

Ordering number:EN3365

PNP/NPN Epitaxial Planar Silicon Transistors



# 2SB1471/2SD2223

## Driver Applications

### Applications

- Motor drivers, printer hammer drivers, relay drivers, voltage regulator control.

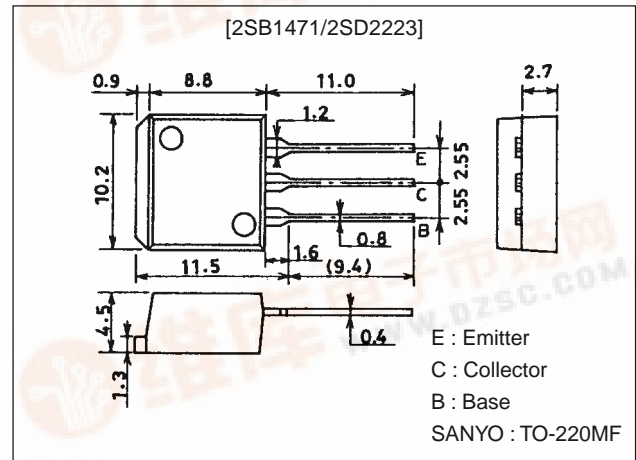
### Features

- Suitable for sets whose height is restricted.
- High DC current gain.
- Large current capacity and wide ASO.

### Package Dimensions

unit:mm

2049B



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### Specifications

#### Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CB0}$		(-70)	V
Collector-to-Emitter Voltage	$V_{CEO}$		(-60)	V
Emitter-to-Base Voltage	$V_{EBO}$		(-6)	V
Collector Current	$I_C$		(-4)	A
Collector Current (Pulse)	$I_{CP}$		(-6)	A
Collector Dissipation	$P_C$		1.65	W
		$T_c=25^\circ\text{C}$	30	W
Junction Temperature	$T_j$		150	°C
Storage Temperature	$T_{stg}$		-55 to +150	°C

#### Electrical Characteristics at Ta = 25°C

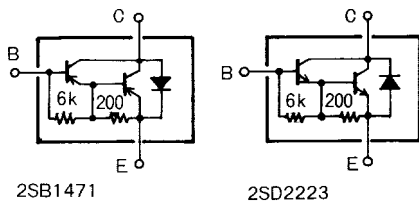
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CB0}$	$V_{CB} = (-)40\text{V}, I_E = 0$			(-0.1)	mA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = (-)5\text{V}, I_C = 0$			(-3.0)	mA
DC Current Gain	$h_{FE}$	$V_{CE} = (-)2\text{V}, I_C = (-)2\text{A}$	2000	5000		
Gain-Bandwidth Product	$f_T$	$V_{CE} = (-)5\text{V}, I_C = (-)2\text{A}$		20		MHz
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = (-)2\text{A}, I_B = (-)4\text{mA}$		0.9	(-1.5)	V
				(-1.0)		V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = (-)2\text{A}, I_B = (-)4\text{mA}$			(-2.0)	V

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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = (-)5\text{mA}, I_E = 0$	(-70)			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = (-)50\text{mA}, R_{BE} = \infty$	(-60)			V
Turn-ON Time	$t_{on}$	See specified test circuit.		(0.5)		$\mu\text{s}$
				0.6		$\mu\text{s}$
Storage Time	$t_{stg}$	See specified test circuit.		(1.4)		$\mu\text{s}$
				2.7		$\mu\text{s}$
Fall Time	$t_f$	See specified test circuit.		(1.2)		$\mu\text{s}$
				1.6		$\mu\text{s}$

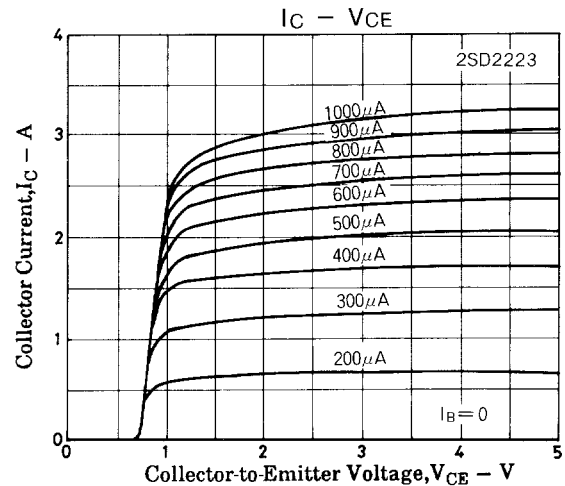
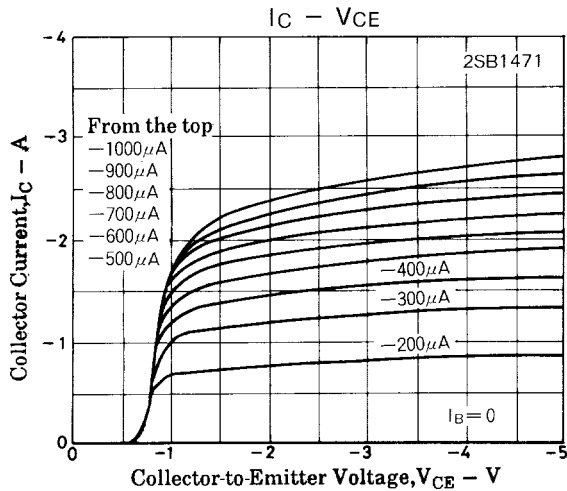
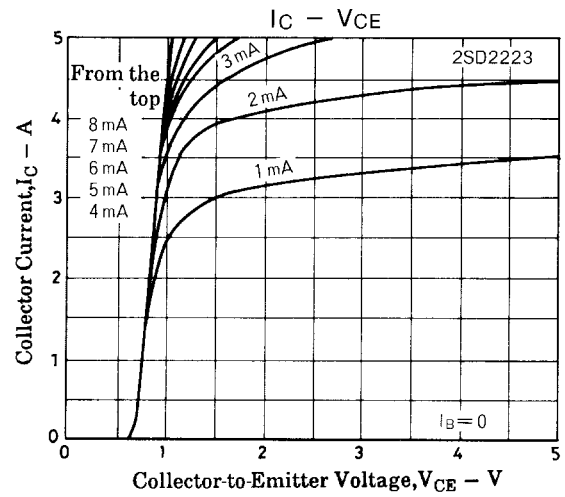
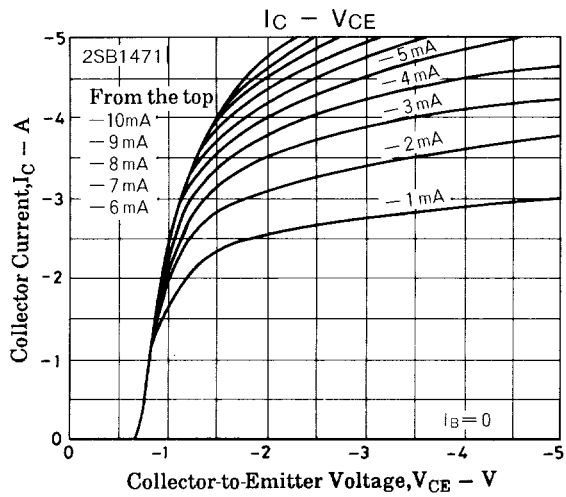
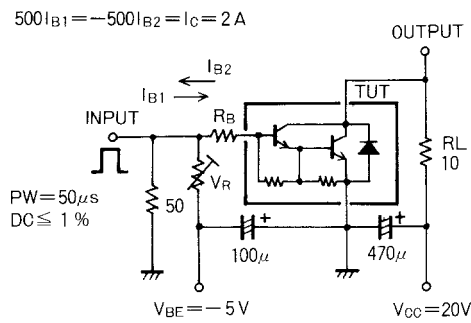
### Electrical Connection



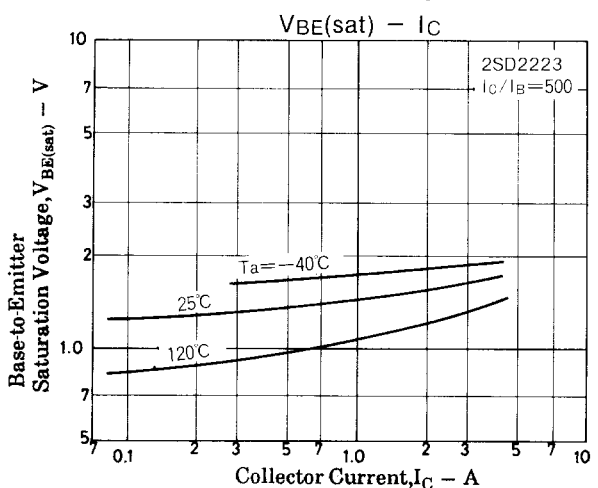
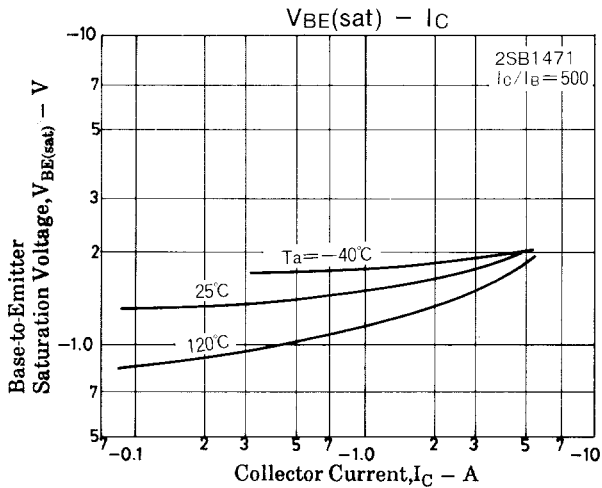
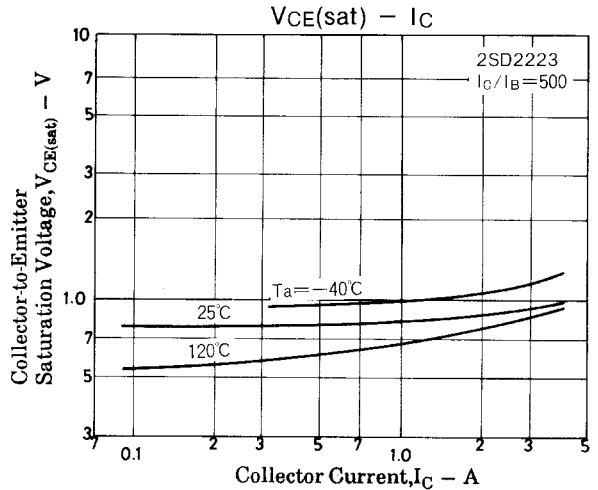
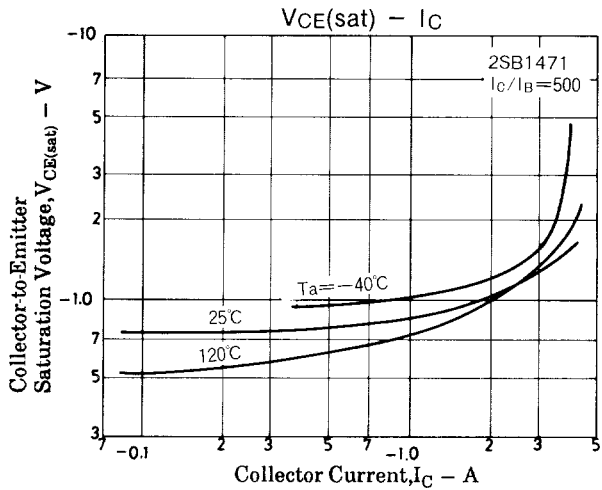
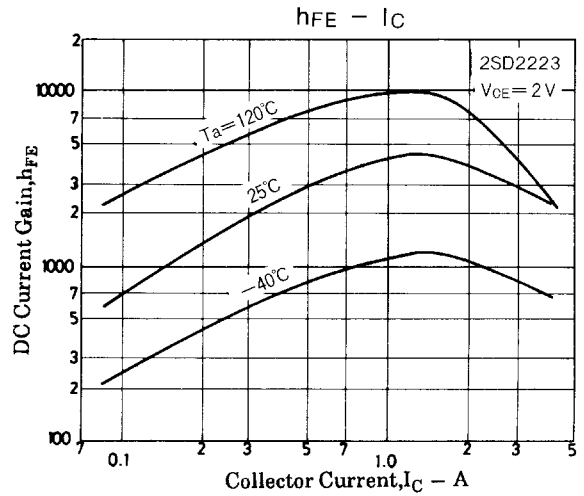
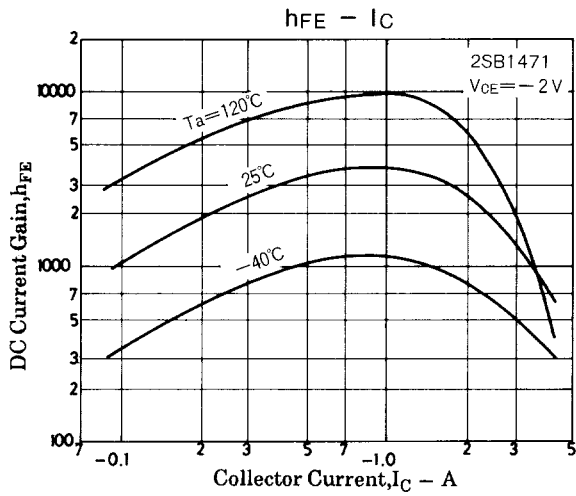
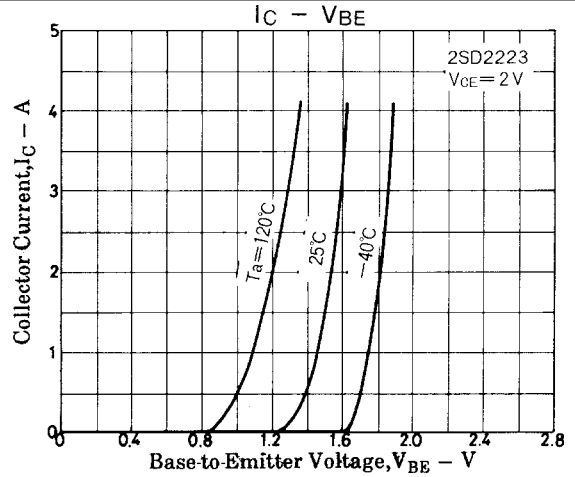
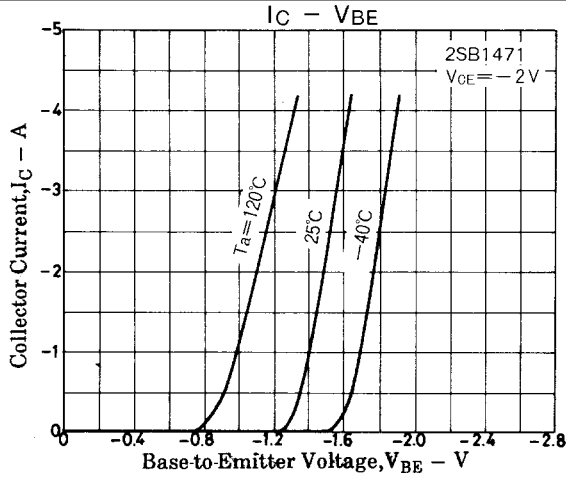
Unit (resistance:  $\Omega$ )

### Switching Time Test Circuit

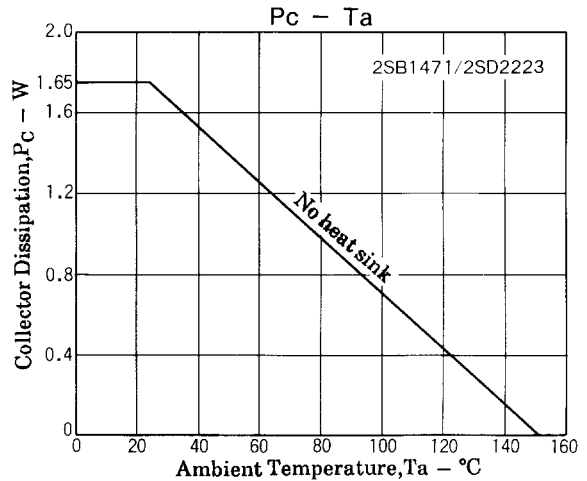
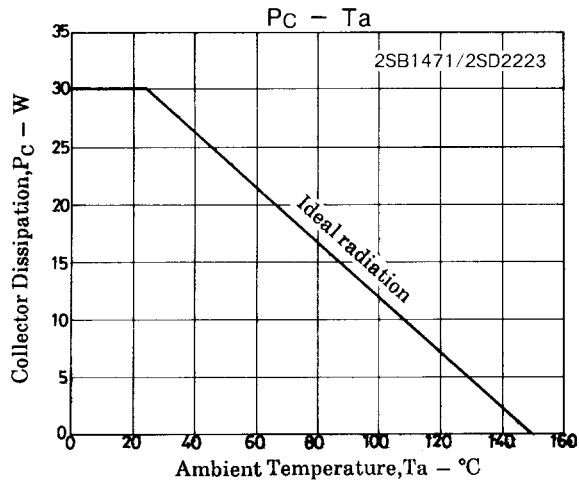
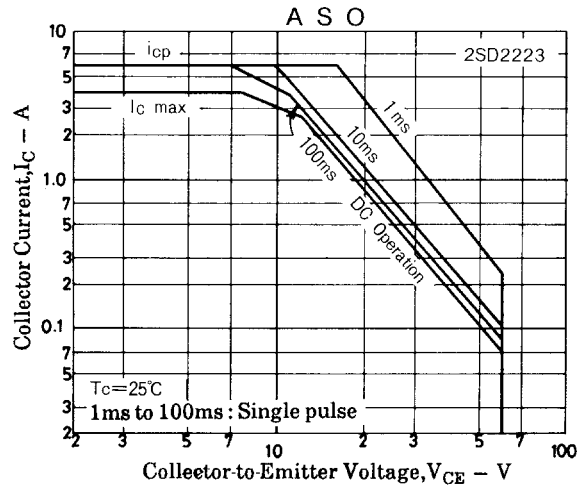
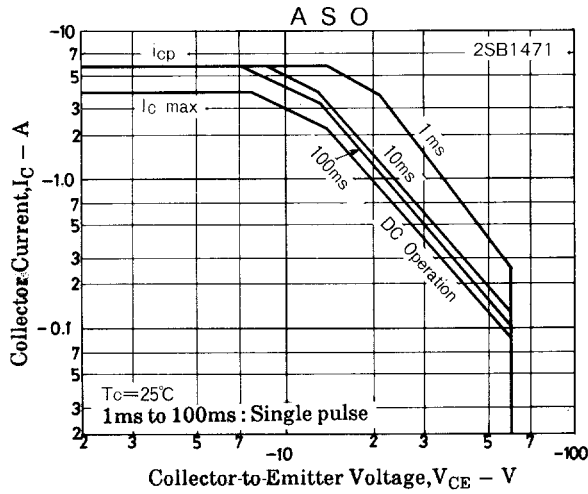
(For PNP, the polarity is reversed.)



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