

# 2SB1228 / 2SD1830 — PNP / NPN Epitaxial Planar Silicon Darlington Transistors

## Driver Applications

### Applications

- Suitable for use in control of motor drivers, printer hammer drivers, relay drivers, and constant-voltage regulators.

### Features

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

### Specifications ( ) : 2SB1228

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V <sub>CB0</sub>		(-)110	V
Collector-to-Emitter Voltage	V <sub>CEO</sub>		(-)100	V
Emitter-to-Base Voltage	V <sub>EBO</sub>		(-)6	V
Collector Current	I <sub>C</sub>		(-)8	A
Collector Current (Pulse)	I <sub>CP</sub>		(-)12	A
Collector Dissipation	P <sub>C</sub>		2.0	W
		T <sub>c</sub> =25°C	30	W
Junction Temperature	T <sub>J</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I <sub>CB0</sub>	V <sub>CB</sub> =(-)80V, I <sub>E</sub> =0A			(-)0.1	mA
Emitter Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> =(-)5V, I <sub>C</sub> =0A			(-)3.0	mA
DC Current Gain	h <sub>FE</sub>	V <sub>CE</sub> =(-)3V, I <sub>C</sub> =(-)4A	1500	4000		
Gain-Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> =(-)5V, I <sub>C</sub> =(-)4A		20		MHz
Collector-to-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =(-)4A, I <sub>B</sub> =(-)8mA		(-1.0)0.9	(-)1.5	V
Base-to-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =(-)4A, I <sub>B</sub> =(-)8mA			(-)2.0	V
Collector-to-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> =(-)5mA, I <sub>E</sub> =0A	(-)110			V
Collector-to-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> =(-)50mA, R <sub>BE</sub> =∞	(-)100			V

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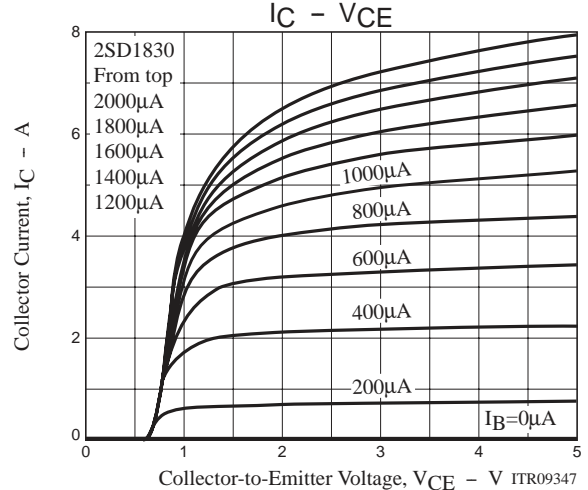
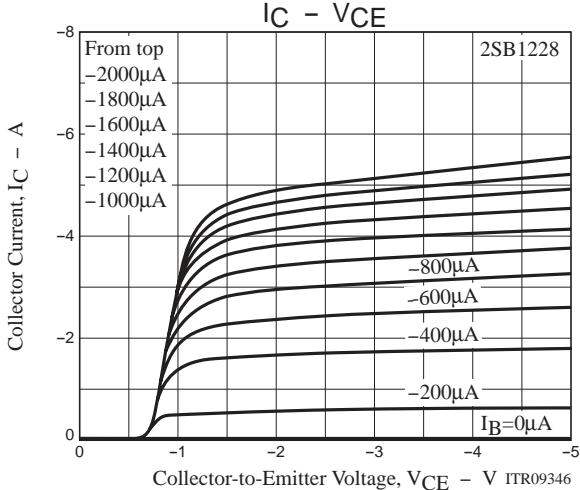
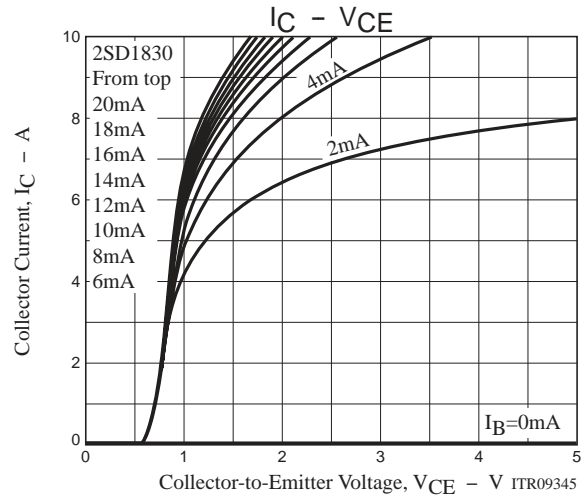
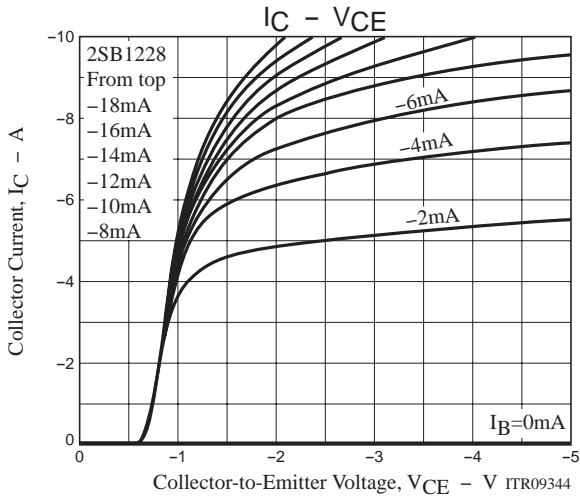
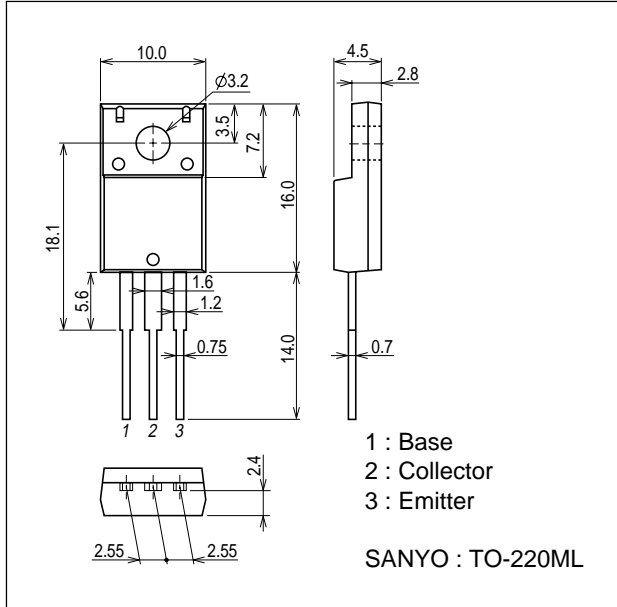
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-On Time	$t_{on}$	See specified Test Circuit.		(0.7)0.6		$\mu s$
Storage Time	$t_{stg}$	See specified Test Circuit.		(1.4)4.8		$\mu s$
Fall Time	$t_f$	See specified Test Circuit.		(1.5)1.6		$\mu s$

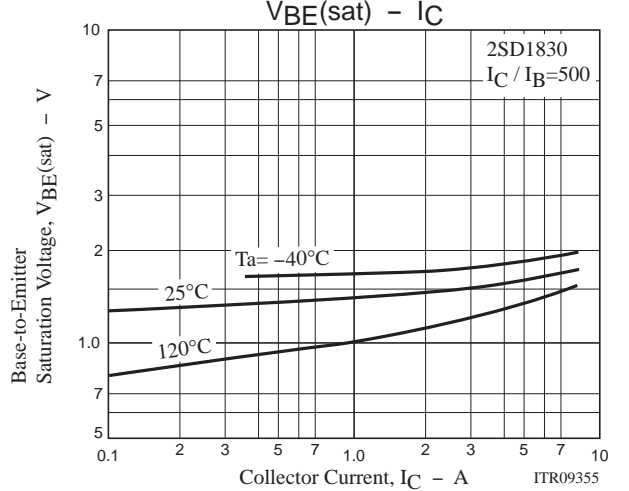
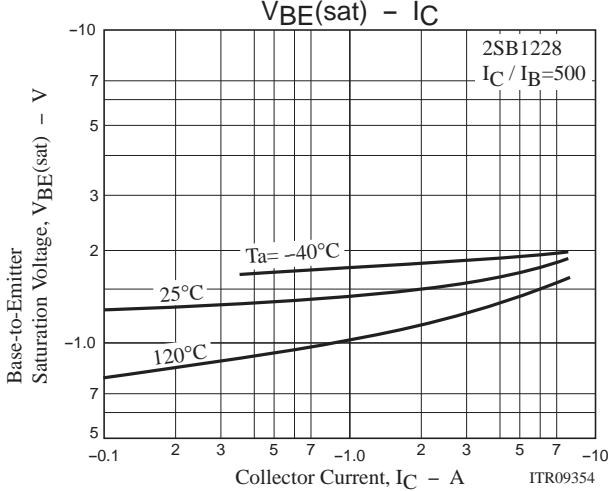
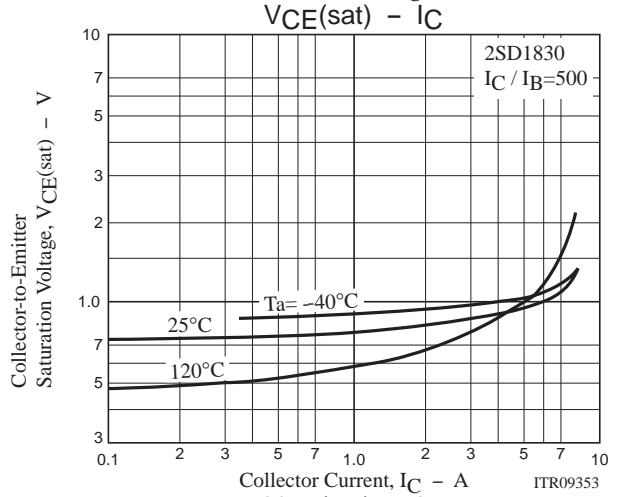
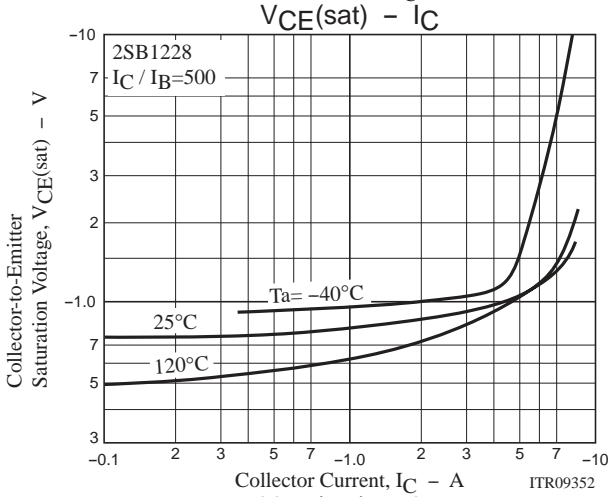
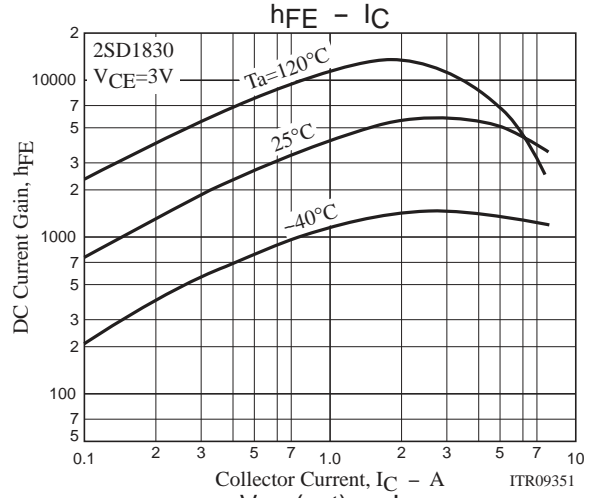
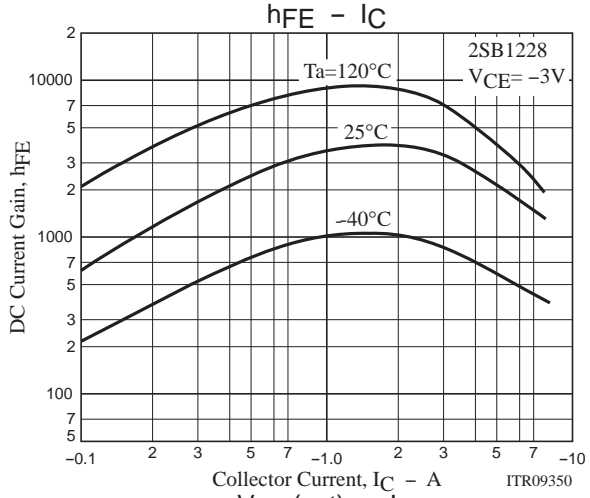
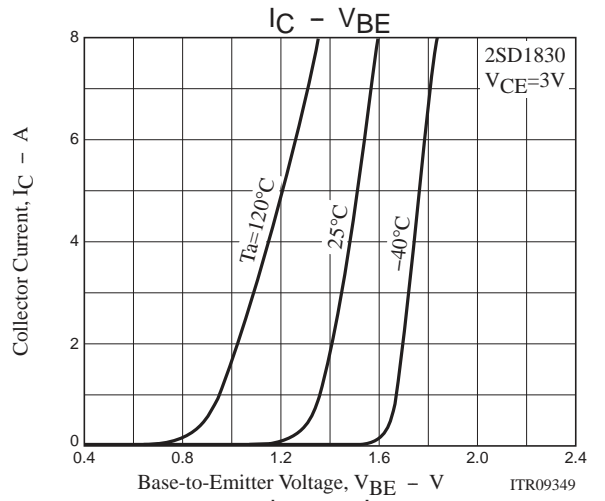
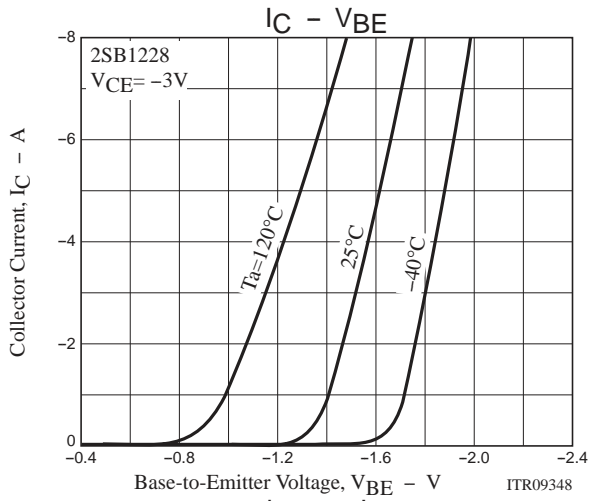
## Package Dimensions

unit : mm (typ)

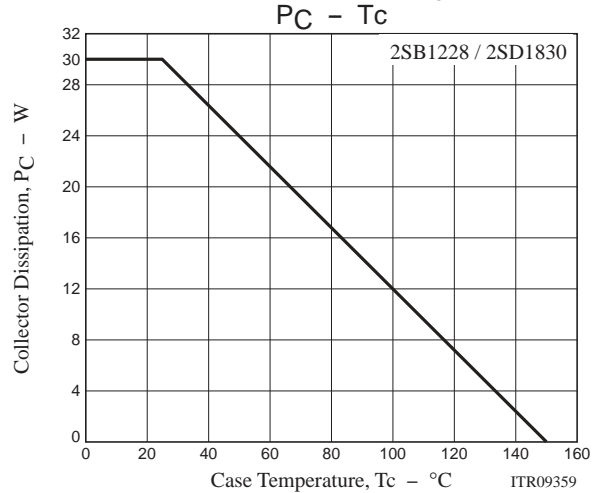
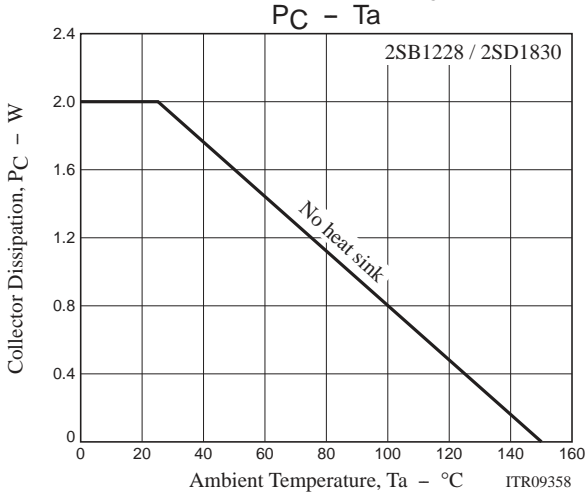
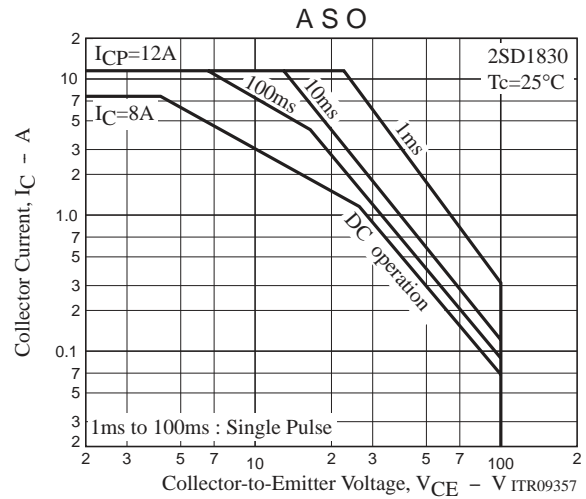
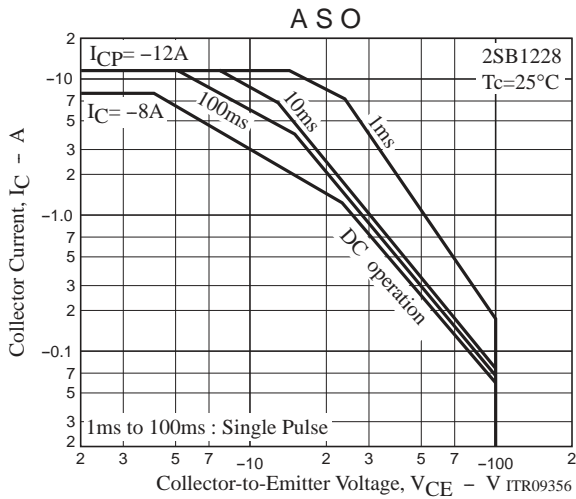
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