Ordering number: EN 2479A

SANYO

No.2479A

2SA1607/2SC4168

PNP/NPN Epitaxial Planar Silicon Transistors

High-Speed Switching Applications

Features

- Fast switching speed
- High gain-bandwidth product
- Low saturation voltage

( ) : 2SA1607

Absolute Maximum Ratings at Ta = 25°C

			unit
Collector to Base Voltage	V_{CBO}	(−)40	V
Collector to Emitter Voltage	V_{CEO}	(−)20	V
Emitter to Base Voltage	V_{EBO}	(−)5	V
Collector Current	I_C	(−)150	mA
Collector Current(Pulse)	I_{CP}	(−)300	mA
Base Current	I_B	(−)30	mA
Collector Dissipation	P_C	200	mW
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}=(−)30V, I_E=0			(−)0.1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(−)4V, I_C=0			(−)0.1	μA
DC Current Gain	h_{FE}	V_{CE}=(−)1V, I_C=(−)10mA	60※		270※ (180)	
Gain-Bandwidth Product	f_T	V_{CE}=(−)10V, I_C=(−)10mA		700 (400)		MHz
Output Capacitance	c_{ob}	V_{CB}=(−)10V, f=1MHz		(2.9)2.6		pF
C-E Saturation Voltage	$V_{CE(sat)}$	I_C=(−)10mA, I_B=(−)1mA		0.08 (−0.07)	(−)0.2	V
B-E Saturation Voltage	$V_{BE(sat)}$	I_C=(−)10mA, I_B=(−)1mA		0.72 (−0.75)	(−)1.0	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	I_C=(−)10μA, I_E=0	(−)40			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	I_C=(−)1mA, R_{BE}=∞	(−)20			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	I_E=(−)10μA, I_C=0	(−)5			V

Continued on next page.

※ : The 2SA1607/2SC4168 are classified by 10mA h_{FE} as follows :

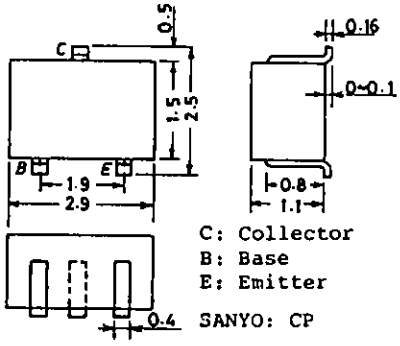
2SA1607	60 3 120	90 4 180	
2SC4168	60 3 120	90 4 180	135 5 270

Marking 2SA1607 : YL
2SC4168 : GT

h_{FE} rank 2SA1607 : 3,4
2SC4168 : 3,4,5

Package Dimensions 2018A

(unit : mm)



C: Collector
B: Base
E: Emitter
SANYO: CP

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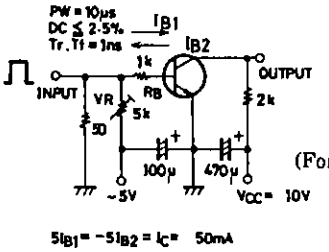
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110 JAPAN

Continued from preceding page.

			min	typ	max	unit
Delay Time	t_d	See specified Test Circuit.		(14)11	20	ns
Rise Time	t_r	〃		(11)10	20	ns
Storage Time	t_{stg}	〃		(80)70	180	ns
Fall Time	t_f	〃		(16)15	25	ns

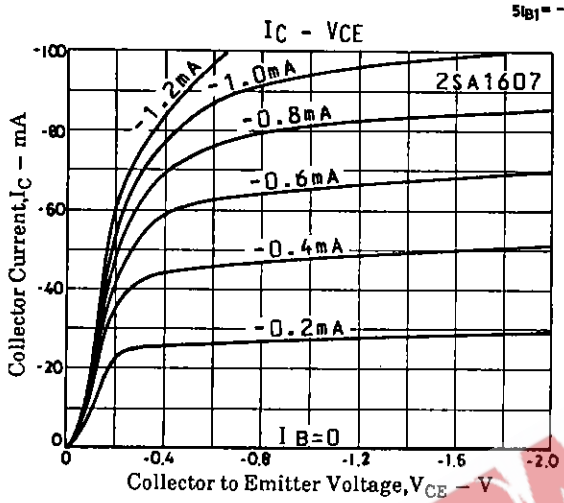
Switching Time Test Circuit

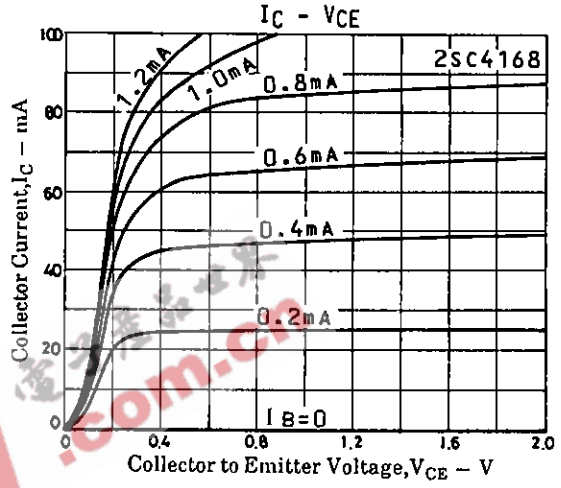


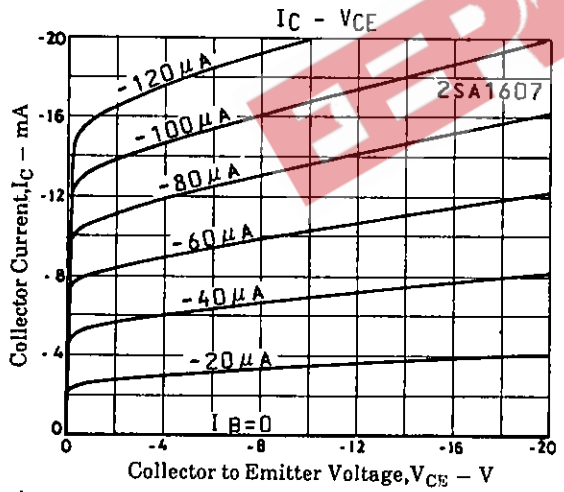
(For PNP, the polarity is reversed.)

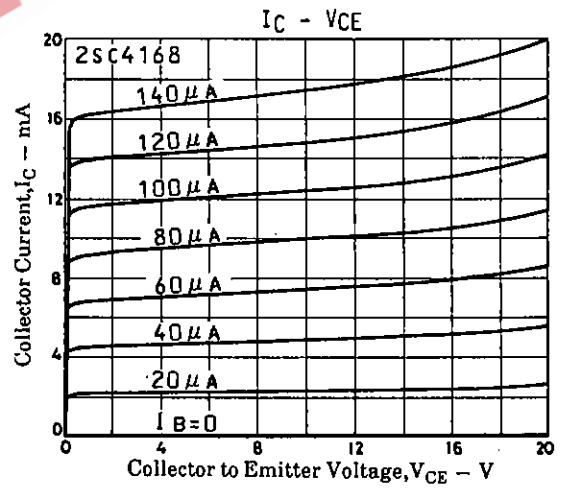
Unit (Resistance : Ω, Capacitance : F)

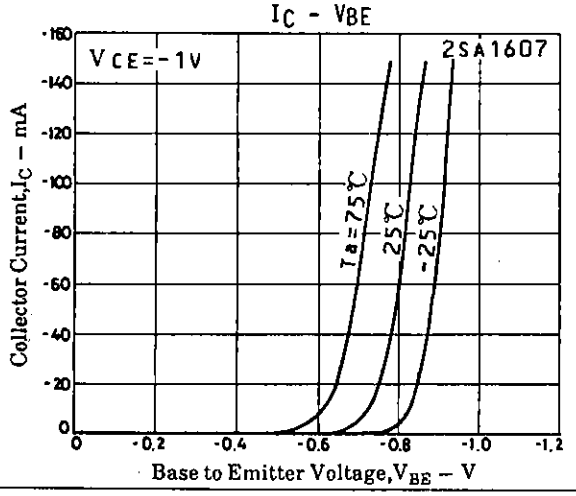
$5I_{B1} = -5I_{B2} = I_C = 50mA$

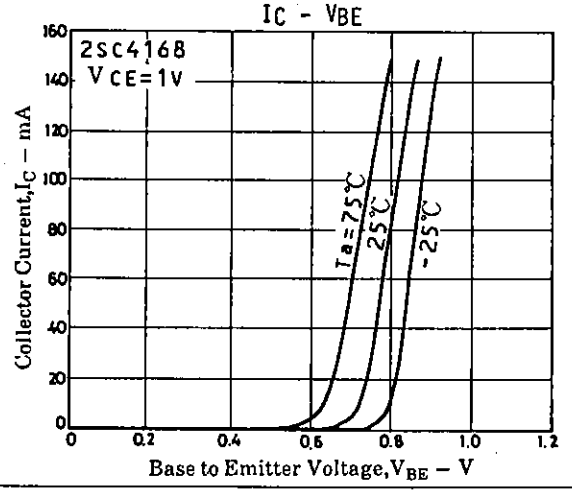


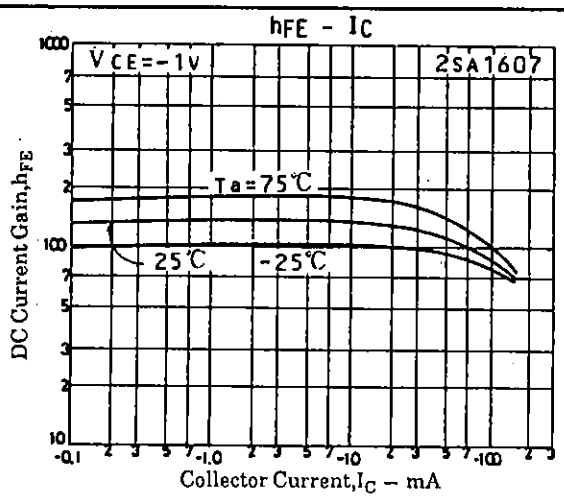


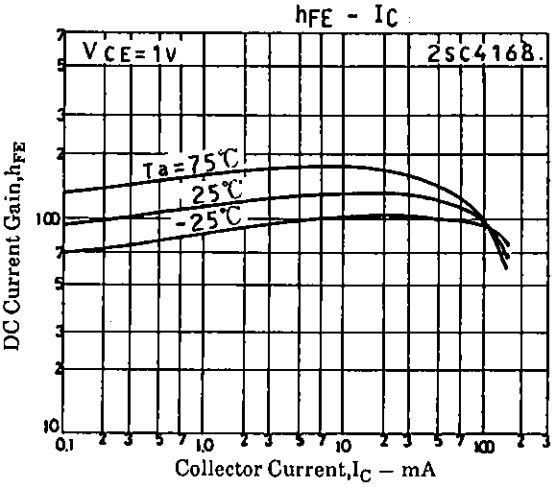


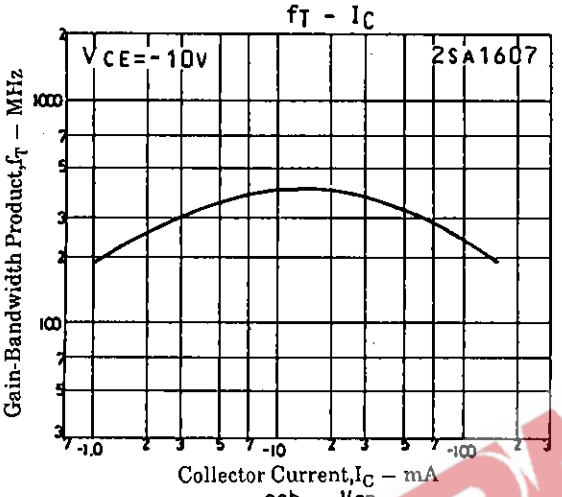


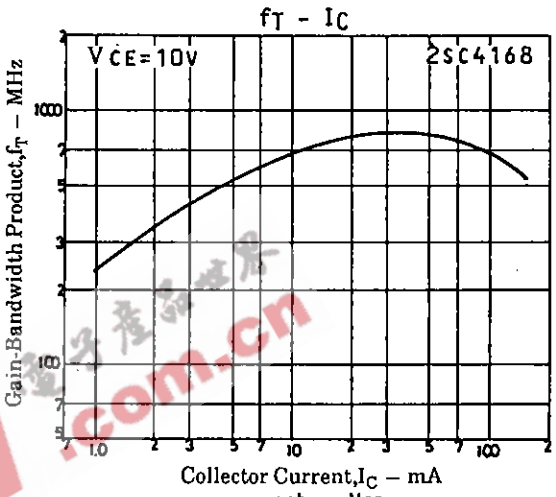


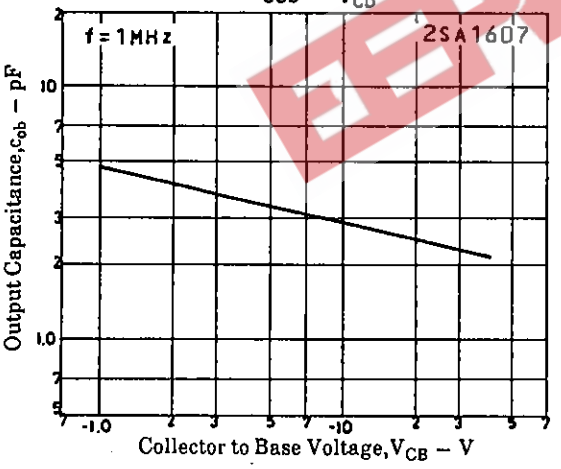


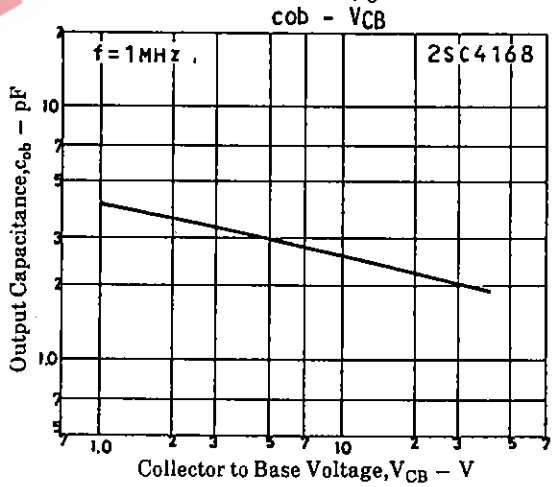

hFE - IC
VCE=-1V
2SA1607
Ta=75℃
25℃
-25℃
DC Current Gain,hFE
Collector Current,IC – mA

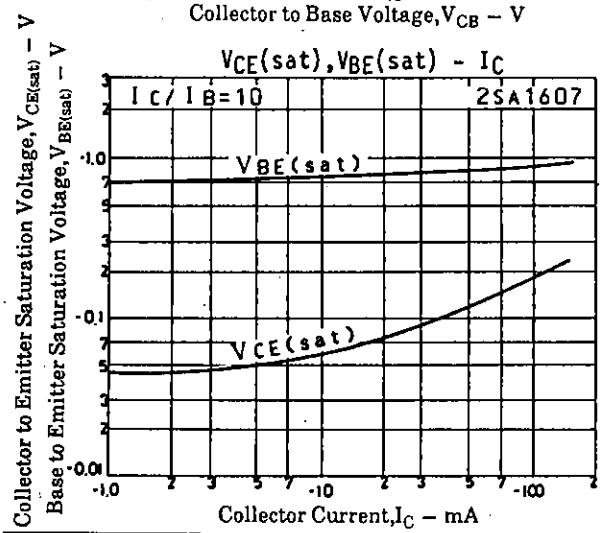

hFE - IC
VCE=1V
2SC4168
Ta=75℃
25℃
-25℃
DC Current Gain,hFE
Collector Current,IC – mA

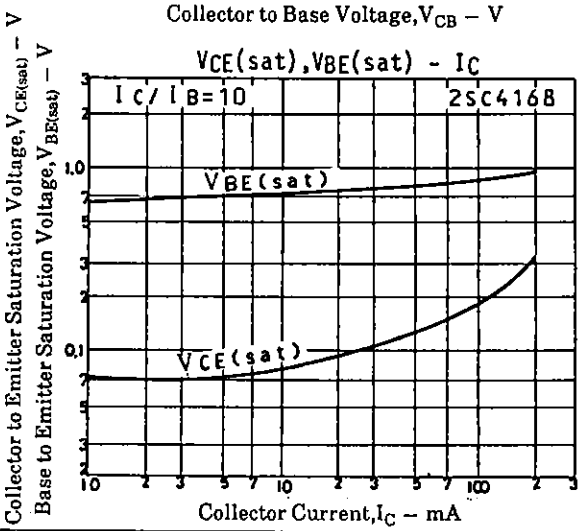

fT - IC
VCE=-10V
2SA1607
Gain-Bandwidth Product,fT – MHz
Collector Current,IC – mA


fT - IC
VCE=10V
2SC4168
Gain-Bandwidth Product,fT – MHz
Collector Current,IC – mA


Cob - VCB
f=1MHz
2SA1607
Output Capacitance,Cob – pF
Collector to Base Voltage,VCB – V


Cob - VCB
f=1MHz
2SC4168
Output Capacitance,Cob – pF
Collector to Base Voltage,VCB – V


VCE(sat),VBE(sat) - IC
IC/IB=10
2SA1607
VBE(sat)
VCE(sat)
Collector to Emitter Saturation Voltage,VCE(sat) – V
Base to Emitter Saturation Voltage,VBE(sat) – V
Collector Current,IC – mA


VCE(sat),VBE(sat) - IC
IC/IB=10
2SC4168
VBE(sat)
VCE(sat)
Collector to Emitter Saturation Voltage,VCE(sat) – V
Base to Emitter Saturation Voltage,VBE(sat) – V
Collector Current,IC – mA