Ordering number:686I

PNP/NPN Epitaxial Planar Silicon Transistors

2SB824/2SD1060

50V/5A Switching Applications

Applications

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

Features

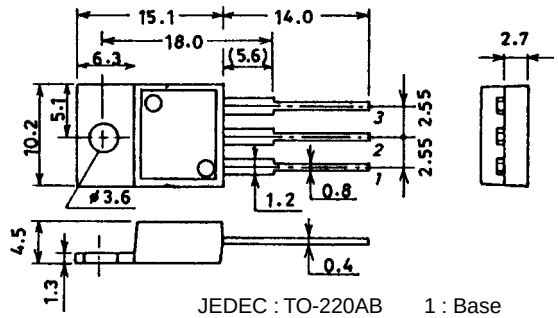
· Low collector-to-emitter saturation voltage : $V_{CE(sat)}$=(–)0.4V max/I_C=(–)3A, I_B=(–)0.3A.

Package Dimensions

unit:mm

2010C

[2SB824/2SD1060]



JEDEC : TO-220AB
EIAJ : SC-46

1 : Base
2 : Collector
3 : Emitter

( ) : 2SB824

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	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
Collector Dissipation	P_C	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}=(–)40V, I_E=0			(–)0.1	mA
Emitter Cutoff 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	C_{ob}	V_{CB}=(–)10V, f=1MHz		100		pF
				(160)		pF

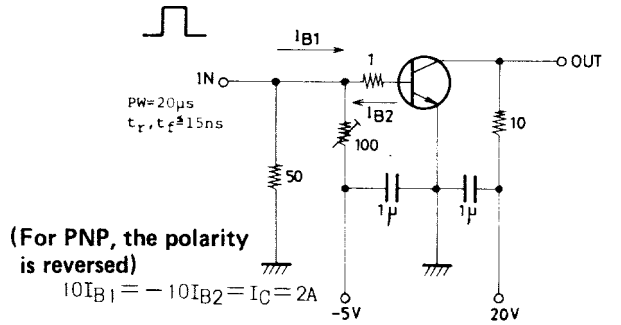
* : The 2SB824/2SD1060 are graded as follows by h_{FE} at 1A :

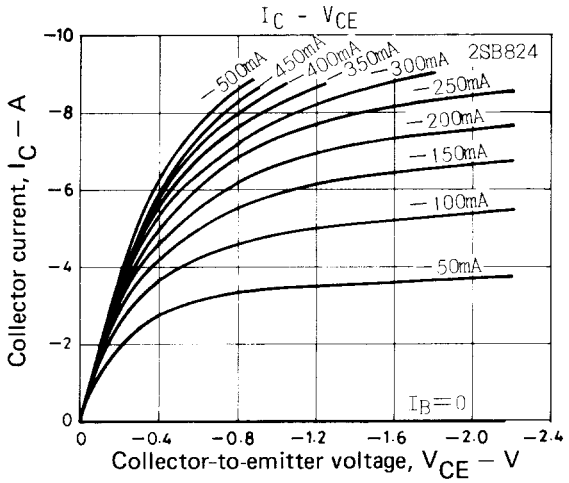
70 Q 140	100 R 200	140 S 280

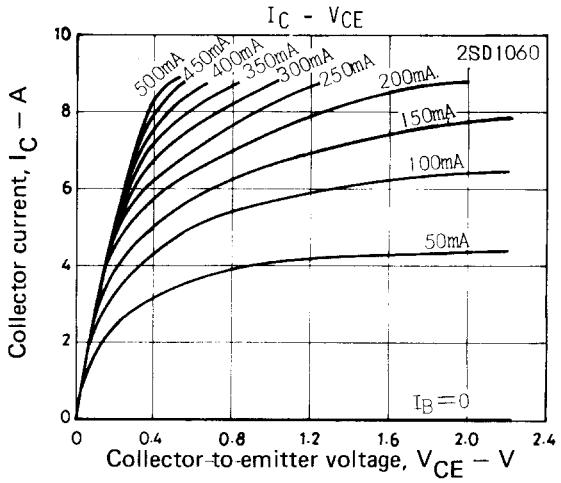
SANYO Electric Co.,Ltd. Semiconductor Bussiness Headquaters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

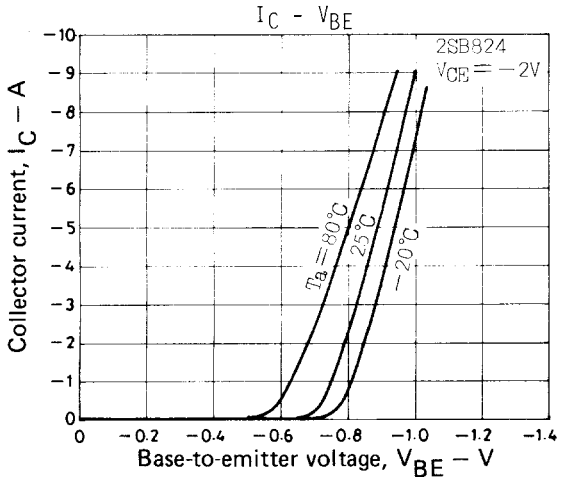
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)3A, I_B=(–)0.3A			(–)0.4	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)1mA, I_E=0	(–)60			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)1mA, R_{BE}=∞	(–)50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=(–)1mA, I_C=0	(–)6			V
Turn-ON Time	t_{on}	See specified test circuit.		0.1		μs
Storage Time	t_{stg}	See specified test circuit.		(0.7)		μs
				1.4		μs
Fall Time	t_f	See specified test circuit.		0.2		μs

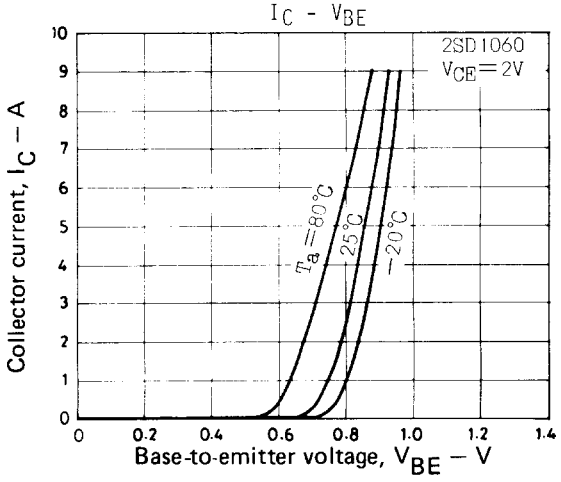
Switching Time Test Circuit

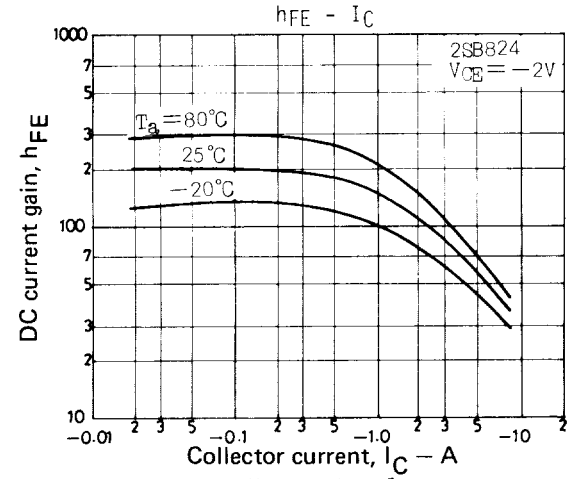


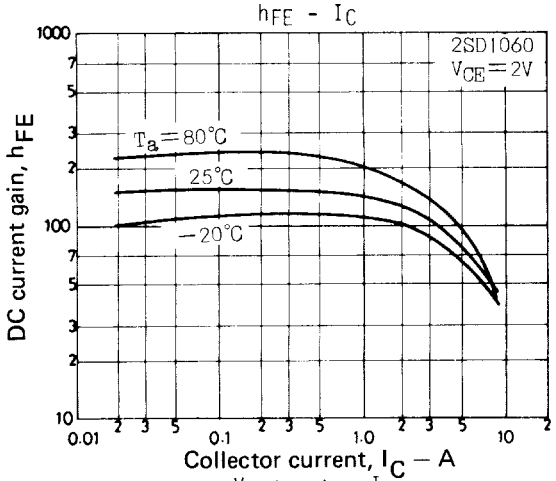


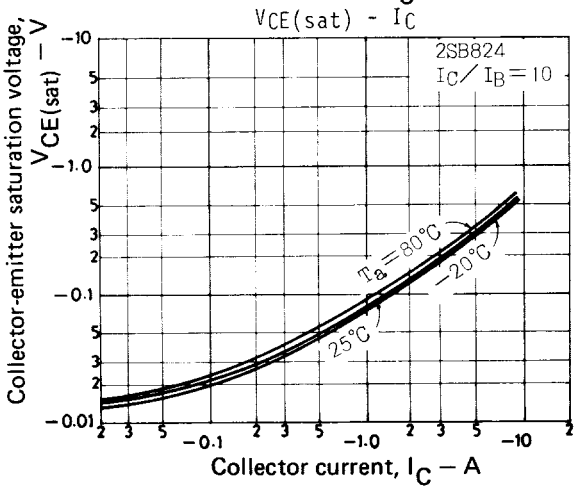


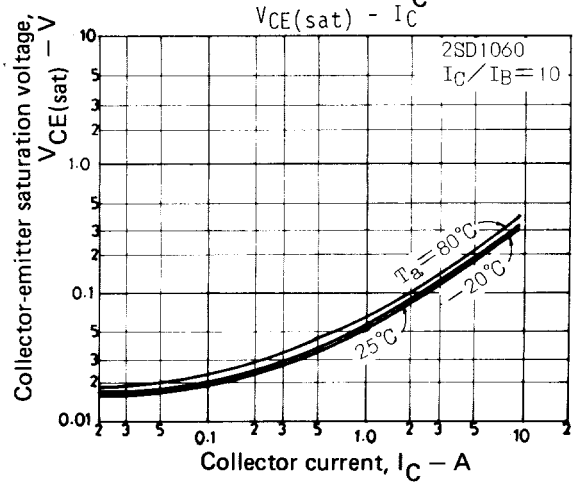


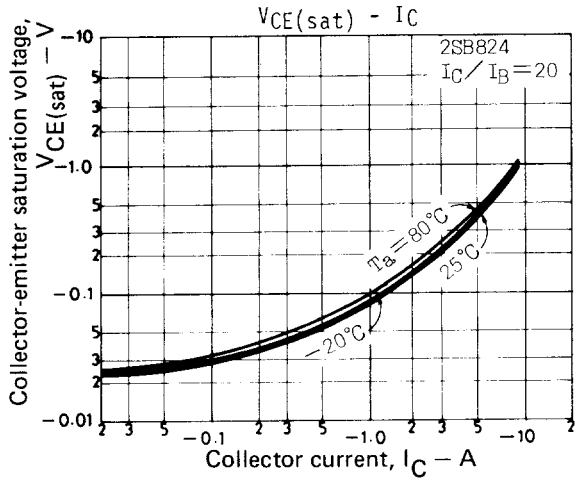


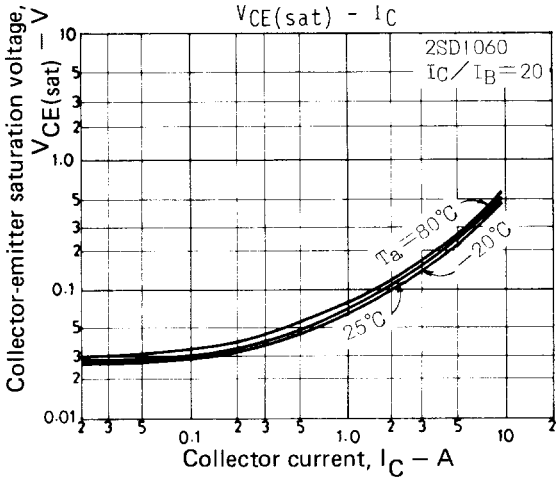

hFE - IC
2SB824
VCE=−2V
Ta=80°C
25°C
−20°C
DC current gain, hFE
Collector current, IC − A

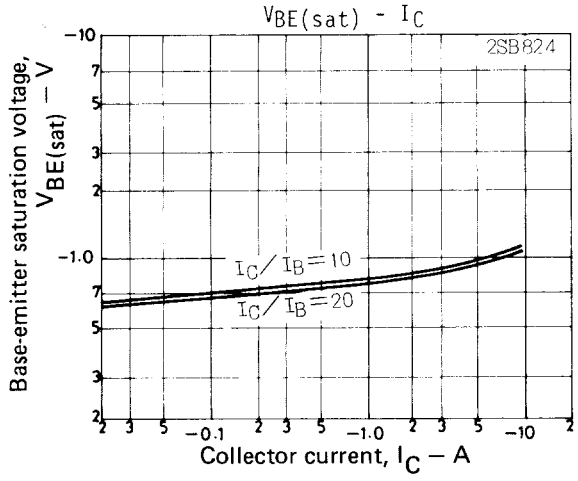

hFE - IC
2SD1060
VCE=2V
Ta=80°C
25°C
−20°C
DC current gain, hFE
Collector current, IC − A

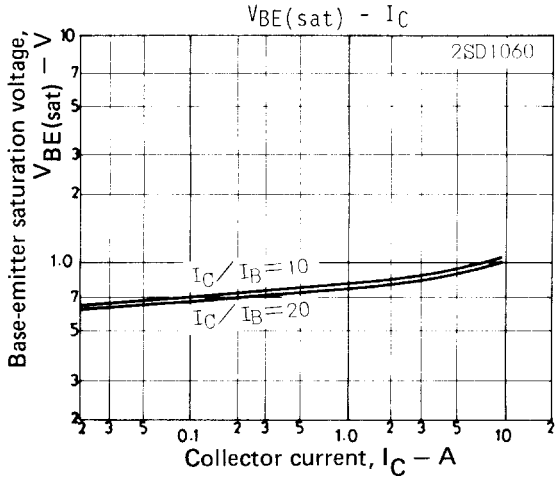

VCE(sat) - IC
2SB824
IC/IB=10
Ta=80°C
−20°C
25°C
Collector-emitter saturation voltage, VCE(sat) − V
Collector current, IC − A


VCE(sat) - IC
2SD1060
IC/IB=10
Ta=80°C
−20°C
25°C
Collector-emitter saturation voltage, VCE(sat) − V
Collector current, IC − 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