



2SB920 / 2SD1236

Large Current Switching Applications

Applications

- Large current switching of relay drivers, high-speed inverters, converters.

Features

- Low collector-to-emitter saturation voltage :
 $V_{CE(sat)} = -0.5V$ (PNP), $0.4V$ (NPN) max.
- Large current capacity.

Specifications

() : 2SB920

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CB0}		(-)120	V
Collector-to-Emitter Voltage	V_{CE0}		(-)80	V
Emitter-to-Base Voltage	V_{EB0}		(-)6	V
Collector Current	I_C		(-)5	A
Collector Current (Pulse)	I_{CP}		(-)9	A
Collector Dissipation	P_C		1.75	W
		$T_c = 25^\circ C$	30	W
Junction Temperature	T_J		150	$^\circ C$
Storage Temperature	T_{stg}		-55 to +150	$^\circ C$

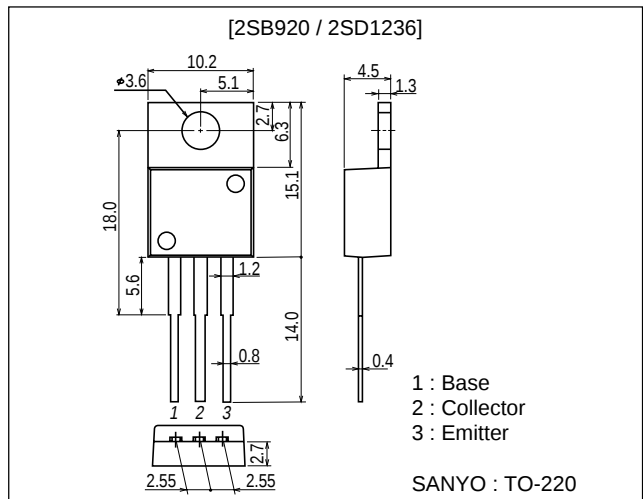
Electrical Characteristics at $T_a = 25^\circ C$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CB0}	$V_{CB} = (-)80V, I_E = 0$			(-)0.1	mA
Emitter Cutoff Current	I_{EB0}	$V_{EB} = (-)4V, I_C = 0$			(-)0.1	mA

Continued on next page.

Package Dimensions

unit : mm
2010C



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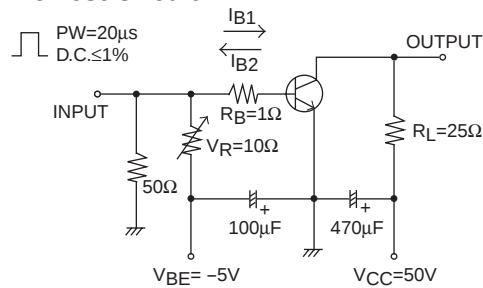
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
DC Current Gain	h_{FE1}^*	$V_{CE}=(-)2V, I_C=(-)1A$	70*		280*	
	h_{FE2}	$V_{CE}=(-)2V, I_C=(-)3A$	30			
Gain-Bandwidth Product	f_T	$V_{CE}=(-)5V, I_C=(-)1A$		20		MHz
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)3A, I_B=(-)0.3A$			$(-0.5)0.4$	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)1mA, I_E=0$	$(-)120$			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	$(-)80$			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)1mA, I_C=0$	$(-)6$			V
Turn-ON Time	t_{on}	See specified test circuit.		$(0.2)0.1$		μs
Storage Time	t_{stg}	See specified test circuit.		$(0.7)1.2$		μs
Fall Time	t_f	See specified test circuit.		$(0.2)0.4$		μs

*The 2SB920 / 2SD1236 are graded as follows by h_{FE} at 1A :

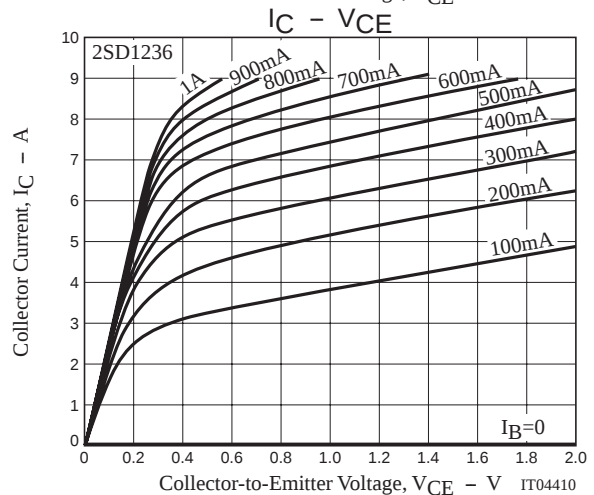
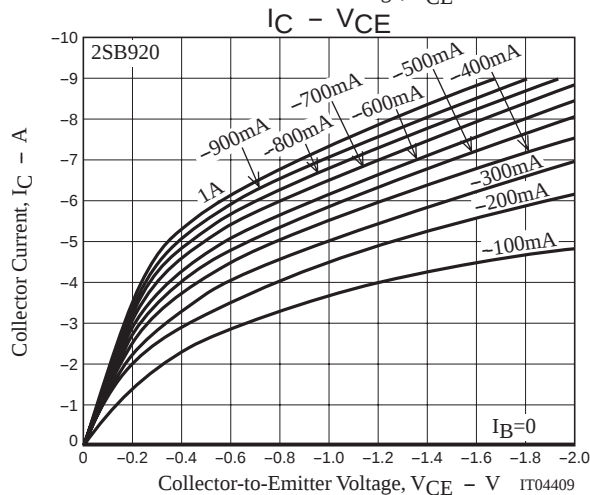
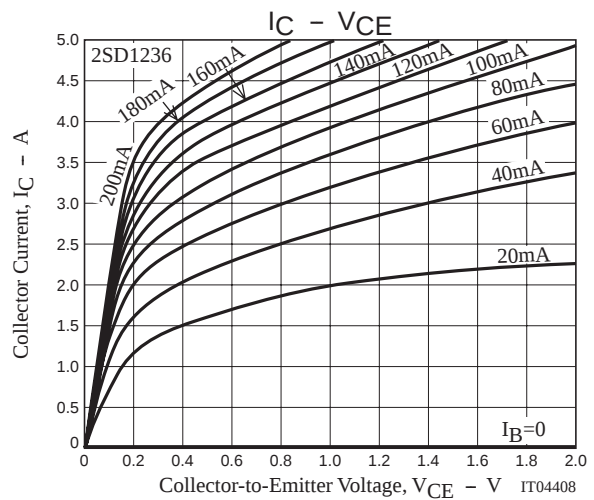
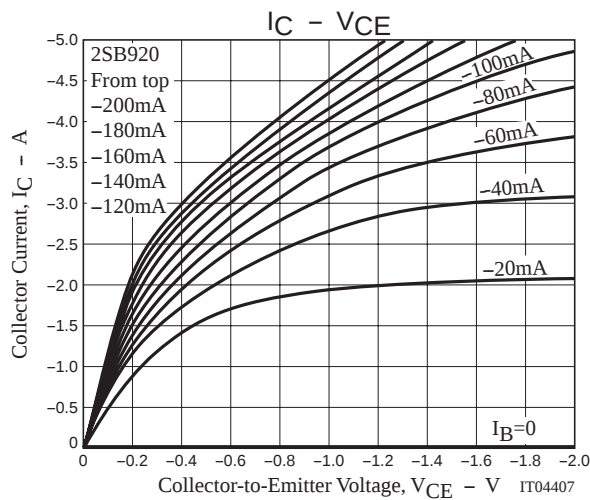
Rank	Q	R	S
h_{FE}	70 to 140	100 to 200	140 to 280

Swicthing Time Test Circuit

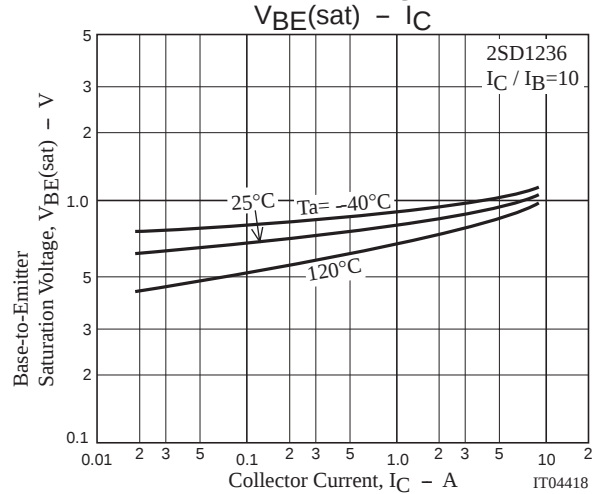
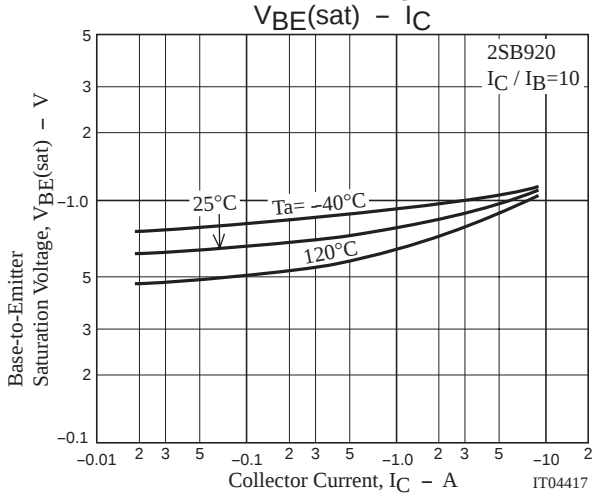
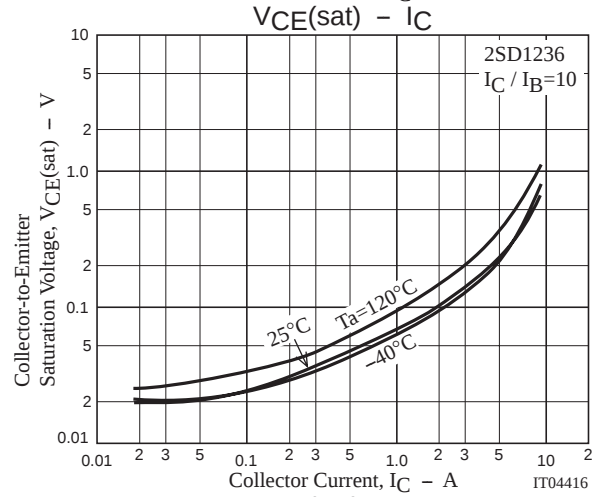
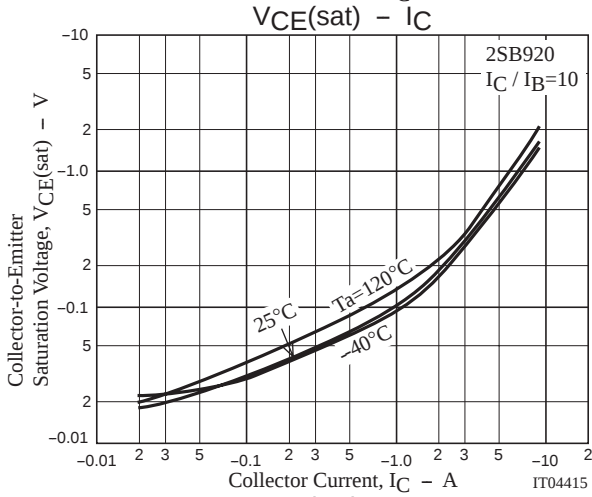
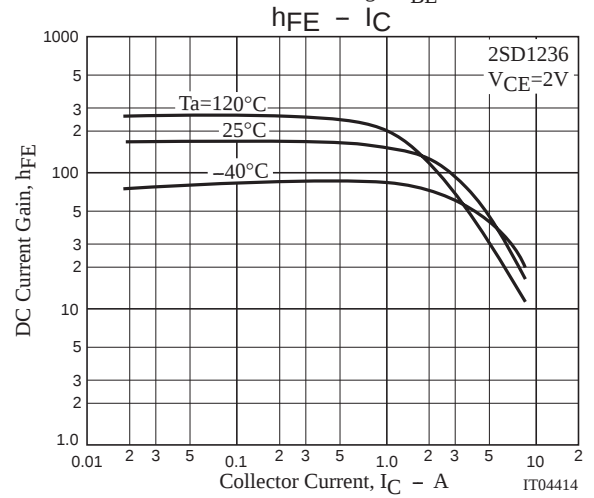
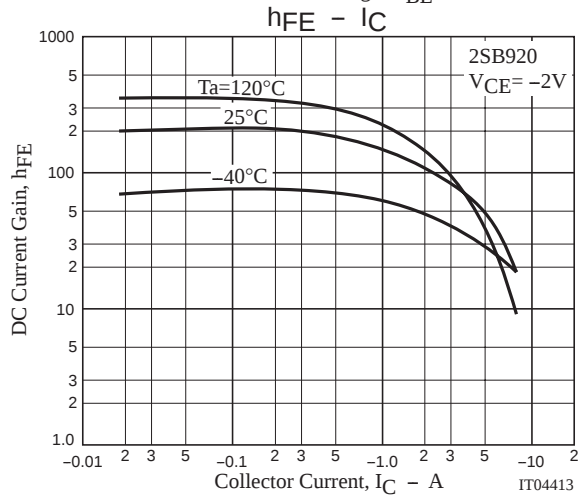
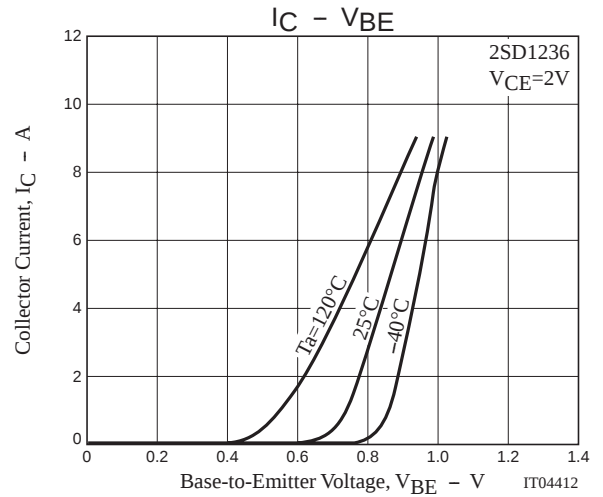
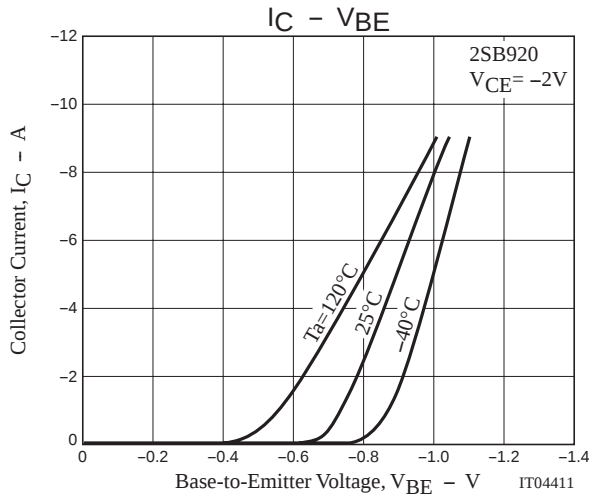


$$I_C = 10I_{B1} = -10I_{B2} = 2A$$

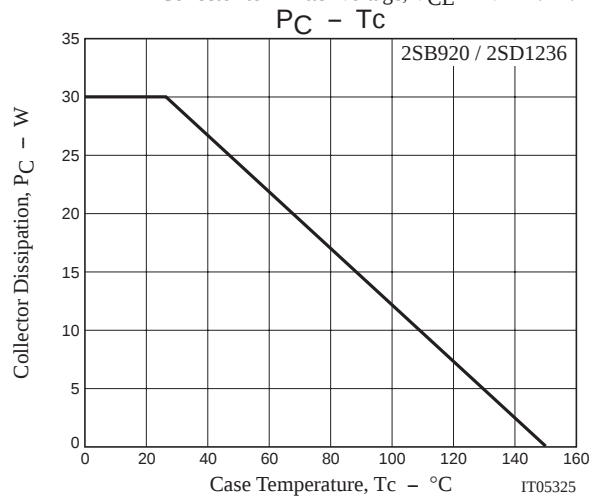
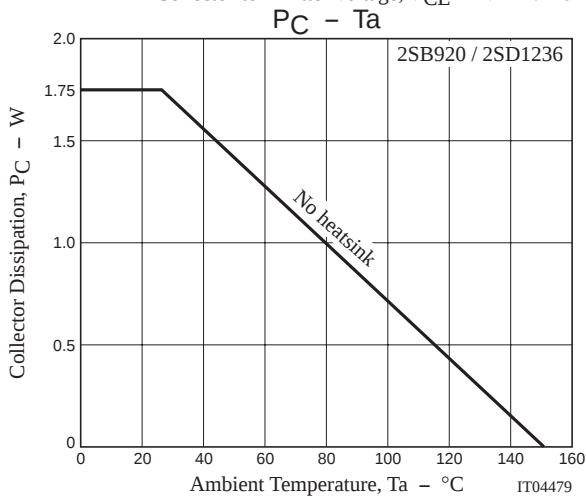
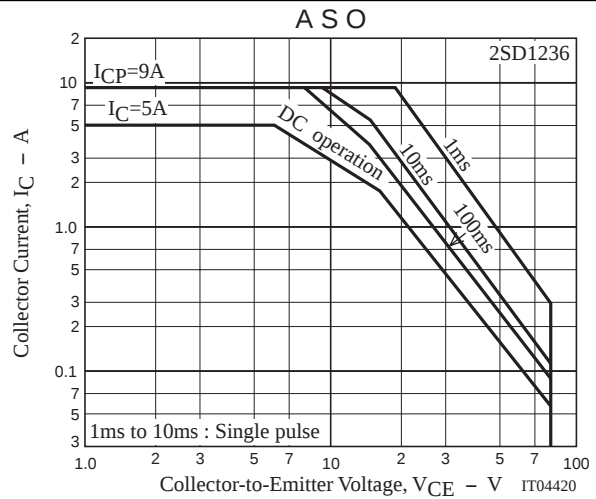
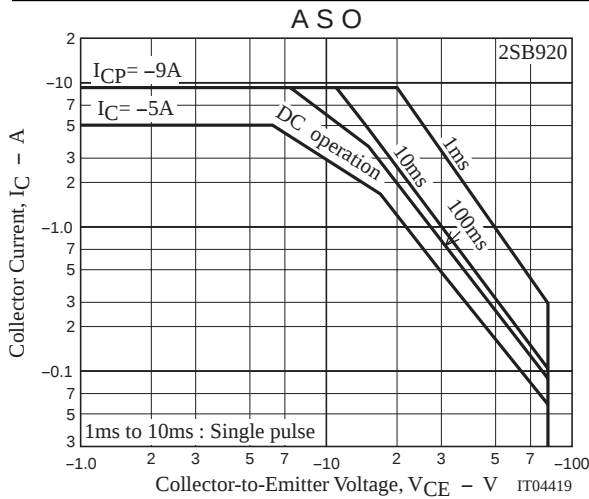
For PNP, the polarity is reversed.



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