

2SB1388 : PNP Epitaxial Planar Silicon Transistors
2SD2093 : NPN Triple Diffused Planar Silicon Transistors



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 volatage.
- Micaless package facilitating mounting.

() : 2SB1388

Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CB0}		(-)110	V
Collector-to-Emitter Voltage	V_{CE0}		(-)100	V
Emitter-to-Base Voltage	V_{EB0}		(-)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	°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_{CBO}	$V_{CB} = (-)80\text{V}, I_E = 0$			(-)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

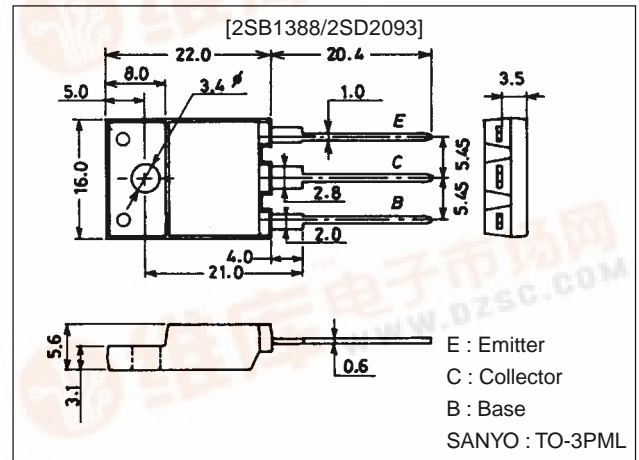
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Package Dimensions

unit:mm

2039A

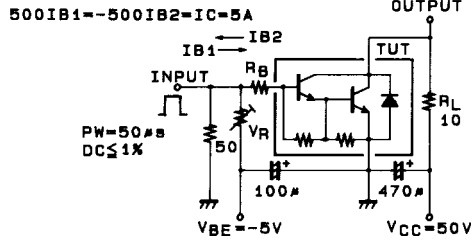


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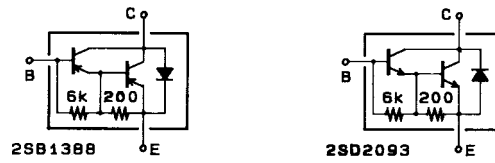
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = (-)5mA, I_E = 0$	(-)110			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = (-)50mA, R_{BE} = \infty$	(-)100			V
Turn-ON Time	t_{on}	See specified test circuit.		(0.7)		μs
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

Switching Time Test Circuit

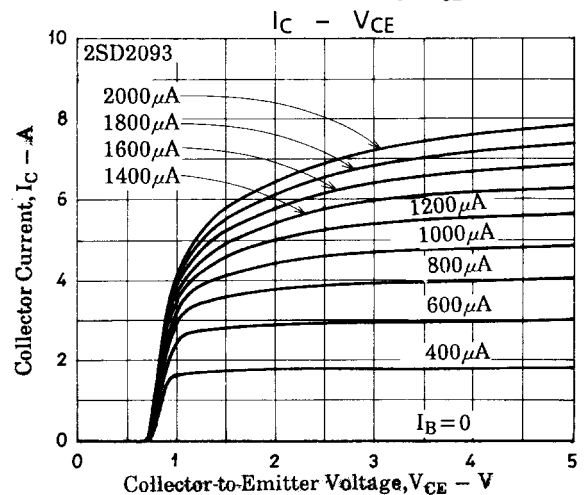
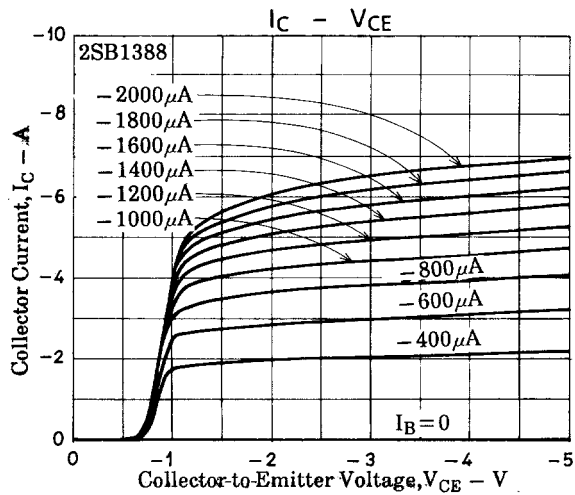
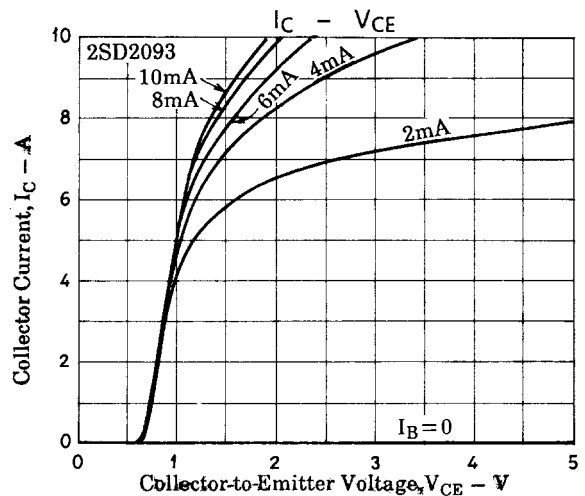
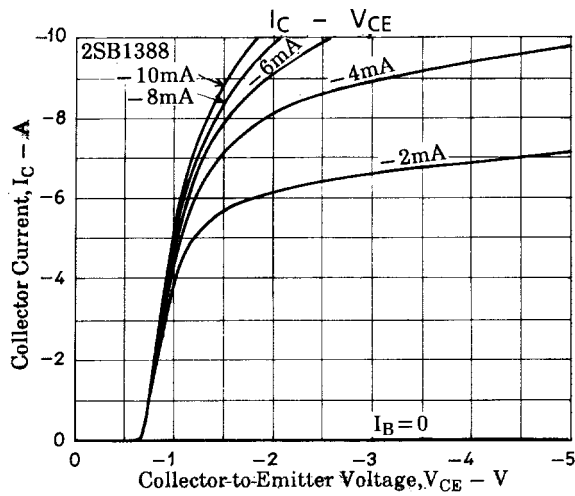
(For PNP, the polarity is reversed)



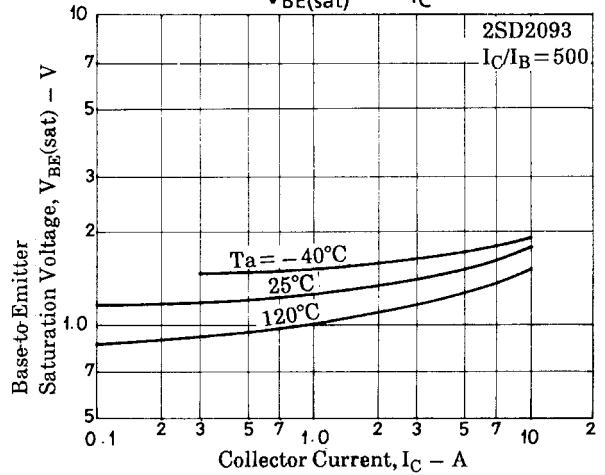
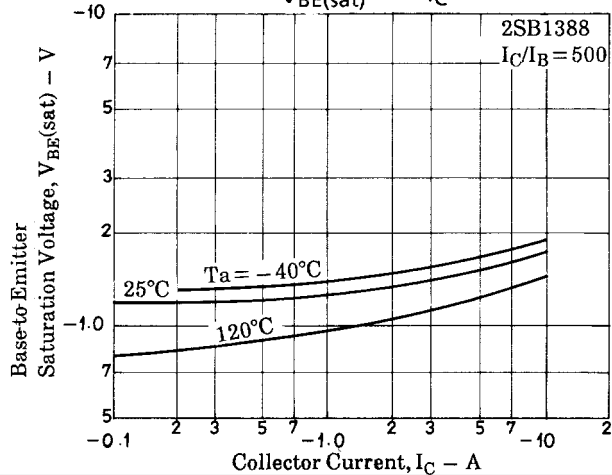
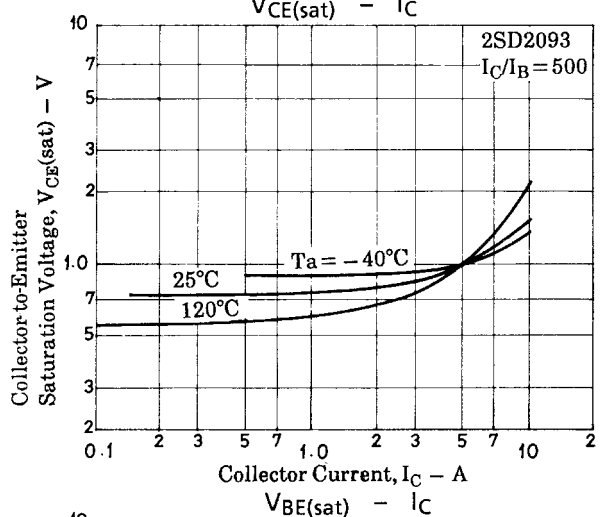
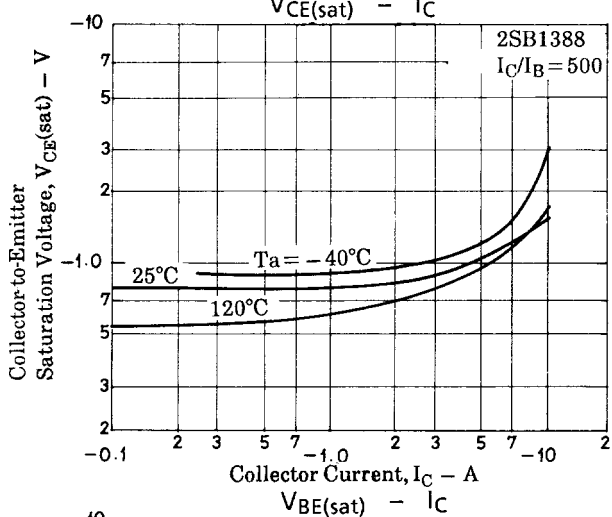
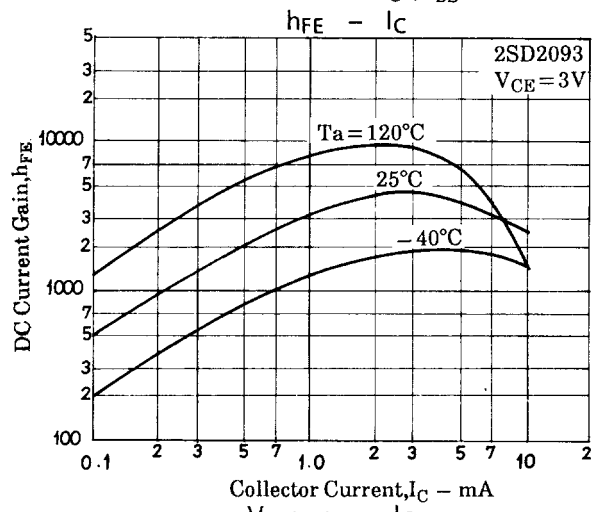
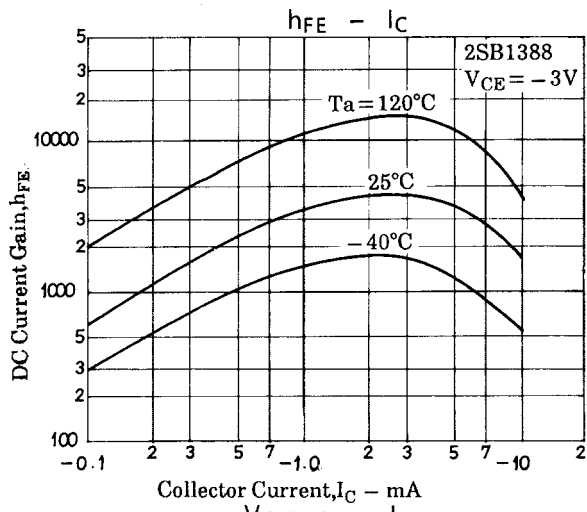
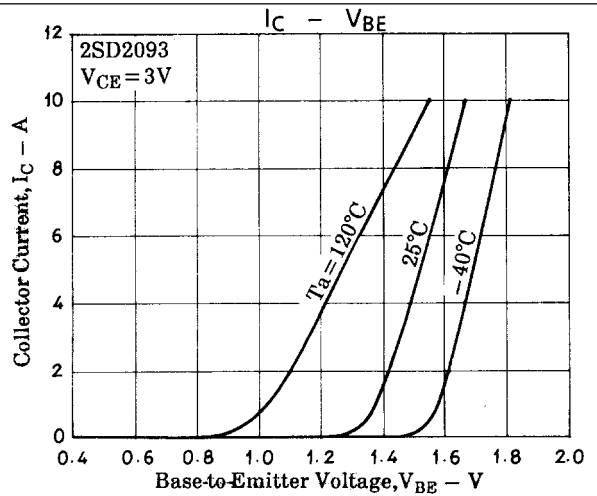
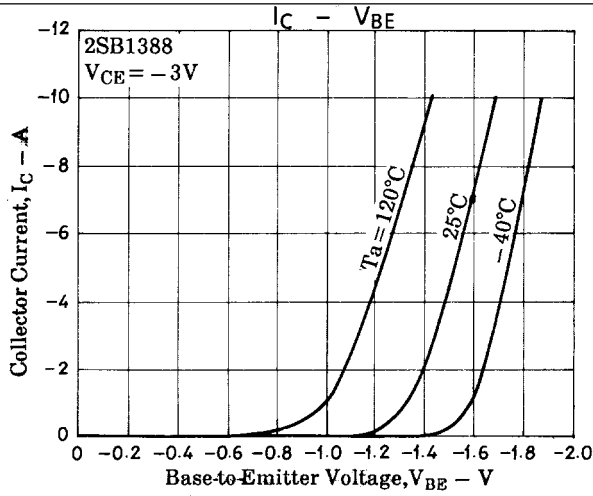
Electrical Connection



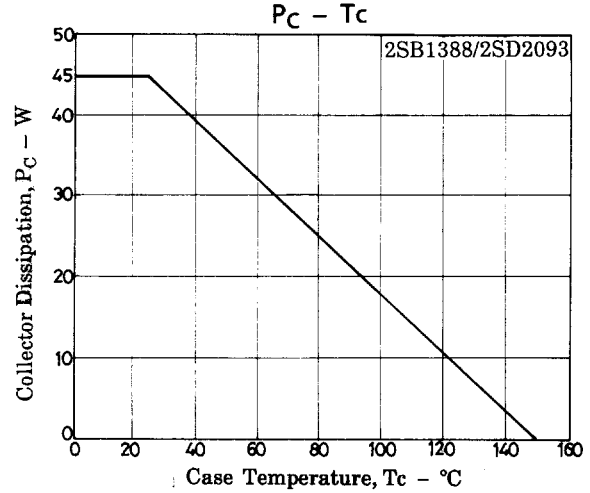
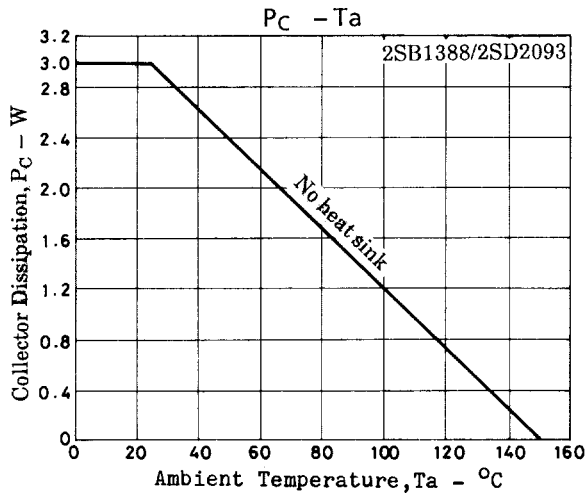
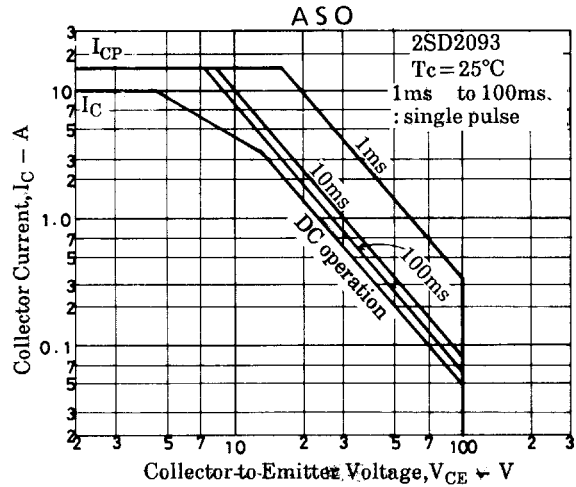
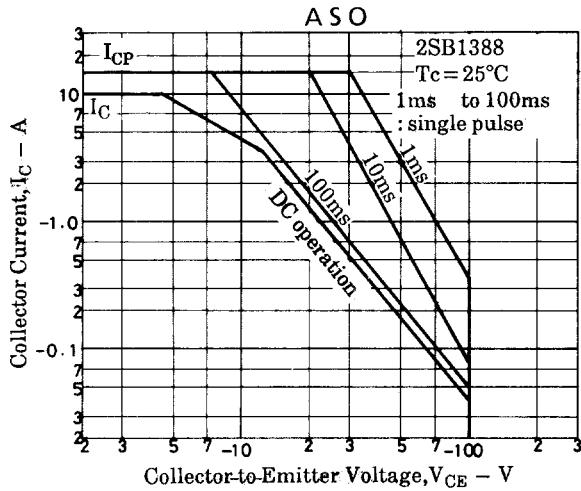
Unit (resistance : Ω , capacitance : F)



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