Ordering number:346G

PNP/NPN Epitaxial Planar Silicon Transistor

2SB631,631K/2SD600,600K

100V/120V, 1A Low-Frequency Power Amplifier Applications

Features

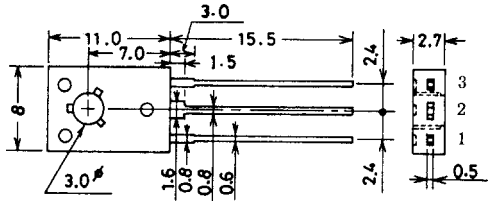
- High breakdown voltage V_{CEO} 100/120V, High current 1A.
- Low saturation voltage, excellent h_{FE} linearity.

Package Dimensions

unit:mm

2009B

[2SB631, 631K/2SD600, 600K]



1 : Emitter
2 : Collector
3 : Base

JEDEC : TO-126

( ) : 2SB631, 631K

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbo	Condition	2SB631, D60	2SB631K, D600	Uni
Collector-to-Base Voltage	CBO		(–)100	(–)12	
Collector-to-Emitter Voltage	CEO		(–)100	(–)12	
Emitter-to-Base Voltage	EBO		(–)5		
Collector Current	C		(–)1		
Collector Current (Pulse)	CP		(–)2		
Collector Dissipation	C		1W		
		Tc=25˚C	8W		
Junction Temperature	T		150		˚C
Storage Temperature	Tst		–55 to +150		˚C

Electrical Characteristics at Ta = 25˚C

Parameter	Symbo	Condition		Ratings			Unit
				mi	ty	ma	
Collector-to-Base Breakdown Voltage	(BR)CBO	I_C=(–)10μA, I_E=0	B631, D600	(–)10			
			B631K, D600K	(–)12			
Collector-to-Emitter Brakdown Voltage	(BR)CEO	I_C=(–)1mA, R_{BE}=∞	B631, D600	(–)10			
			B631K, D600K	(–)12			
Emitter-to-Base Breakdown Voltage	(BR)EBO	I_E=(–)10μA, I_C=0		(–)			
Collector Cutoff Current	CBO	V_{CB}=(–)50V, I_E=0				(–)	μ
Emitter Cutoff Current	EBO	V_{EB}=(–)4V, I_C=0				(–)	μ

■ Any and all SANYO products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your SANYO representative nearest you before using any SANYO products described or contained herein in such applications.

■ SANYO assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges,or other parameters) listed in products specifications of any and all SANYO products described or contained herein.

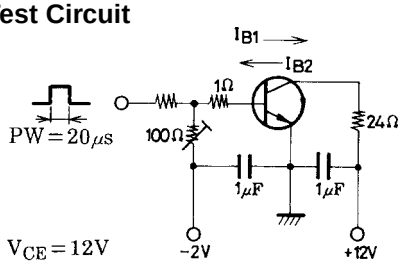
SANYO Electric Co.,Ltd. Semiconductor Bussiness Headquaters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
DC Current Gain	$h_{FE}1$	V_{CE}=(–)5V, I_C=(–)50mA	60*		320*	
	$h_{FE}2$	V_{CE}=(–)5V, I_C=(–)500mA	2			
Gain-Bandwidth Product	fT	V_{CE}=(–)10V, I_C=(–)50mA		(210)		MHz
				130		MHz
Output Capacitance	Cob	V_{CB}=(–)10V, f=1MHz		(50)2		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C=(–)500mA, I_B=(–)50mA		(–)0.1	(–)0.4	V
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C=(–)500mA, I_B=(–)50mA		(–)0.8	(–)1.2	V
Fall Time	tf	See specified Test Circuit		(80)		ns
				160		ns
Turn-OFF Time	toff	See specified Test Circuit		(100)		ns
				560		ns
Storage Time	tstg	See specified Test Circuit		(600)		ns
				760		ns

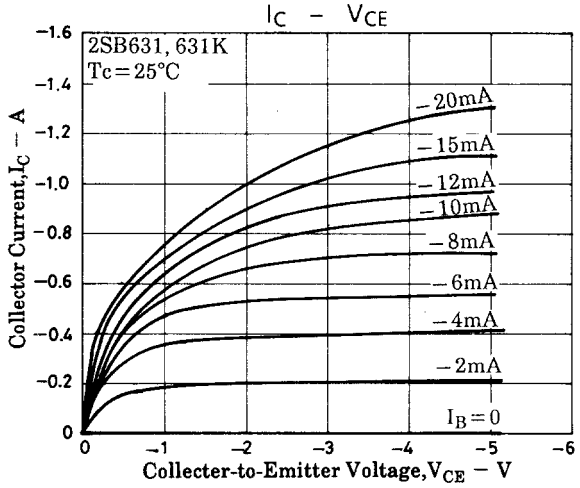
* : The 2SB631/2SD600 are classified by 50mA h_{FE} as follows :

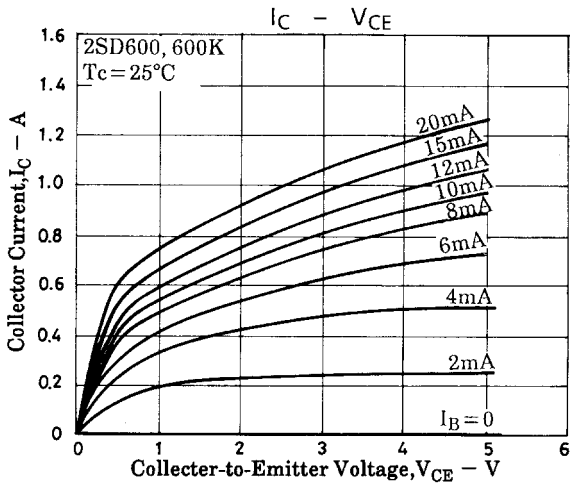
60 D 120	100 E 200	160 F 320

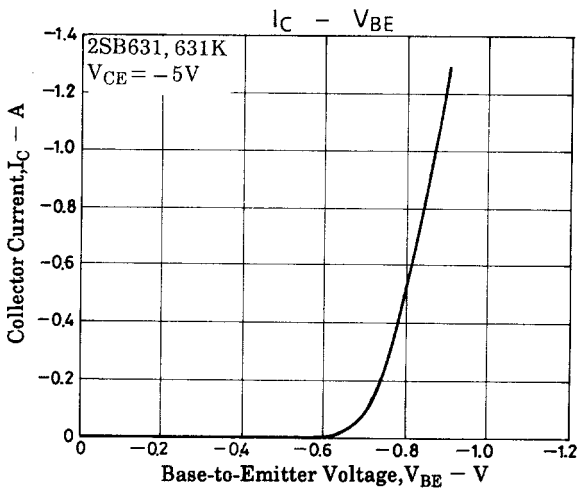
Switching Time Test Circuit

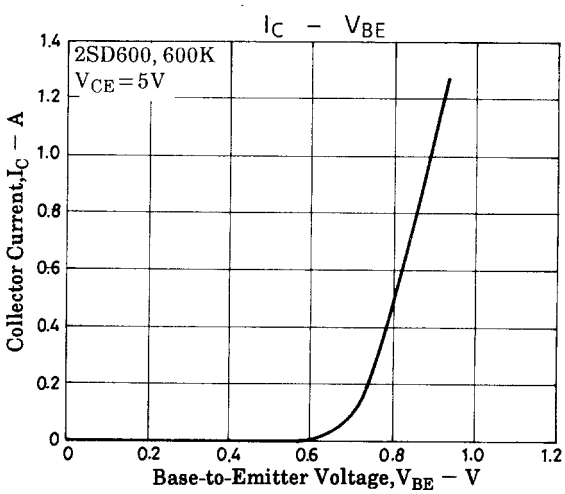


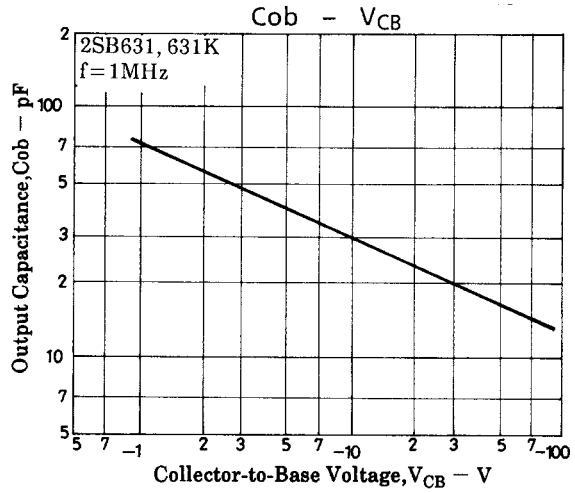
V_{CE} = 12V
$I_C = 10I_{B1} = -10I_{B2}$ = 500mA
(For PNP, the polarity is reversed.)

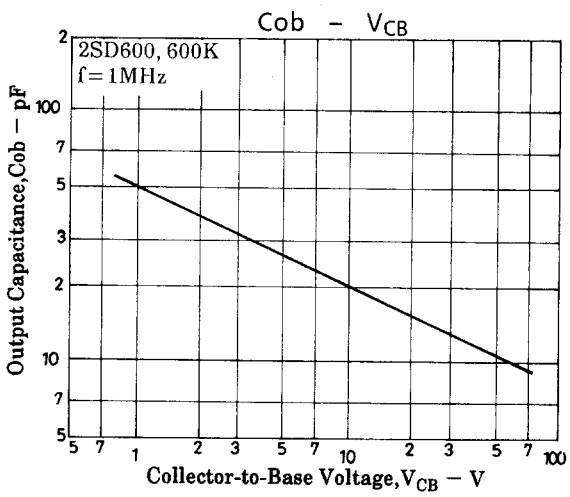


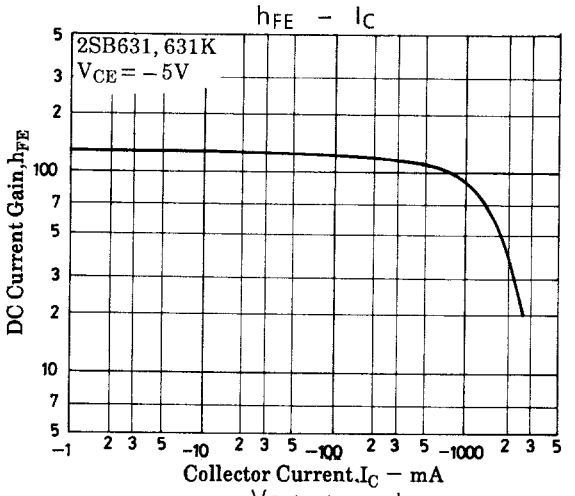


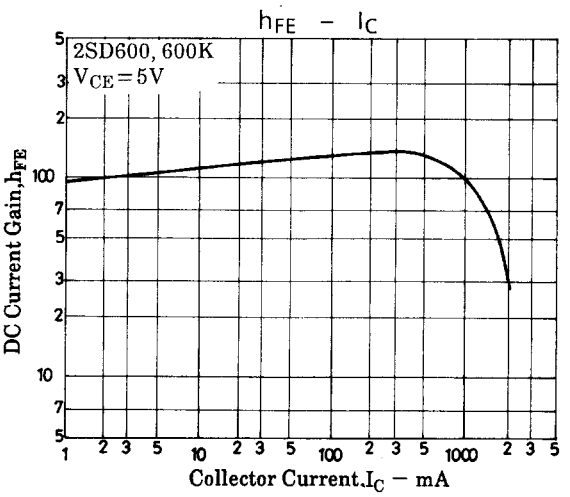


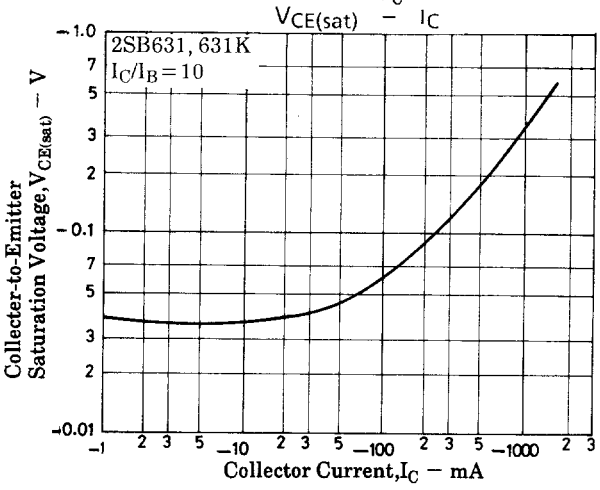


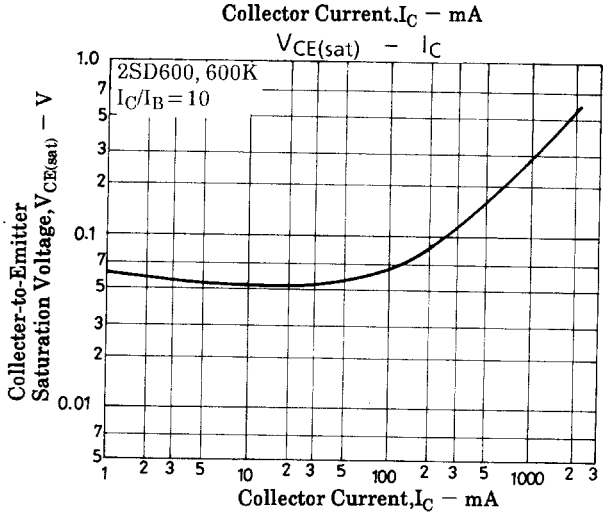

Cob – VCB
2SB631, 631K
f=1MHz
Output Capacitance,Cob – pF
Collector-to-Base Voltage,VCB – V

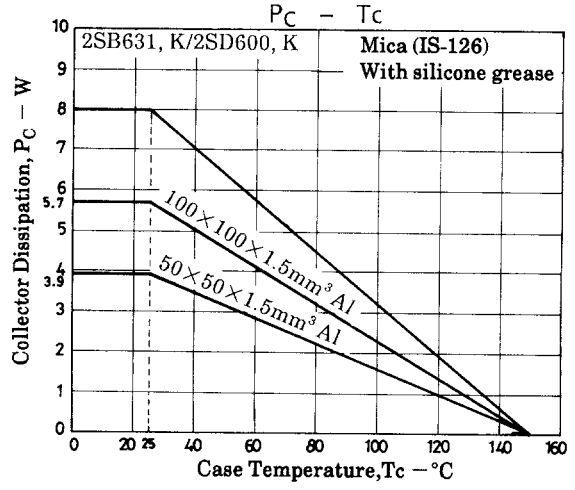

Cob – VCB
2SD600, 600K
f=1MHz
Output Capacitance,Cob – pF
Collector-to-Base Voltage,VCB – V

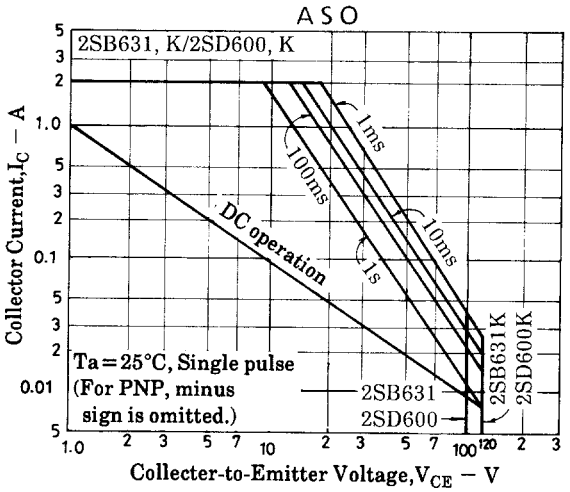

hFE – IC
2SB631, 631K
VCE=–5V
DC Current Gain,hFE
Collector Current,IC – mA


hFE – IC
2SD600, 600K
VCE=5V
DC Current Gain,hFE
Collector Current,IC – mA


VCE(sat) – IC
2SB631, 631K
IC/IB=10
Collecter-to-Emitter Saturation Voltage,VCE(sat) – V
Collector Current,IC – mA


VCE(sat) – IC
2SD600, 600K
IC/IB=10
Collecter-to-Emitter Saturation Voltage,VCE(sat) – V
Collector Current,IC – mA


PC – TC
2SB631, K/2SD600, K
Mica (IS-126)
With silicone grease
100×100×1.5mm³ Al
50×50×1.5mm³ Al
Collector Dissipation, PC – W
Case Temperature,Tc – °C


ASO
2SB631, K/2SD600, K
1ms
10ms
100ms
1s
DC operation
Ta=25°C, Single pulse
(For PNP, minus sign is omitted.)
2SB631
2SD600
2SB631K
2SD600K
Collector Current,IC – A
Collecter-to-Emitter Voltage,VCE – V