Ordering number:EN1788A

PNP/NPN Epitaxial Planar Silicon Transistors

2SA1418/2SC3648

High-Voltage Switching, Predriver Applications

Applications

· Color TV audio output, inverter.

Features

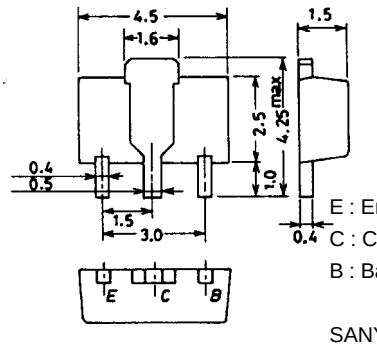
· Adoption of FBET, MBIT processes.
· High breakdown voltage and large current capacity.
· Fast switching speed.
· Very small size marking it easy to provide high-density, small-sized hybrid ICs.

Package Dimensions

unit:mm

2038

[2SA1418/2SC3648]



E : Emitter
C : Collector
B : Base

SANYO : PCP
(Bottom view)

( ) : 2SA1418

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–)180	V
Collector-to-Emitter Voltage	V_{CEO}		(–)160	V
Emitter-to-Base Voltage	V_{EBO}		(–)6	V
Collector Current	I_C		(–)0.7	A
Collector Current (Pulse)	I_{CP}		(–)1.5	A
Collector Dissipation	P_C		500	mW
		Mounted on ceramic board (250mm²×0.8mm)	1.3	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}=(–)120V, I_E=0			(–)0.1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(–)4V, I_C=0			(–)0.1	μA
DC Current Gain	$h_{FE}1$	V_{CE}=(–)5V, I_C=(–)100mA	100*		400*	
	$h_{FE}2$	V_{CE}=(–)5V, I_C=(–)10mA	90			
Gain-Bandwidth Product	f_T	V_{CE}=(–)10V, I_C=(–)50mA		120		MHz
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)250mA, I_B=(–)25mA		0.12	0.4	V
				(–0.2)	(–0.5)	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=(–)250mA, I_B=(–)25mA		(–)0.85	(–)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)10μA, I_E=0	(–)180			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)1mA, R_{BE}=∞	(–)160			V
Emitter-to-Base Breakdown Votage	$V_{(BR)EBO}$	I_E=(–)10μA, I_C=0	(–)6			V
Output Capacitance	C_{ob}	V_{CB}=(–)10V, f=1MHz		8		pF
				(11)		pF
Turn-ON Time	t_{on}	See specified Test Circuit.		50		ns
				(60)		ns
Stotage Time	t_{stg}	See specified Test Circuit.		1000		ns
				(900)		ns
Fall Time	t_f	See specified Test Circuit.		60		ns
				(60)		ns

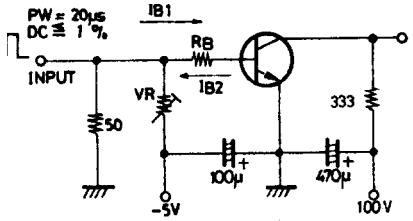
SANYO Electric Co.,Ltd. Semiconductor Bussiness Headquaters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

* : the 2SA1418/2SC3648 are classified by 100mA h_{FE} as follows :

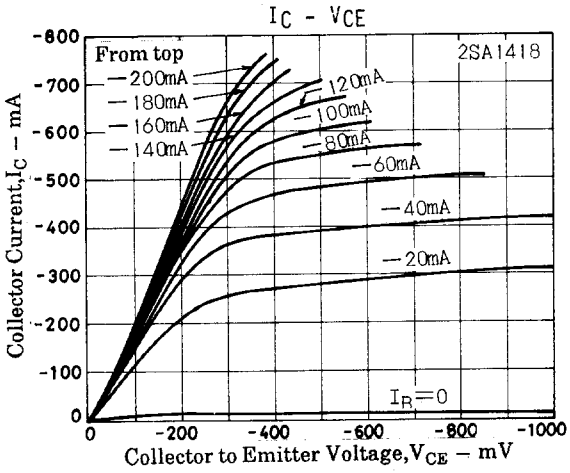
100	R	200	140	S	280	200	T	400

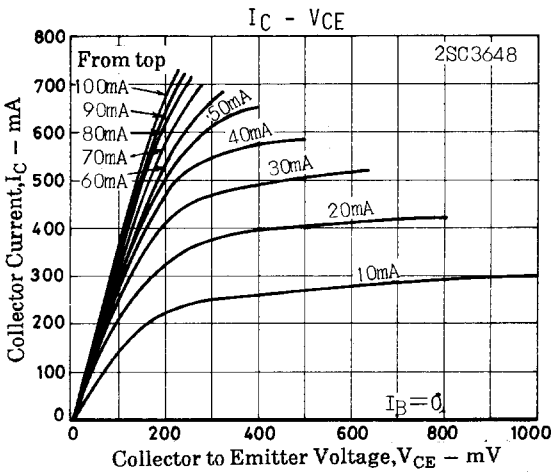
Marking 2SA1418 : AD h_{FE} rank : R, S, T
2SC3648 : CD

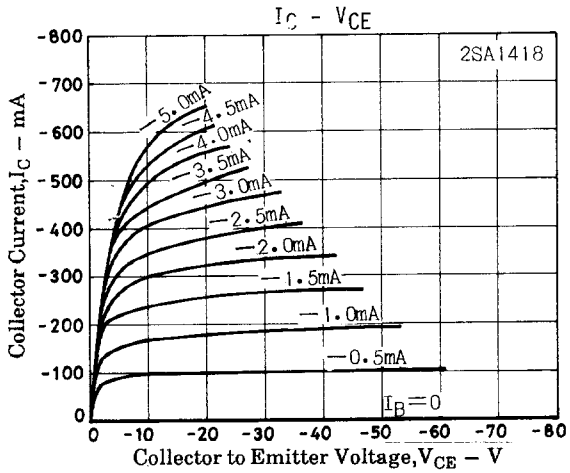
Switching Time Test Circuit

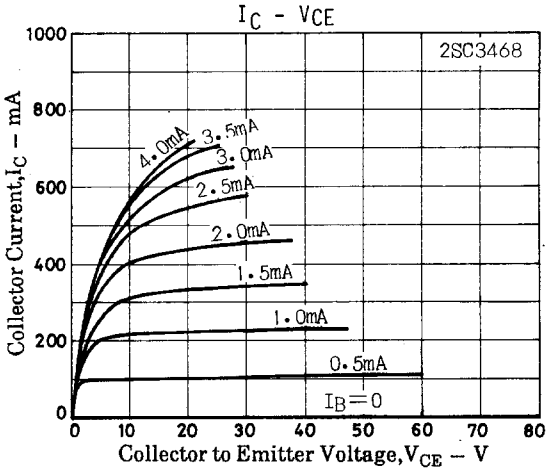


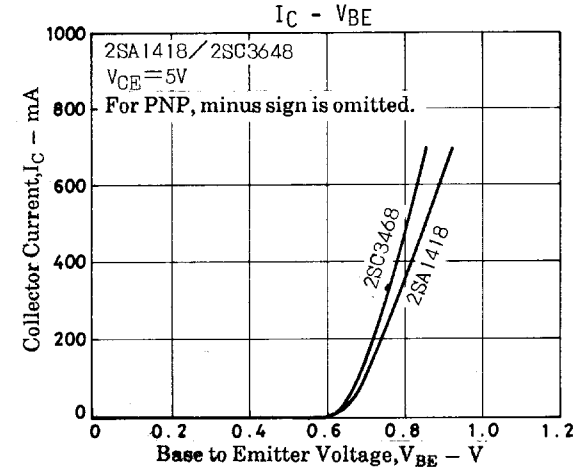
$20I_{B1} = -20I_{B2} = I_C = 300m$
(For PNP, the polarity is reversed)
Unit (resistance : Ω, capacitance : F)

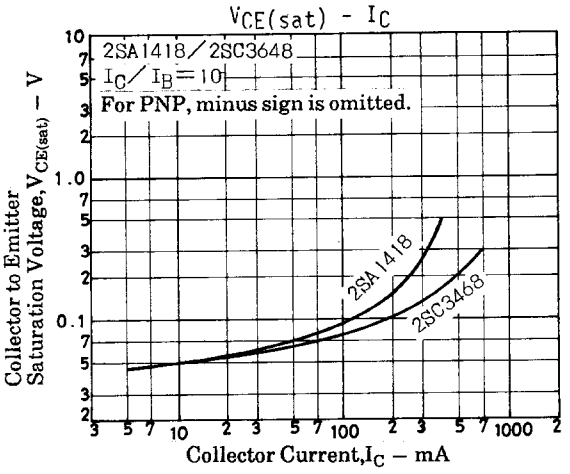


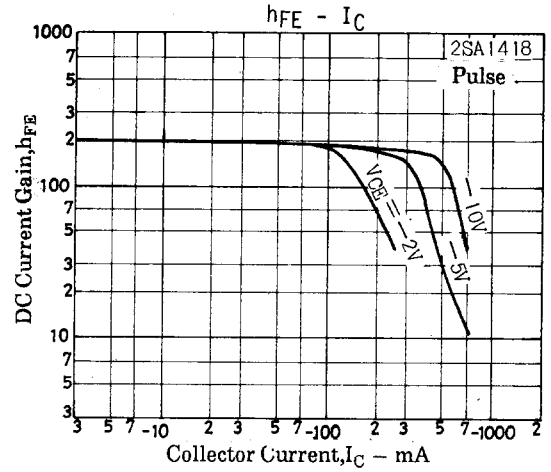


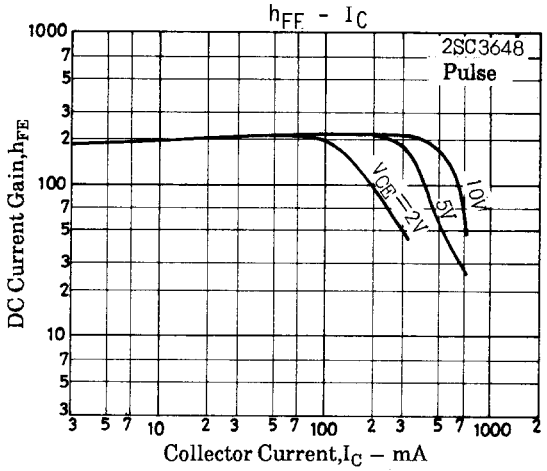


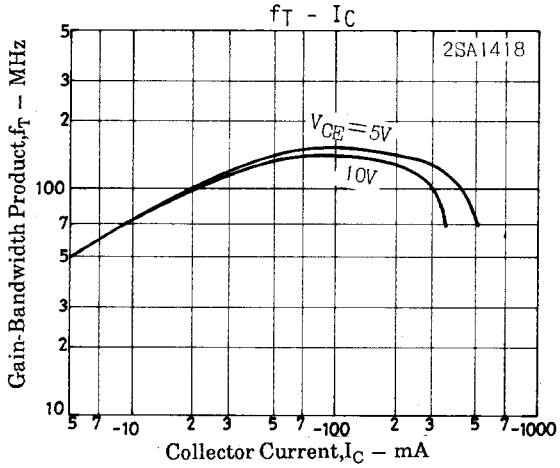


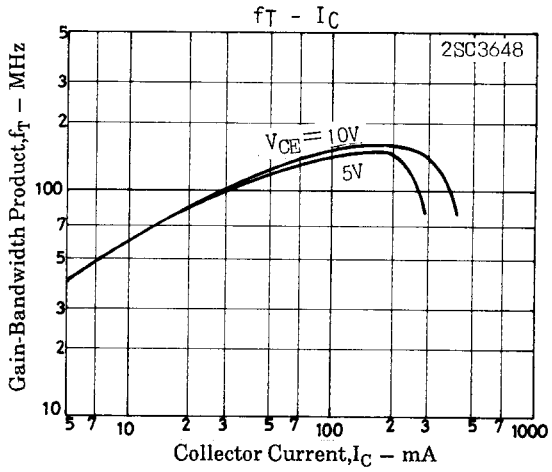


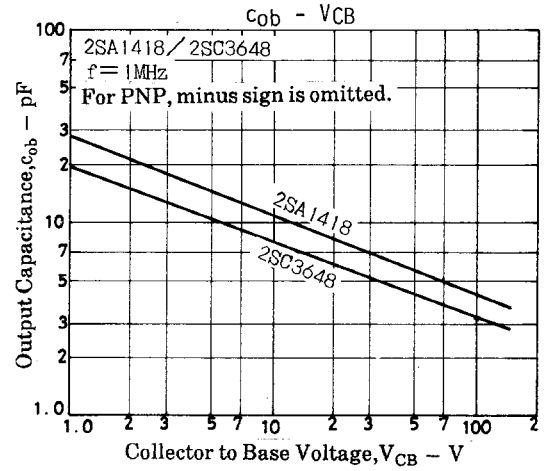


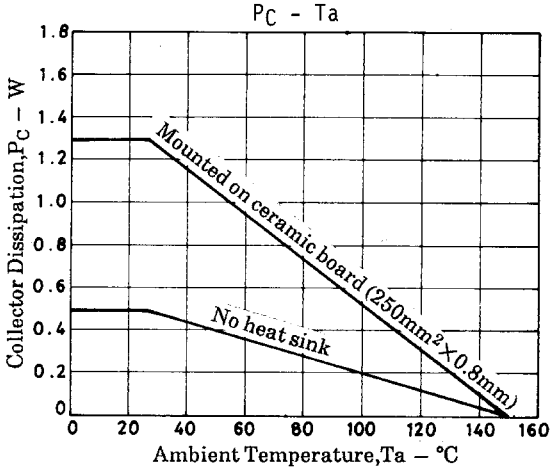

hFE - IC
2SA1418
Pulse
VCE=−2V
−5V
−10V
DC Current Gain,hFE
Collector Current,IC − mA

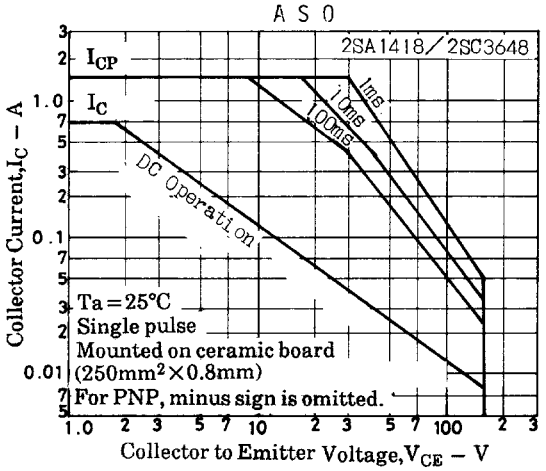

hFE - IC
2SC3648
Pulse
VCE=2V
5V
10V
DC Current Gain,hFE
Collector Current,IC − mA


fT - IC
2SA1418
VCE=5V
10V
Gain-Bandwidth Product,fT − MHz
Collector Current,IC − mA


fT - IC
2SC3648
VCE=10V
5V
Gain-Bandwidth Product,fT − MHz
Collector Current,IC − mA


Cob - VCB
2SA1418/2SC3648
f=1MHz
For PNP, minus sign is omitted.
2SA1418
2SC3648
Output Capacitance,Cob − pF
Collector to Base Voltage,VCB − V


PC - Ta
Mounted on ceramic board (250mm²×0.8mm)
No heat sink
Collector Dissipation,PC − W
Ambient Temperature,Ta − °C


A S O
2SA1418/2SC3648
ICP
IC
1ms
10ms
100ms
DC Operation
Ta=25°C
Single pulse
Mounted on ceramic board
(250mm²×0.8mm)
For PNP, minus sign is omitted.
Collector Current,IC − A
Collector to Emitter Voltage,VCE − V