Ordering number: EN 3094

SANYO

No.3094

2SA1708/2SC4488

PNP/NPN Epitaxial Planar Silicon Transistors

High-Voltage Switching Applications

Features

- Adoption of FBET, MBIT processes
- High breakdown voltage, large current capacity
- Fast switching speed

( ) : 2SA1708

Absolute Maximum Ratings at Ta = 25°C

			unit
Collector to Base Voltage	V_{CBO}	(−)120	V
Collector to Emitter Voltage	V_{CEO}	(−)100	V
Emitter to Base Voltage	V_{EBO}	(−)6	V
Collector Current	I_C	(−)1	A
Collector Current(Pulse)	I_{CP}	(−)2	A
Collector Dissipation	P_C	1	W
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	−55 to +150	°C

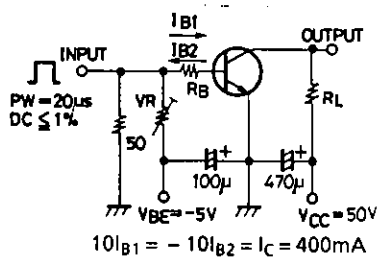
Electrical Characteristics at Ta = 25°C

			min	typ	max	unit
Collector Cutoff Current	I_{CBO}	V_{CB}=(−)100V, I_E=0			(−)100	nA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(−)4V, I_C=0			(−)100	nA
DC Current Gain	h_{FE}	V_{CE}=(−)5V, I_C=(−)100mA	100※		400※	
Gain-Bandwidth Product	f_T	V_{CE}=(−)10V, I_C=(−)100mA		120		MHz
C-E Saturation Voltage	$V_{CE(sat)}$	I_C=(−)400mA, I_B=(−)40mA		(−0.2)(−0.6) 0.1 0.4		V
B-E Saturation Voltage	$V_{BE(sat)}$	I_C=(−)400mA, I_B=(−)40mA		(−)0.85(−)1.2		V
Output Capacitance	c_{ob}	V_{CB}=(−)10V, f=1MHz		(13)8.5		pF
C-B Breakdown Voltage	$V_{(BR)CBO}$	I_C=(−)10μA, I_E=0	(−)120			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	I_C=(−)1mA, R_{BE}=∞	(−)100			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	I_E=(−)10μA, I_C=0	(−)6			V
Turn-ON Time	t_{on}	See specified Test Circuit.		80		ns
Storage Time	t_{stg}	〃		(700) 850		ns
Fall Time	t_f	〃		(40)50		ns

※: The 2SA1708/2SC4488 are classified by 100mA h_{FE} as follows:

100 R 200	140 S 280	200 T 400

Switching Time Test Circuit



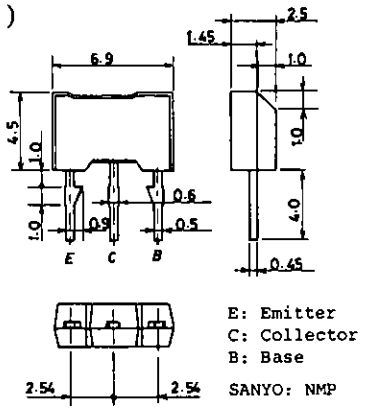
$10I_{B1} = -10I_{B2} = I_C = 400mA$

(For PNP, the polarity is reversed.)

Unit(Resistance : Ω , Capacitance : F)

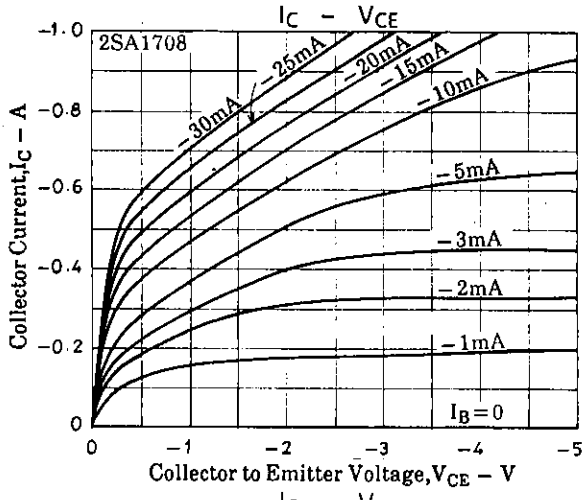
Package Dimensions 2064

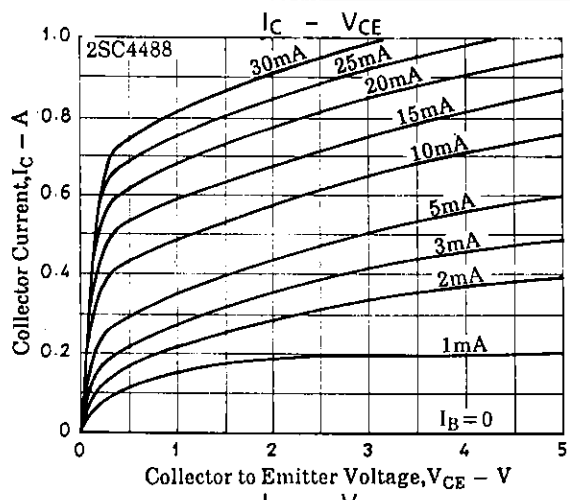
(unit: mm)

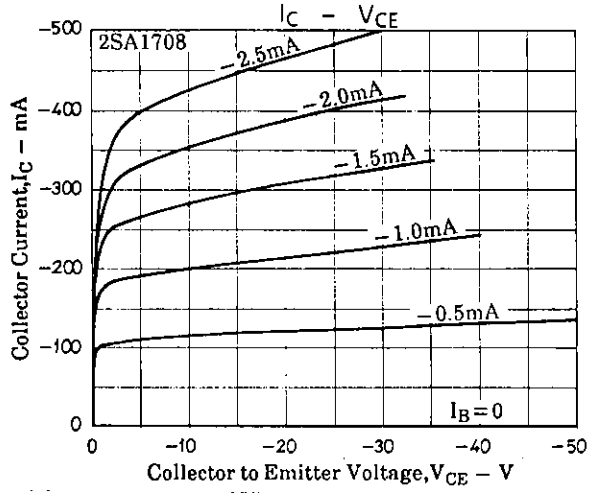


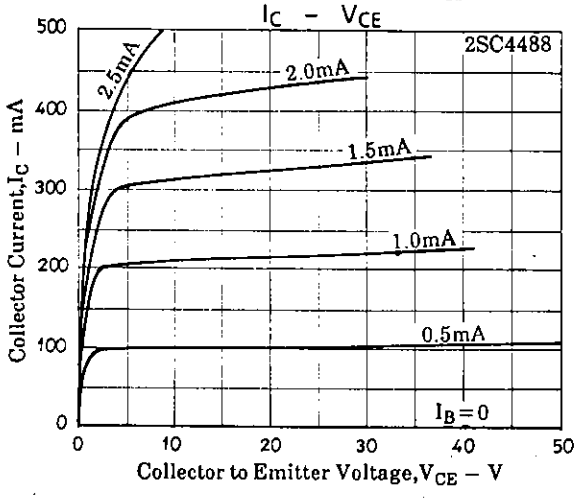
E: Emitter
C: Collector
B: Base

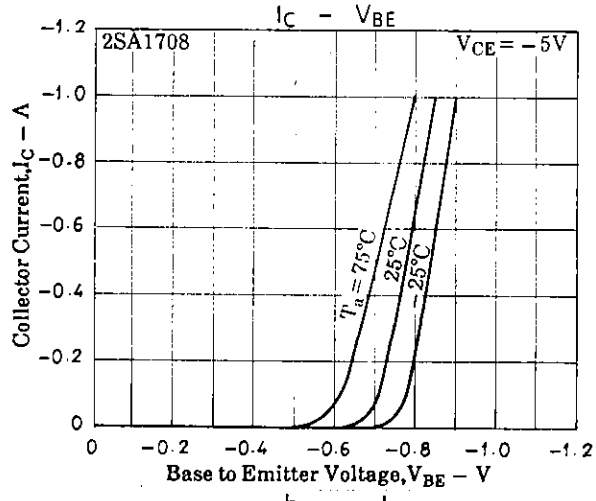
SANYO: NMP

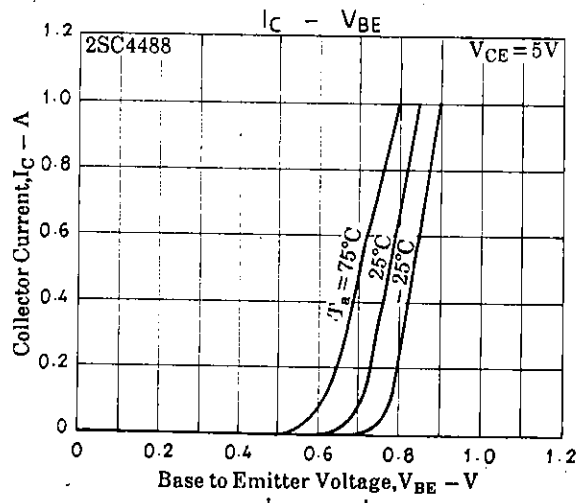

I_C – V_{CE}
2SA1708
−30mA
−25mA
−20mA
−15mA
−10mA
−5mA
−3mA
−2mA
−1mA
I_B=0
Collector Current,I_C – A
Collector to Emitter Voltage,V_{CE} – V

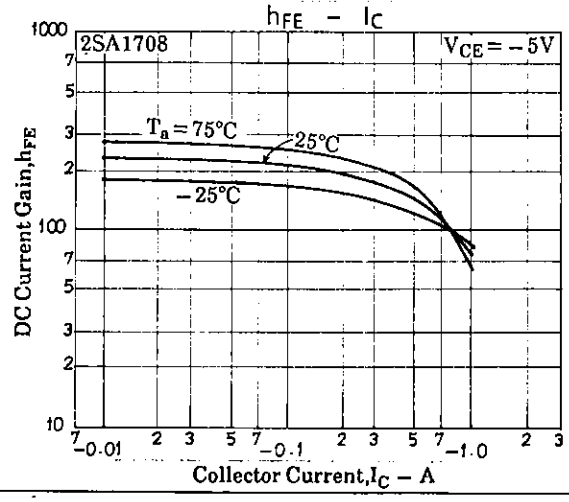

I_C – V_{CE}
2SC4488
30mA
25mA
20mA
15mA
10mA
5mA
3mA
2mA
1mA
I_B=0
Collector Current,I_C – A
Collector to Emitter Voltage,V_{CE} – V

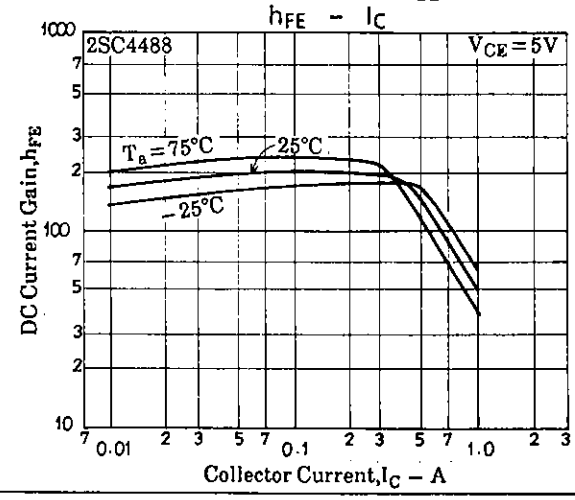

I_C – V_{CE}
2SA1708
−2.5mA
−2.0mA
−1.5mA
−1.0mA
−0.5mA
I_B=0
Collector Current,I_C – mA
Collector to Emitter Voltage,V_{CE} – V

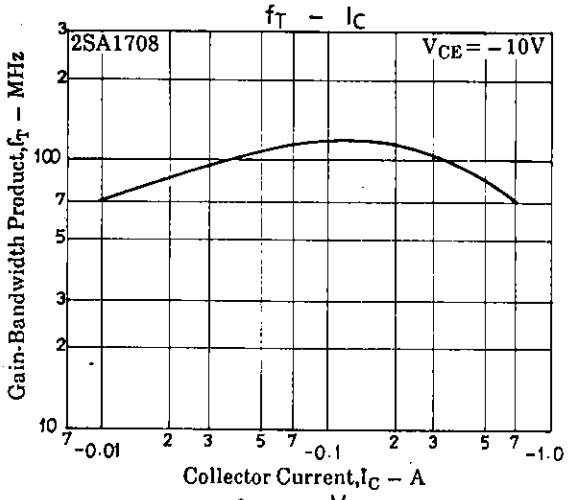

I_C – V_{CE}
2SC4488
2.5mA
2.0mA
1.5mA
1.0mA
0.5mA
I_B=0
Collector Current,I_C – mA
Collector to Emitter Voltage,V_{CE} – V

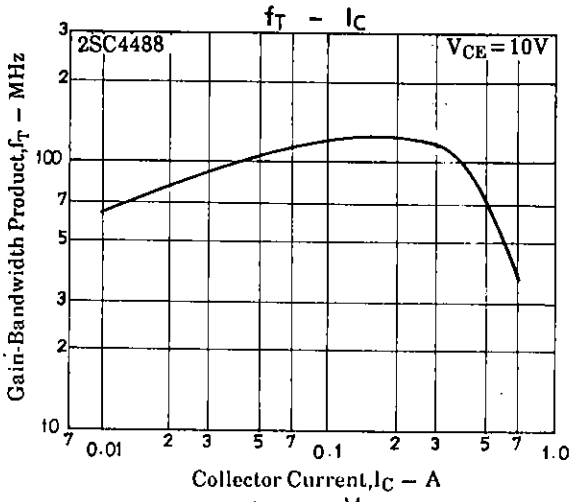

I_C – V_{BE}
2SA1708
V_{CE}=−5V
T_a=75°C
25°C
−25°C
Collector Current,I_C – A
Base to Emitter Voltage,V_{BE} – V

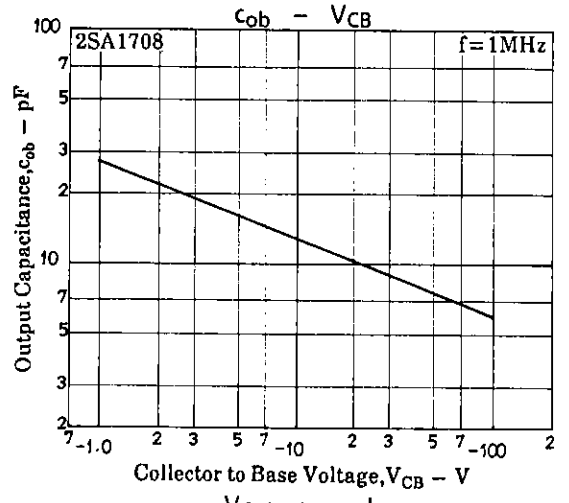

I_C – V_{BE}
2SC4488
V_{CE}=5V
T_a=75°C
25°C
−25°C
Collector Current,I_C – A
Base to Emitter Voltage,V_{BE} – V

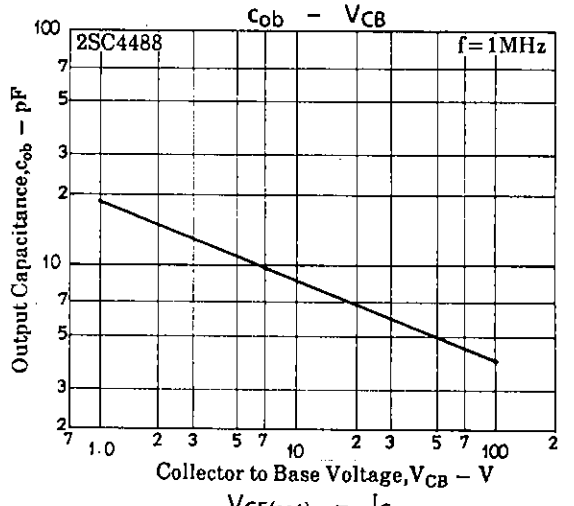

h_{FE} – I_C
2SA1708
V_{CE}=−5V
T_a=75°C
25°C
−25°C
DC Current Gain,h_{FE}
Collector Current,I_C – A

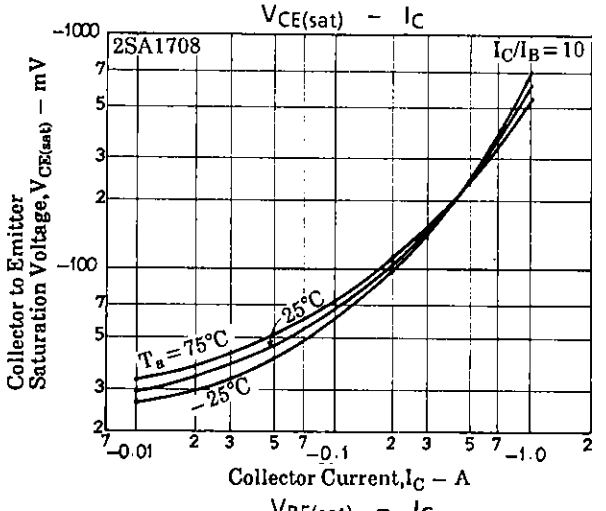

h_{FE} – I_C
2SC4488
V_{CE}=5V
T_a=75°C
25°C
−25°C
DC Current Gain,h_{FE}
Collector Current,I_C – A

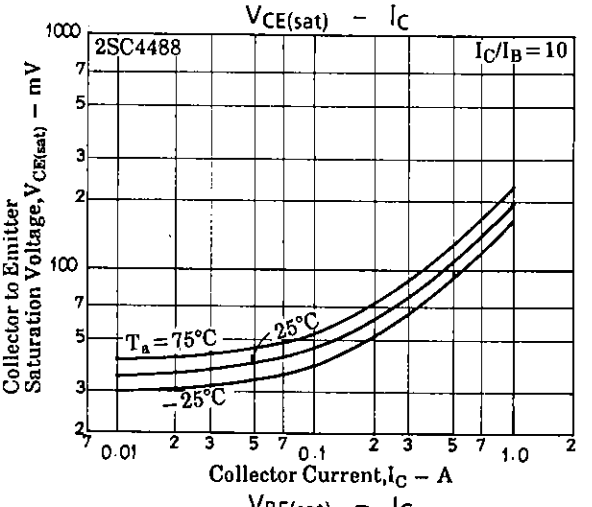

fT – IC
2SA1708
VCE = –10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A

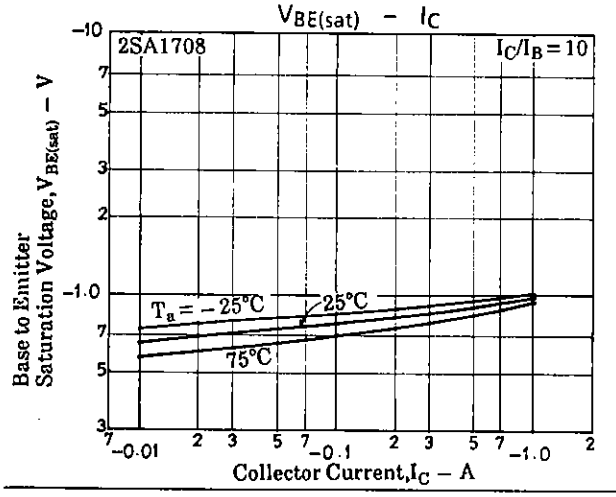

fT – IC
2SC4488
VCE = 10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A

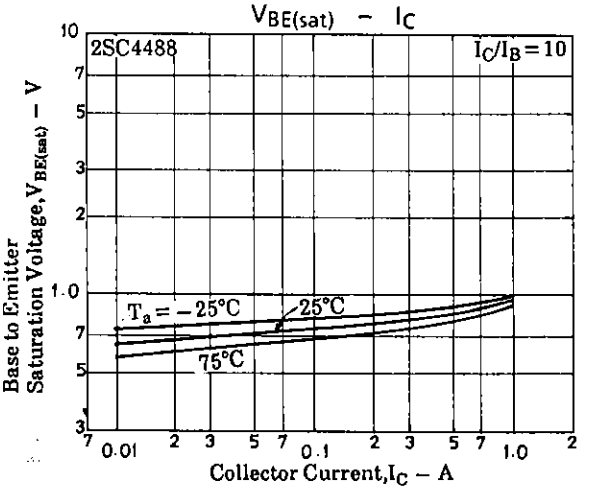

Cob – VCB
2SA1708
f = 1MHz
Output Capacitance, Cob – pF
Collector to Base Voltage, VCB – V


Cob – VCB
2SC4488
f = 1MHz
Output Capacitance, Cob – pF
Collector to Base Voltage, VCB – V


VCE(sat) – IC
2SA1708
IC/IB = 10
Collector to Emitter Saturation Voltage, VCE(sat) – mV
Ta = 75°C
25°C
–25°C
Collector Current, IC – A


VCE(sat) – IC
2SC4488
IC/IB = 10
Collector to Emitter Saturation Voltage, VCE(sat) – mV
Ta = 75°C
25°C
–25°C
Collector Current, IC – A


VBE(sat) – IC
2SA1708
IC/IB = 10
Base to Emitter Saturation Voltage, VBE(sat) – V
Ta = –25°C
25°C
75°C
Collector Current, IC – A


VBE(sat) – IC
2SC4488
IC/IB = 10
Base to Emitter Saturation Voltage, VBE(sat) – V
Ta = –25°C
25°C
75°C
Collector Current, IC – A