Ordering number:346G

PNP/NPN Epitaxial Planar Silicon Transistor

2SB631,631K/2SD600,600K

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

Features

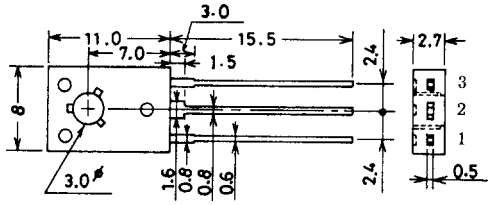
- High breakdown voltage V_{CEO} 100/120V, High current 1A.
- Low saturation voltage, excellent h_{FE} linearity.

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	Symbol	Conditions	2SB631, D600	2SB631K, D600K	Unit
Collector-to-Base Voltage	V_{CBO}		(–)100	(–)120	V
Collector-to-Emitter Voltage	V_{CEO}		(–)100	(–)120	V
Emitter-to-Base Voltage	V_{EBO}		(–)5		V
Collector Current	I_C		(–)1		A
Collector Current (Pulse)	I_{CP}		(–)2		A
Collector Dissipation	P_C		1		W
		Tc=25˚C	8		W
Junction Temperature	Tj		150		˚C
Storage Temperature	Tstg		–55 to +150		˚C

Electrical Characteristics at Ta = 25˚C

Parameter	Symbol	Conditions		Ratings min	Ratings typ	Ratings max	Unit
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)10μA, I_E=0	B631, D600	(–)100			V
			B631K, D600K	(–)120			V
Collector-to-Emitter Brakdown Voltage	$V_{(BR)CEO}$	I_C=(–)1mA, R_{BE}=∞	B631, D600	(–)100			V
			B631K, D600K	(–)120			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=(–)10μA, I_C=0		(–)5			V
Collector Cutoff Current	I_{CBO}	V_{CB}=(–)50V, I_E=0				(–)1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(–)4V, I_C=0				(–)1	μA

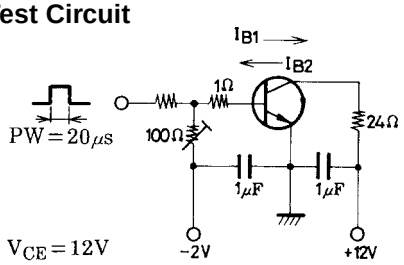
SANYO Electric Co.,Ltd. Semiconductor Bussiness Headquaters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

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	20			
Gain-Bandwidth Product	f_T	V_{CE}=(–)10V, I_C=(–)50mA		(110)		MHz
				130		MHz
Output Capacitance	C_{ob}	V_{CB}=(–)10V, f=1MHz		(30)20		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)500mA, I_B=(–)50mA		(–)0.15	(–)0.4	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=(–)500mA, I_B=(–)50mA		(–)0.85	(–)1.2	V
Fall Time	t_f	See specified Test Circuit		(80)		ns
				100		ns
Turn-OFF Time	t_{off}	See specified Test Circuit		(100)		ns
				500		ns
Storage Time	t_{stg}	See specified Test Circuit		(600)		ns
				700		ns

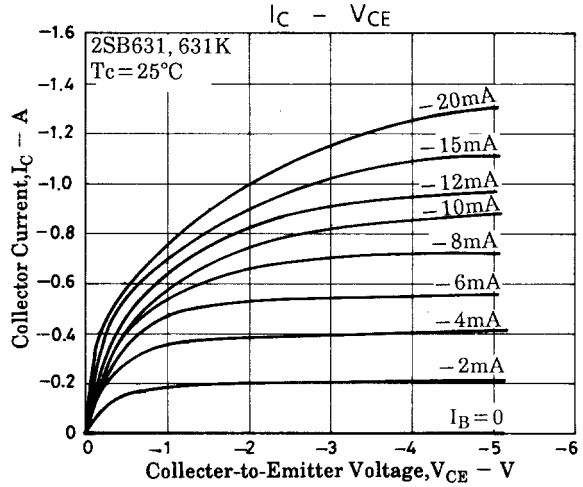
* : The 2SB631/2SD600 are classified by 50mA h_{FE} as follows :

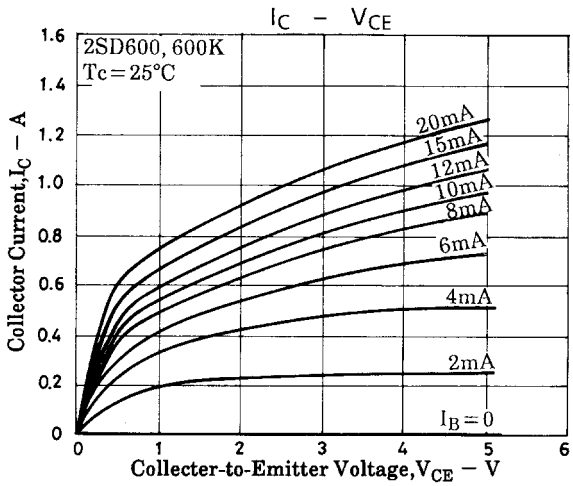
60 D 120	100 E 200	160 F 320

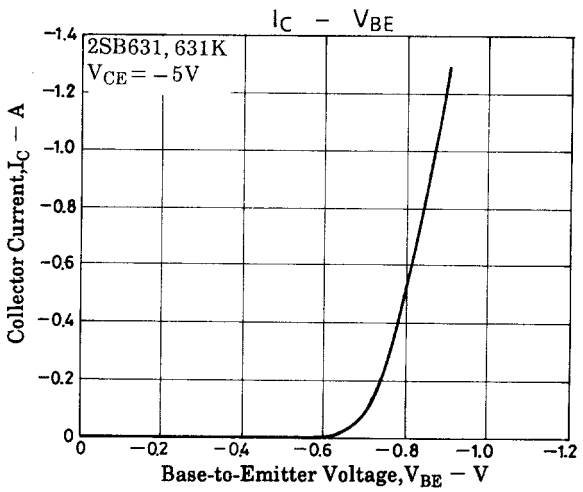
Switching Time Test Circuit

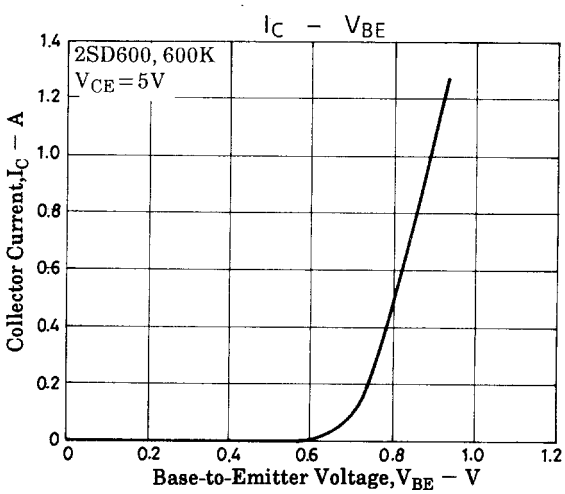


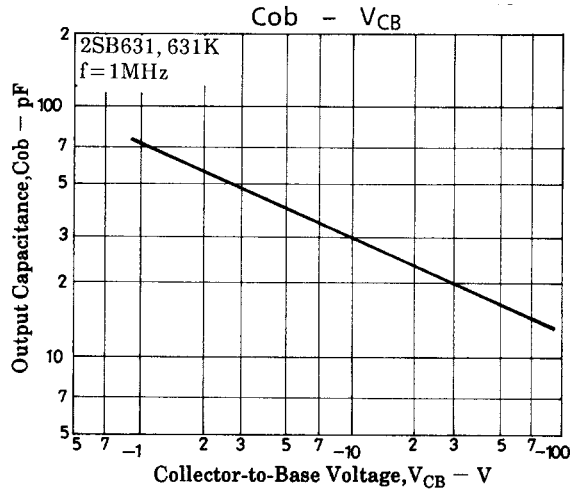
(For PNP, the polarity is reversed.)

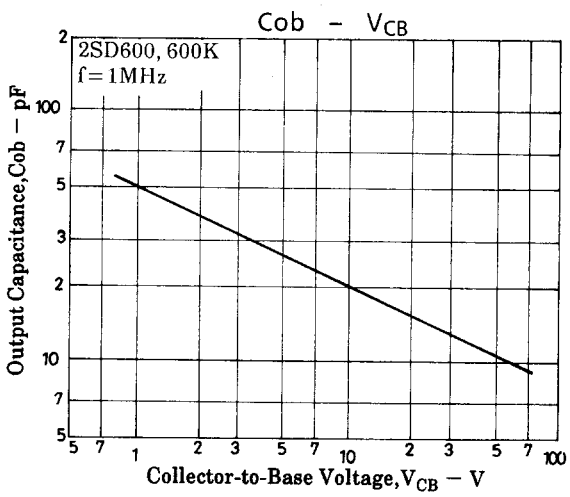


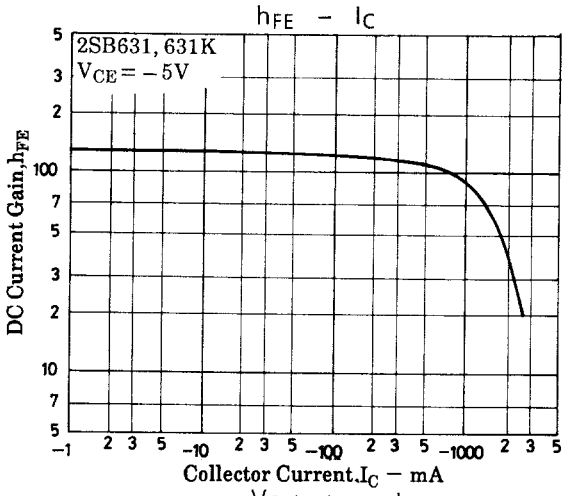


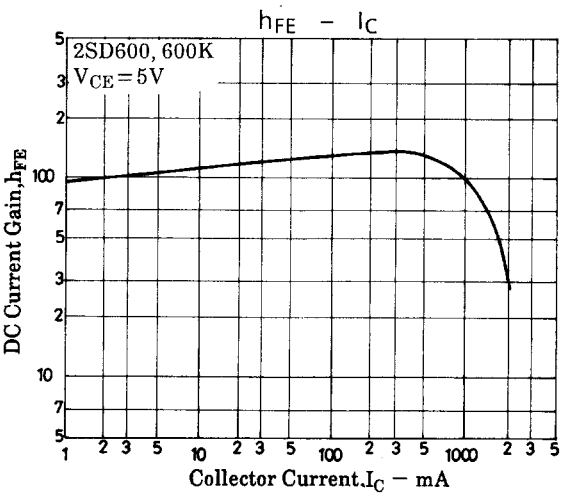


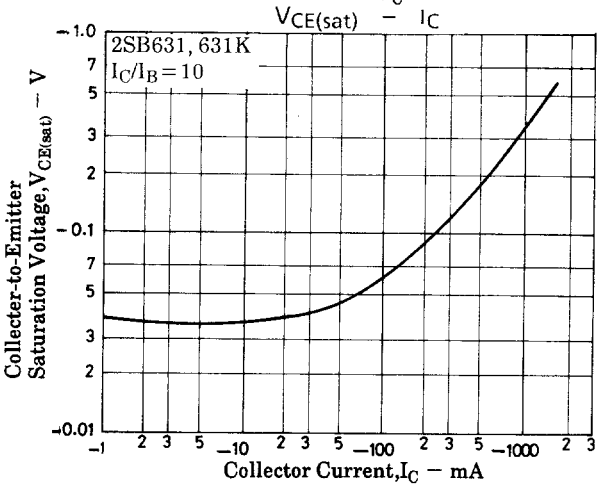


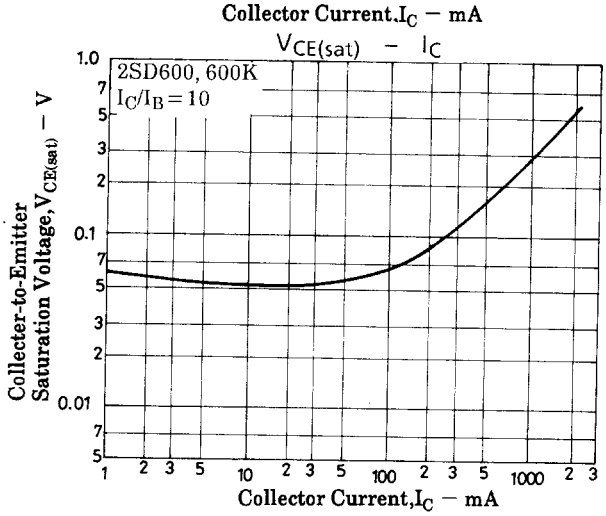

Cob – VCB
2SB631, 631K
f=1MHz
Output Capacitance,Cob – pF
Collector-to-Base Voltage,VCB – V

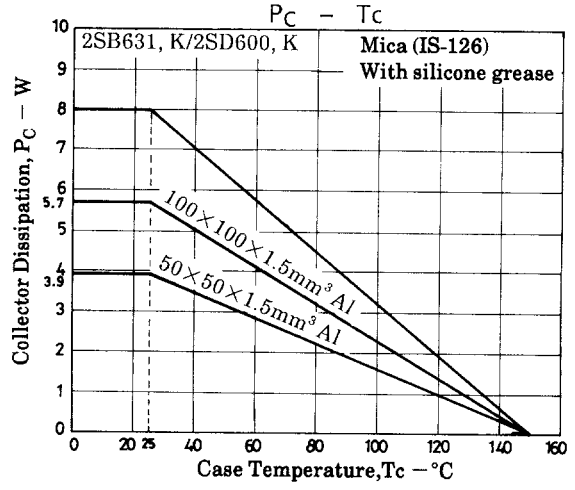

Cob – VCB
2SD600, 600K
f=1MHz
Output Capacitance,Cob – pF
Collector-to-Base Voltage,VCB – V

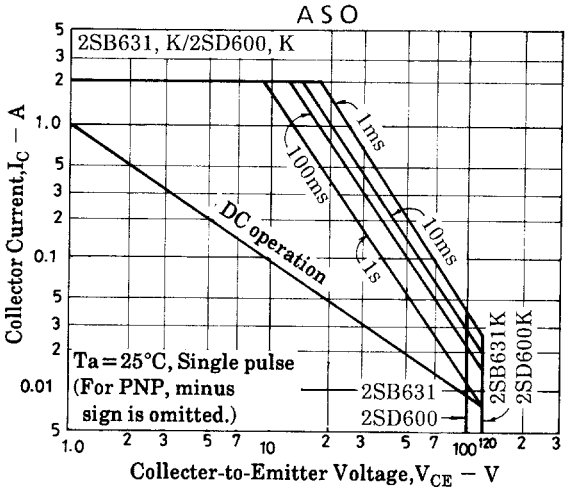

hFE – IC
2SB631, 631K
VCE=–5V
DC Current Gain,hFE
Collector Current,IC – mA


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