Ordering number:EN2214B

PNP/NPN Epitaxial Planar Silicon Darlington Transistor

2SB1228/2SD1830

Driver Applications

Applications

· Suitable for use in control of motor drivers, printer hammer drivers, relay drivers, and constant-voltage regulators.

Features

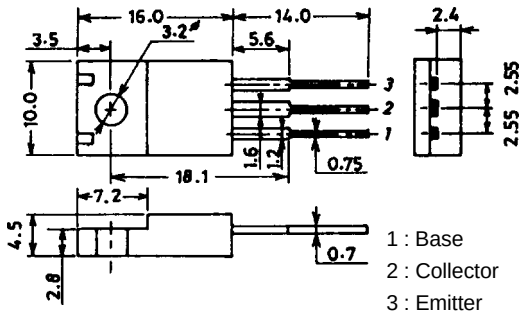
· High DC current gain.
· Large current capacity and wide ASO.
· Low saturation voltage.
· Micaless package facilitating mounting.

Package Dimensions

unit:mm

2041A

[2SB1228/2SD1830]



SANYO : TO-220ML

( ) : 2SB1228

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–)110	V
Collector-to-Emitter Voltage	V_{CEO}		(–)100	V
Emitter-to-Base Voltage	V_{EBO}		(–)6	V
Collector Current	I_C		(–)8	A
Collector Current (Pulse)	I_{CP}		(–)12	A
Collector Dissipation	P_C		2.0	W
		Tc=25˚C	30	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}=(–)80V, I_E=0			(–)0.1	mA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(–)5V, I_C=0			(–)3.0	mA
DC Current Gain	h_{FE}	V_{CE}=(–)3V, I_C=(–)4A	1500	4000		
Gain-Bandwidth Product	f_T	V_{CE}=(–)5V, I_C=(–)4A		20		MHz
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)4A, I_B=(–)8mA		0.9	(–)1.5	V
				(–1.0)		V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=(–)4A, I_B=(–)8mA			(–)2.0	V

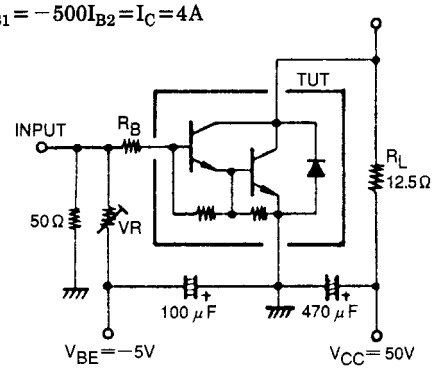
SANYO Electric Co.,Ltd. Semiconductor Bussiness Headquaters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)5mA, I_E=0	(–)110			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)50mA, R_{BE}=∞	(–)100			V
Turn-ON TIme	t_{on}	See specified Test Circuit		0.6		µs
				(0.7)		µs
Storage Time	t_{stg}	See specified Test Circuit		4.8		µs
				(1.4)		µs
Fall Time	t_f	See specified Test Circuit		1.6		µs
				(1.5)		µs

Switching Time Test Circuit

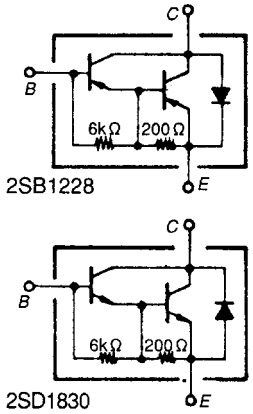
PW=50µs, Duty cycle ≦1%

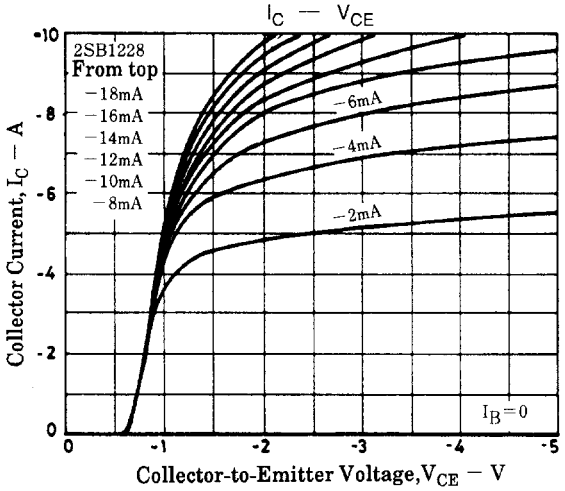
$500I_{B1}=-500I_{B2}=I_C=4A$

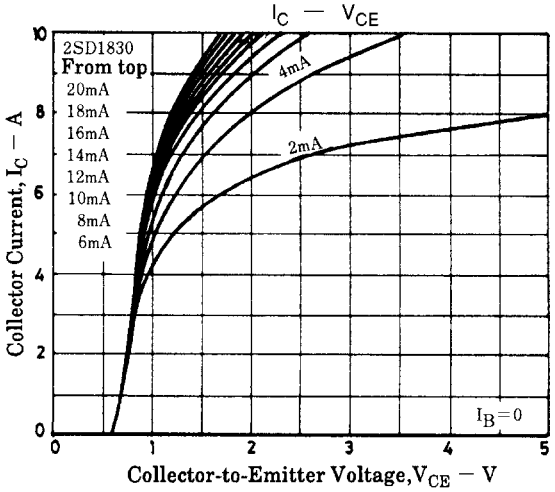


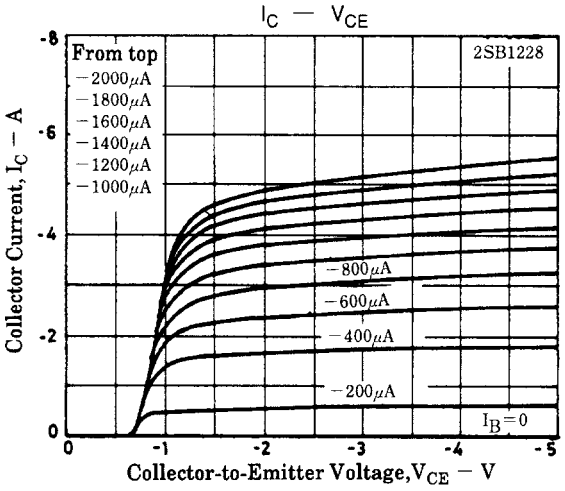
(For PNP, the polarity is reversed.)

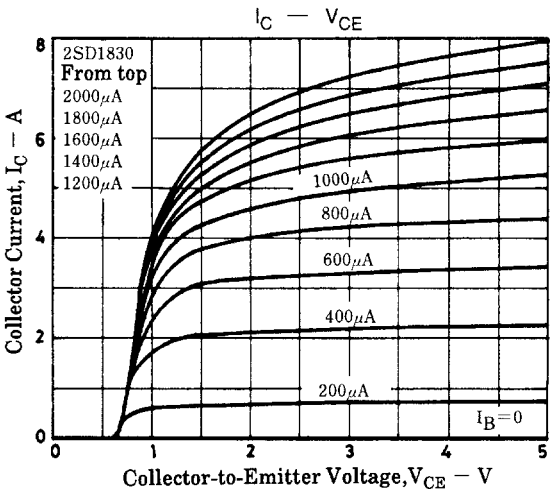
Electrical Connection

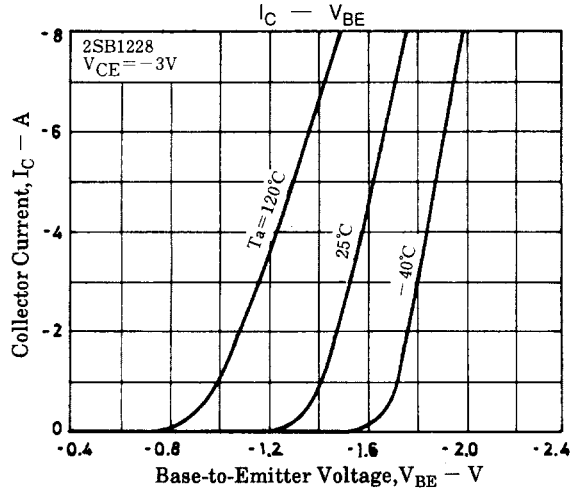


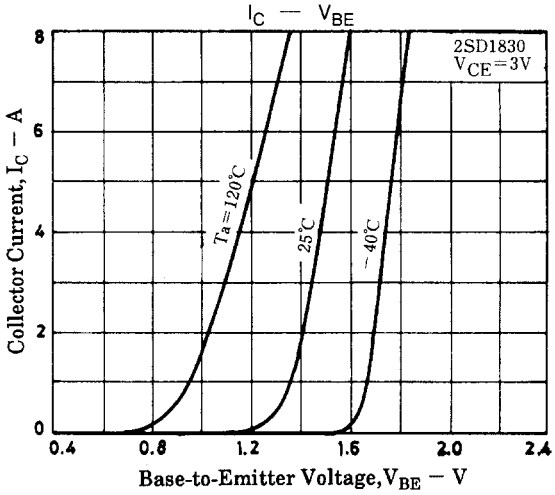


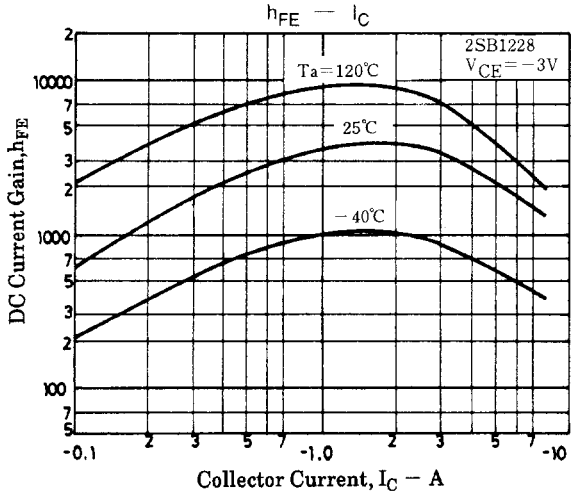


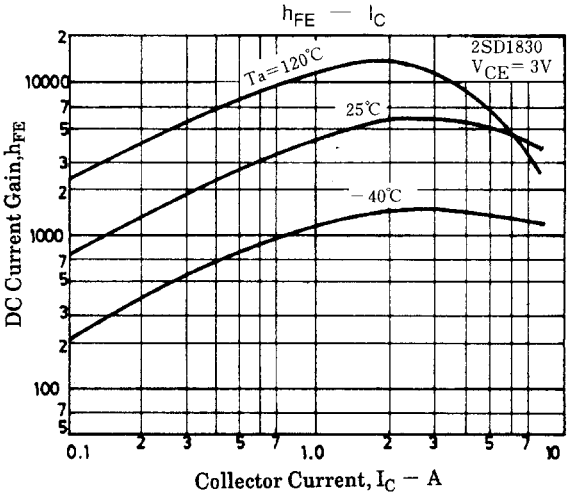


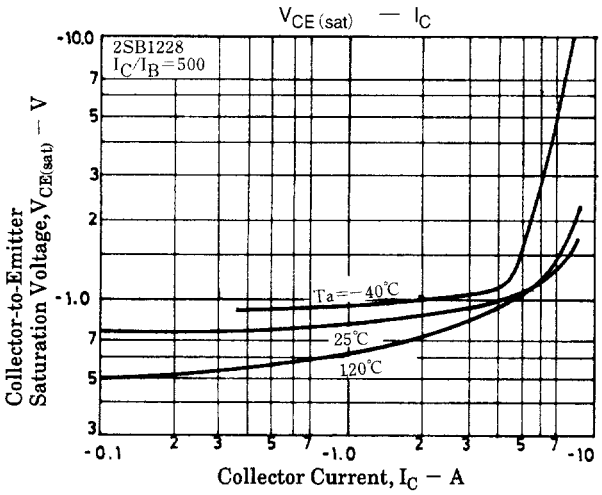


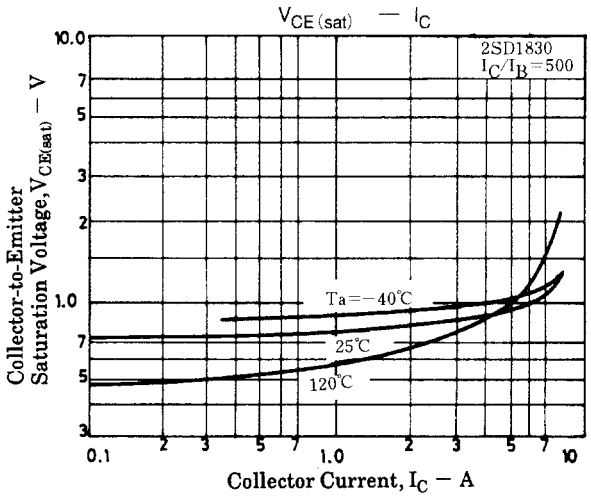

I_C — V_{BE}
2SB1228
V_{CE}=−3V
Ta=120℃
25℃
−40℃
Collector Current, I_C — A
Base-to-Emitter Voltage, V_{BE} — V

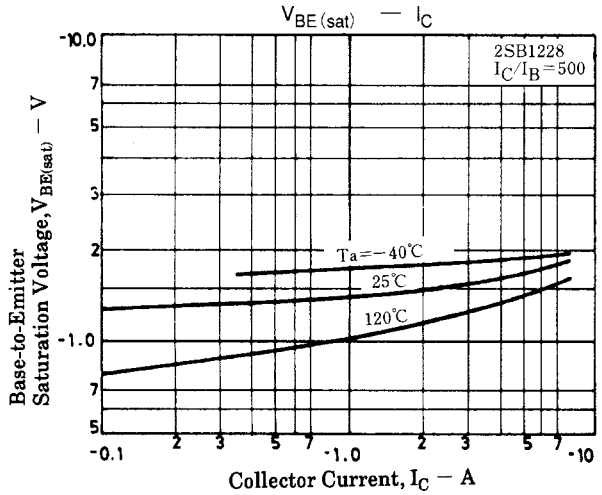

I_C — V_{BE}
2SD1830
V_{CE}=3V
Ta=120℃
25℃
−40℃
Collector Current, I_C — A
Base-to-Emitter Voltage, V_{BE} — V

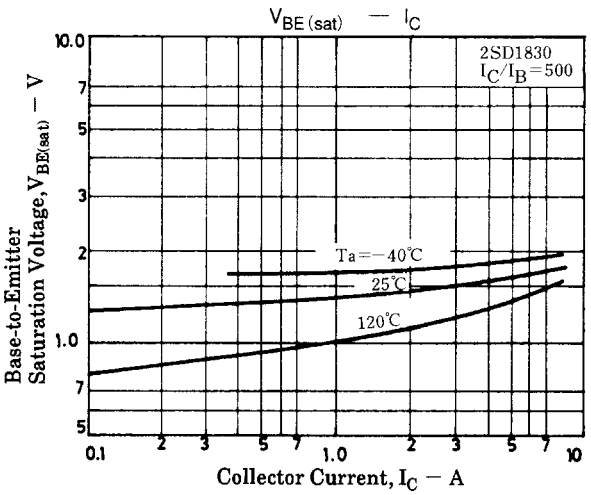

h_{FE} — I_C
2SB1228
V_{CE}=−3V
Ta=120℃
25℃
−40℃
DC Current Gain, h_{FE}
Collector Current, I_C — A


h_{FE} — I_C
2SD1830
V_{CE}=3V
Ta=120℃
25℃
−40℃
DC Current Gain, h_{FE}
Collector Current, I_C — A


$V_{CE(sat)}$ — I_C
2SB1228
I_C/I_B=500
Ta=−40℃
25℃
120℃
Collector-to-Emitter Saturation Voltage, $V_{CE(sat)}$ — V
Collector Current, I_C — A


$V_{CE(sat)}$ — I_C
2SD1830
I_C/I_B=500
Ta=−40℃
25℃
120℃
Collector-to-Emitter Saturation Voltage, $V_{CE(sat)}$ — V
Collector Current, I_C — A


$V_{BE(sat)}$ — I_C
2SB1228
I_C/I_B=500
Ta=−40℃
25℃
120℃
Base-to-Emitter Saturation Voltage, $V_{BE(sat)}$ — V
Collector Current, I_C — A


$V_{BE(sat)}$ — I_C
2SD1830
I_C/I_B=500
Ta=−40℃
25℃
120℃
Base-to-Emitter Saturation Voltage, $V_{BE(sat)}$ — V
Collector Current, I_C — A