



## 2SB824/2SD1060

### 50V/5A Switching Applications

#### Applications

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

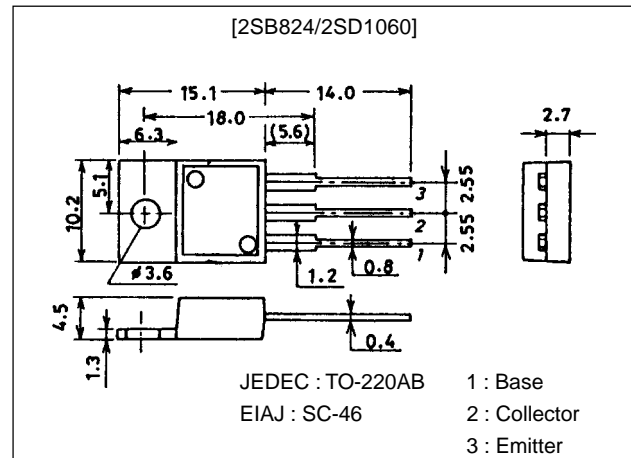
#### Features

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

#### Package Dimensions

unit:mm

2010C



() : 2SB824

#### Specifications

##### Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

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	$P_C$	$T_c = 25^\circ\text{C}$	30	W
Junction Temperature	$T_J$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

##### Electrical Characteristics at $T_a = 25^\circ\text{C}$

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	$h_{FE1}$	$V_{CE} = (-)2V, I_C = (-)1A$	70*		280*	
	$h_{FE2}$	$V_{CE} = (-)2V, I_C = (-)3A$	30			
Gain-Bandwidth Product	$f_T$	$V_{CE} = (-)5V, I_C = (-)1A$		30		MHz
Output Capacitance	$C_{ob}$	$V_{CB} = (-)10V, f = 1\text{MHz}$		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
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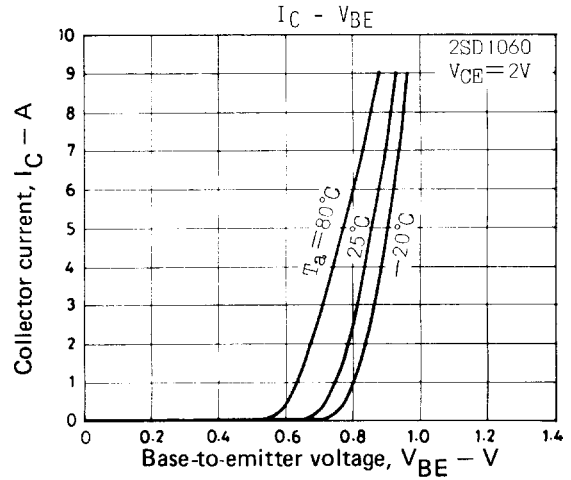
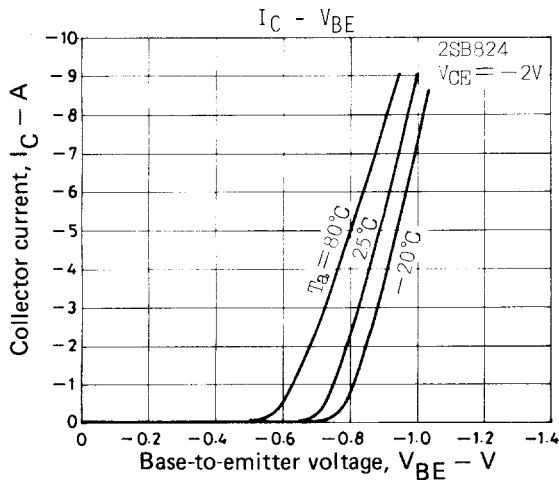
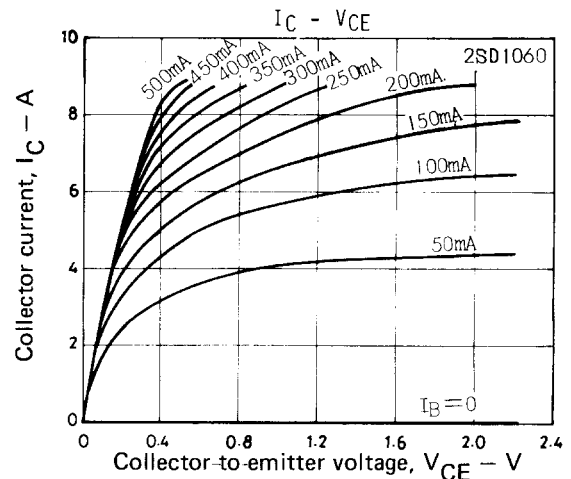
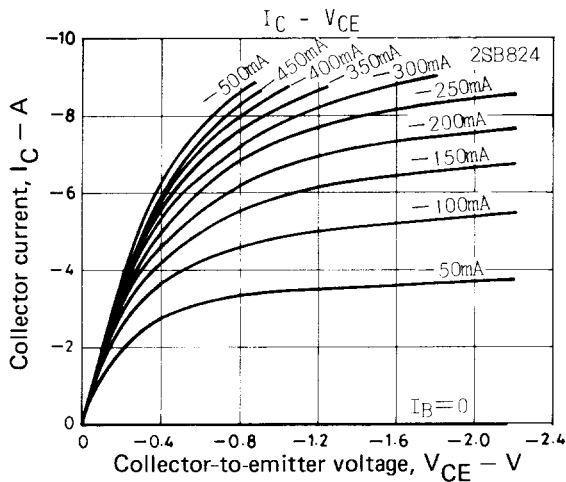
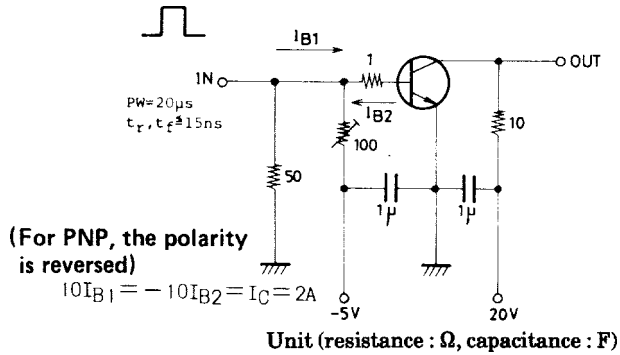
**SANYO Electric Co., Ltd. Semiconductor Business Headquarters**

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

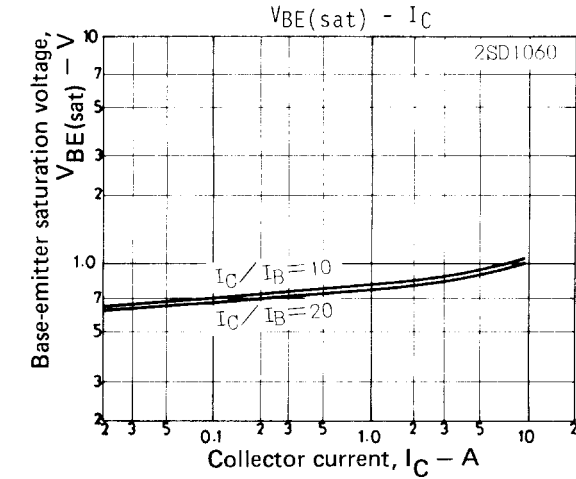
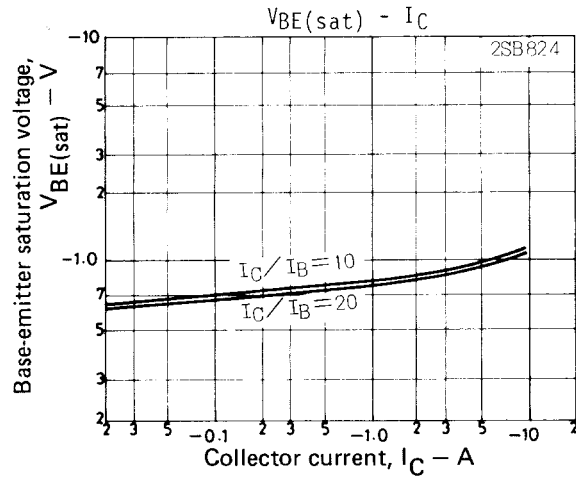
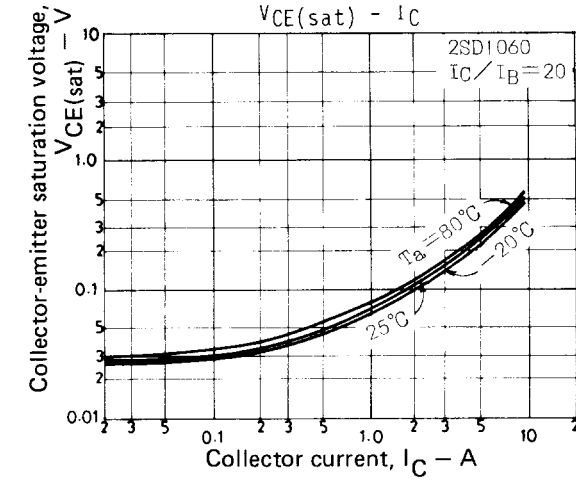
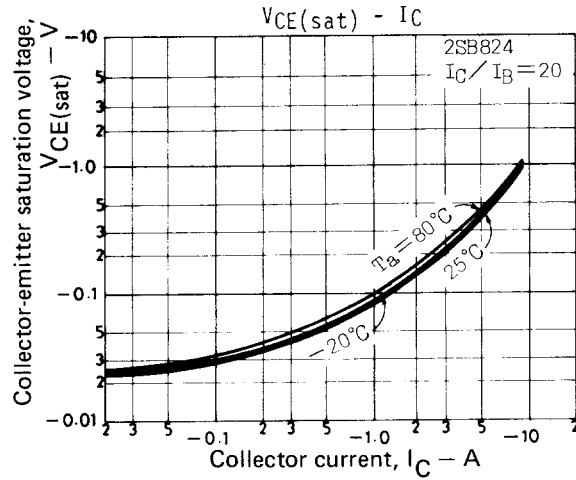
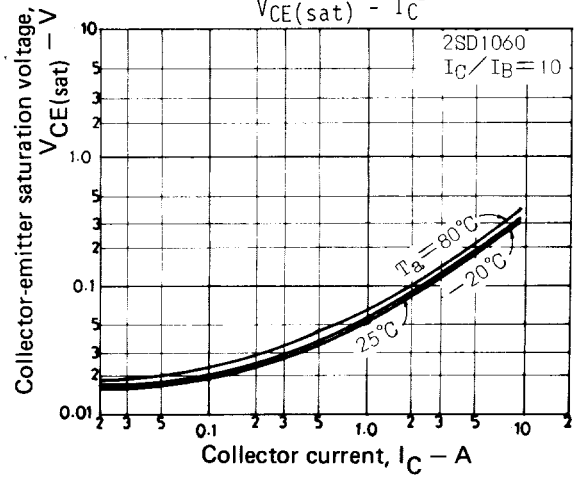
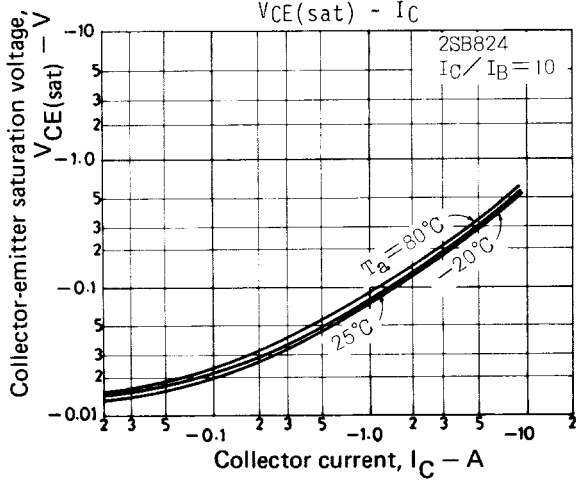
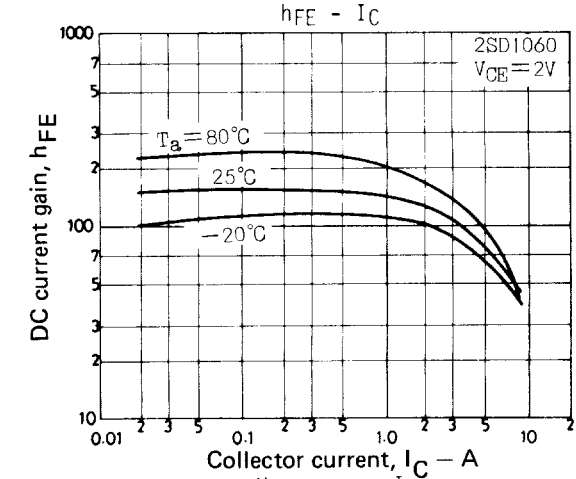
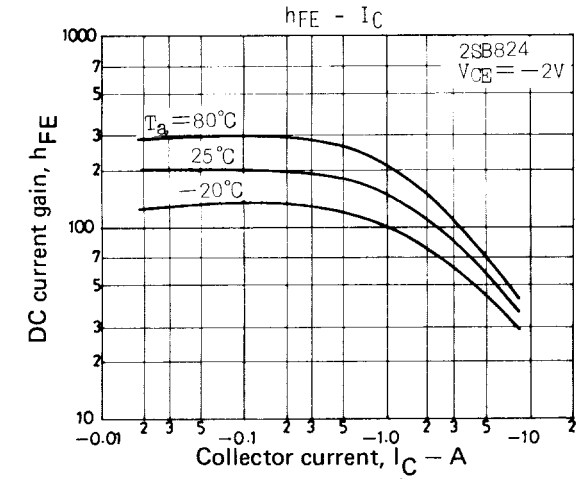
# 2SB824/2SD1060

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	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-)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		$\mu s$
Storage Time	$t_{stg}$	See specified test circuit.		(0.7)		$\mu s$
				1.4		$\mu s$
Fall Time	$t_f$	See specified test circuit.		0.2		$\mu s$

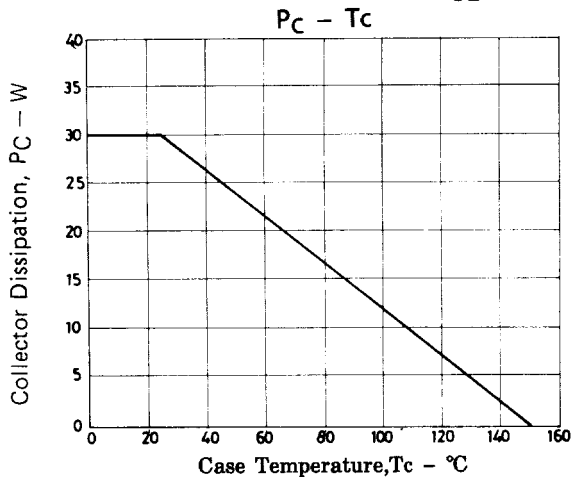
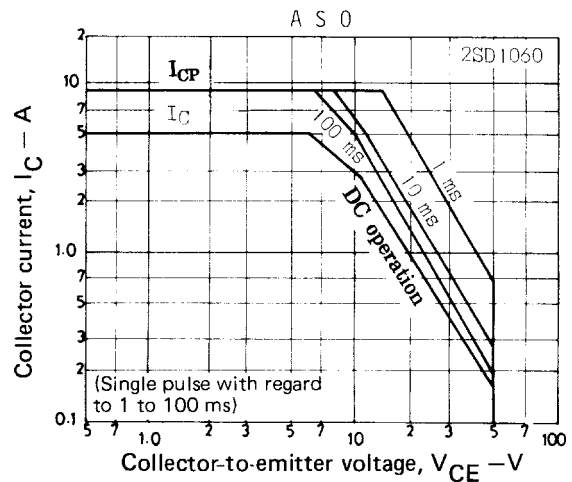
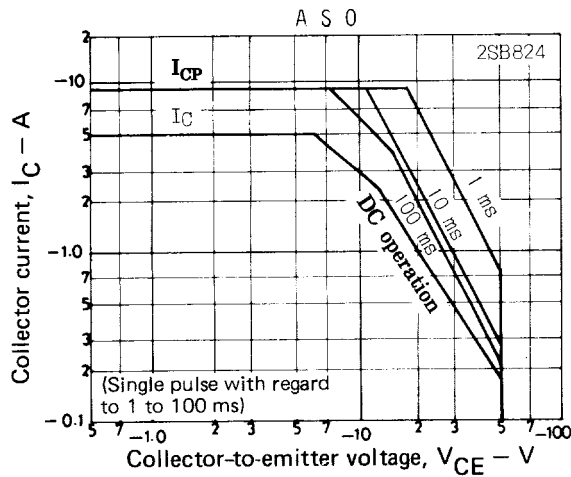
## Switching Time Test Circuit



# 2SB824/2SD1060



## 2SB824/2SD1060



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