Ordering number: EN686I

SANYO

No.686I

2SB824/2SD1060

PNP/NPN Epitaxial Planar Silicon Transistors

50V/5A Switching Applications

APPLICATIONS

- Suitable for relay drivers, high-speed inverters, converters, and other general large-current switching

FEATURES

- Low collector-emitter saturation voltage: $V_{CE(sat)}$=(−)0.4V max/I_C=(−)3A, I_B=(−)0.3A

Values for 2SB824 shown in ( )

ABSOLUTE MAXIMUM RATINGS/Ta=25°C

				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		(−)5	A
Collector Current (Pulse)	I_{CP}		(−)9	A
Allowable collector dissipation	P_C	T_c=25°C	30	W
Junction temperature	T_j		150	°C
Storage ambient temperature	T_{stg}		−55~+150	°C

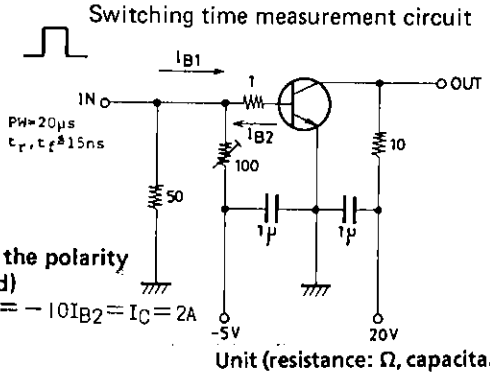
ELECTRICAL CHARACTERISTICS/Ta=25°C

			min	typ	max	unit
Collector cut-off current	I_{CBO}	V_{CB}=(−)40V, I_E=0			(−)0.1	mA
Emitter cut-off current	I_{EBO}	V_{EB}=(−)4V, I_C=0			(−)0.1	mA
DC current gain	$h_{FE}(1)$	V_{CE}=(−)2V, I_C=(−)1A	70*		280*	
	$h_{FE}(2)$	V_{CE}=(−)2V, I_C=(−)3A	30			
Gain bandwidth product	f_T	V_{CE}=(−)5V, I_C=(−)1A		30		MHz
Output capacitance	Cob	V_{CB}=(−)10V, f=1MHz		100		pF
				(160)		pF
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=(−)3A, I_B=(−)0.3A			(−)0.4	V
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=(−)1mA, I_E=0	(−)60			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C=(−)1mA, R_{BE}=∞	(−)50			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=(−)1mA, I_C=0	(−)6			V
Turn-on time	t_{on}	at the appointed circuit		0.1		μs
Storage time	t_{stg}	at the appointed circuit		(0.7)1.4		μs
Fall time	t_f	at the appointed circuit		0.2		μs

* 2SB824 and 2SD1060 are graded as follows by h_{FE} at 1A:

70	Q	140	100	R	200	140	S	280

Switching time measurement circuit



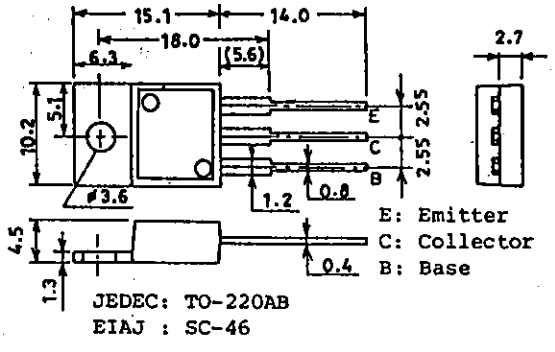
(For PNP, the polarity is reversed)

$10I_{B1} = -10I_{B2} = I_C = 2A$

Unit (resistance: Ω, capacitance: F)

Package Dimensions 2010B

(unit : mm)



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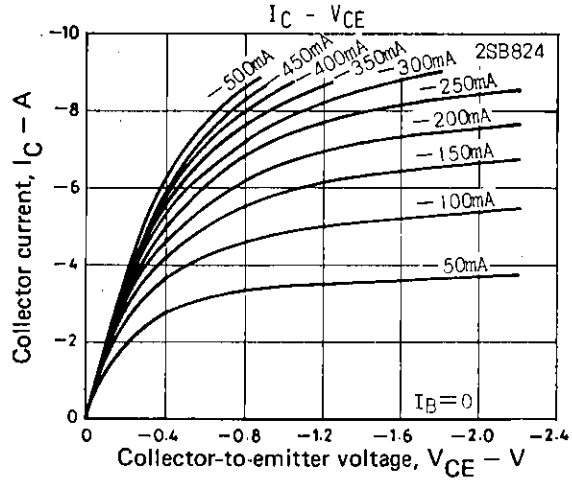
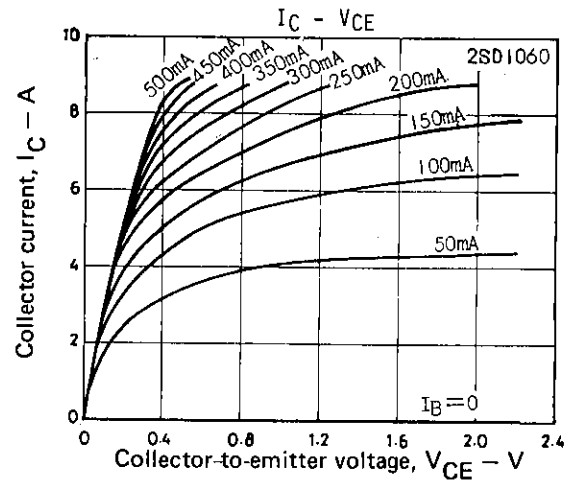
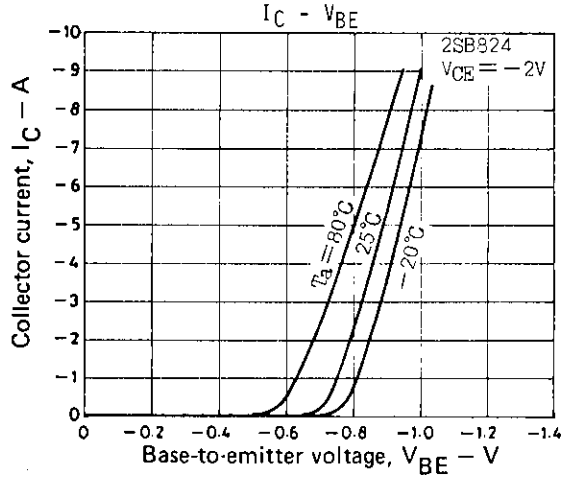
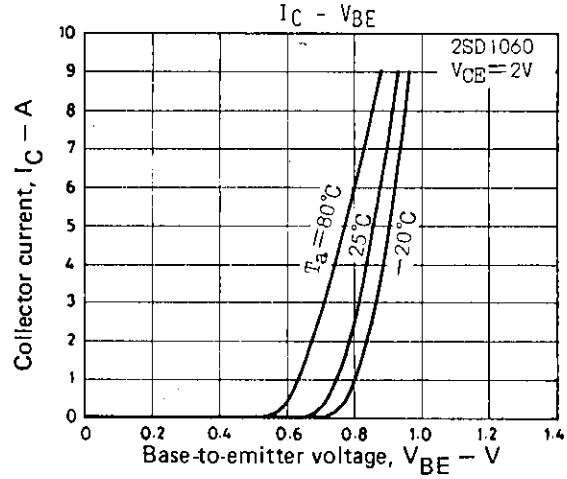
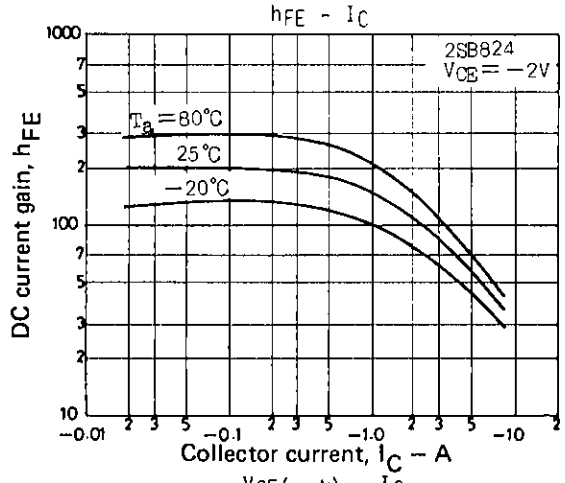
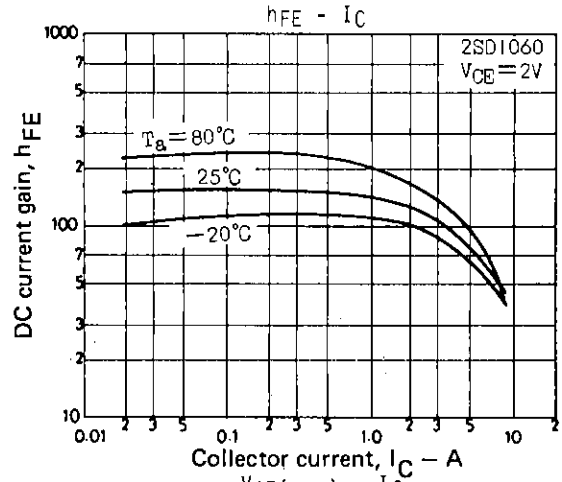

I_C - V_{CE}
2SB824
−500mA
−450mA
−400mA
−350mA
−300mA
−250mA
−200mA
−150mA
−100mA
−50mA
I_B=0
Collector current, I_C − A
Collector-to-emitter voltage, V_{CE} − V

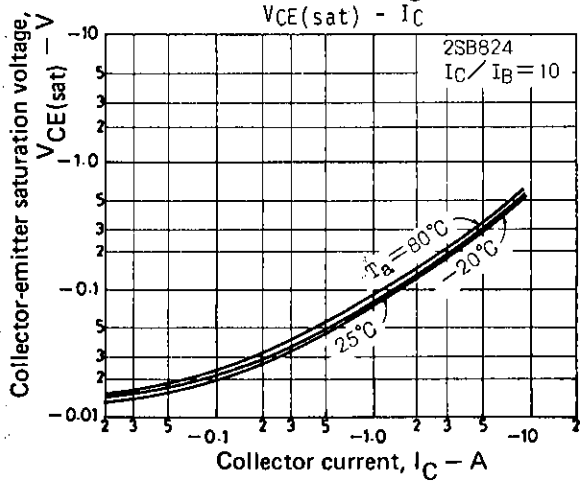

I_C - V_{CE}
2SD1060
500mA
450mA
400mA
350mA
300mA
250mA
200mA
150mA
100mA
50mA
I_B=0
Collector current, I_C − A
Collector-to-emitter voltage, V_{CE} − V

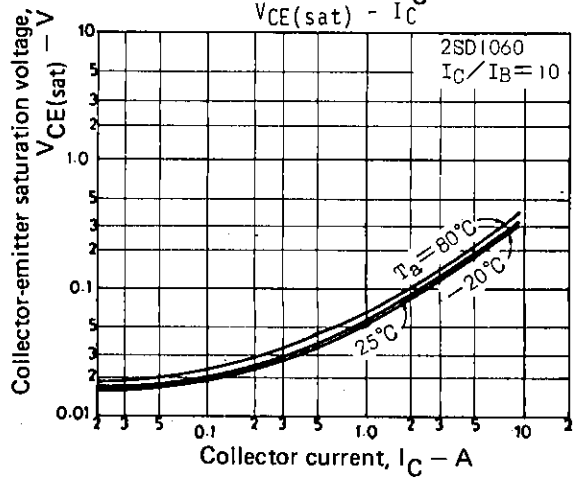

I_C - V_{BE}
2SB824
V_{CE}=−2V
T_a=80°C
25°C
−20°C
Collector current, I_C − A
Base-to-emitter voltage, V_{BE} − V

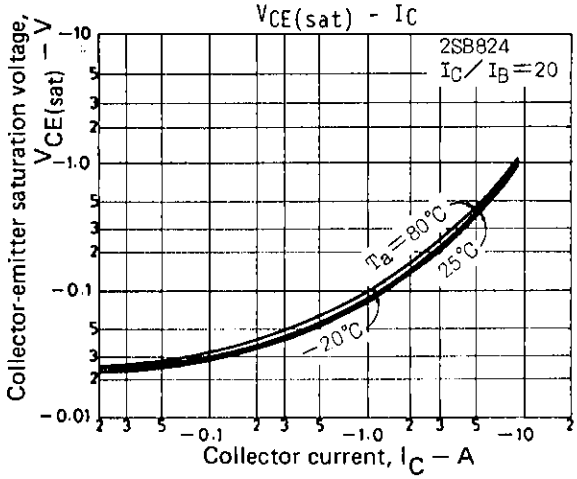

I_C - V_{BE}
2SD1060
V_{CE}=2V
T_a=80°C
25°C
−20°C
Collector current, I_C − A
Base-to-emitter voltage, V_{BE} − V

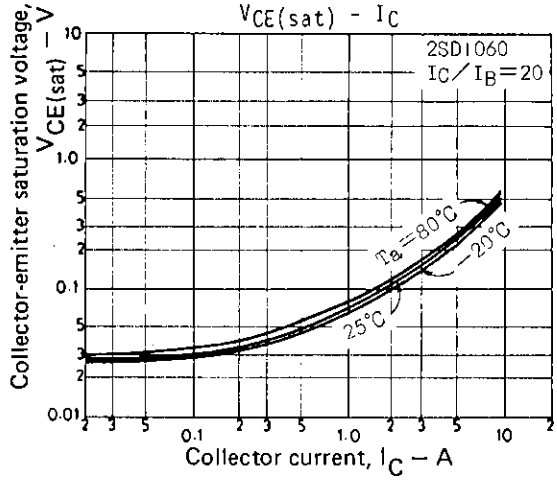

h_{FE} - I_C
2SB824
V_{CE}=−2V
T_a=80°C
25°C
−20°C
DC current gain, h_{FE}
Collector current, I_C − A

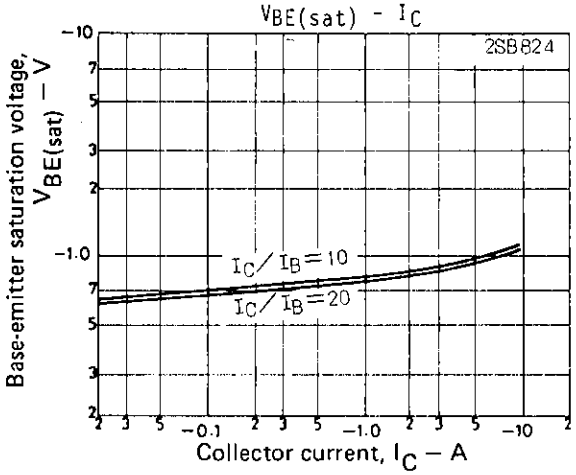

h_{FE} - I_C
2SD1060
V_{CE}=2V
T_a=80°C
25°C
−20°C
DC current gain, h_{FE}
Collector current, I_C − A

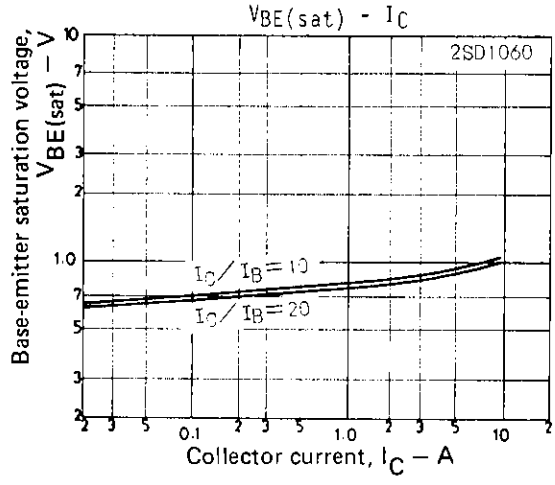

$V_{CE(sat)}$ - I_C
2SB824
I_C/I_B=10
T_a=80°C
−20°C
25°C
Collector-emitter saturation voltage, $V_{CE(sat)}$ − V
Collector current, I_C − A

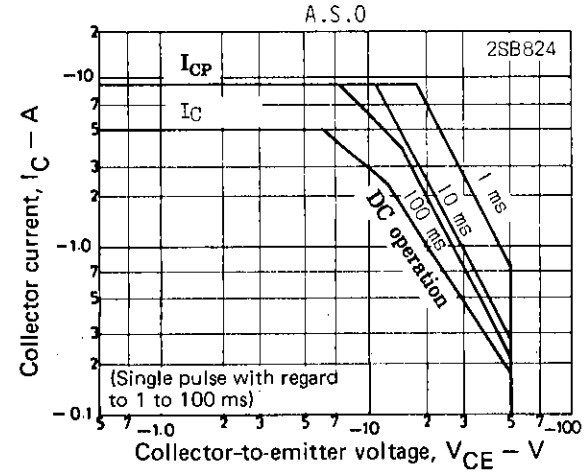

$V_{CE(sat)}$ - I_C
2SD1060
I_C/I_B=10
T_a=80°C
−20°C
25°C
Collector-emitter saturation voltage, $V_{CE(sat)}$ − V
Collector current, I_C − A

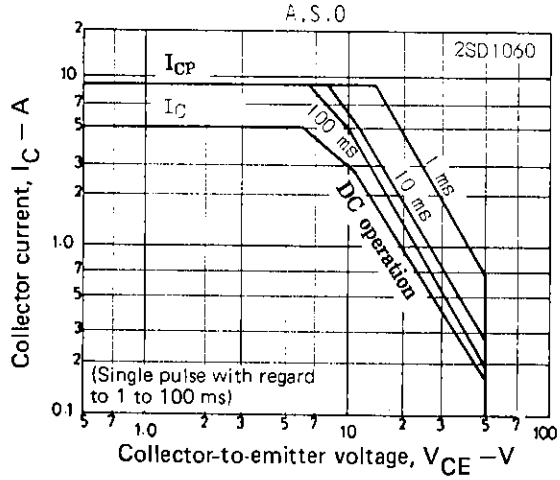

VCE(sat) - IC
2SB824
IC/IB=20
Ta=80°C
25°C
−20°C
Collector-emitter saturation voltage, VCE(sat) − V
Collector current, IC − A

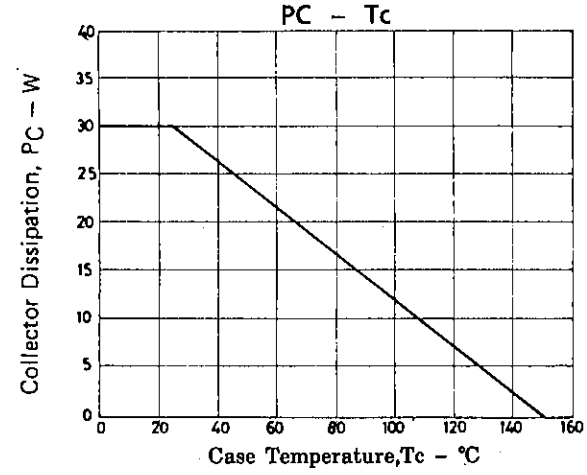

VCE(sat) - IC
2SD1060
IC/IB=20
Ta=80°C
−20°C
25°C
Collector-emitter saturation voltage, VCE(sat) − V
Collector current, IC − A


VBE(sat) - IC
2SB824
IC/IB=10
IC/IB=20
Base-emitter saturation voltage, VBE(sat) − V
Collector current, IC − A


VBE(sat) - IC
2SD1060
IC/IB=10
IC/IB=20
Base-emitter saturation voltage, VBE(sat) − V
Collector current, IC − A


A.S.O
2SB824
ICP
IC
1 ms
10 ms
100 ms
DC operation
(Single pulse with regard to 1 to 100 ms)
Collector current, IC − A
Collector-to-emitter voltage, VCE − V


A.S.O
2SD1060
ICP
IC
100 ms
10 ms
1 ms
DC operation
(Single pulse with regard to 1 to 100 ms)
Collector current, IC − A
Collector-to-emitter voltage, VCE −V


PC − Tc
Collector Dissipation, PC − W
Case Temperature,Tc − °C