



2SB1388/2SD2093

Driver Applications

Applications

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

Features

- High DC current gain.
- Large current capacity and large ASO.
- Low saturation voltage.
- Micaless package facilitating mounting.

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Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CB0}		(-)110	V
Collector-to-Emitter Voltage	V_{CEO}		(-)100	V
Emitter-to-Base Voltage	V_{EBO}		(-)6	V
Collector Current	I_C		(-)10	A
Collector Current (Pulse)	I_{CP}		(-)15	A
Collector Dissipation	P_C		3.0	W
		$T_c=25^\circ\text{C}$	45	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_{CB0}	$V_{CB}=(-)80\text{V}, I_E=0$			(-)0.1	mA
Emitter Cutoff Current	I_{EBO}	$V_{CE}=(-)5\text{V}, I_C=0$			(-)3.0	mA
DC Current Gain	h_{FE}	$V_{CE}=(-)3\text{V}, I_C=(-)5\text{A}$	1500	4000		
Gain-Bandwidth Product	f_T	$V_{CE}=(-)5\text{V}, I_C=(-)5\text{A}$		20		MHz
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)5\text{A}, I_B=(-)10\text{mA}$		(-)1.0	(-)1.5	V
				0.9		V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)5\text{A}, I_B=(-)10\text{mA}$			(-)2.0	V

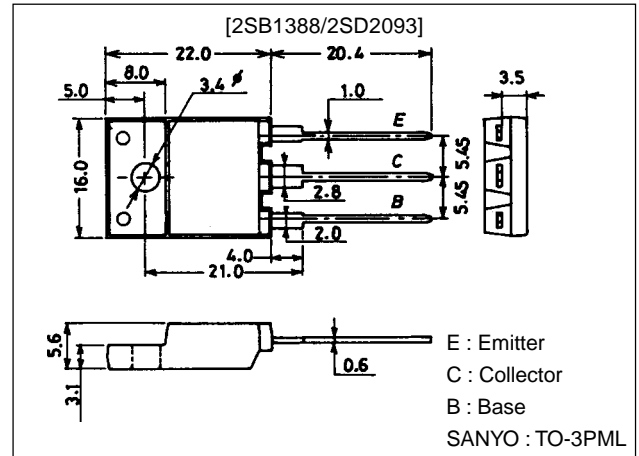
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Package Dimensions

unit:mm

2039A

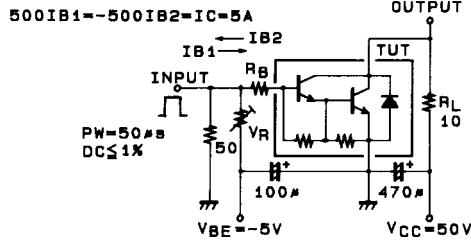


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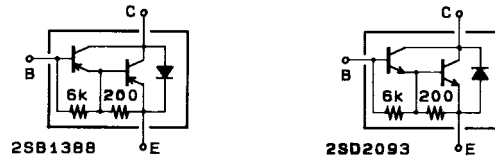
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)5mA, I_E=0$	(-)110			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)50mA, R_{BE}=\infty$	(-)100			V
Turn-ON Time	t_{on}	See specified test circuit.		(0.7)		μs
Storage Time	t_{stg}	See specified test circuit.		0.6		μs
				(1.4)		μs
Fall Time	t_f	See specified test circuit.		4.8		μs
				(1.5)		μs
				1.6		μs

Switching Time Test Circuit

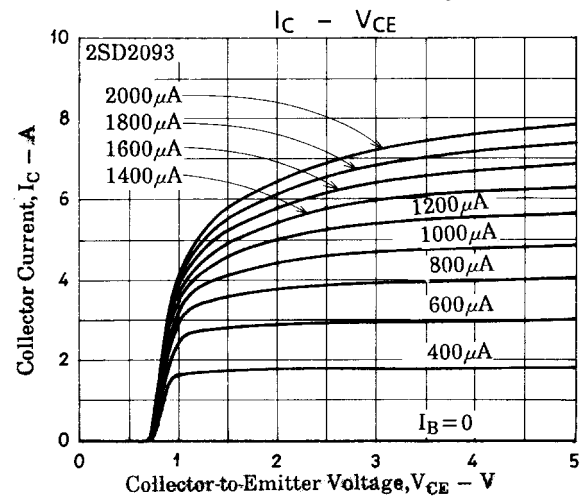
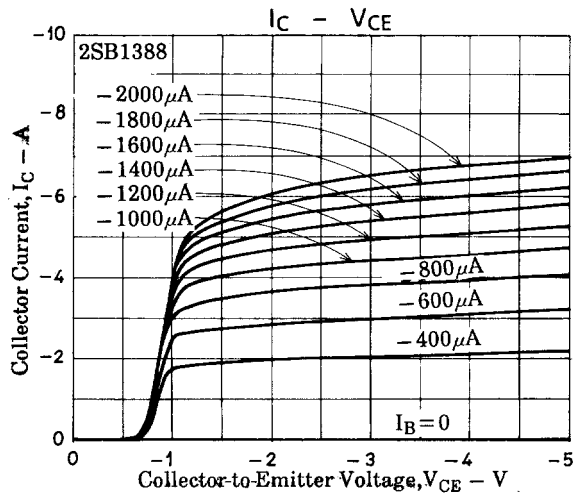
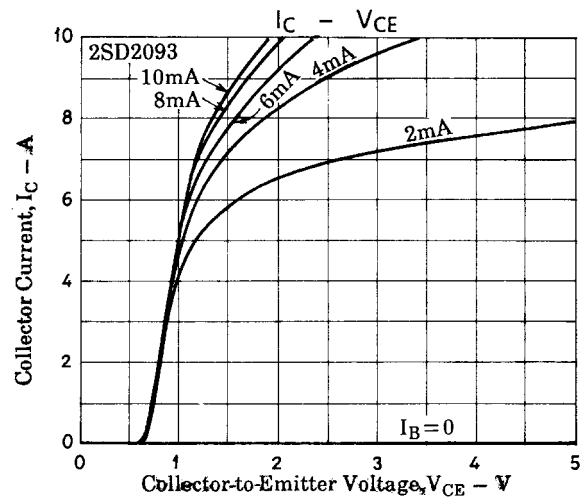
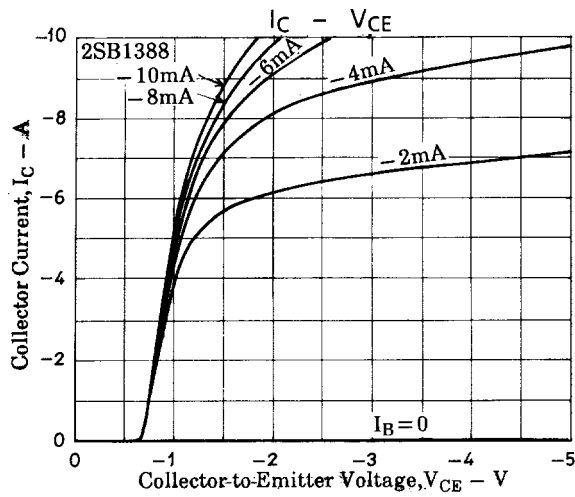
(For PNP, the polarity is reversed)



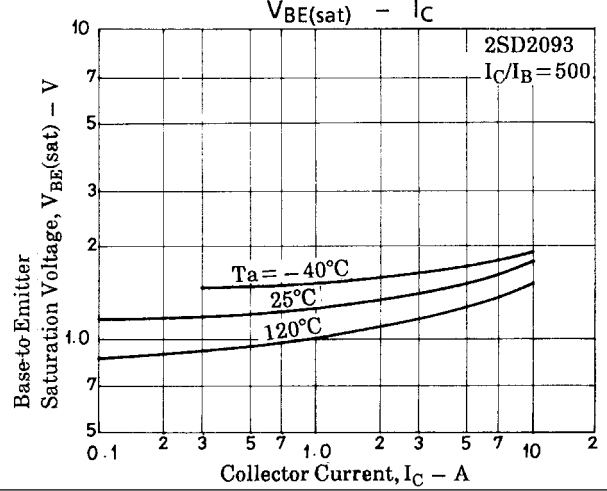
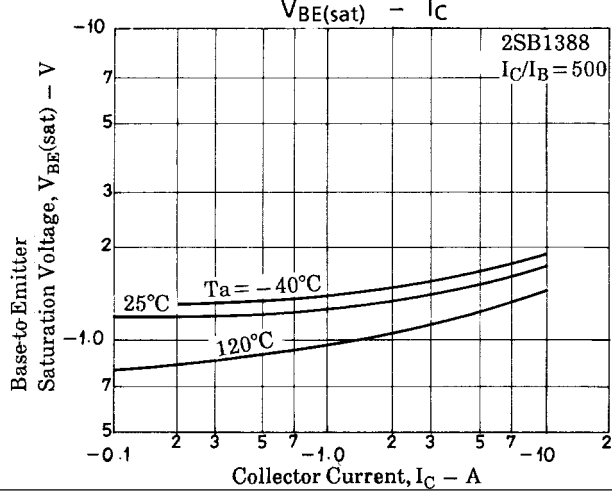
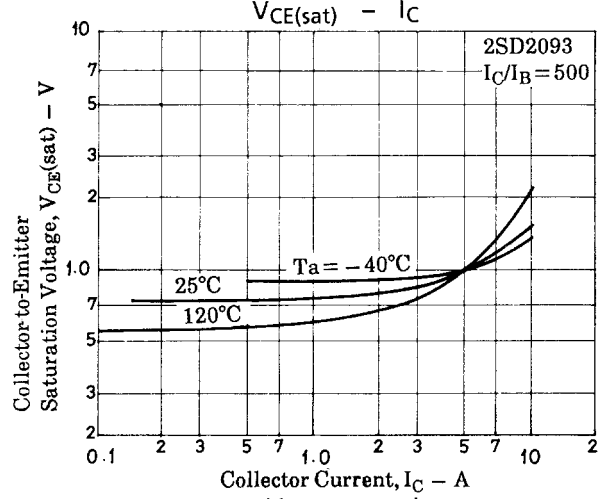
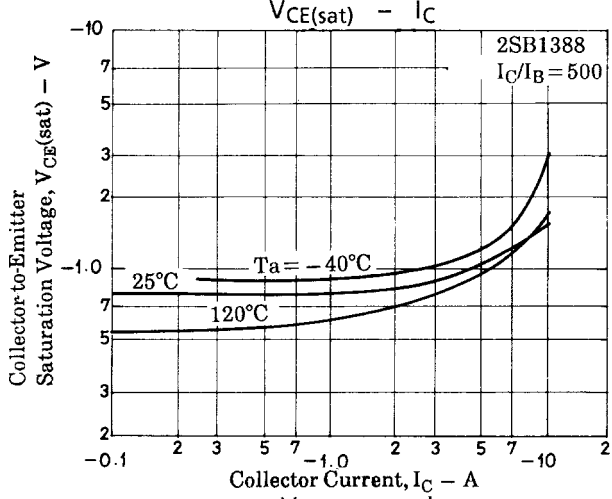
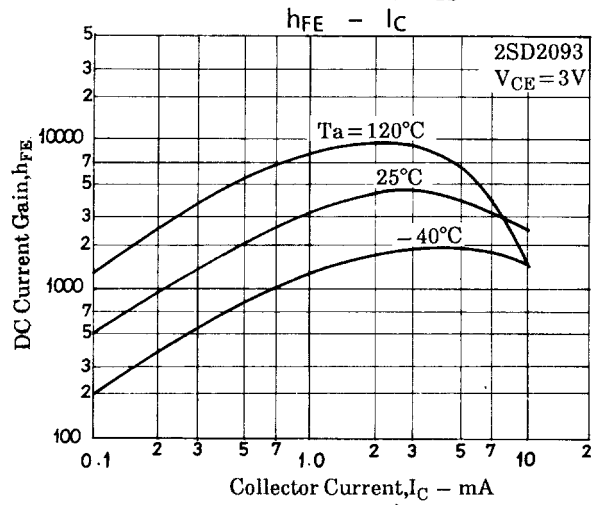
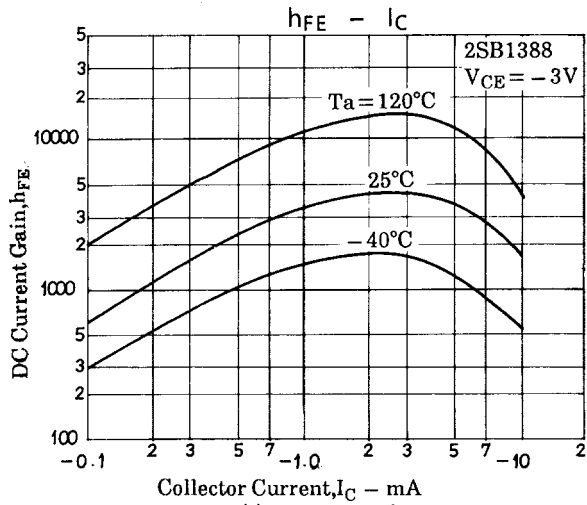
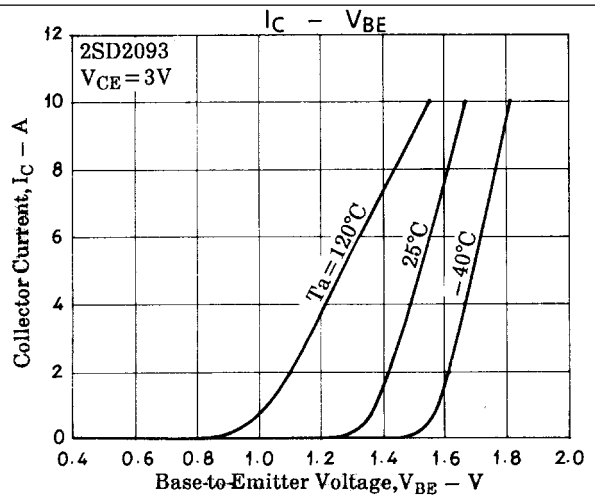
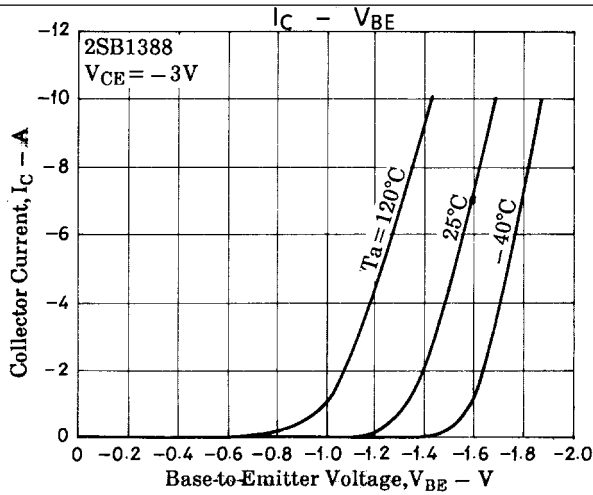
Electrical Connection



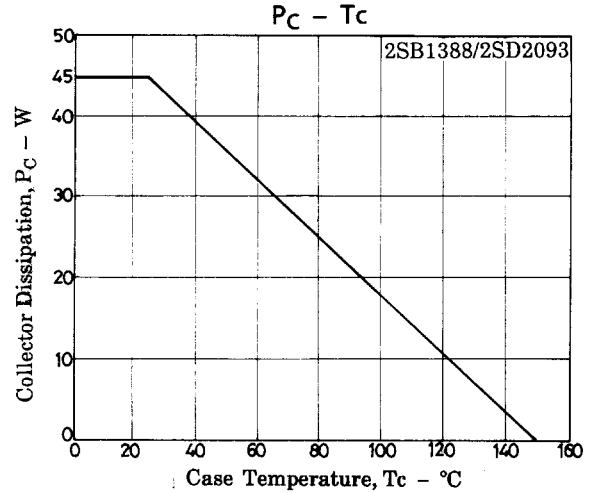
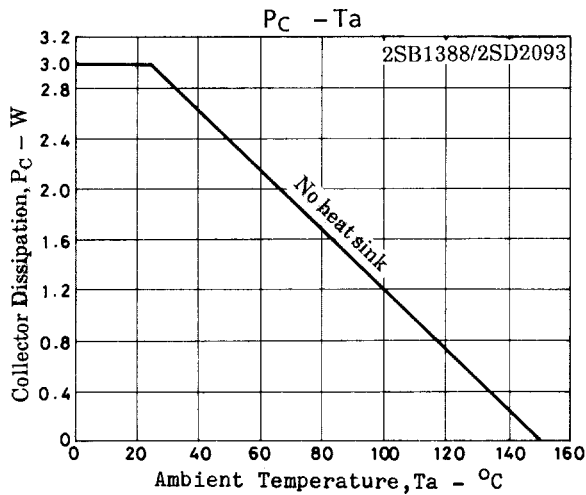
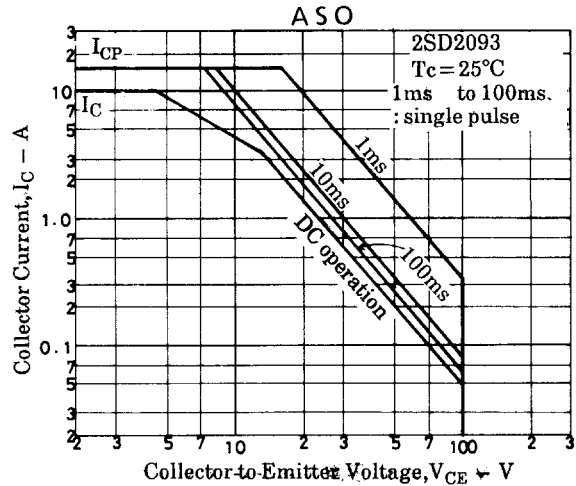
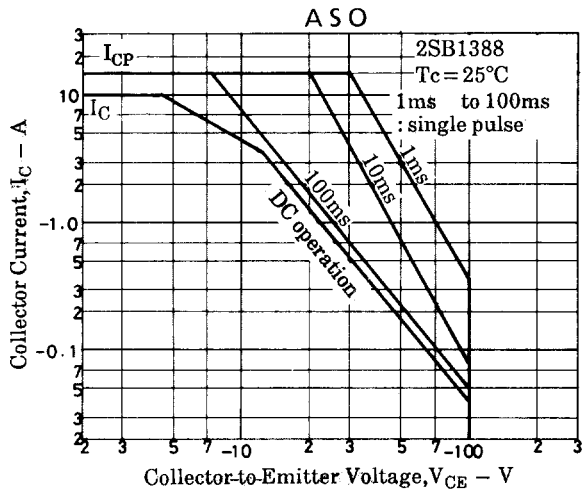
Unit (resistance : Ω , capacitance : F)



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