



2SB1136/2SD1669

50V/12A Switching Applications

Applications

- Relay drivers, high-speed inverters, converters, and other general high-current switching applications.

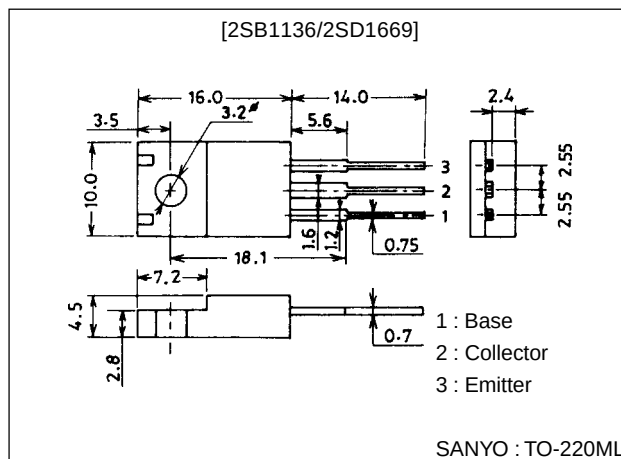
Features

- Low-saturation collector-to-emitter voltage : $V_{CE(sat)} = -0.5V$ (PNP), $0.4V$ (NPN) max.
- Wide ASO leading to high resistance to breakdown.
- Micaless package facilitating mounting.

Package Dimensions

unit:mm

2041A



() : 2SB1136

Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		$(-)-60$	V
Collector-to-Emitter Voltage	V_{CEO}		$(-)-50$	V
Emitter-to-Base Voltage	V_{EBO}		$(-)-6$	V
Collector Current	I_C		$(-)-12$	A
Collector Current (Pulse)	I_{CP}		$(-)-15$	A
Collector Dissipation	P_C		2	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}	$V_{CB}=(-)40V, I_E=0$			$(-)-0.1$	mA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=(-)4V, I_C=0$			$(-)-0.1$	mA
DC Current Gain	h_{FE1}	$V_{CE}=(-)2V, I_C=(-)1A$	70*		280*	
	h_{FE2}	$V_{CE}=(-)2V, I_C=(-)5A$	30			
Gain-Bandwidth Product	f_T	$V_{CE}=(-)5V, I_C=(-)1A$		10		MHz
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)6A, I_B=(-)0.6A$			$(-)-0.4$	V

* : The 2SB1136/2SD1669 are classified by 1A h_{FE} as follows :

70	Q	140	100	R	200	140	S	280
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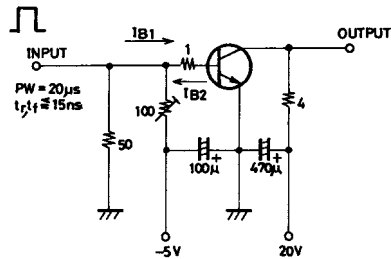
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92098HA (KT)/10996TS (KOTO) 8-8812/4277AT, TS No.2092-1/4

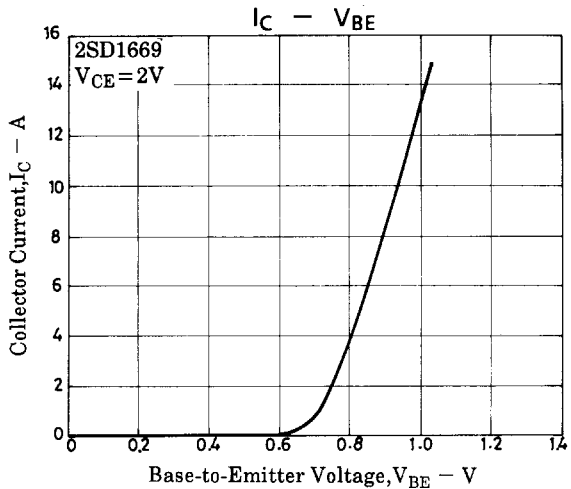
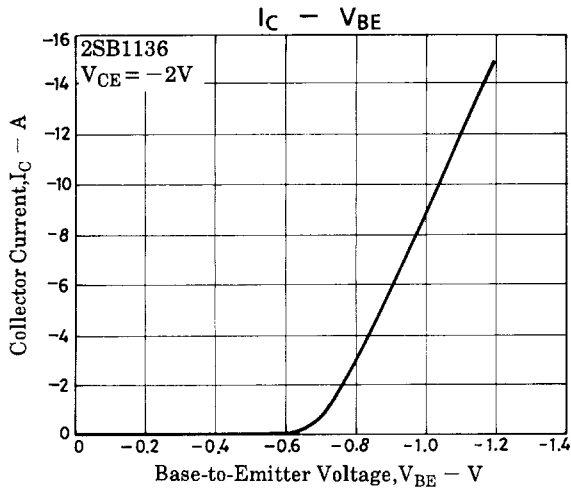
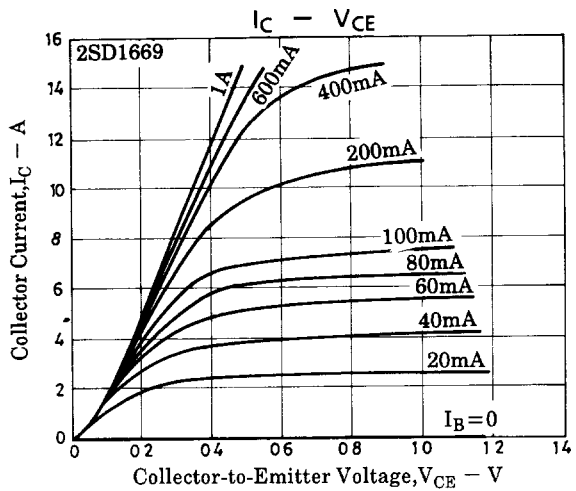
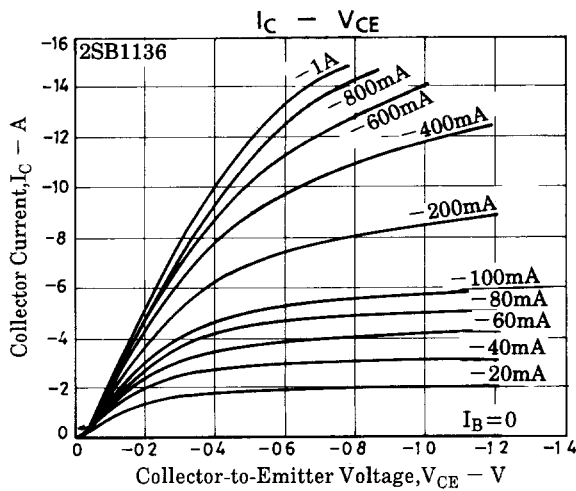
2SB1136/2SD1669

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)1mA, I_E=0$	(-)60			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-)50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)1mA, I_C=0$	(-)6			V
Rise Time	t_{on}	See specified Test Circuit.		(0.2)		μs
Storage Time	t_{stg}	See specified Test Circuit.		0.1		μs
				(0.4)		μs
				1.2		μs
Fall Time	t_f	See specified Test Circuit.		(0.1)		μs
				0.05		μs

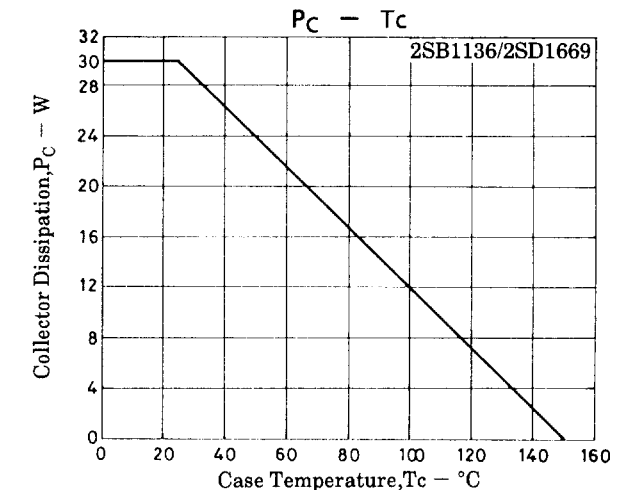
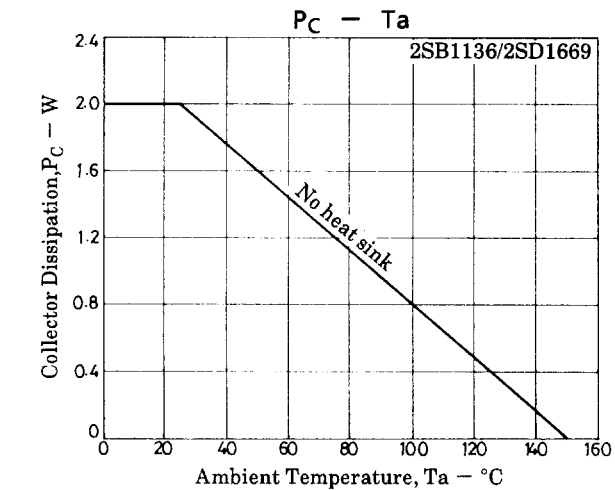
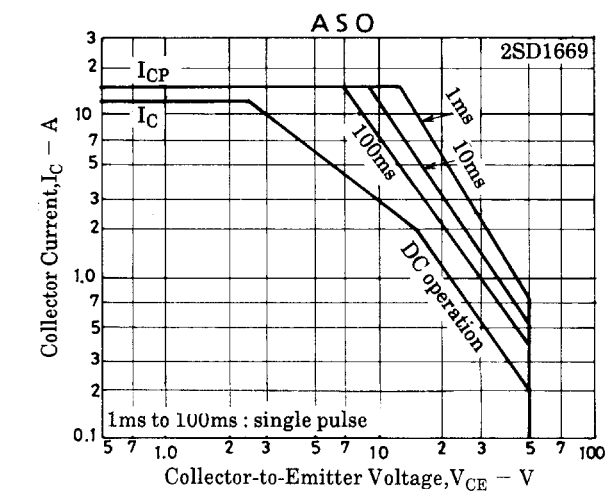
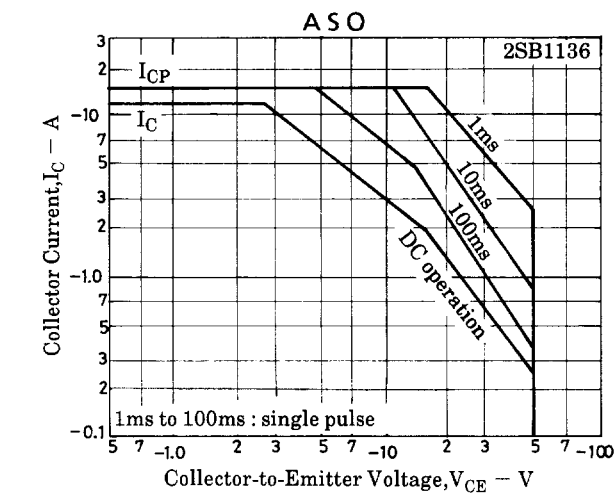
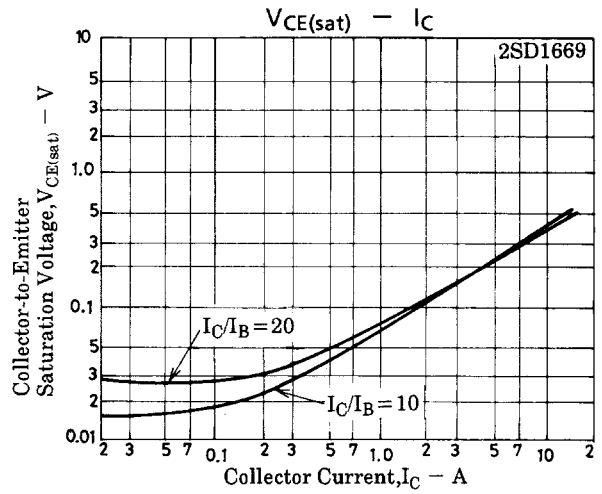
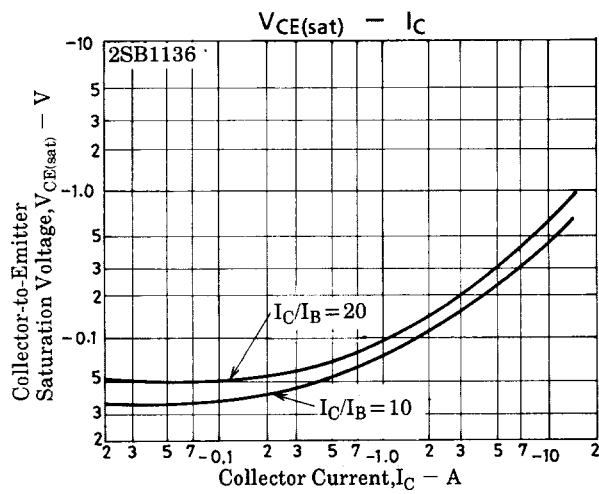
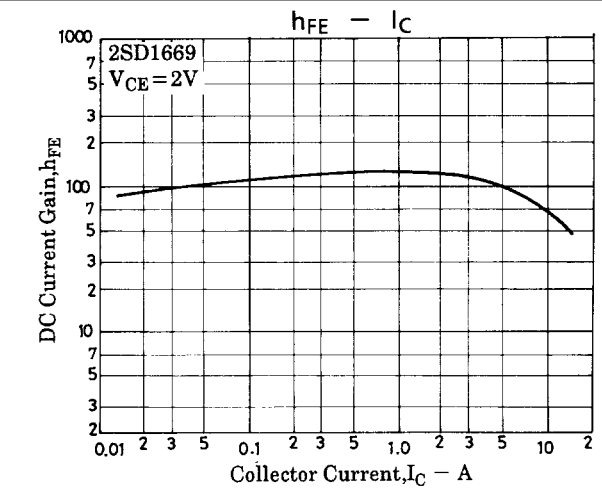
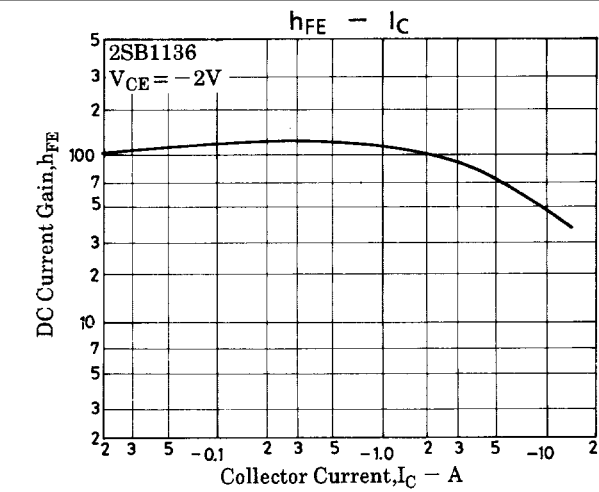
Switching Time Test Circuit



$10I_{B1} = -10I_{B2} = I_C = 2A$
(For PNP, the polarity is reversed.)
Unit (resistance : Ω , capacitance : F)



2SB1136/2SD1669



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