



## 2SB1509/2SD2282

### High-Current Switching Applications

#### Applications

- Relay drivers, high-speed inverters, converters.

#### Features

- Low collector-to-emitter saturation voltage :  
 $V_{CE(sat)} = -0.5V$  max.
- Wide ASO and highly resistant to breakdown.
- Micaless package facilitating easy mounting.

( ) : 2SB1509

#### Specifications

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

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	$I_C$		(-15)	A
Collector Current (Pulse)	$I_{CP}$		(-30)	A
Collector Dissipation	$P_C$		3.0	W
		$T_c = 25^\circ C$	50	W
Junction Temperature	$T_J$		150	$^\circ C$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ C$

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

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*	
	$h_{FE2}$	$V_{CE} = (-)2V, I_C = (-)8A$	30			
Gain-Bandwidth Product	$f_T$	$V_{CE} = (-)5V, I_C = (-)1A$		20		MHz
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = (-)8A, I_B = (-)0.4A$		(-0.26)	(-0.5)	V
				0.18	0.4	V

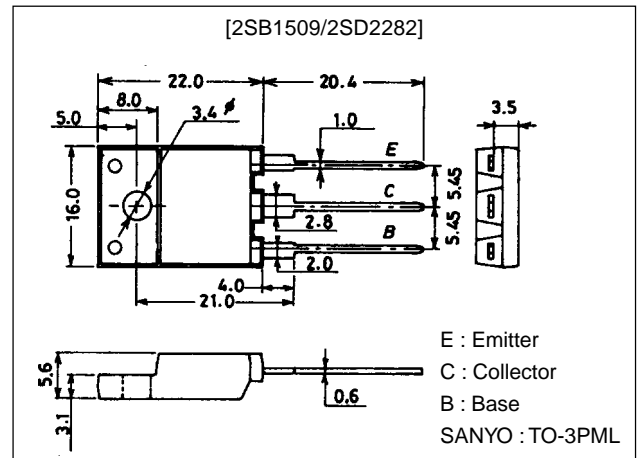
\* : The 2SB1509/2SD2282 are classified by 1A  $h_{FE}$  as follows :

70	Q	140	100	R	200	140	S	280
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#### Package Dimensions

unit:mm

2039A



E : Emitter

C : Collector

B : Base

SANYO : TO-3PML

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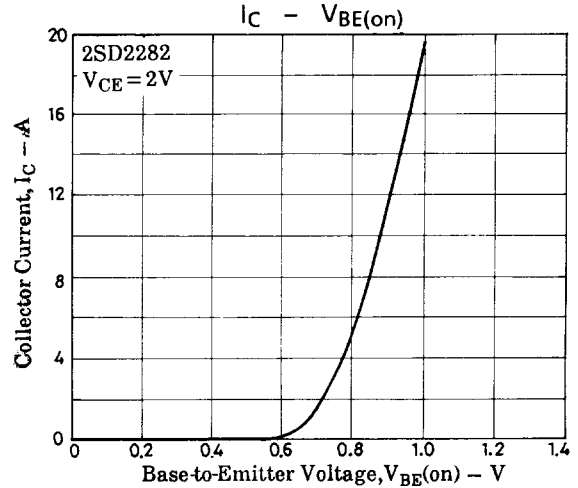
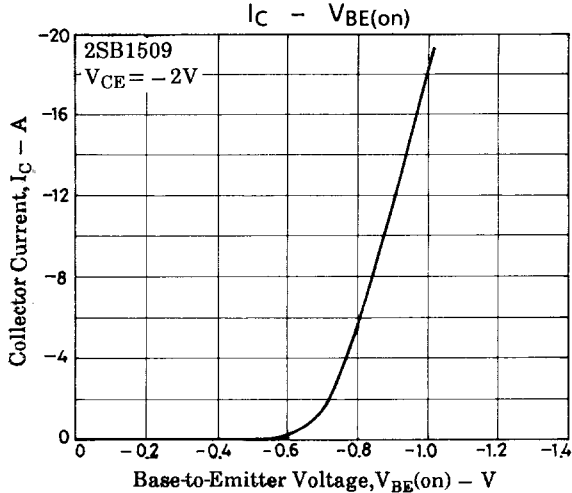
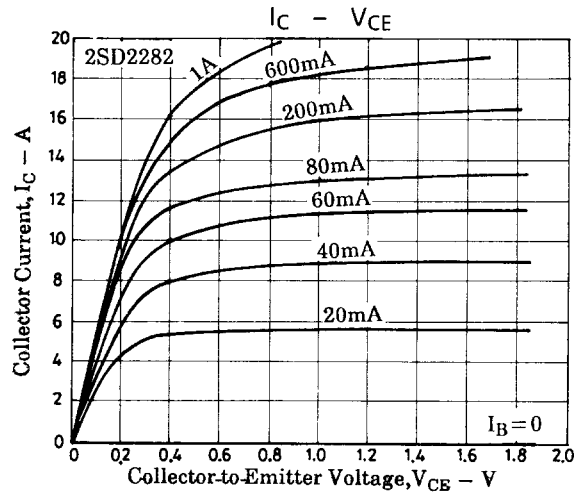
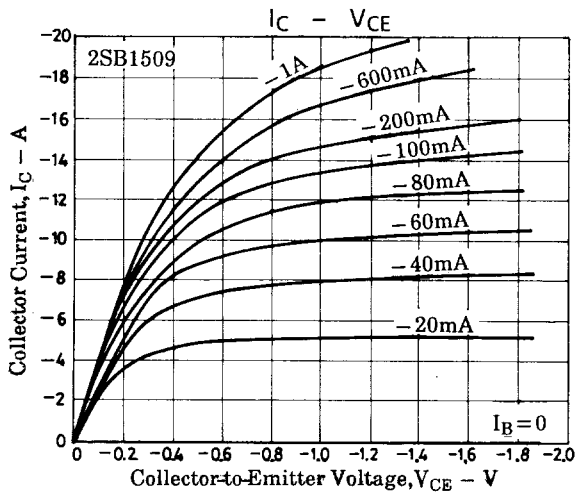
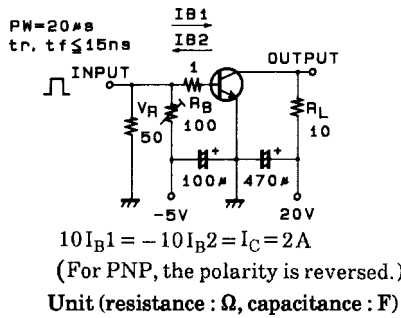
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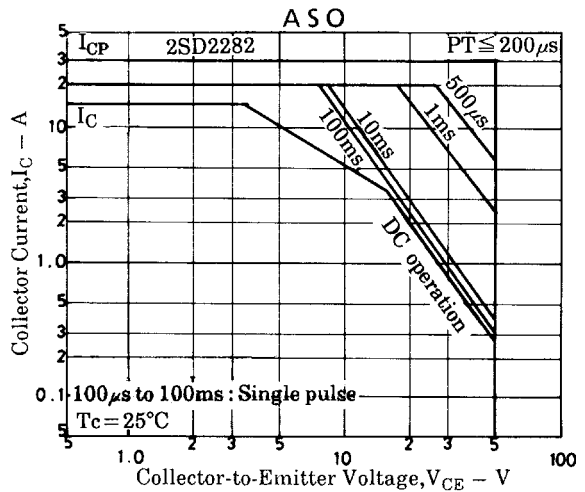
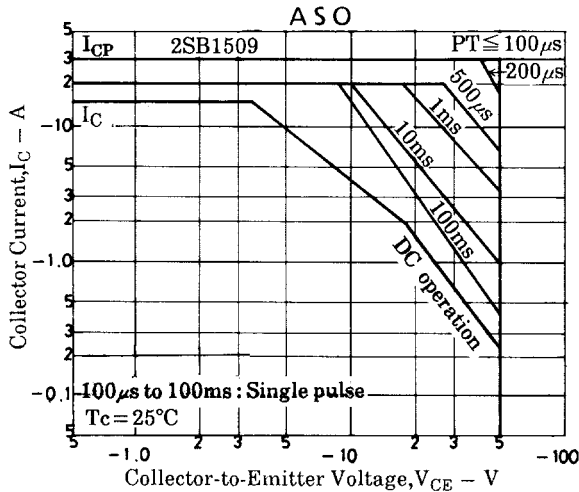
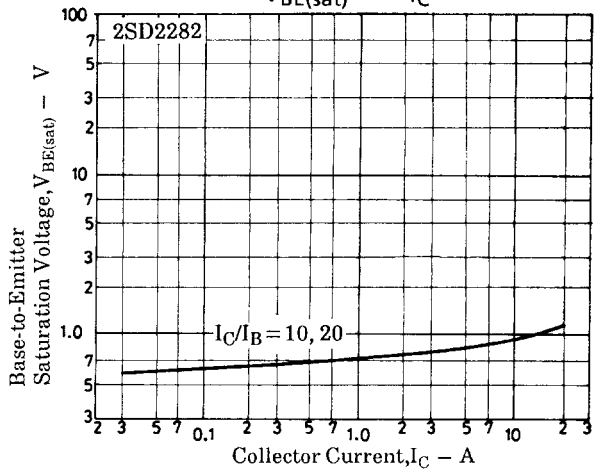
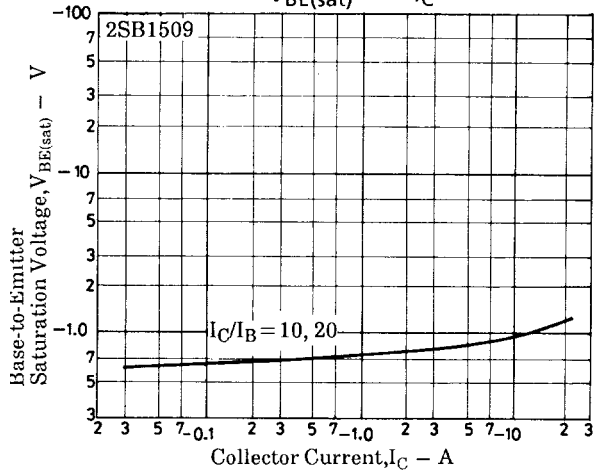
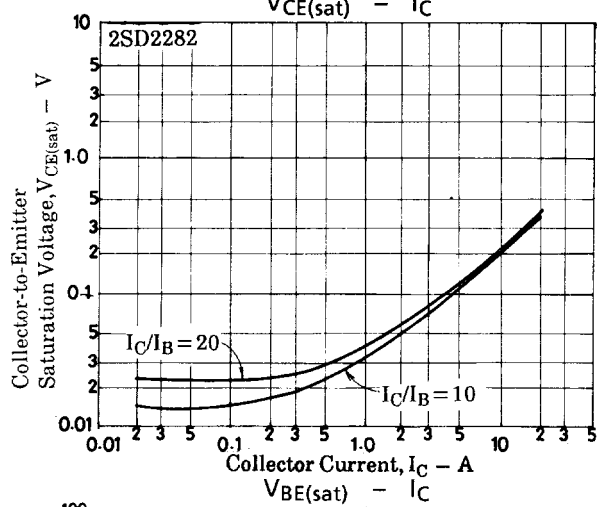
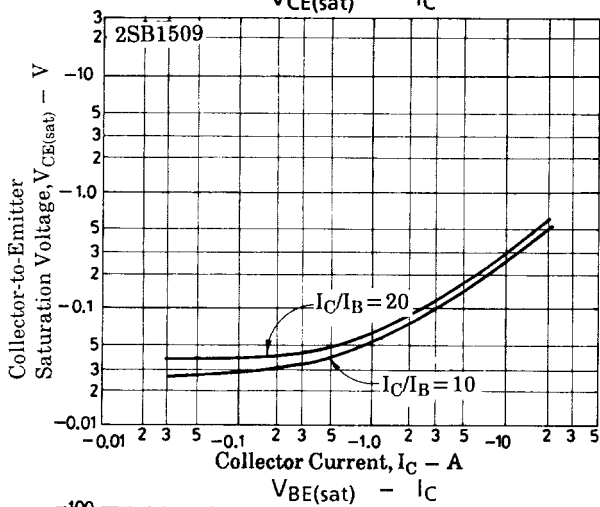
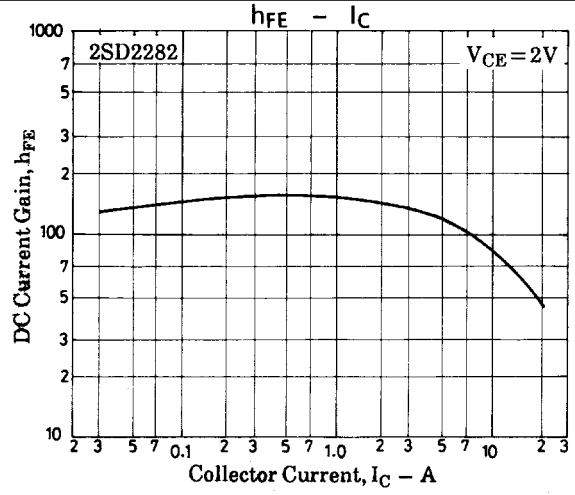
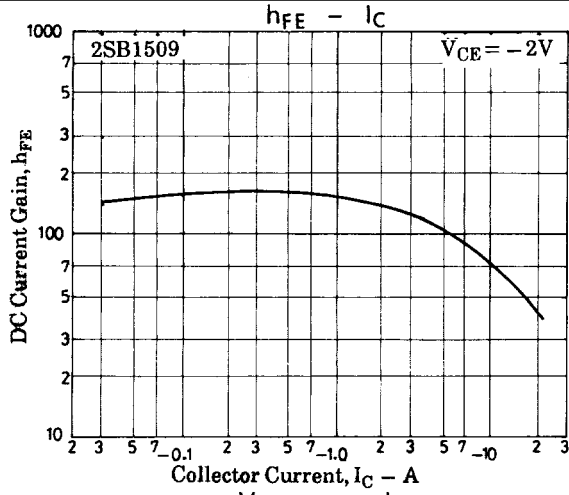
# 2SB1509/2SD2282

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
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.		0.2		$\mu s$
Storage Time	$t_{stg}$	See specified test circuit.		(0.5)		$\mu s$
				1.0		$\mu s$
Fall Time	$t_f$	See specified test circuit.		0.1		$\mu s$

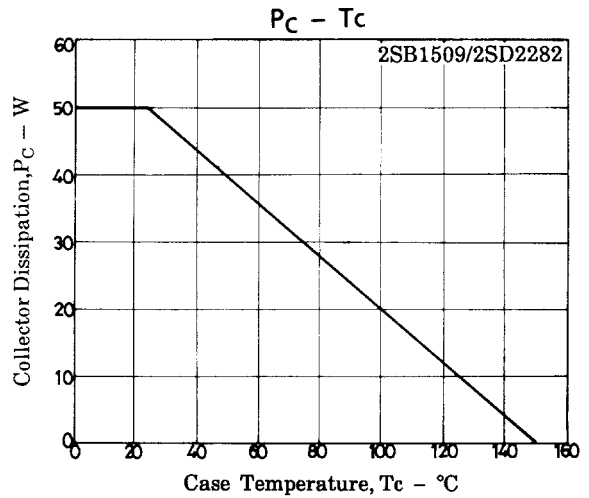
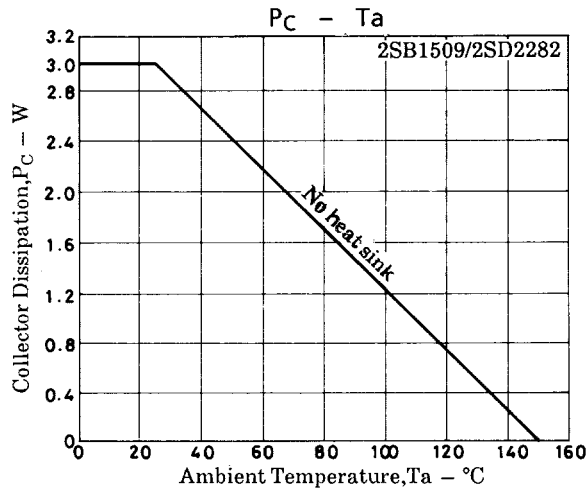
## Switching Time Test Circuit



## 2SB1509/2SD2282



## 2SB1509/2SD2282



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