



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_{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
		$T_c = 25^\circ C$	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_{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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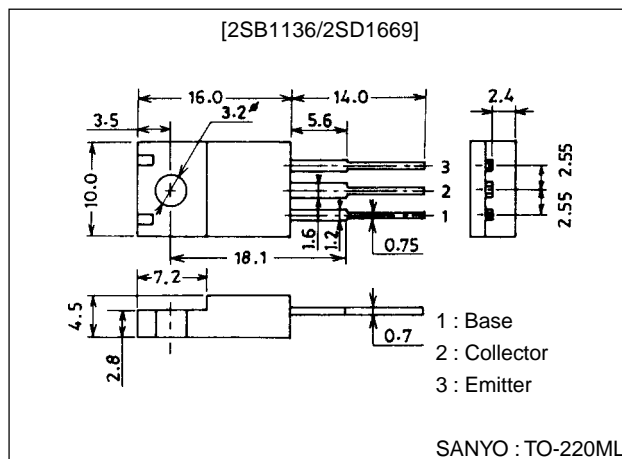
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Package Dimensions

unit:mm

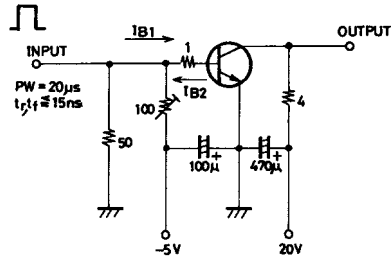
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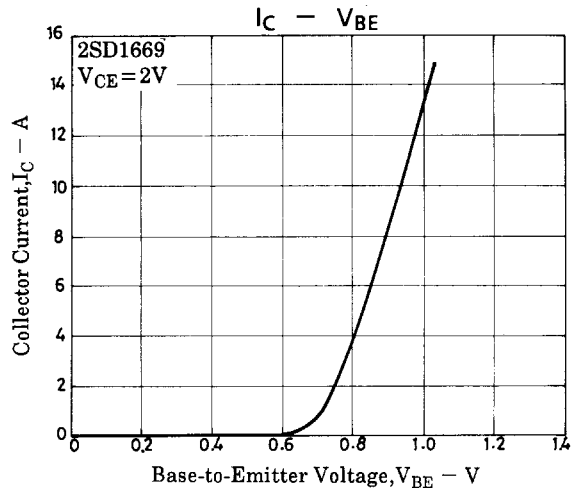
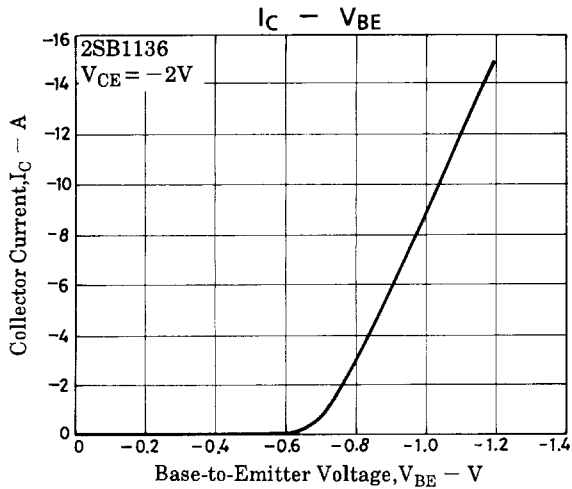
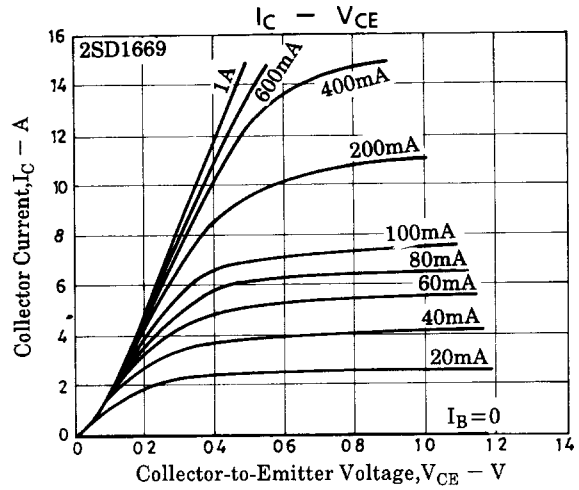
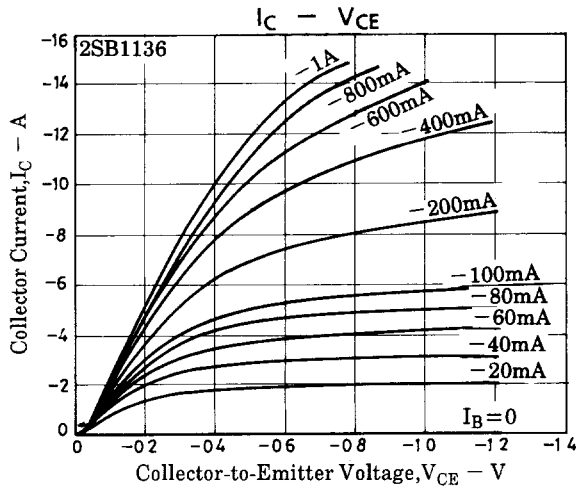
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = (-)1mA, I_E = 0$	(-)60			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = (-)1mA, R_{BE} = \infty$	(-)50			V
Emitter-to-Base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

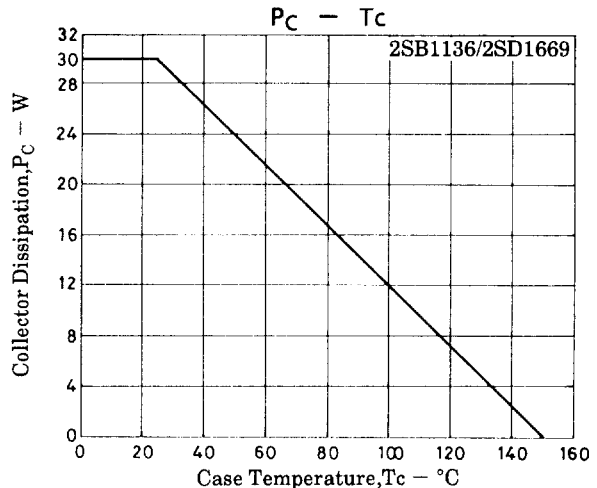
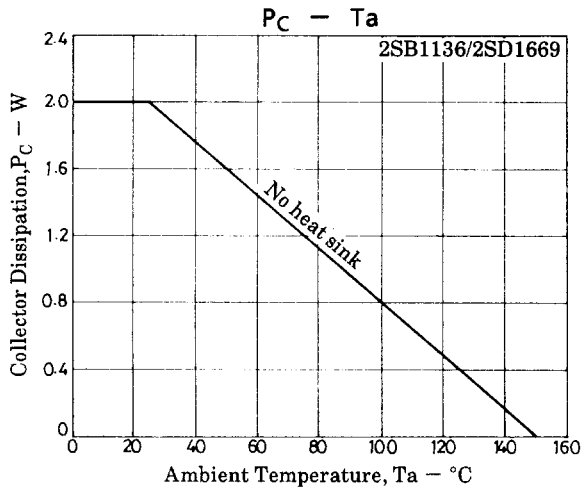
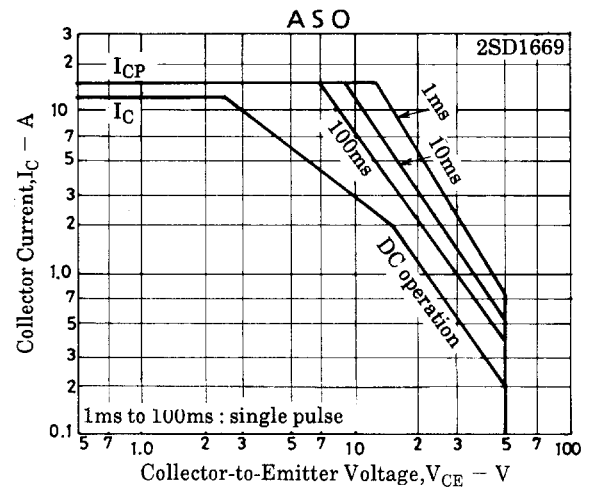
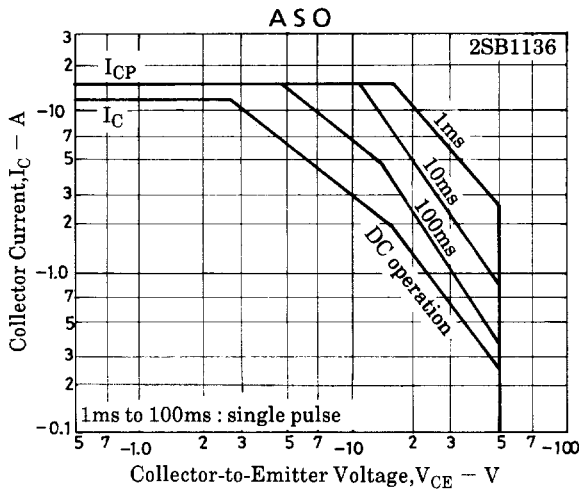
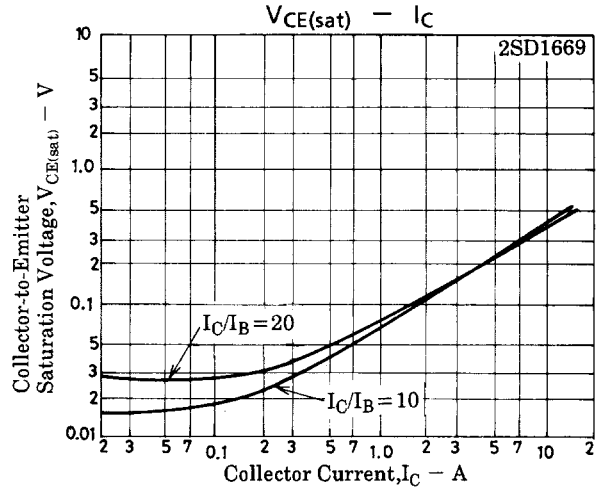
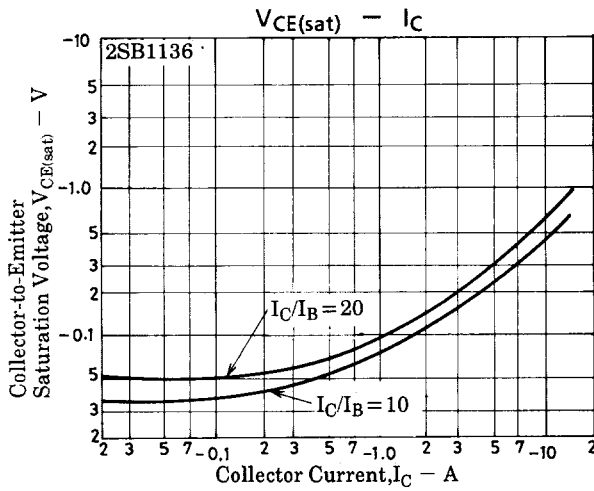
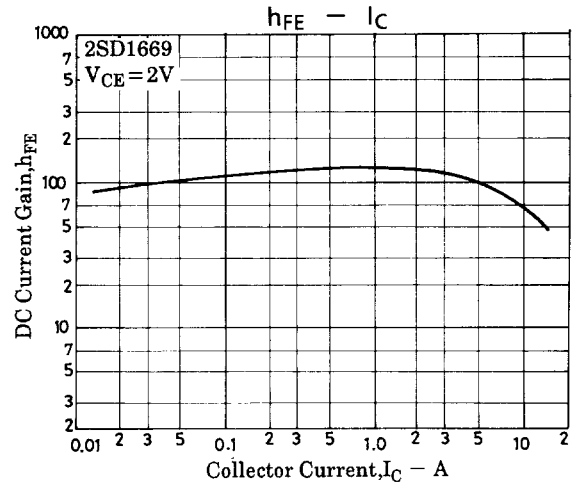
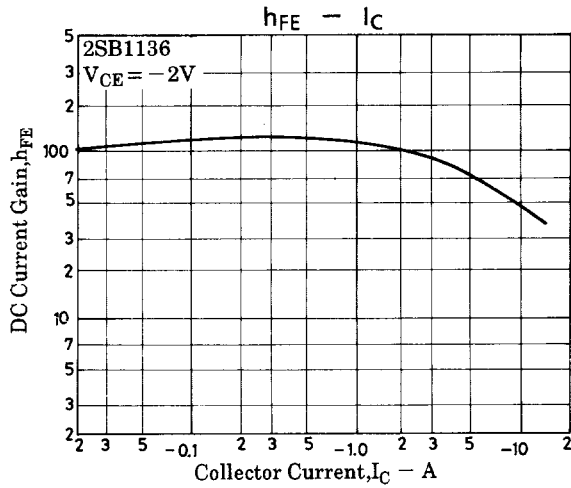
Switching Time Test Circuit



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



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