Ordering number:1727B

PNP/NPN Epitaxial Planar Silicon Transistors

2SB1123/2SD1623

High-Current Switching Applications

Applications

· Voltage regulators, relay drivers, lamp drivers, electrical equipment.

Features

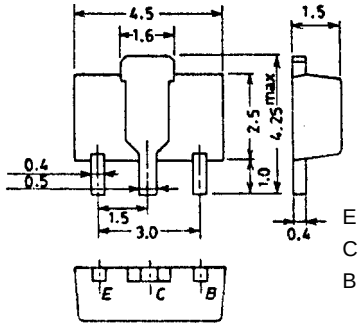
· Adoption of FBET, MBIT processes.
· Low collector-to-emitter saturation voltage.
· Large current capacity and wide ASO.
· Fast switching speed.
· Very small size making it easy to provide high-density, small-sized hybrid IC's.

Package Dimensions

unit:mm

2038

[2SB1123/2SD1623]



E : Emitter
C : Collector
B : Base

SANYO : PCP
(Bottom view)

( ) : 2SB1123

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		(–)2	A
Collector Current (Pulse)	I_{CP}		(–)4	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}=(–)50V, I_E=0			(–)100	nA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(–)4V, I_C=0			(–)100	nA
DC Current Gain	$h_{FE}1$	V_{CE}=(–)2V, I_C=(–)100mA	100*		560*	
	$h_{FE}2$	V_{CE}=(–)2V, I_C=(–)1.5A	40			
Gain-Bandwidth Product	f_T	V_{CE}=(–)10V, I_C=(–)50mA		150		MHz
Output Capacitance	C_{ob}	V_{CB}=(–)10V, f=1MHz		12		pF
				(22)		pF

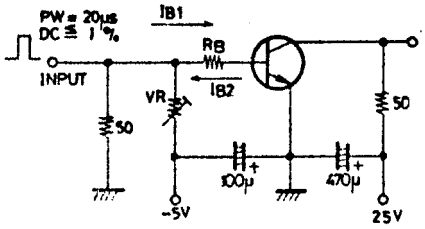
* ; The 2SB1123/2SD1623 are classified by 100mA h_{FE} as follows :

100	R	200	140	S	280	200	T	400	280	U	560

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=(–)1A, I_B=(–)50mA		(–0.3)	(–0.7)	V
				0.15	0.4	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=(–)1A, I_B=(–)50mA		(–)0.9	(–)1.2	V
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 Voltage	$V_{(BR)EBO}$	I_E=(–)10μA, I_C=0	(–)6			V
Turn-ON Time	t_{on}	See specified Test Circuit.		60		ns
				(60)		ns
Storage Time	t_{stg}	See specified Test Circuit.		550		ns
				(450)		ns
Fall Time	t_f	See specified Test Circuit.		30		ns
				(30)		ns

Switching Time Test Circuit

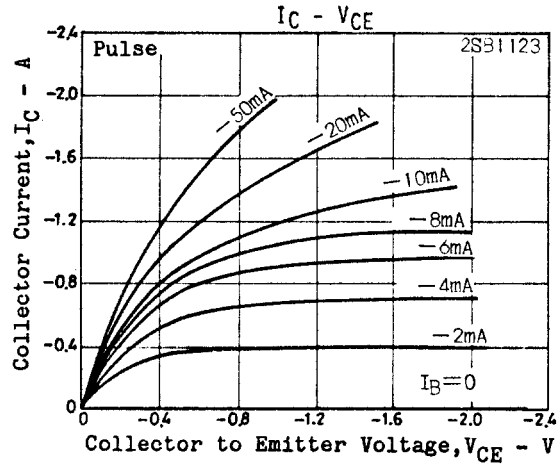


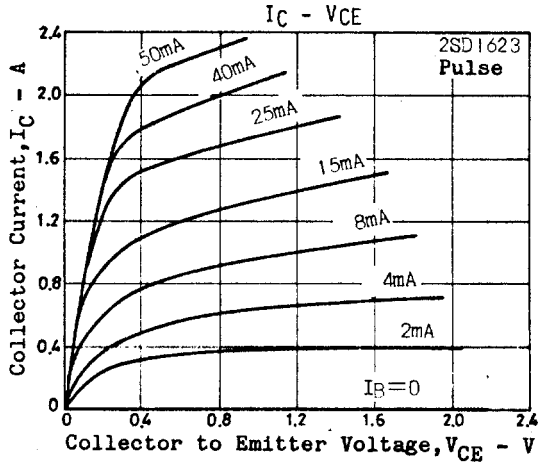
Marking: 2SB1123 -- BF
2SD1623 -- DF

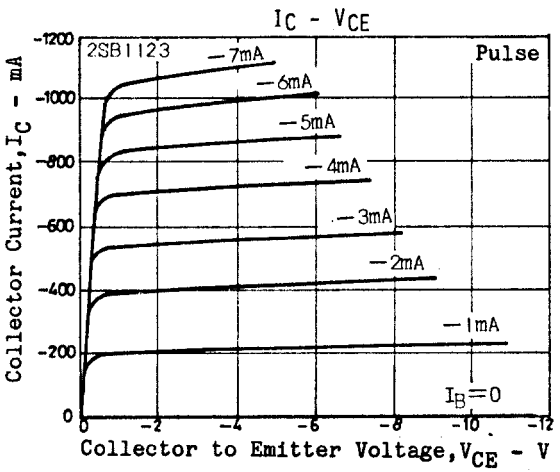
$20I_{B1}=-20I_{B2}=I_C=500mA$

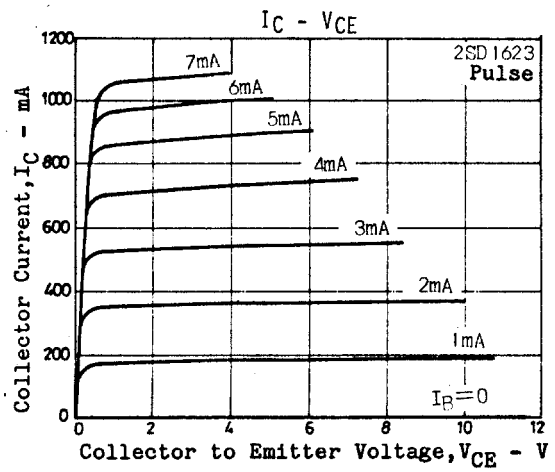
(For PNP, the polarity is reversed.)

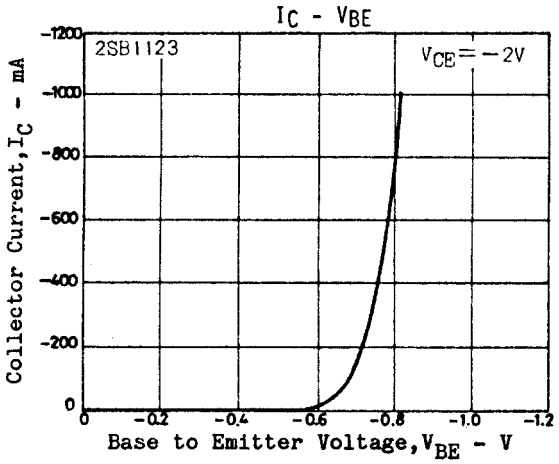
Unit (resistance : Ω, capacitance : F)

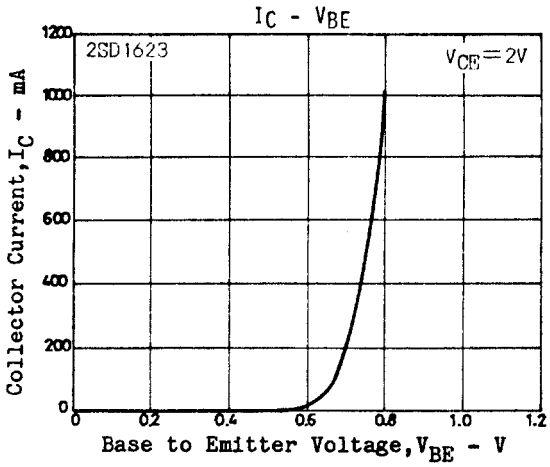


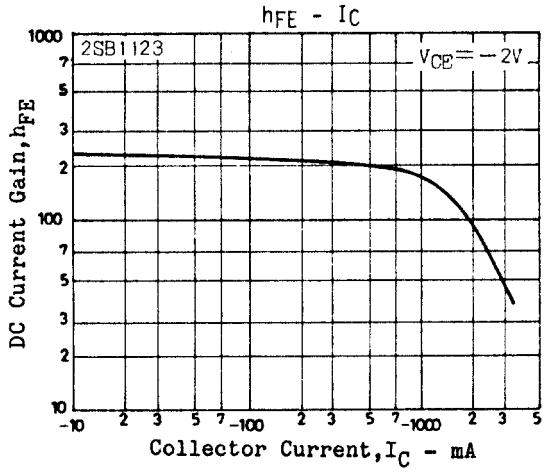


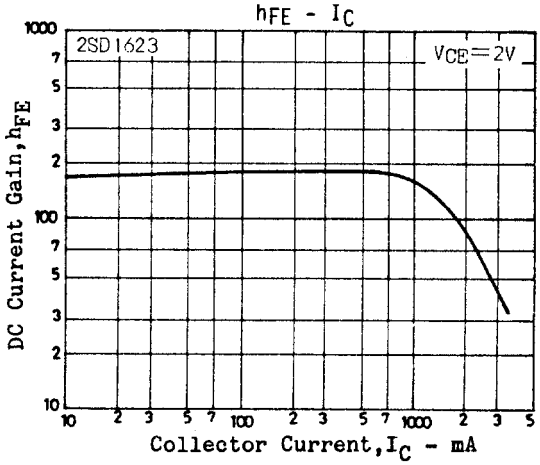


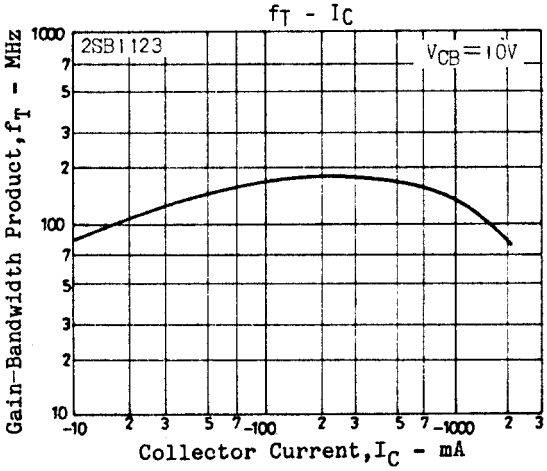


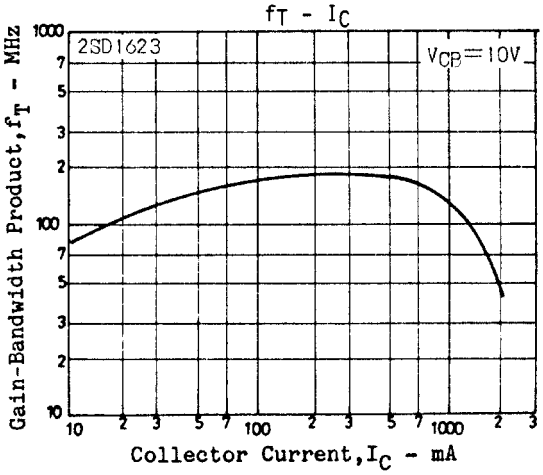

IC - VBE
2SB1123
VCE=−2V
Collector Current,IC - mA
Base to Emitter Voltage,VBE - V

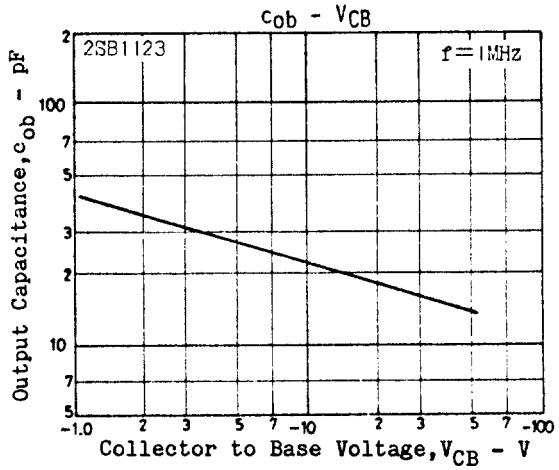

IC - VBE
2SD1623
VCE=2V
Collector Current,IC - mA
Base to Emitter Voltage,VBE - V

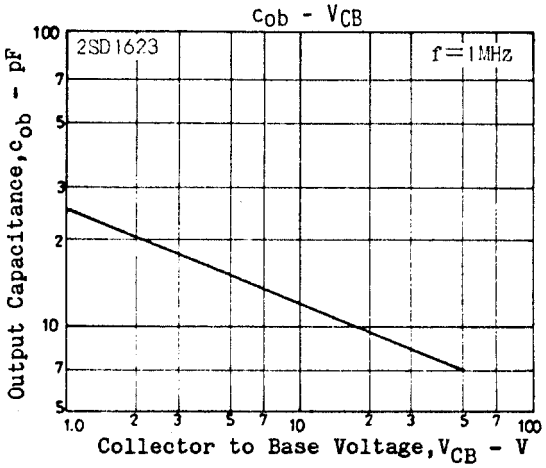

hFE - IC
2SB1123
VCE=−2V
DC Current Gain,hFE
Collector Current,IC - mA


hFE - IC
2SD1623
VCE=2V
DC Current Gain,hFE
Collector Current,IC - mA


fT - IC
2SB1123
VCB=10V
Gain-Bandwidth Product,fT - MHz
Collector Current,IC - mA


fT - IC
2SD1623
VCB=10V
Gain-Bandwidth Product,fT - MHz
Collector Current,IC - mA


Cob - VCB
2SB1123
f=1MHz
Output Capacitance,Cob - pF
Collector to Base Voltage,VCB - V


Cob - VCB
2SD1623
f=1MHz
Output Capacitance,Cob - pF
Collector to Base Voltage,VCB - V