



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.

() : 2SB1136

Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CB0}		(-60)	V
Collector-to-Emitter Voltage	V_{CE0}		(-50)	V
Emitter-to-Base Voltage	V_{EB0}		(-6)	V
Collector Current	I_C		(-12)	A
Collector Current (Pulse)	I_{CP}		(-15)	A
Collector Dissipation	P_C		2	W
		$T_c=25^\circ C$	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}	$V_{CB} = (-40V), I_E = 0$			(-0.1)	mA
Emitter Cutoff Current	I_{EB0}	$V_{EB} = (-4V), I_C = 0$			(-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

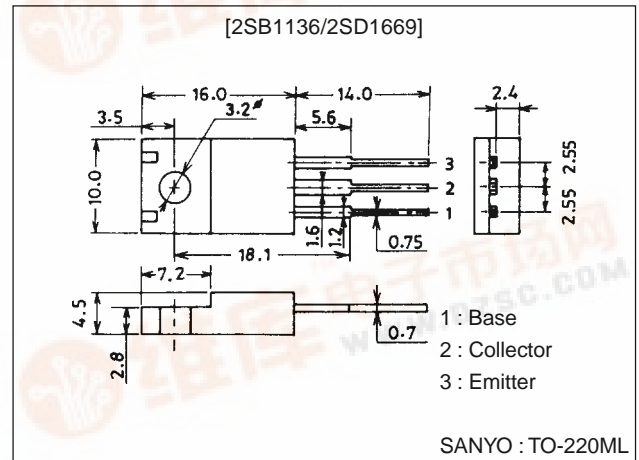
* : The 2SB1136/2SD1669 are classified by 1A h_{FE} as follows :

70	Q	140	100	R	200	140	S	280
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Package Dimensions

unit:mm

2041A



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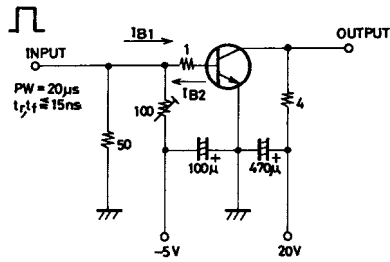
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = (-)1\text{mA}, I_E = 0$	(-)60			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = (-)1\text{mA}, R_{BE} = \infty$	(-)50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

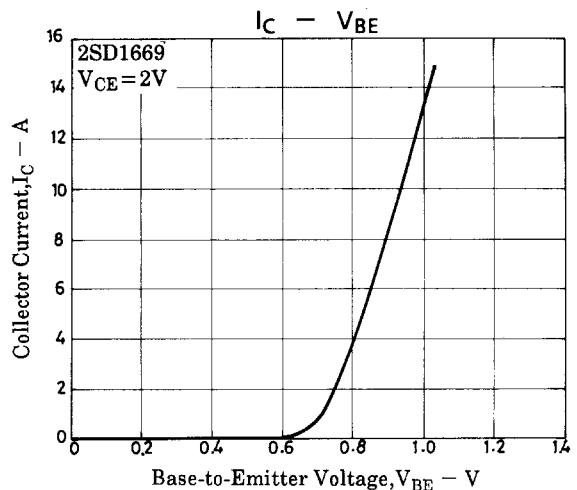
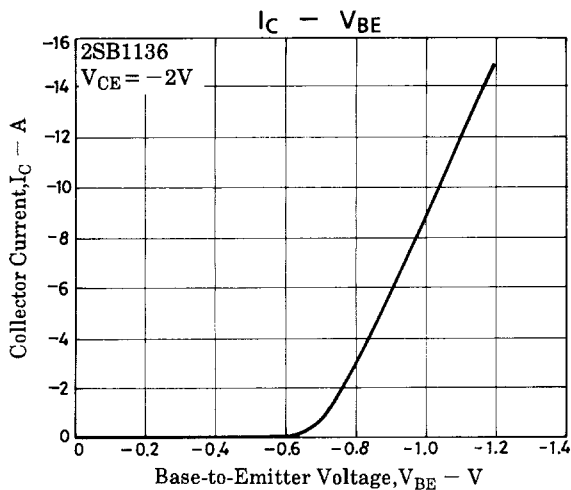
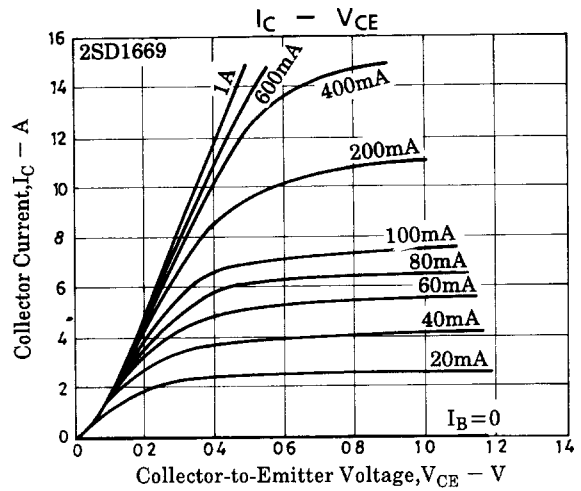
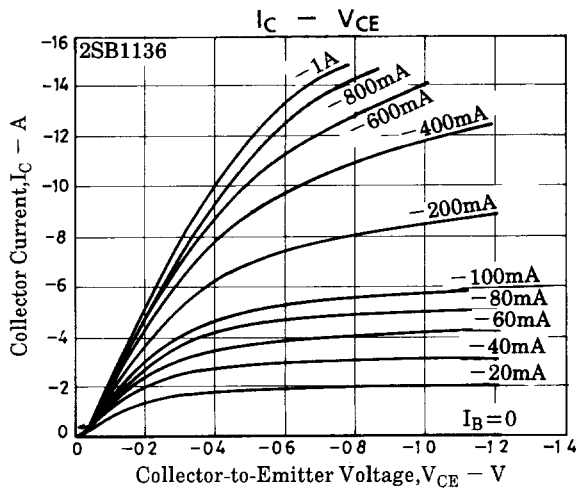
Switching Time Test Circuit



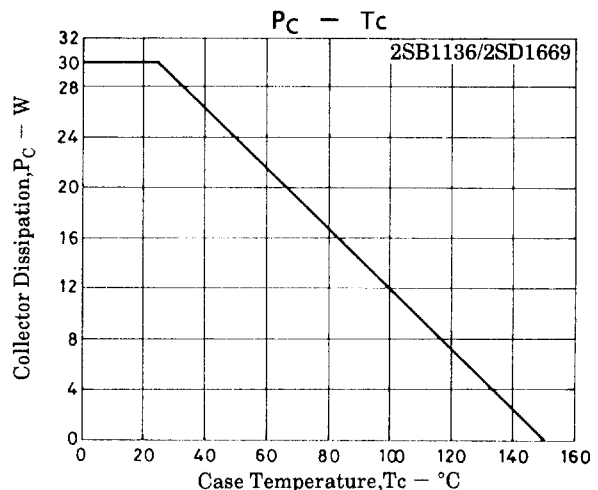
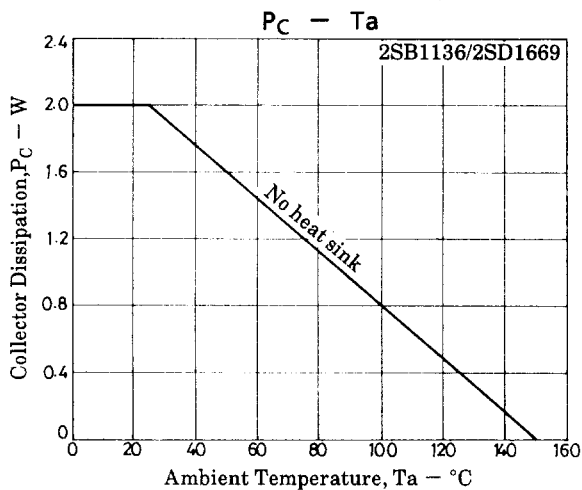
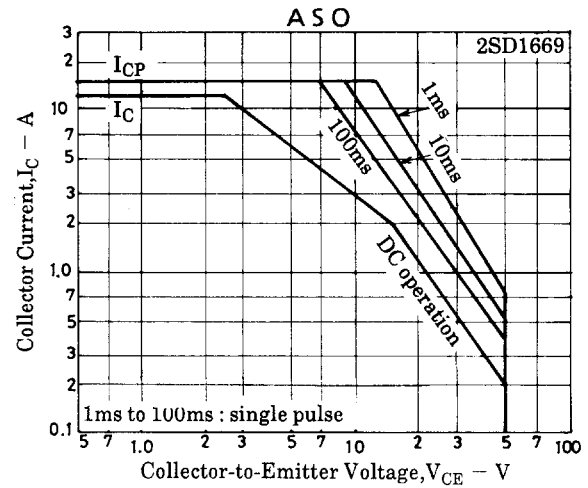
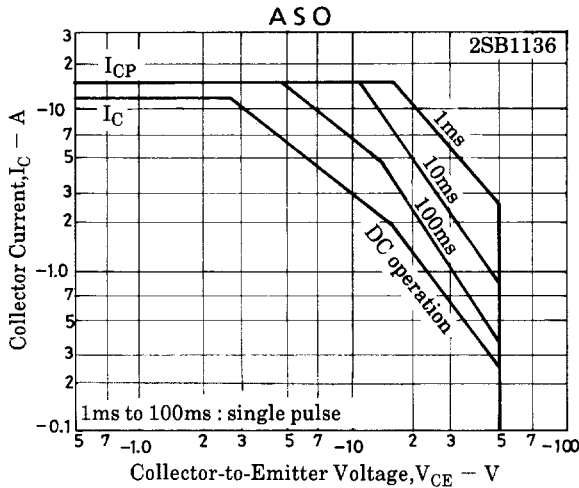
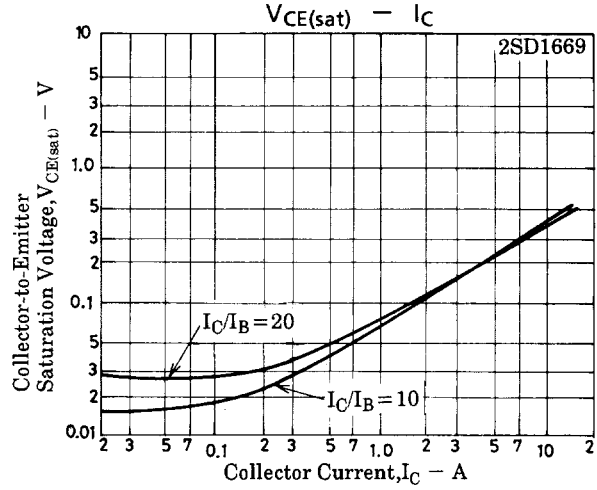
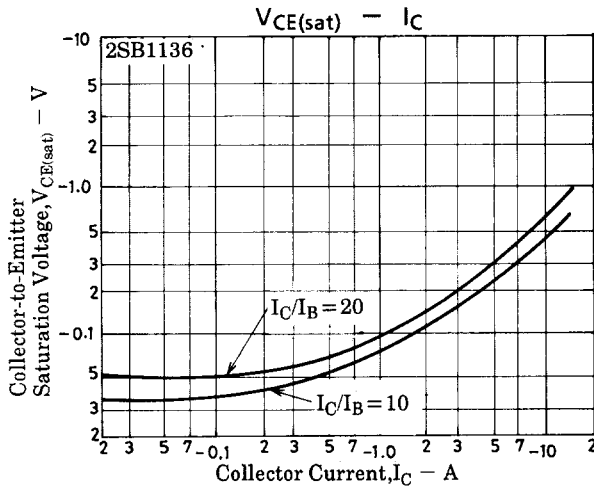
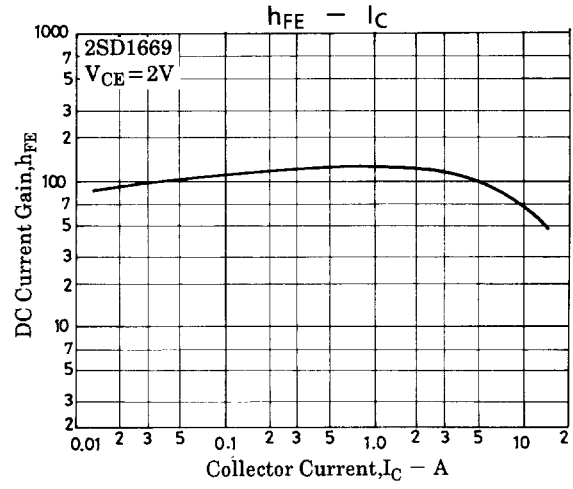
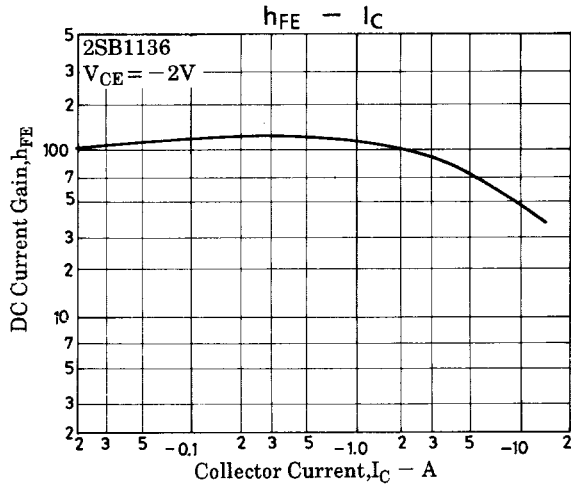
$$10I_{B1} = -10I_{B2} = I_C = 2A$$

(For PNP, the polarity is reversed.)

Unit (resistance : Ω , capacitance : F)



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