Ordering number:EN3174B

PNP/NPN Epitaxial Planar Silicon Transistors

2SB1394/2SD2099

Compact Motor Driver Applications

Features

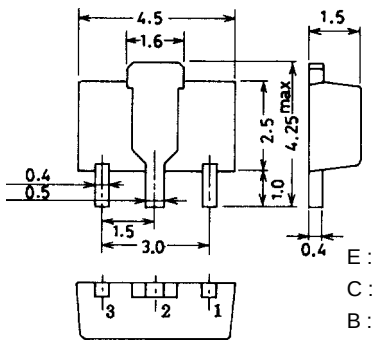
- Contains input resistance (R_1), base-to-emitter resistance (R_{BE}).
- Contains diode between collector and emitter.
- Low saturation voltage.
- Large current capacity.
- Small-sized package making it easy to provide high-density, small-sized hybrid ICs.

Package Dimensions

unit:mm

2038A

[2SB1394/2SD2099]



E : Emitter
C : Collector
B : Base
SANYO : PCP
(Bottom view)

( ) : 2SB1394

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–)40	V
Collector-to-Emitter Voltage	V_{CEO}		(–)30	V
Emitter-to-Base Voltage	V_{EBO}		(–)6	V
Collector Current	I_C		(–)3	A
Collector Current (Pulse)	I_{CP}		(–)5	A
Collector Dissipation	P_C	Mounted on ceramic board (250mm^2×0.8mm)	1.5	W
Junction Temperature	Tj		150	˚C
Storage Temperature	Tstg		–55 to +150	˚C

Electrical Characteristics at Ta = 25˚C

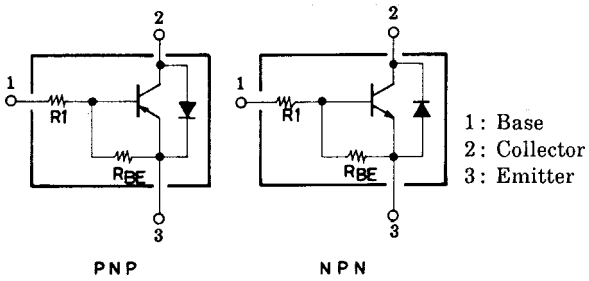
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=(–)30V, I_E=0			(–)1.0	μA
DC Current Gain	$h_{FE}1$	V_{CE}=(–)2V, I_C=(–)0.5A	(–)70			
	$h_{FE}2$	V_{CE}=(–)2V, I_C=(–)2A	(–)50			
Gain-Bandwidth Product	f_T	V_{CE}=(–)2V, I_C=(–)0.5A		100		MHz
Output Capacitance	C_{ob}	V_{CB}=(–)10V, f=1MHz		(55)40		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)1A, I_B=(–)50mA		0.12	0.3	V
				(–0.18)	(–0.4)	V

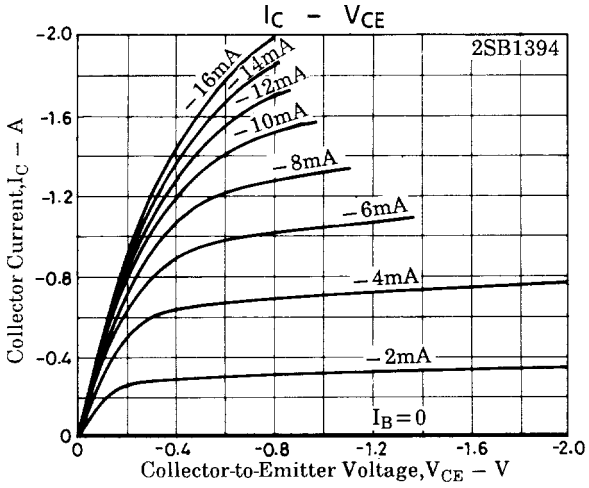
Marking : 2SB1394 : BN
2SD2099 : DL

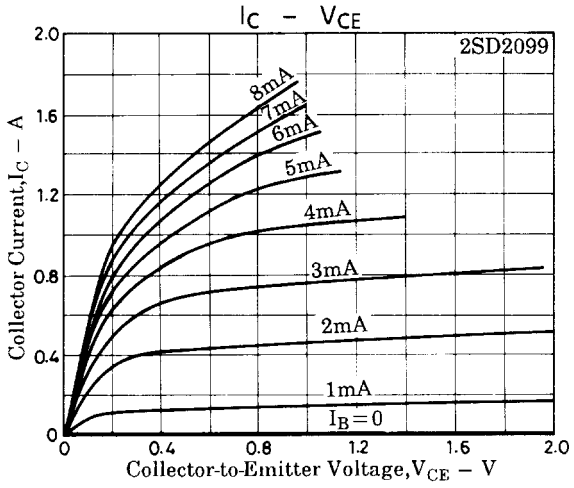
SANYO Electric Co.,Ltd. Semiconductor Bussiness Headquaters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

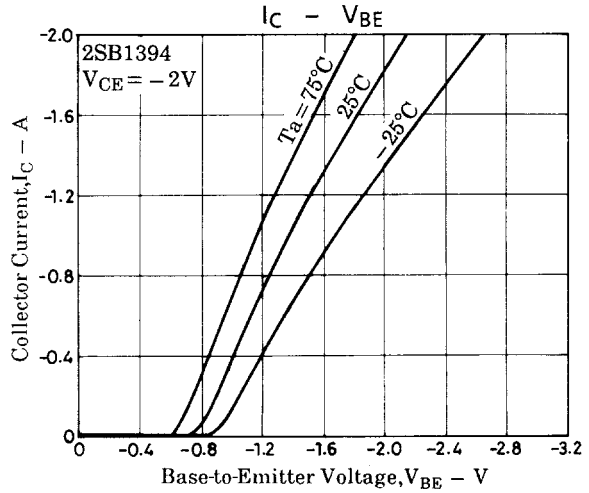
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Base-to-Emitter ON State Voltage	$V_{BE(ON)}$	V_{CE}=(–)2V, I_C=(–)1A	(–)0.7	(–)1.5	(–)4.0	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)10μA, I_E=0	(–)40			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO1}$	I_C=(–)10μA, R_{BE}=∞	(–)40			V
	$V_{(BR)CEO2}$	I_C=(–)10mA, R_{BE}=∞	(–)30			V
Diode Forwad Voltage	V_F	I_F=0.5A			(–)1.5	V
Base-to-Emitter Resistance	R_{BE}			0.8		kΩ
Base Resistance	R_1		60	90	120	Ω

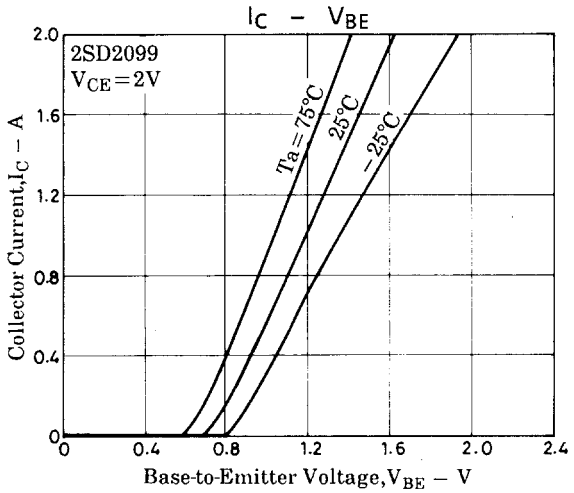
Electrical Connection

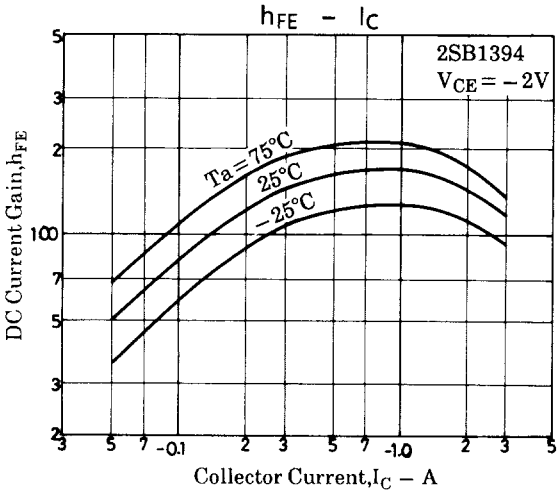


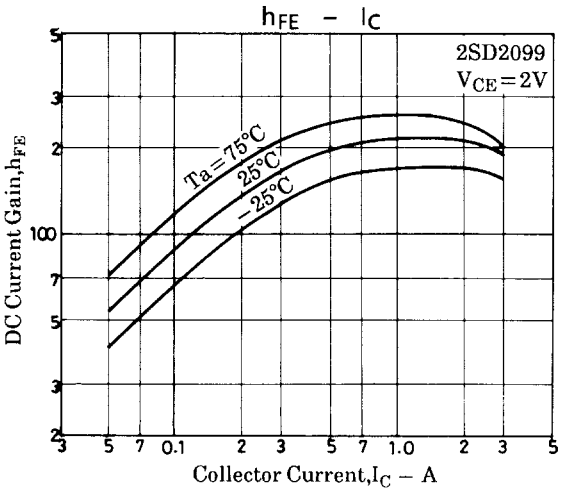


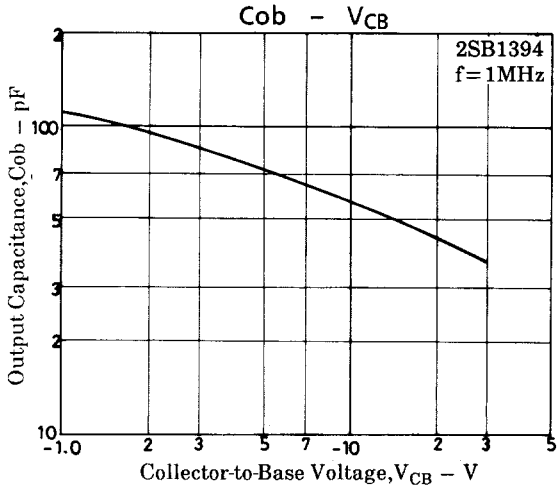


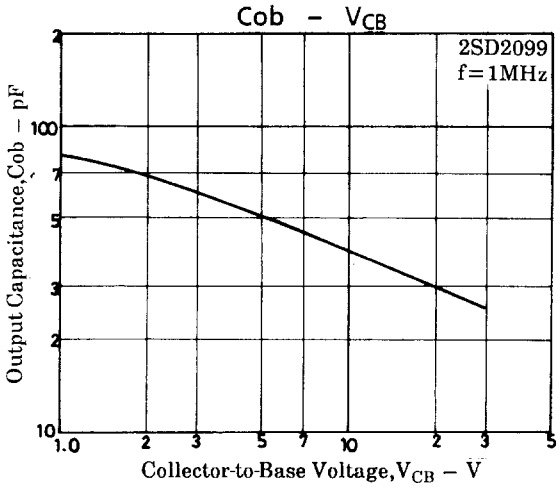


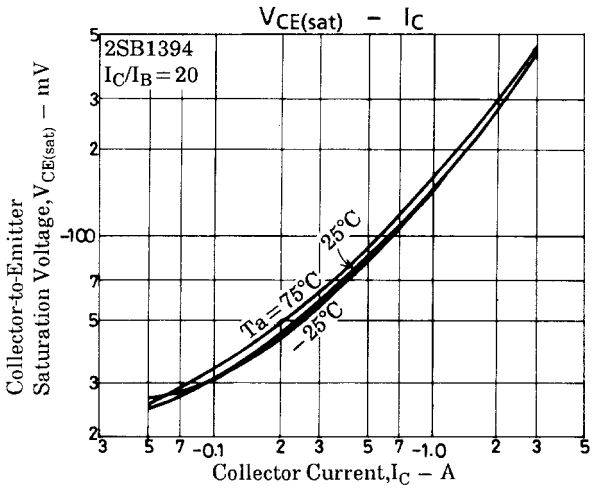


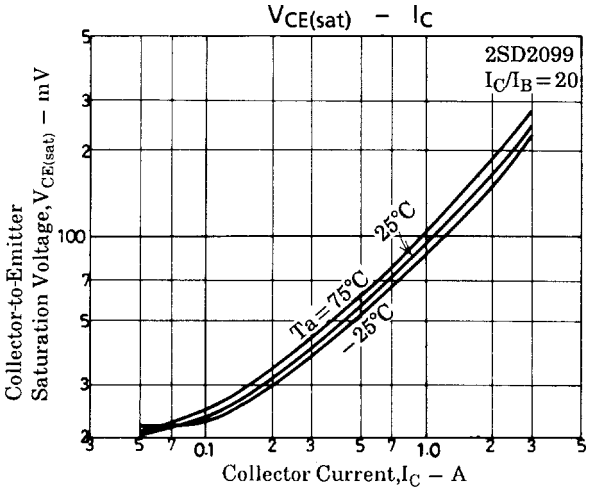

hFE – IC
2SB1394
VCE = –2V
Ta=75°C
25°C
–25°C
DC Current Gain,hFE
Collector Current,IC – A

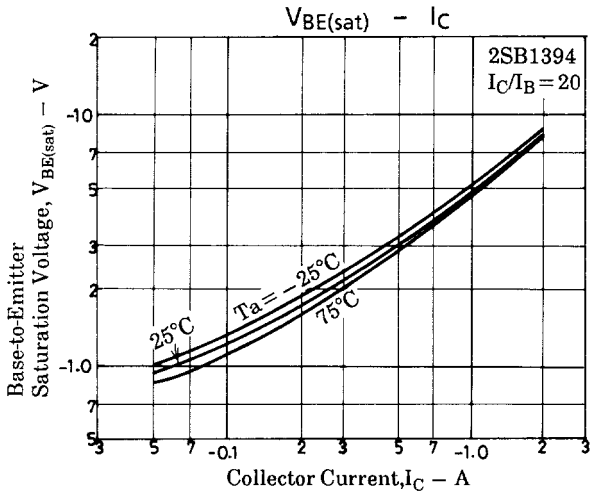

hFE – IC
2SD2099
VCE=2V
Ta=75°C
25°C
–25°C
DC Current Gain,hFE
Collector Current,IC – A

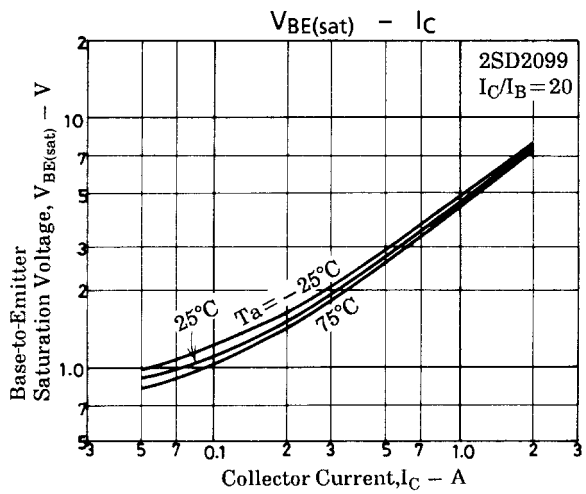

Cob – VCB
2SB1394
f=1MHz
Output Capacitance,Cob – pF
Collector-to-Base Voltage,VCB – V


Cob – VCB
2SD2099
f=1MHz
Output Capacitance,Cob – pF
Collector-to-Base Voltage,VCB – V


VCE(sat) – IC
2SB1394
IC/IB=20
25°C
Ta=75°C
–25°C
Collector-to-Emitter Saturation Voltage,VCE(sat) – mV
Collector Current,IC – A


VCE(sat) – IC
2SD2099
IC/IB=20
25°C
Ta=75°C
–25°C
Collector-to-Emitter Saturation Voltage,VCE(sat) – mV
Collector Current,IC – A


VBE(sat) – IC
2SB1394
IC/IB=20
25°C
Ta=–25°C
75°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current,IC – A


VBE(sat) – IC
2SD2099
IC/IB=20
25°C
Ta=–25°C
75°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current,IC – A