



## 2SB1450/2SD2199

### 50V/7A Switching Applications

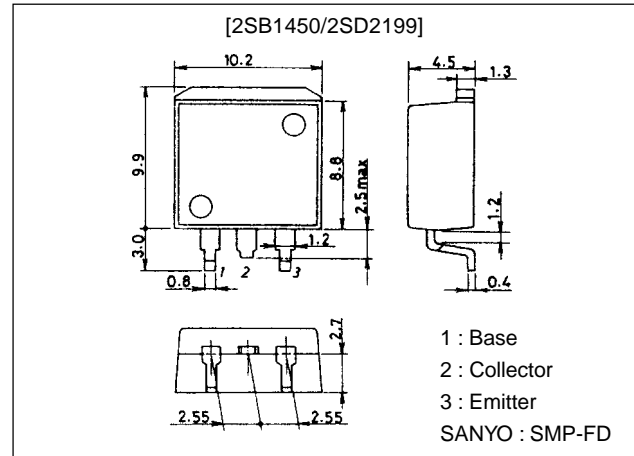
#### Features

- Surface mount type device making the following possible.
- Reduction in the number of manufacturing processes for 2SB1450/2SD2199-applied equipment.
- High density surface mount applications.
- Small size of 2SB1450/2SD2199-applied equipment.
- Low collector-to-emitter saturation voltage.
- Highly resistant to breakdown because of wide ASO.

#### Package Dimensions

unit:mm

2069B



() : 2SB1450

#### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CB0}$		(-)60	V
Collector-to-Emitter Voltage	$V_{CEO}$		(-)50	V
Emitter-to-Base Voltage	$V_{EBO}$		(-)6	V
Collector Current	$I_C$		(-)7	A
Collector Current (Pulse)	$I_{CP}$		(-)12	A
Collector Dissipation	$P_C$		1.65	W
		$T_c=25^\circ\text{C}$	40	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	$I_{CBO}$	$V_{CB} = (-)40\text{V}, I_E = 0$			(-)0.1	mA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = (-)4\text{V}, I_C = 0$			(-)0.1	mA
DC Current Gain	$h_{FE1}$	$V_{CE} = (-)2\text{V}, I_C = (-)1\text{A}$	70*		280*	
	$h_{FE2}$	$V_{CE} = (-)2\text{V}, I_C = (-)5\text{A}$	30			
Gain-Bandwidth Product	$f_T$	$V_{CE} = (-)5\text{V}, I_C = (-)1\text{A}$		10		MHz
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = (-)4\text{A}, I_B = (-)0.4\text{A}$			(-)0.4	V

\* : The 2SB1450/2SD2199 are classified by 1A  $h_{FE}$  as follows :

70	Q	140	100	R	200	140	S	280
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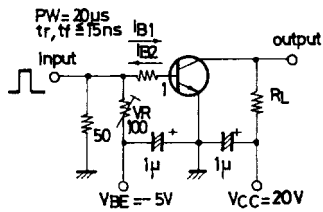
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

O1598HA (KT)/7039MO, TS No.3150-1/4

## 2SB1450/2SD2199

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.		(0.1)		$\mu s$
				0.3		$\mu s$
Fall Time	$t_f$	See specified test circuit.		(0.7)		$\mu s$
				0.9		$\mu s$

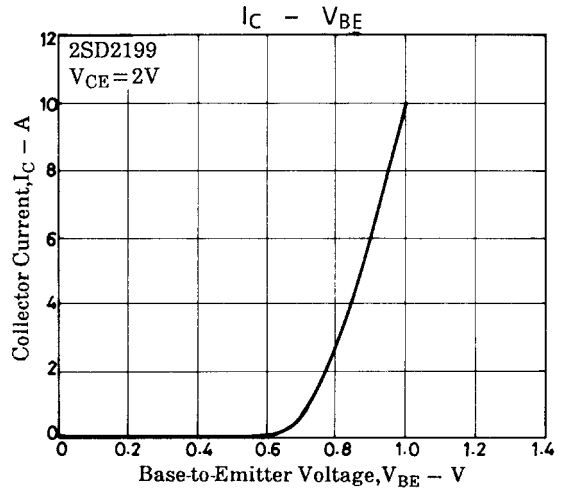
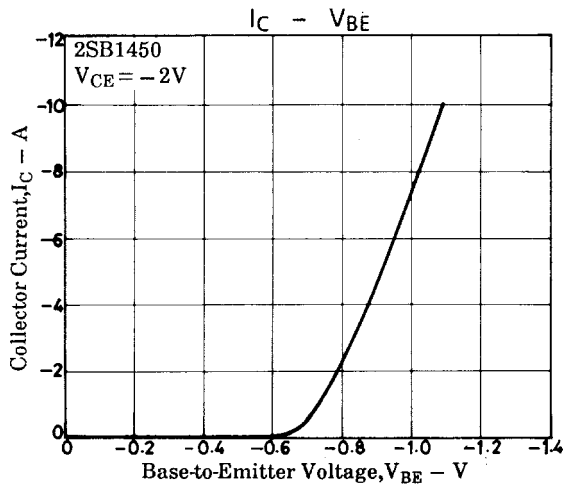
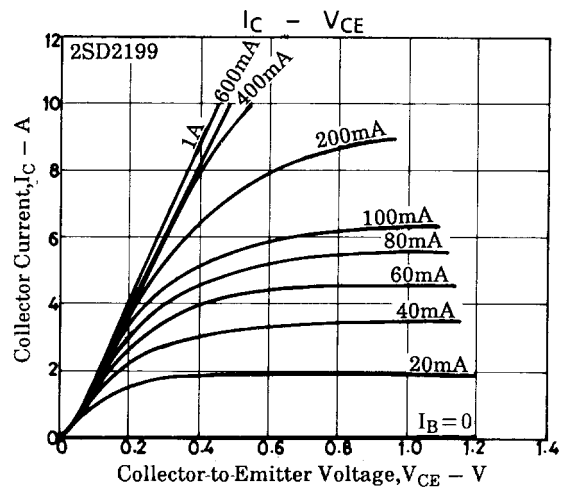
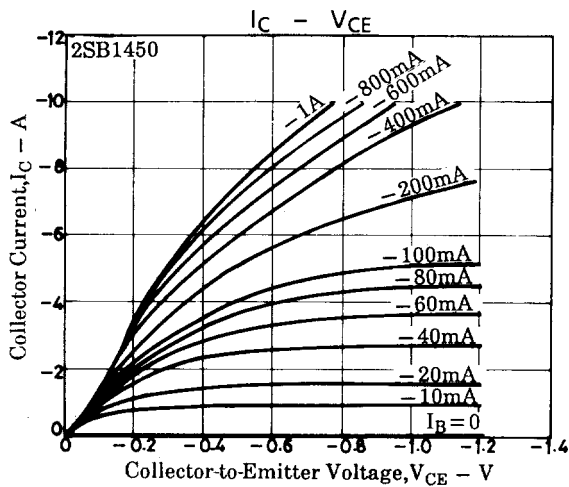
### Switching Time Test Circuit



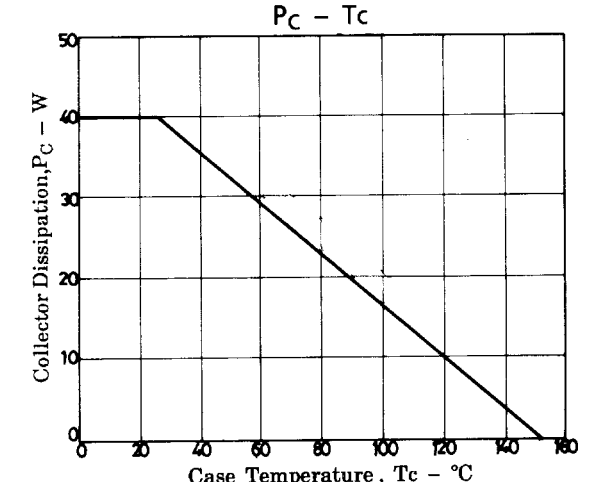
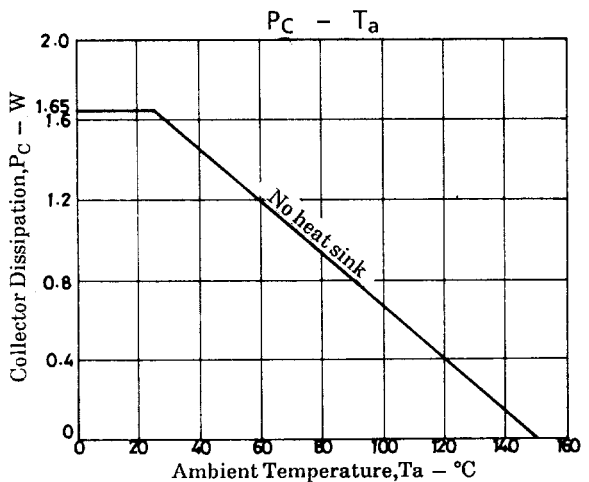
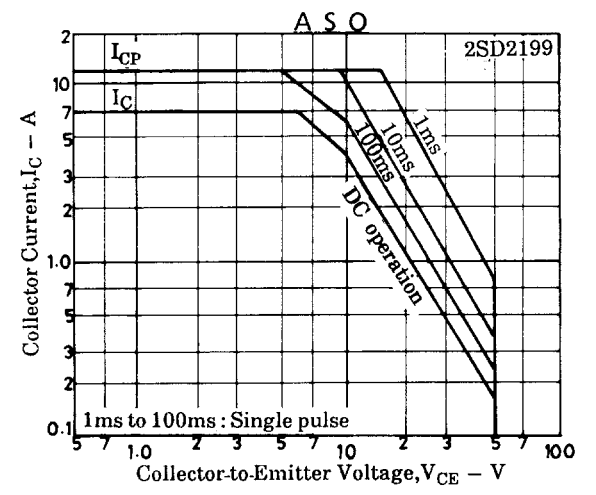
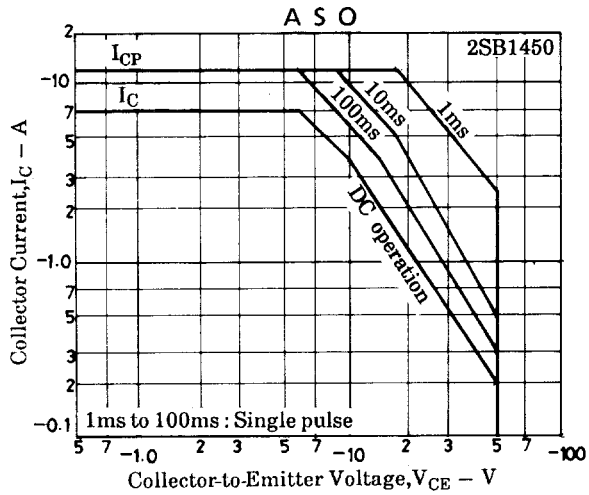
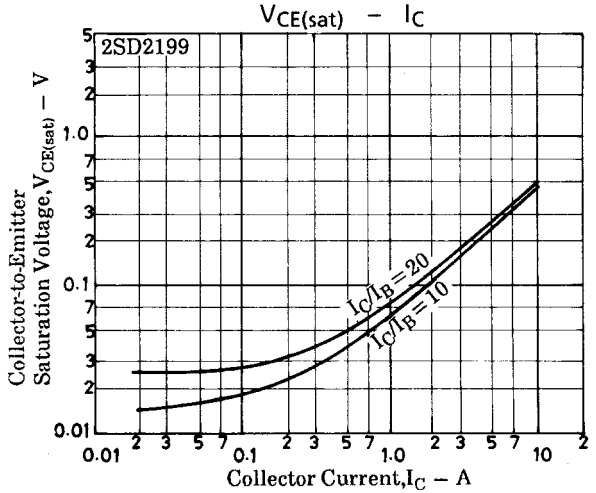
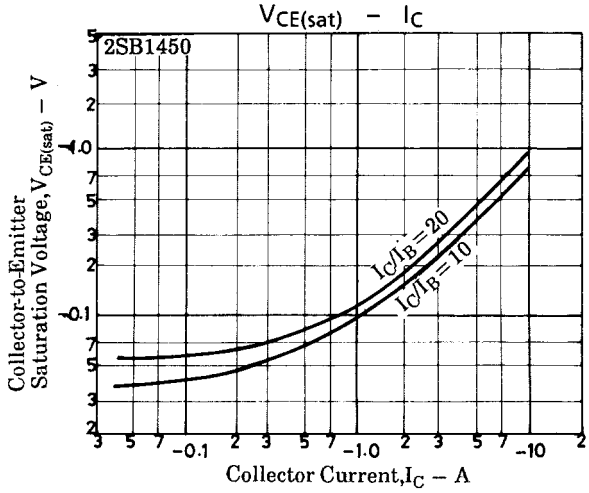
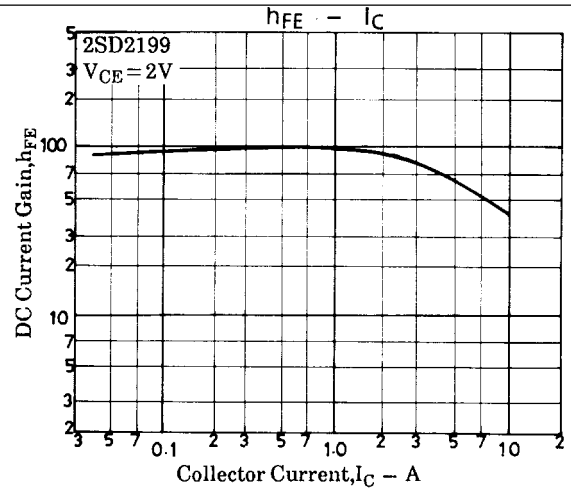
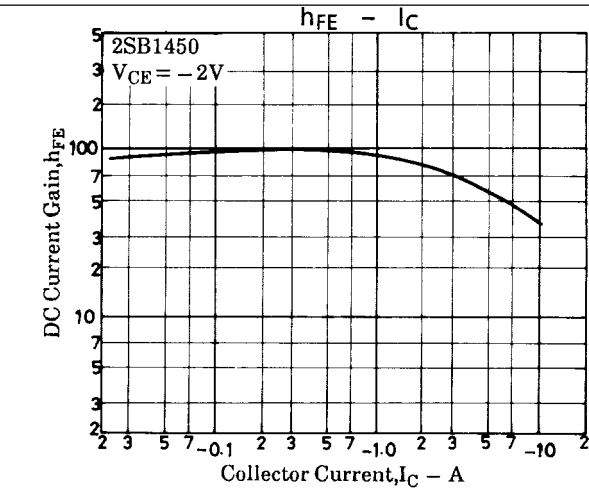
$$10 I_{B1} = -10 I_{B2} = I_C = 2A$$

For PNP, the polarity is reversed.

Unit (resistance :  $\Omega$ , capacitance : F)



# 2SB1450/2SD2199



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