



No.1788A

# 2SA1418/2SC3648

PNP/NPN Epitaxial Planar Silicon Transistors  
High-Voltage Switching,  
Predriver Applications

### Applications

- Color TV audio output, converter, 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

( ) : 2SA1418

### Absolute Maximum Ratings at Ta = 25°C

			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
	$P_C$ Mounted on ceramic board (250mm <sup>2</sup> × 0.8mm)	1.3	W
Junction Temperature	$T_j$	150	°C
Storage Temperature	$T_{stg}$	-55 to +150	°C

### Electrical Characteristics at Ta = 25°C

			min	typ	max	unit
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
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C = (-)250mA, I_B = (-)25mA$		0.12	0.4	V
				(-0.2)	(-0.5)	V
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C = (-)250mA, I_B = (-)25mA$		(-)0.85	(-)1.2	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C = (-)10μA, I_E = 0$	(-)180			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C = (-)1mA, R_{BE} = ∞$	(-)160			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E = (-)10μA, I_C = 0$	(-)6			V

Continued on next page.

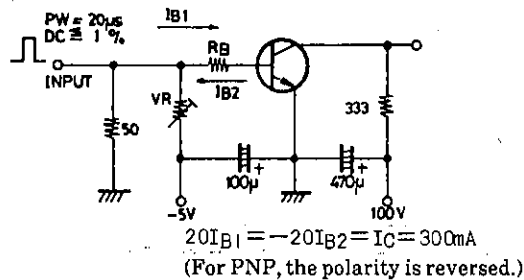
\* : The 2SA1418/2SC3648 are classified by 100mA  $h_{FE}$  as follows :

100 R	200	140 S	280	200 T	400
-------	-----	-------	-----	-------	-----

Marking 2SA1418 : AD  
2SC3648 : CD

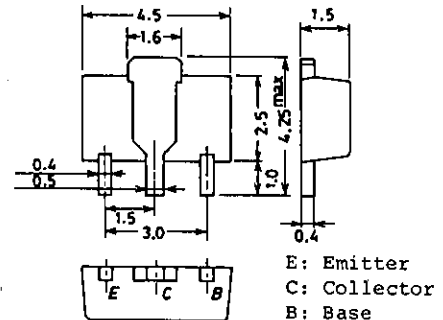
$h_{FE}$  rank : R,S,T

### Switching Time Test Circuit



Unit (Resistance : Ω, Capacitance : F)

### Package Dimensions 2038 (unit : mm)



E: Emitter  
C: Collector  
B: Base

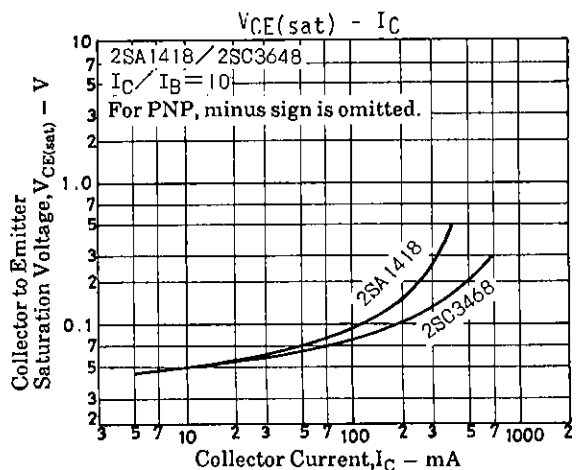
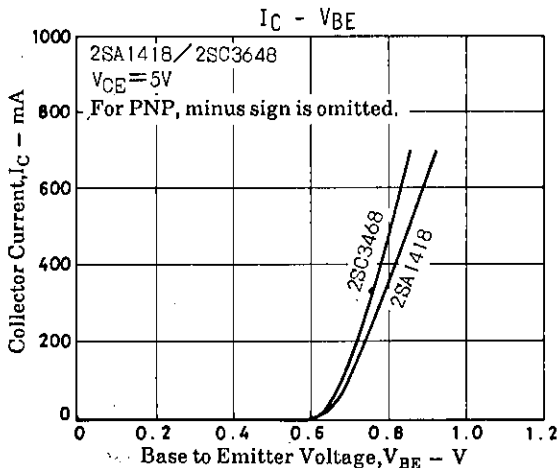
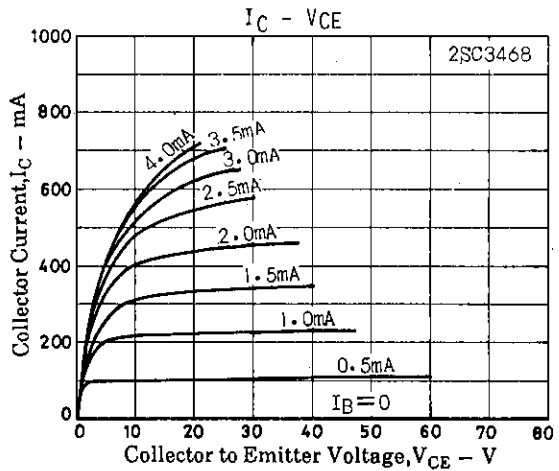
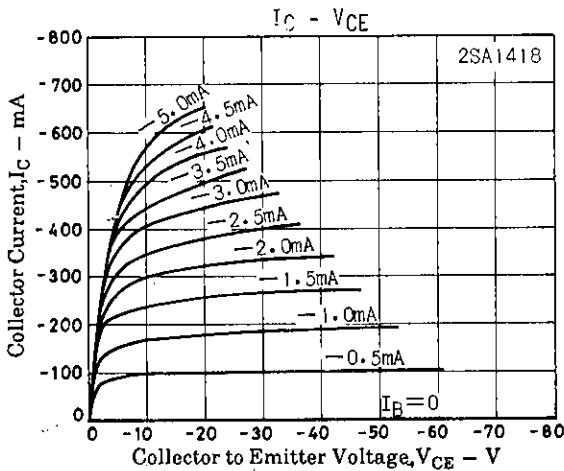
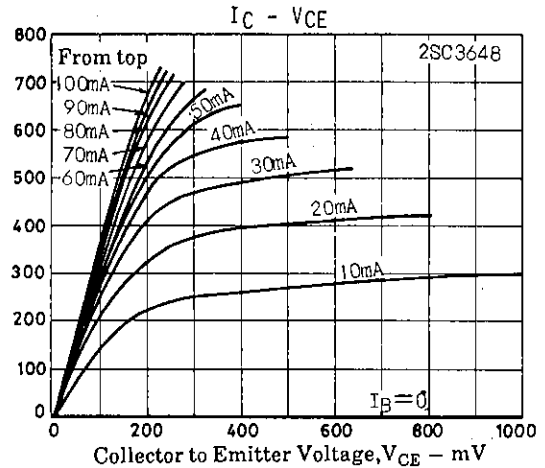
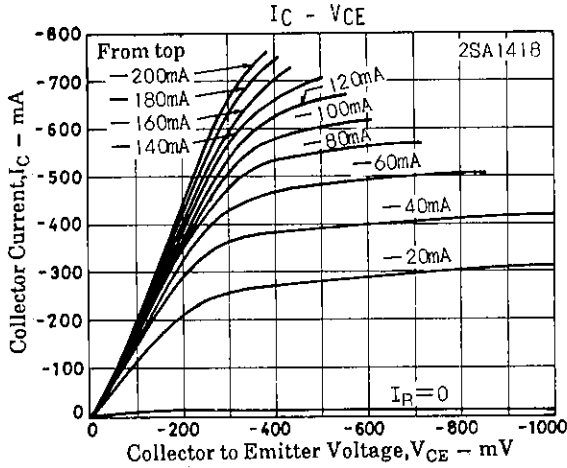
SANYO: PCP  
(Bottom View)

**SANYO Electric Co., Ltd. Semiconductor Business Headquarters**  
TOKYO OFFICE Tokyo Bldg. 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110 JAPAN

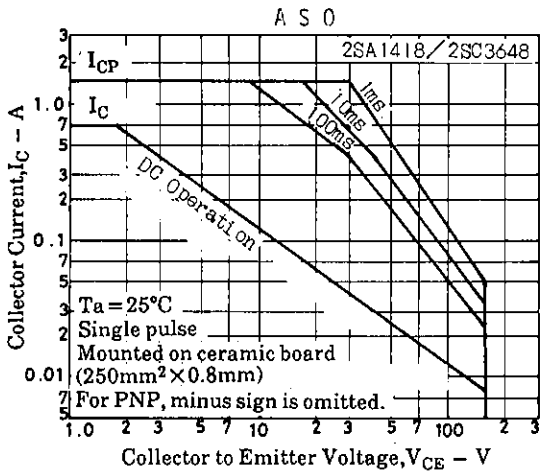
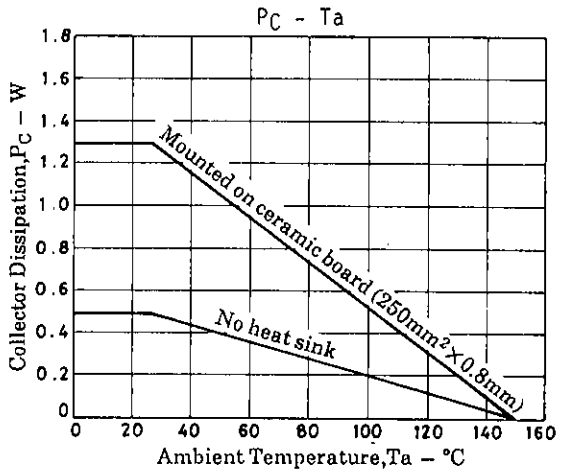
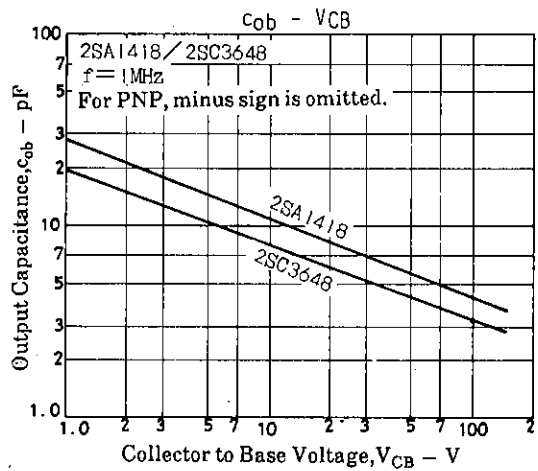
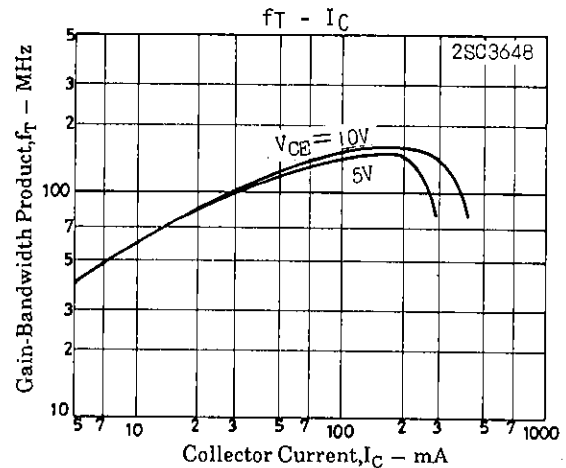
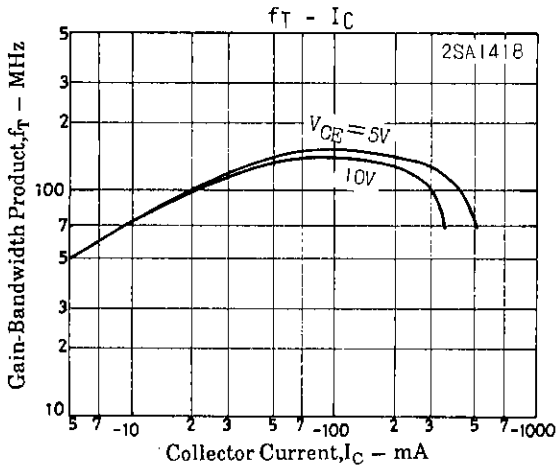
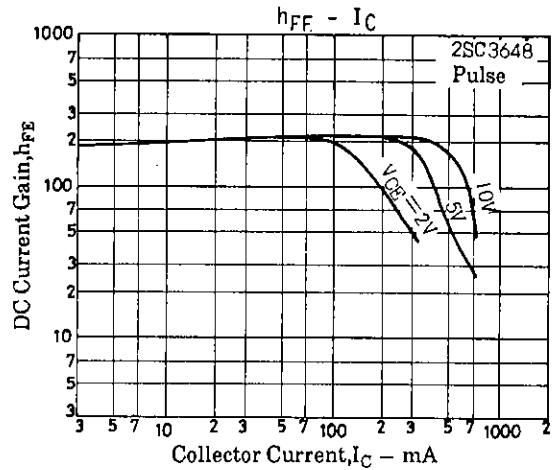
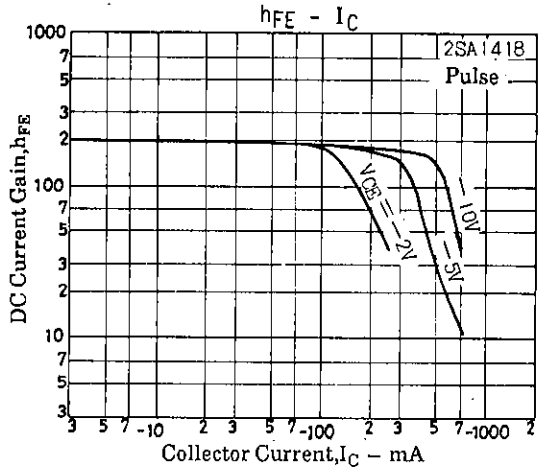
2SA1418/2SC3648

Continued from preceding page.

			min	typ	max	unit
Output Capacitance	$C_{ob}$	$V_{CB} = (-)10V, f = 1MHz$		8		pF
Turn-on Time	$t_{on}$	See specified Test Circuit.		(11)		pF
				50		ns
Storage Time	$t_{stg}$			(60)		ns
				1000		ns
Fall Time	$t_f$			(900)		ns
				60		ns
				(60)		ns



2SA1418/2SC3648



- No products described or contained herein are intended for use in surgical implants, life-support systems, aerospace equipment, nuclear power control systems, vehicles, disaster/crime-prevention equipment and the like, the failure of which may directly or indirectly cause injury, death or property loss.
- Anyone purchasing any products described or contained herein for an above-mentioned use shall:
  - ① Accept full responsibility and indemnify and defend SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors and all their officers and employees, jointly and severally, against any and all claims and litigation and all damages, cost and expenses associated with such use:
  - ② Not impose any responsibility for any fault or negligence which may be cited in any such claim or litigation on SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors or any of their officers and employees jointly or severally.
- Information (including circuit diagrams and circuit parameters) herein is for example only; it is not guaranteed for volume production. SANYO believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.