



## 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.

( ) : 2SB1471

#### Specifications

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

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	$^\circ\text{C}$
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	$I_{EBO}$	$V_{EB}=-5\text{V}$ , $I_C=0$			(-)-3.0	mA
DC Current Gain	$h_{FE}$	$V_{CE}=-2\text{V}$ , $I_C=-2\text{mA}$	2000	5000		
Gain-Bandwidth Product	$f_T$	$V_{CE}=-5\text{V}$ , $I_C=-2\text{mA}$		20		MHz
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=-2\text{mA}$ , $I_B=-4\text{mA}$		0.9	(-)-1.5	V
				(-)-1.0		V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=-2\text{mA}$ , $I_B=-4\text{mA}$			(-)-2.0	V

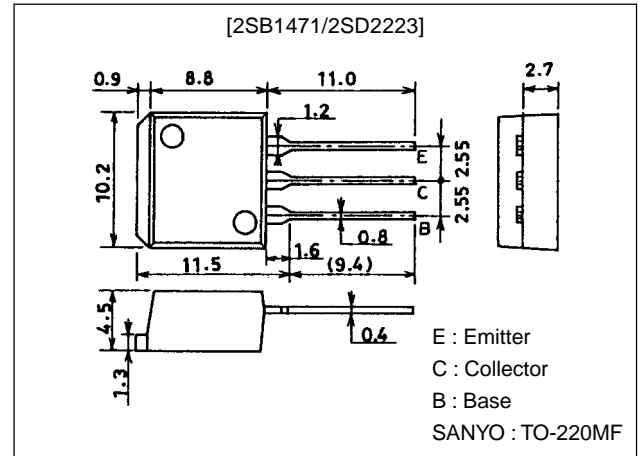
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#### Package Dimensions

unit:mm

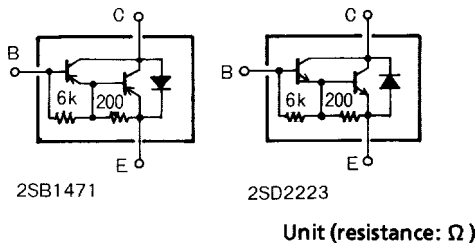
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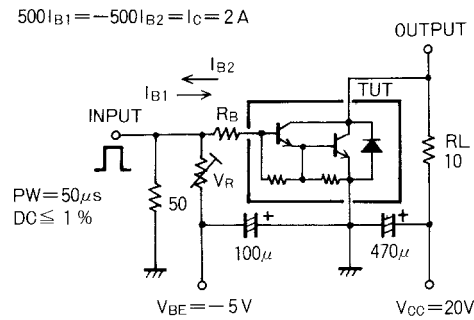
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = (-)5\text{mA}, I_E = 0$	(-70)			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = (-)50\text{mA}, R_{BE} = \infty$	(-60)			V
Turn-ON Time	$t_{on}$	See specified test circuit.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

## Electrical Connection

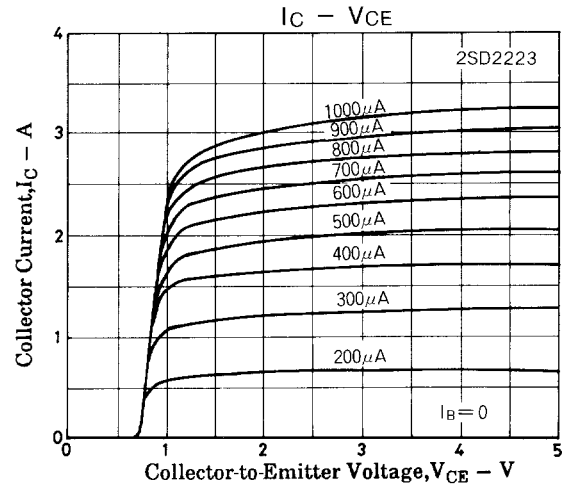
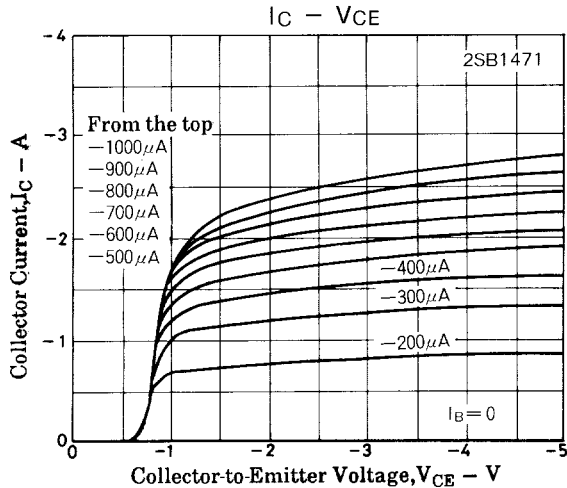
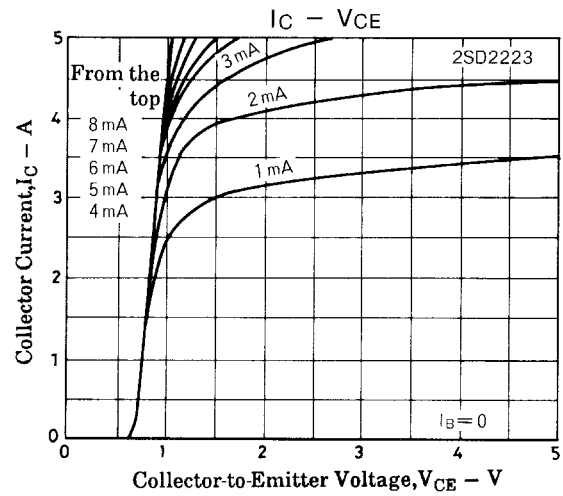
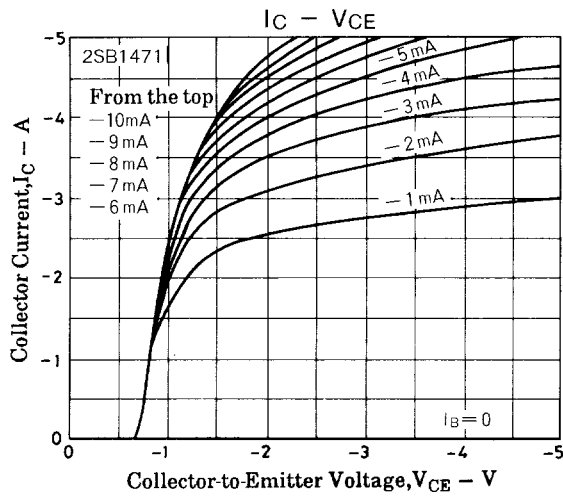


## Switching Time Test Circuit

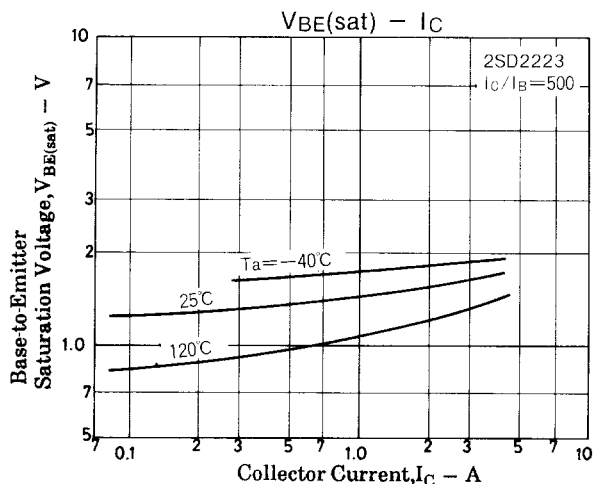
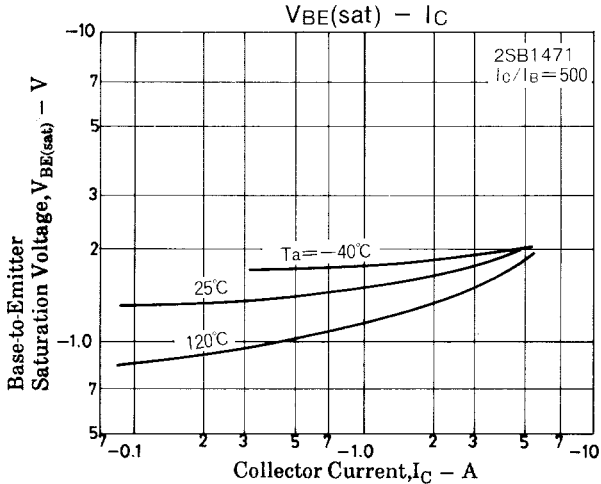
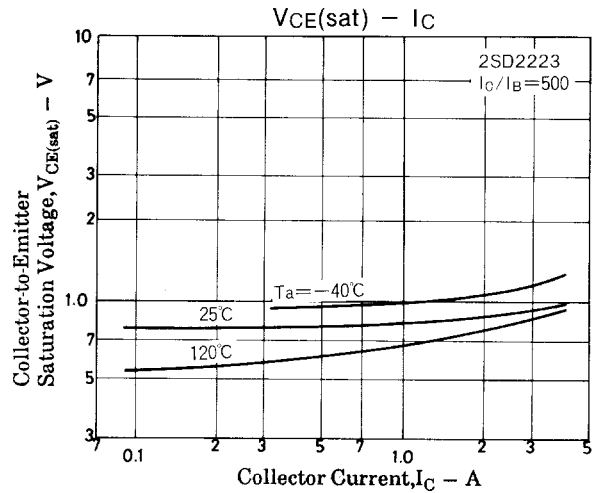
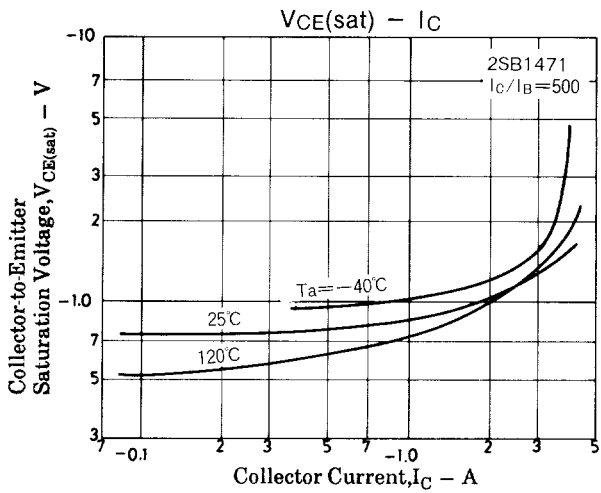
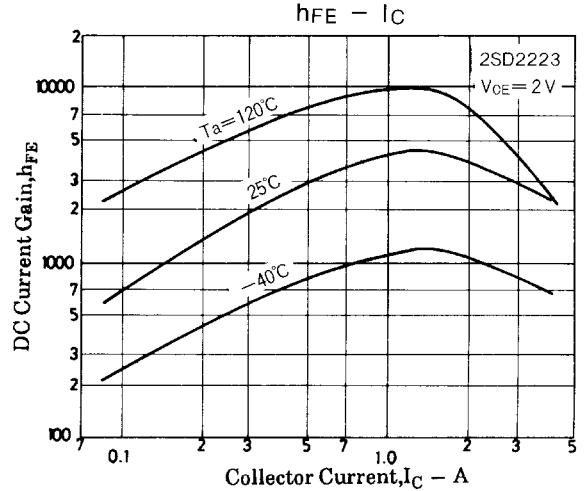
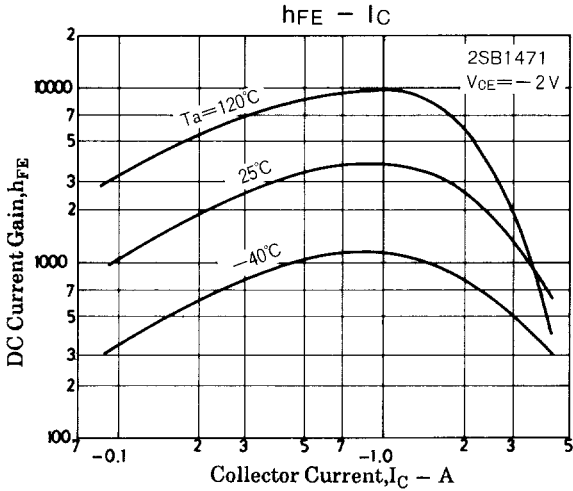
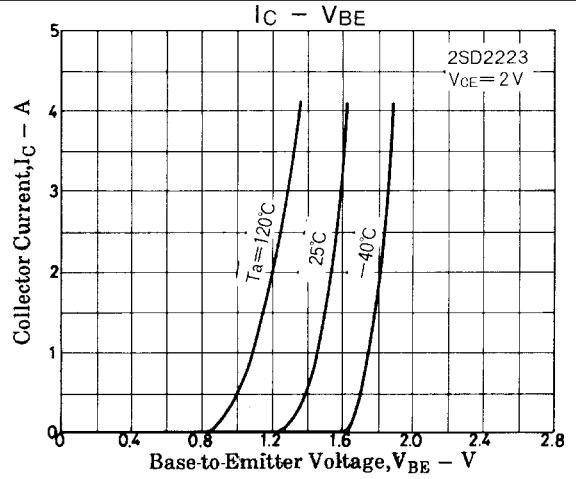
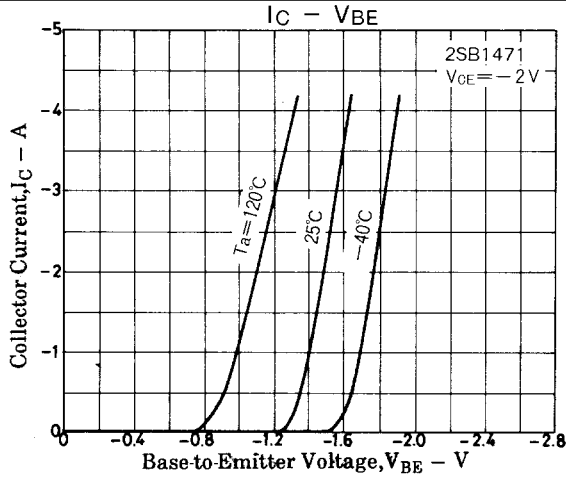
(For PNP, the polarity is reversed.)



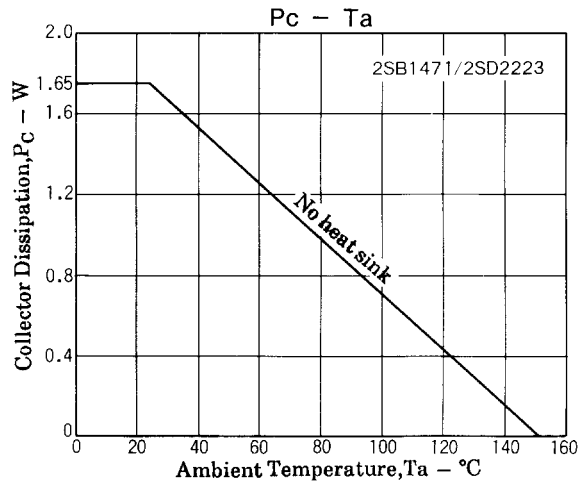
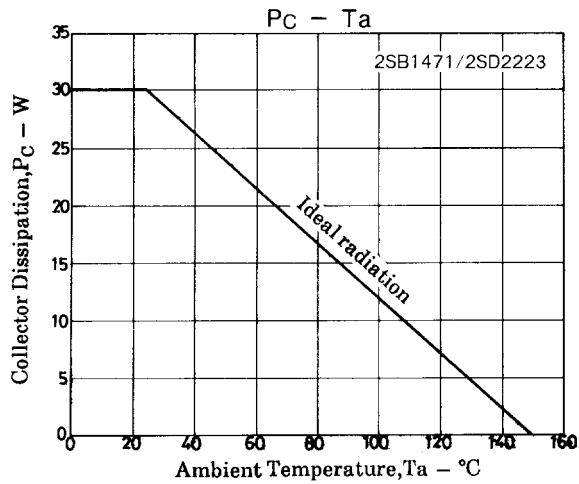
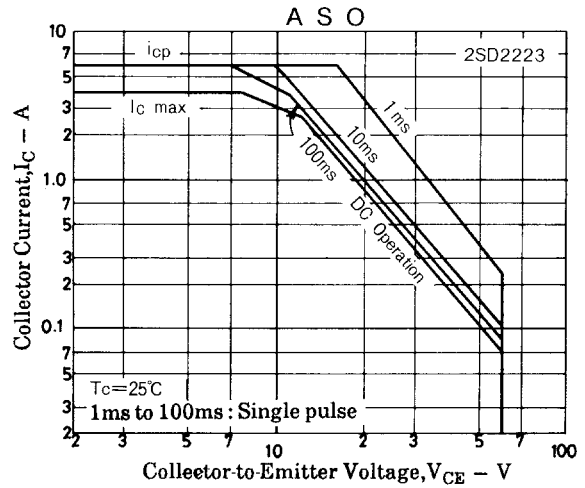
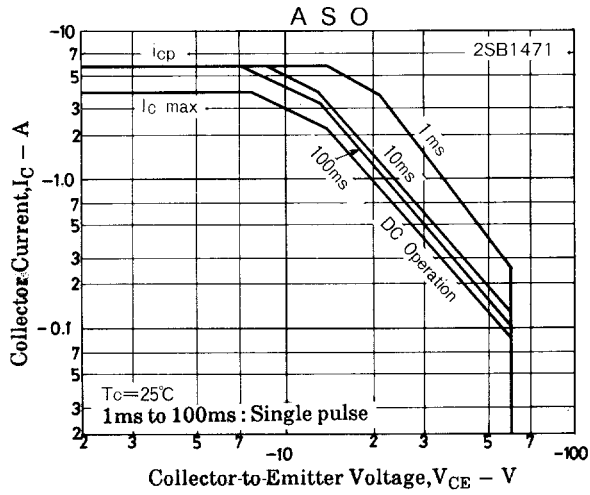
Unit (resistance:  $\Omega$ , capacitance: F)



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