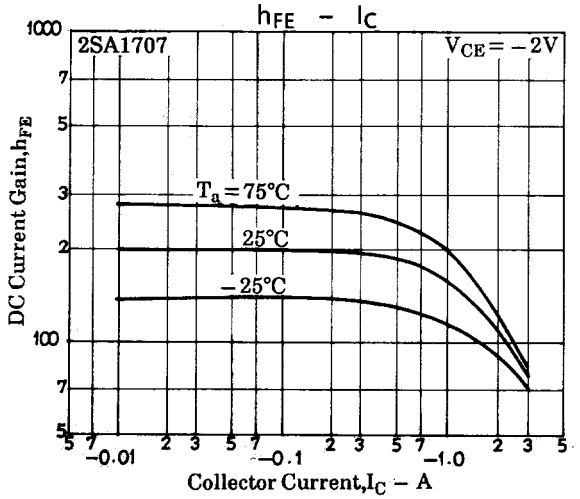


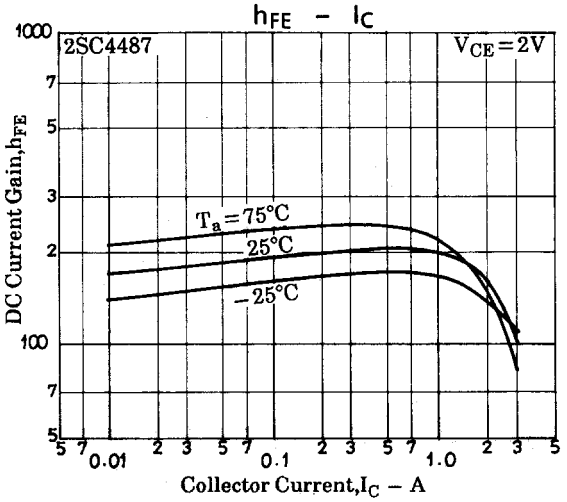


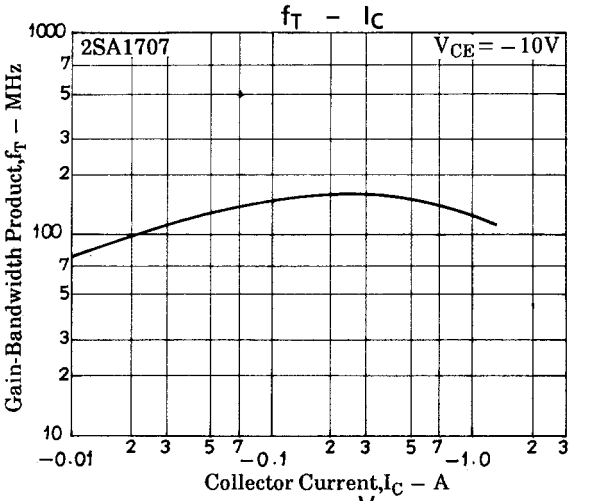


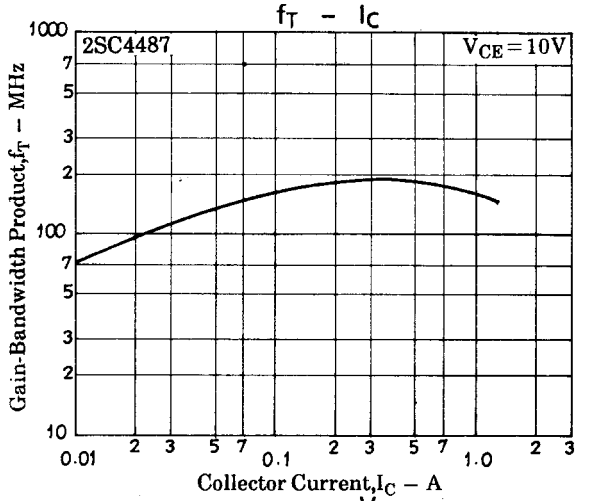

I_C – V_{BE}
2SA1707
V_{CE} = –2V
T_a = 75°C
25°C
–25°C
Collector Current, I_C – A
Base to Emitter Voltage, V_{BE} – V

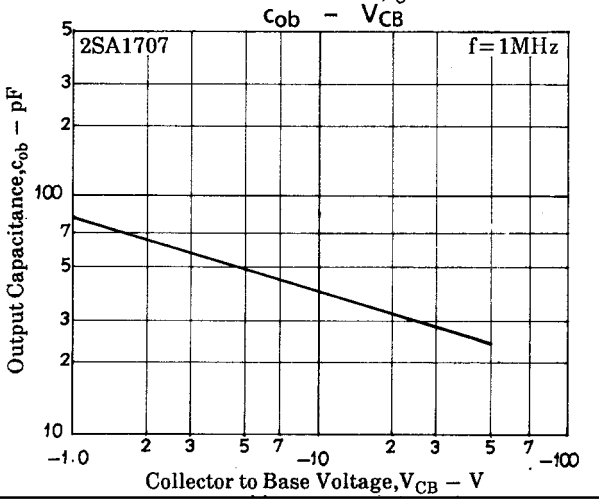

I_C – V_{BE}
2SC4487
V_{CE} = 2V
T_a = 75°C
25°C
–25°C
Collector Current, I_C – A
Base to Emitter Voltage, V_{BE} – V

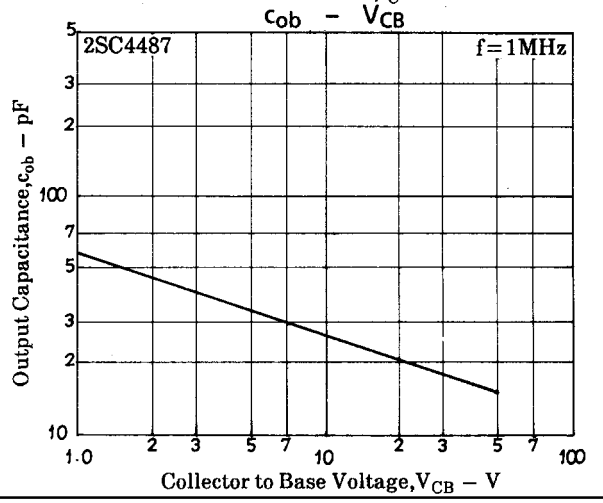

h_{FE} – I_C
2SA1707
V_{CE} = –2V
T_a = 75°C
25°C
–25°C
DC Current Gain, h_{FE}
Collector Current, I_C – A

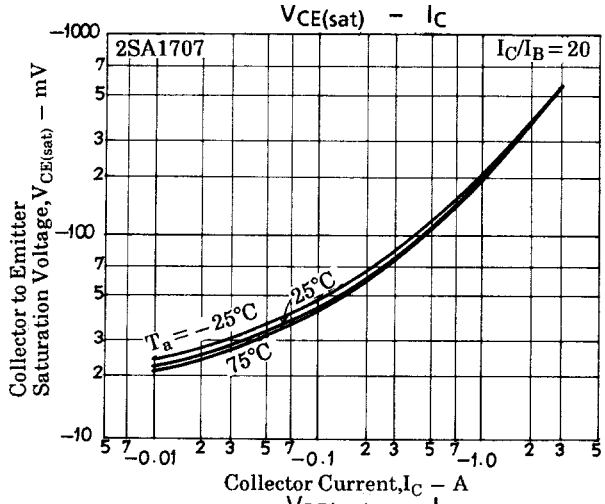

h_{FE} – I_C
2SC4487
V_{CE} = 2V
T_a = 75°C
25°C
–25°C
DC Current Gain, h_{FE}
Collector Current, I_C – A

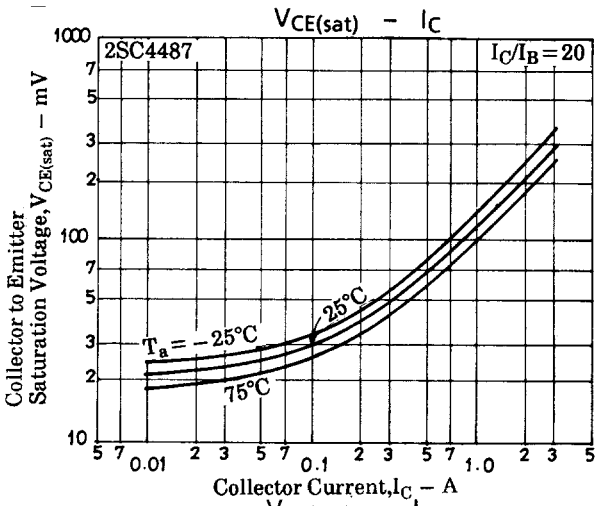

f_T – I_C
2SA1707
V_{CE} = –10V
Gain-Bandwidth Product, f_T – MHz
Collector Current, I_C – A

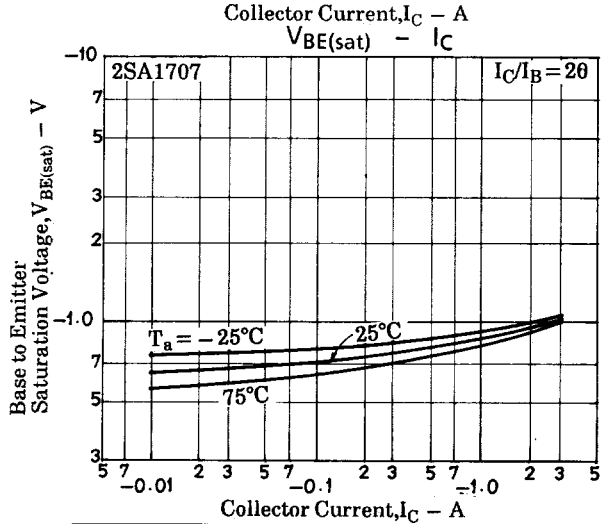

f_T – I_C
2SC4487
V_{CE} = 10V
Gain-Bandwidth Product, f_T – MHz
Collector Current, I_C – A

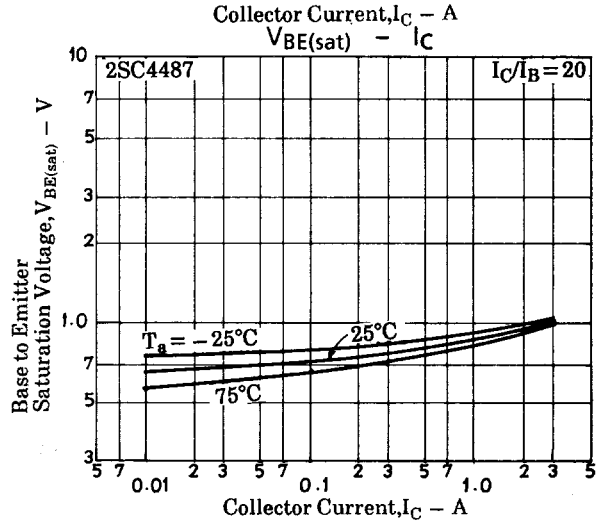

C_{ob} – V_{CB}
2SA1707
f = 1MHz
Output Capacitance, C_{ob} – pF
Collector to Base Voltage, V_{CB} – V

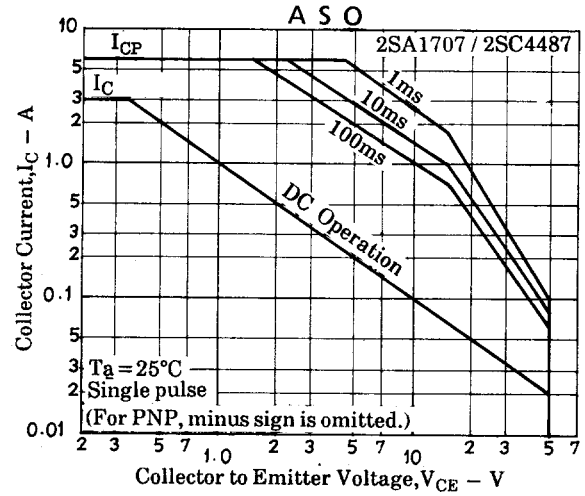

C_{ob} – V_{CB}
2SC4487
f = 1MHz
Output Capacitance, C_{ob} – pF
Collector to Base Voltage, V_{CB} – V

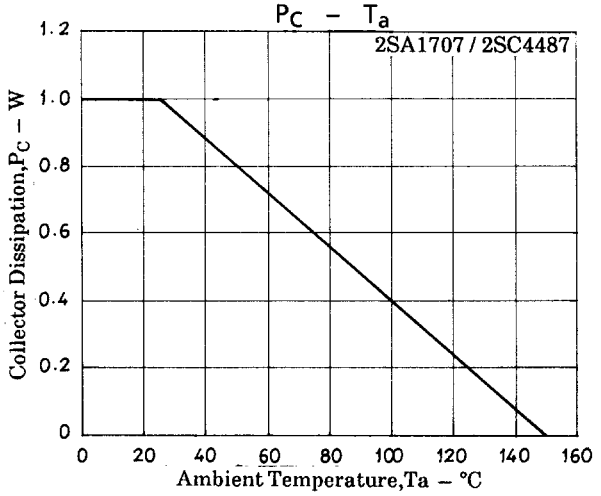

VCE(sat) – IC
2SA1707
IC/IB=20
Ta=–25°C
25°C
75°C
Collector to Emitter Saturation Voltage,VCE(sat) – mV
Collector Current,IC – A


VCE(sat) – IC
2SC4487
IC/IB=20
Ta=–25°C
25°C
75°C
Collector to Emitter Saturation Voltage,VCE(sat) – mV
Collector Current,IC – A


VBE(sat) – IC
2SA1707
IC/IB=20
Ta=–25°C
25°C
75°C
Base to Emitter Saturation Voltage,VBE(sat) – V
Collector Current,IC – A


VBE(sat) – IC
2SC4487
IC/IB=20
Ta=–25°C
25°C
75°C
Base to Emitter Saturation Voltage,VBE(sat) – V
Collector Current,IC – A


A S O
2SA1707 / 2SC4487
ICP
IC
1ms
10ms
100ms
DC Operation
Ta=25°C
Single pulse
(For PNP, minus sign is omitted.)
Collector Current,IC – A
Collector to Emitter Voltage,VCE – V


PC – Ta
2SA1707 / 2SC4487
Collector Dissipation,PC – W
Ambient Temperature,Ta – °C