



SANYO Semiconductors

## DATA SHEET

2SB817/2SD1047

PNP Epitaxial Planar Silicon Transistors  
NPN Triple Diffused Planar Silicon Transistors

140V/12A AF 60W Output Applications

## Features

- Capable of being mounted easily because of one-point fixing type plastic molded package (Interchangeable with TO-3).
- Wide ASO because of on-chip ballast resistance.
- Good dependence of  $f_T$  on current and excellent high frequency response.

The descriptions in parentheses are for the 2SB817 only : other descriptions than those in parentheses are common to the 2SB817 and 2SD1047.

## Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CB0}$		( $\rightarrow$ )160	V
Collector-to-Emitter Voltage	$V_{CEO}$		( $\rightarrow$ )140	V
Emitter-to-Base Voltage	$V_{EBO}$		( $\rightarrow$ )6	V
Collector Current	$I_C$		( $\rightarrow$ )12	A
Collector Current (Pulse)	$I_{CP}$		( $\rightarrow$ )15	A
Collector Dissipation	$P_C$	$T_c=25^\circ\text{C}$	100	W
Junction Temperature	$T_J$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-40 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	$I_{CBO}$	$V_{CB}=(\rightarrow)80\text{V}, I_E=0$			( $\rightarrow$ )0.1	mA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=(\rightarrow)4\text{V}, I_C=0$			( $\rightarrow$ )0.1	mA
DC Current Gain	$h_{FE1}$	$V_{CE}=(\rightarrow)5\text{V}, I_C=(\rightarrow)1\text{A}$	60*		200*	
	$h_{FE2}$	$V_{CE}=(\rightarrow)5\text{V}, I_C=(\rightarrow)6\text{A}$	20			
Gain-Bandwidth Product	$f_T$	$V_{CE}=(\rightarrow)5\text{V}, I_C=(\rightarrow)1\text{A}$		15		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=(\rightarrow)10\text{V}, f=1\text{MHz}$		(300)		pF
				210		pF

\* : The 2SB817/2SD1047 are classified by 1A  $h_{FE}$  as follows :

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Rank	D	E
$h_{FE}$	60 to 120	100 to 200

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# 2SB817/2SD1047

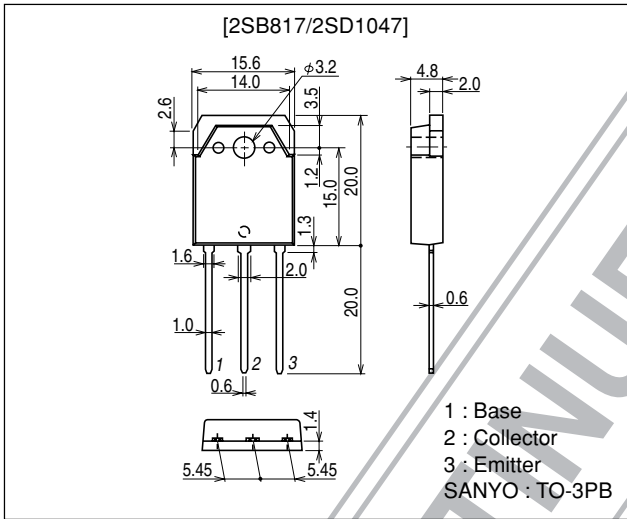
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Base-to-Emitter Voltage	$V_{BE}$	$V_{CE}=(-)5V, I_C=(-)1A$			1.5	V
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)5A, I_B=(-)0.5A$		0.6 (1.1)	2.5	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)5mA, I_E=0$	$(-)160$			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)5mA, R_{BE}=\infty$	$(-)140$			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)50mA, R_{BE}=\infty$	$(-)140$			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)5mA, I_C=0$	$(-)6$			V
Turn-ON Time	$t_{on}$	See specified Test Circuit		(0.25) 0.26		s
Fall Time	$t_f$	See specified Test Circuit		(0.53)		s
Storage Time	$t_{stg}$	See specified Test Circuit		(1.61)		s
				6.88		s

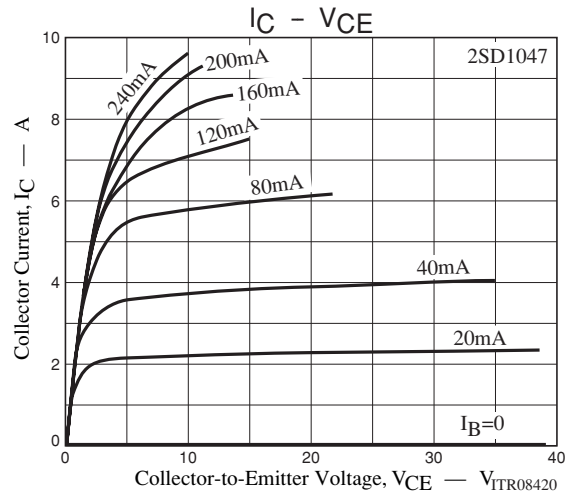
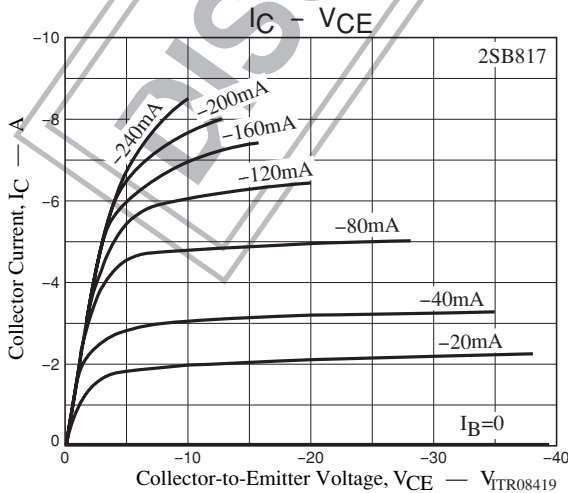
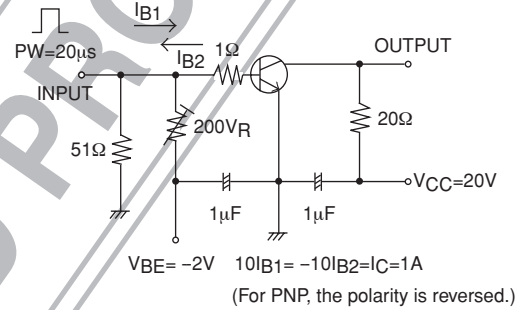
## Package Dimensions

unit:mm

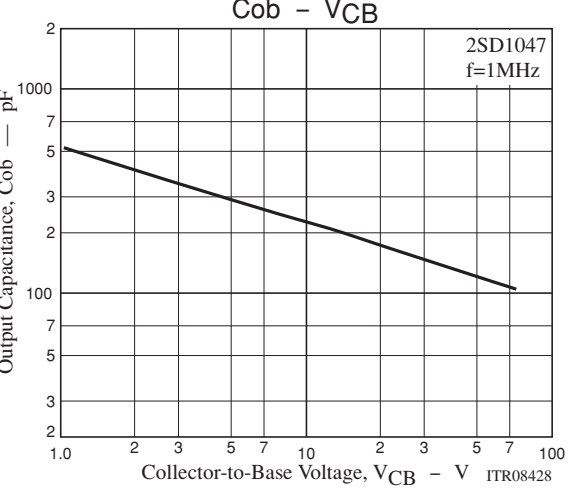
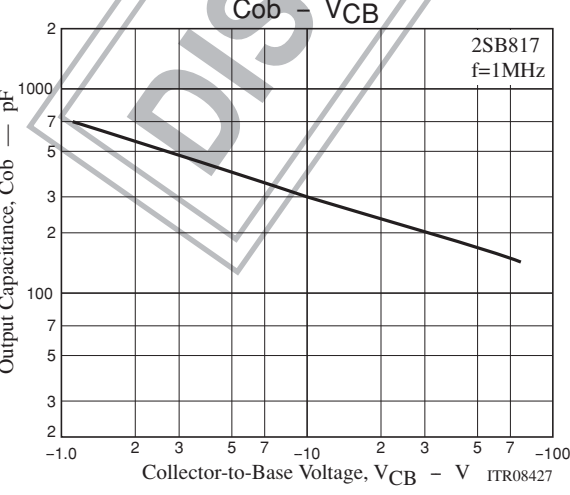
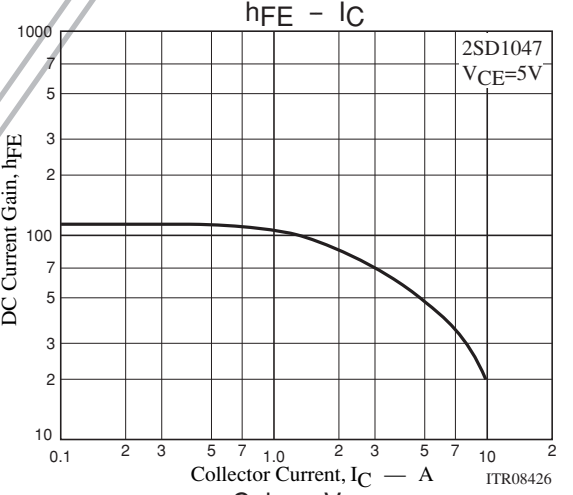
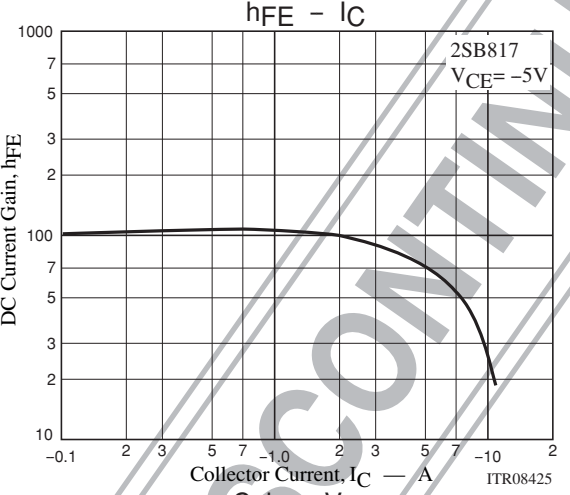
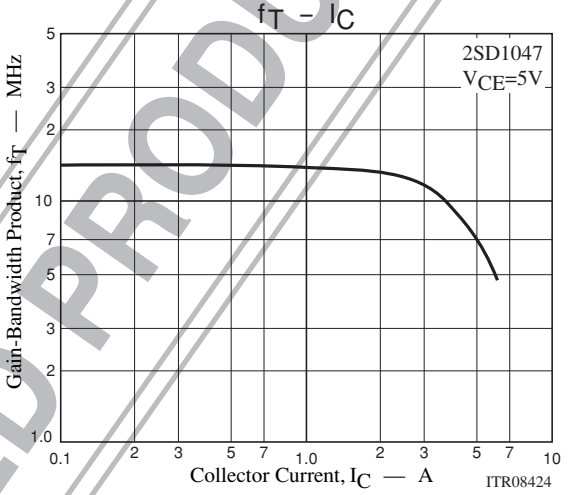
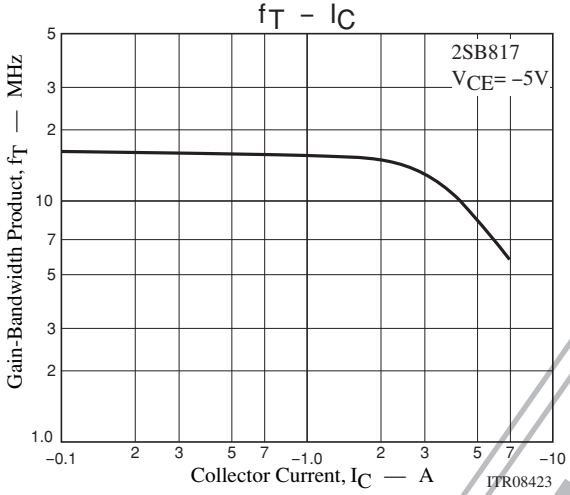
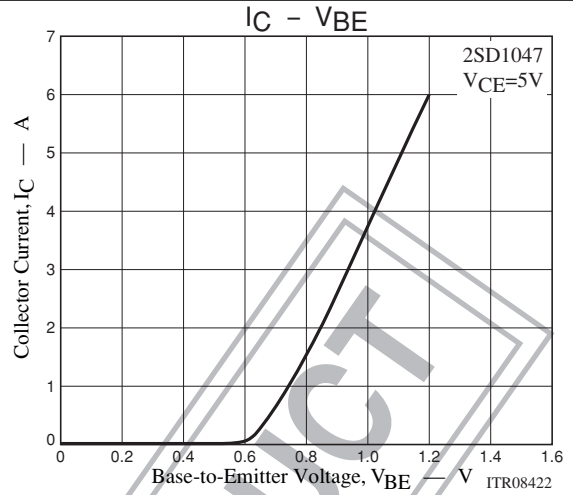
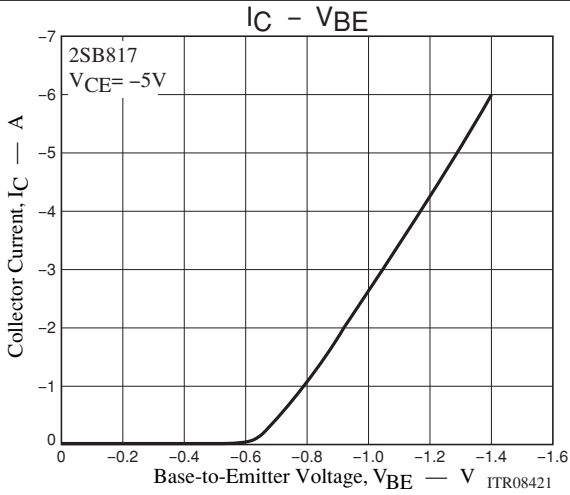
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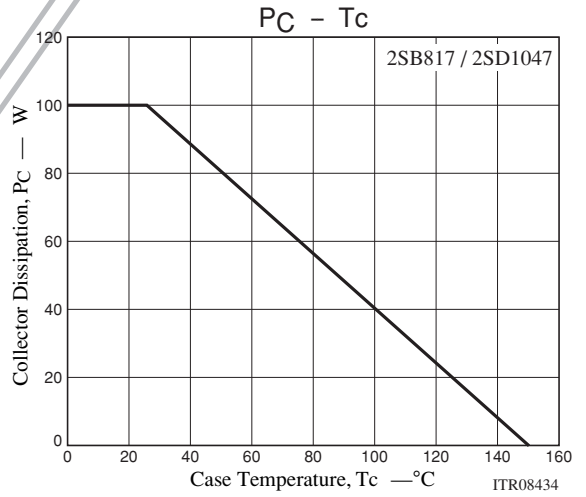
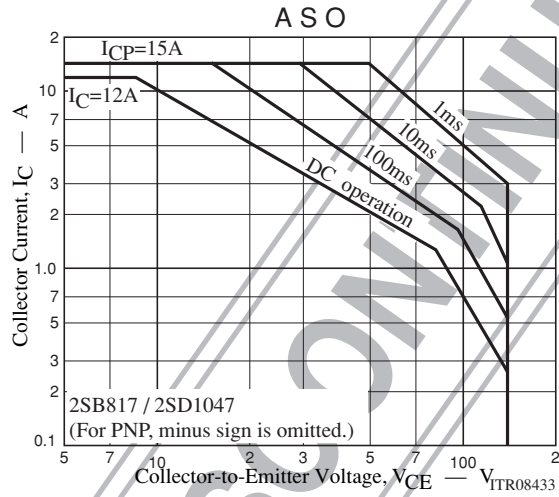
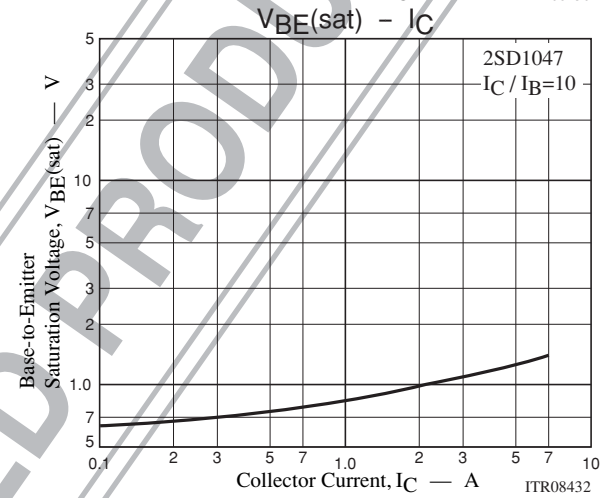
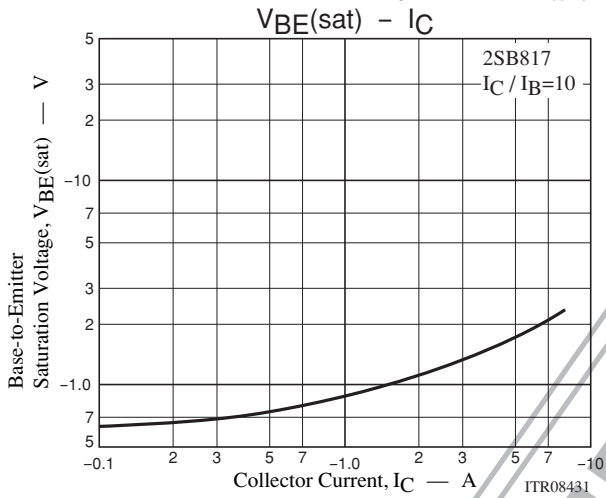
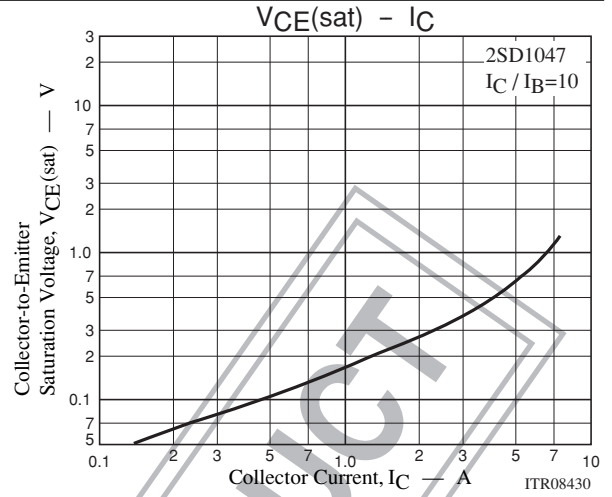
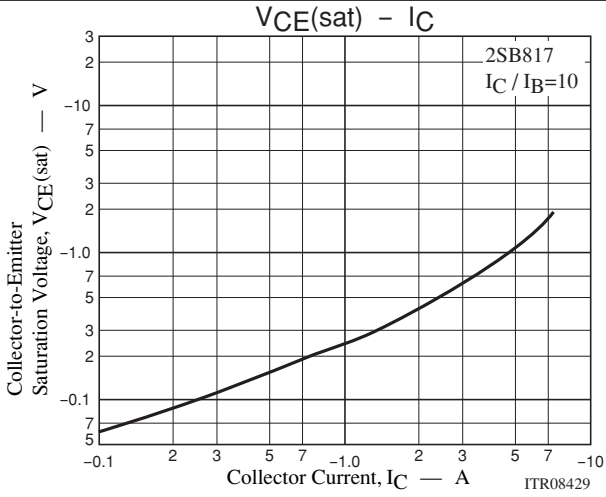
## Switching Time Test Circuit

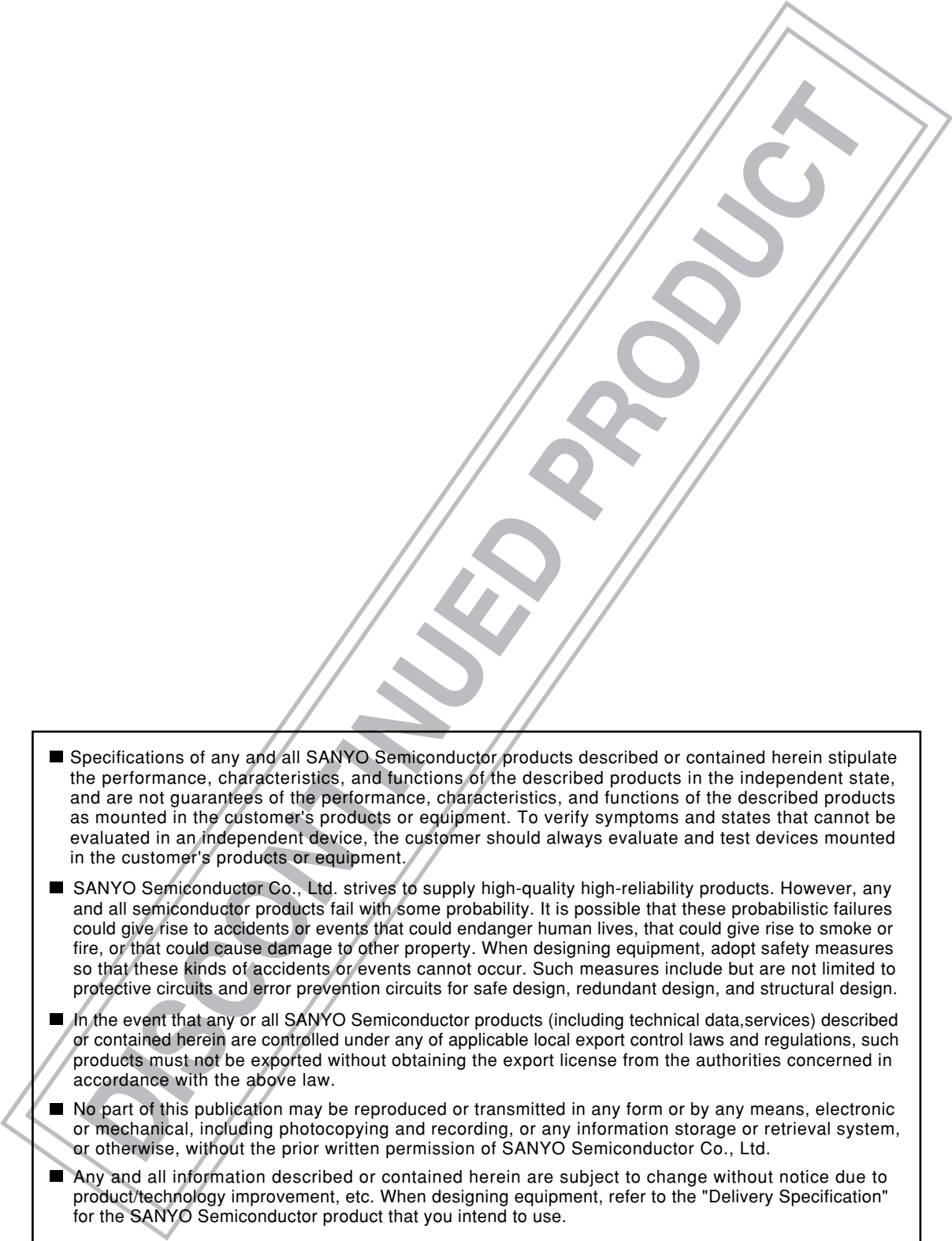


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