

<b>SANYO</b>	No.2094B	<b>2SB1135/2SD1668</b>
		PNP/NPN Epitaxial Planar Silicon Transistors <b>50V/7A Switching Applications</b>

**Applications**

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

**Features**

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

( ) : 2SB1135

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

			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	$I_C$	(-)7	A
Collector Current (Pulse)	$I_{CP}$	(-)12	A
Collector Dissipation	$P_C$	2	W
		30	W
Junction Temperature	$T_j$	150	$^\circ C$
Storage Temperature	$T_{stg}$	-55 to +150	$^\circ C$

$T_c = 25^\circ C$

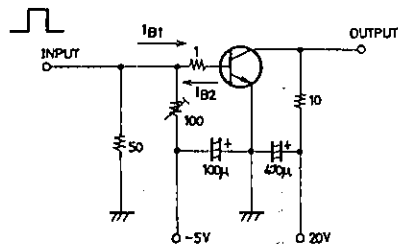
**Electrical Characteristics at  $T_a = 25^\circ C$**

			min	typ	max	unit
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	$h_{FE(1)}$	$V_{CE} = (-)2V, I_C = (-)1A$	70※		280※	
	$h_{FE(2)}$	$V_{CE} = (-)2V, I_C = (-)5A$	30			
Gain Bandwidth Product	$f_T$	$V_{CE} = (-)5V, I_C = (-)1A$		10		MHz
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C = (-)4A, I_B = (-)0.4A$			(-)0.4	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C = (-)1mA, I_E = 0$	(-)60			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C = (-)1mA, R_{BE} = \infty$	(-)50			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E = (-)1mA, I_C = 0$	(-)6			V
Rise Time	$t_{on}$	See specified Test Circuit.		0.2		$\mu s$
Storage Time	$t_{stg}$	"	(0.7)0.9			$\mu s$
Fall Time	$t_f$	"	(0.1)0.3			$\mu s$

※ : The 2SB1135/2SD1668 are classified by 1A  $h_{FE}$  as follows :

70 Q 140	100 R 200	140 S 280
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**Switching Time Test Circuit**



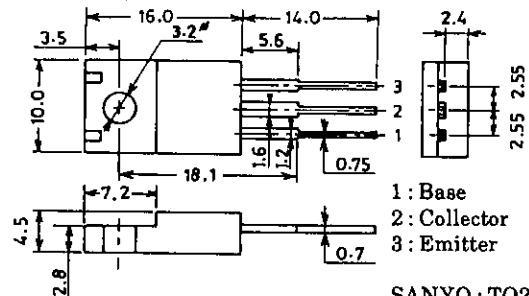
$10I_{B1} = -10I_{B2} = I_C = 2A$

For PNP, the polarity is reversed.

Unit (Resistance :  $\Omega$ , Capacitance : F)

**Package Dimensions 2041A**

(unit : mm)

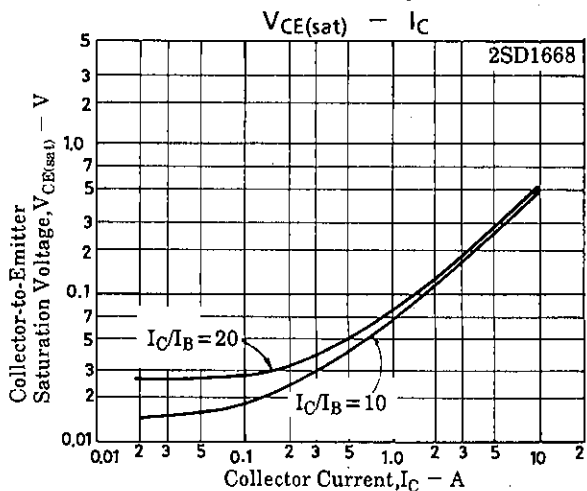
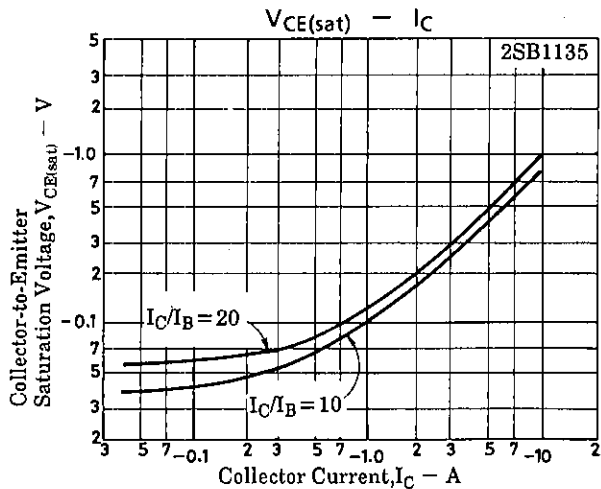
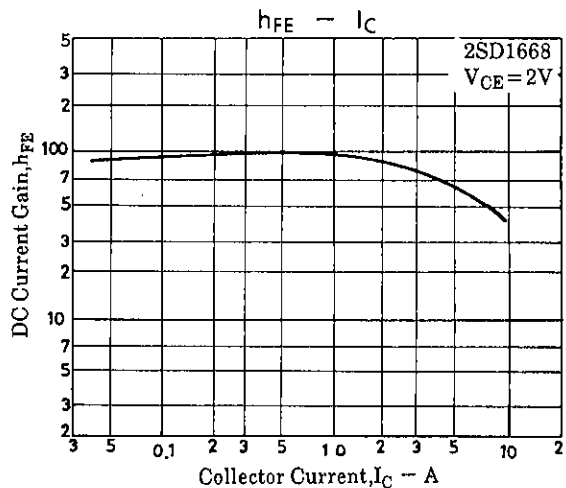
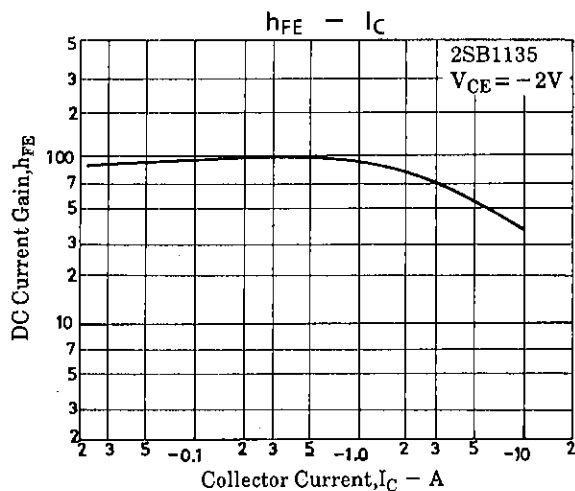
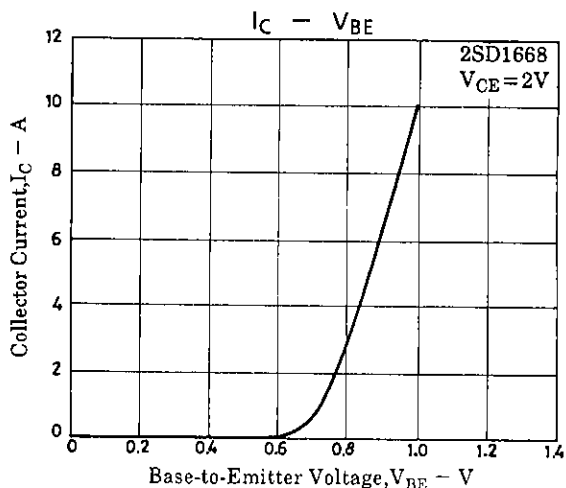
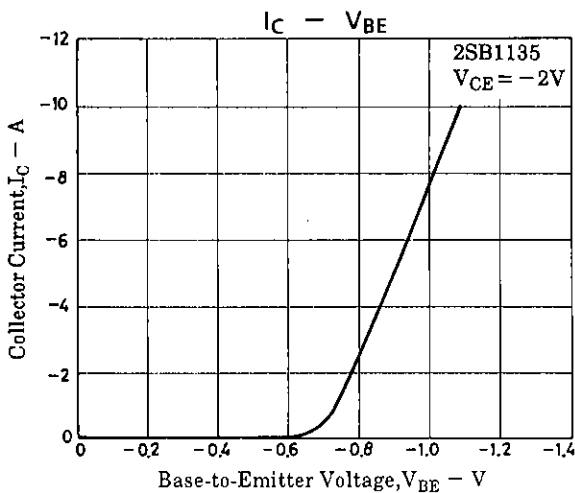
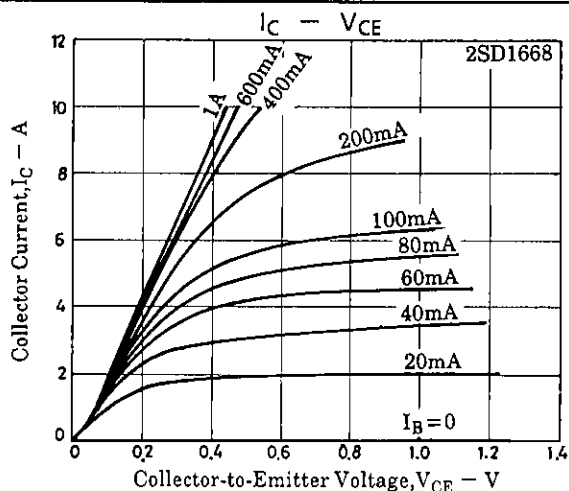
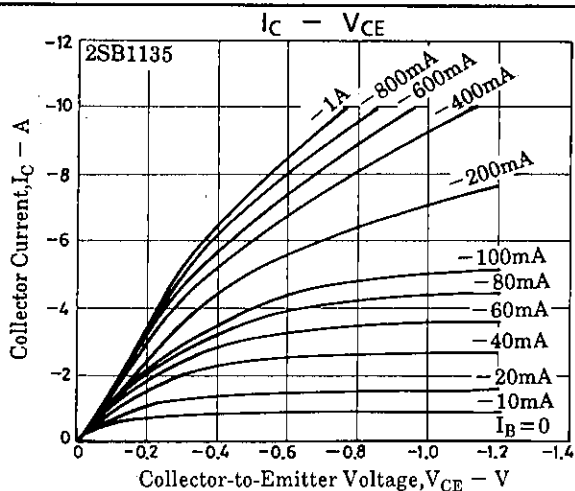


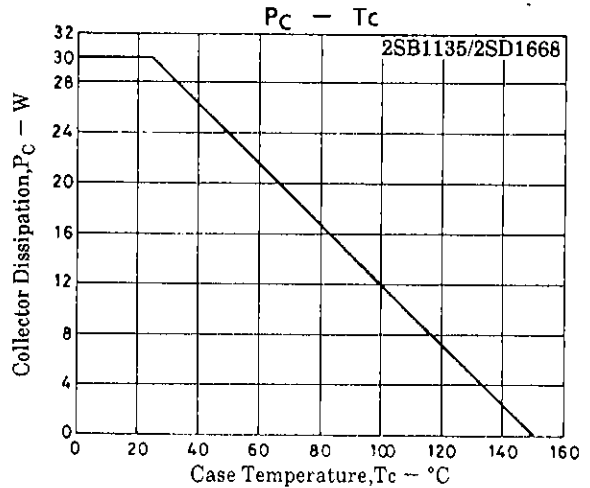
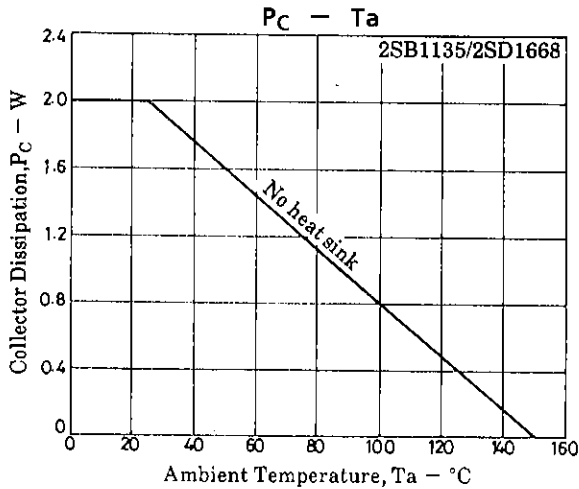
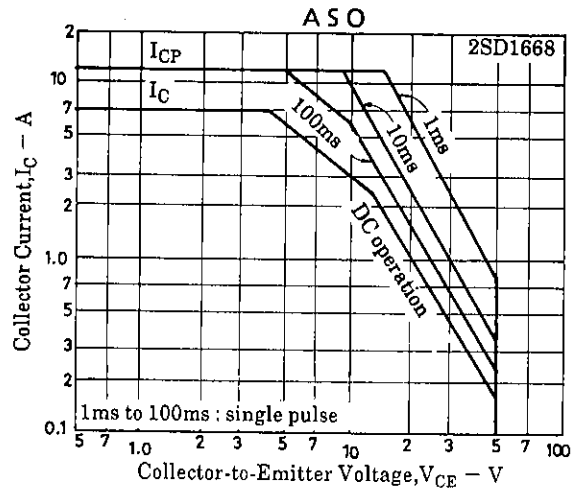
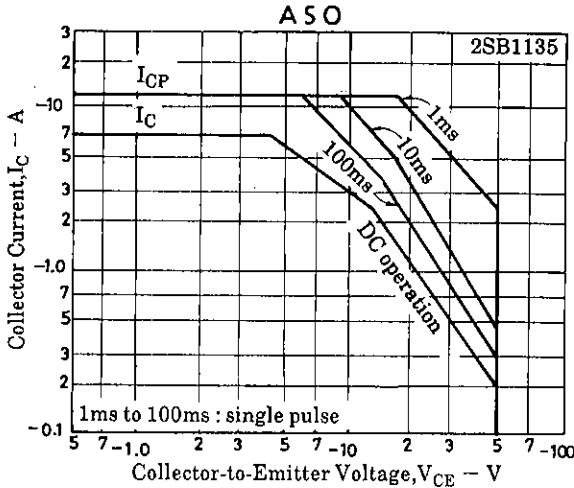
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