

<b>SANYO</b>	No.3217	<b>2SA1331/2SC3361</b>
PNP/NPN Epitaxial Planar Silicon Transistors		
High-Speed Switching Applications		

**Features**

- Fast switching speed
- High breakdown voltage
- Small-sized package permitting the 2SA1331/2SC3361-applied sets to be made small and slim

( ) : 2SA1331

**Absolute Maximum Ratings at Ta = 25°C**

			unit
Collector to Base Voltage	V <sub>CB0</sub>	(-)60	V
Collector to Emitter Voltage	V <sub>CEO</sub>	(-)50	V
Emitter to Base Voltage	V <sub>EBO</sub>	(-)5	V
Collector Current	I <sub>C</sub>	(-)150	mA
Collector Current(Pulse)	I <sub>CP</sub>	(-)400	mA
Base Current	I <sub>B</sub>	(-)40	mA
Collector Dissipation	P <sub>C</sub>	150	mW
Junction Temperature	T <sub>j</sub>	125	°C
Storage Temperature	T <sub>stg</sub>	-55 to +125	°C

**Electrical Characteristics at Ta = 25°C**

			min	typ	max	unit
Collector Cutoff Current	I <sub>CBO</sub>	V <sub>CB</sub> = (-)40V, I <sub>E</sub> = 0			(-)0.1	μA
Emitter Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> = (-)4V, I <sub>C</sub> = 0			(-)0.1	μA
DC Current Gain	h <sub>FE</sub>	V <sub>CE</sub> = (-)6V, I <sub>C</sub> = (-)1mA	90*		400*	
Gain-Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> = (-)6V, I <sub>C</sub> = (-)1mA		100		MHz
Output Capacitance	c <sub>ob</sub>	V <sub>CB</sub> = (-)6V, f = 1MHz		(3.5)2.7		pF
C-E Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> = (-)10mA, I <sub>B</sub> = (-)1mA		(-)0.1	(-)0.4	V
B-E Saturation Voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> = (-)10mA, I <sub>B</sub> = (-)1mA		(-)0.75	(-)1.1	V
C-B Breakdown Voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> = (-)10μA, I <sub>E</sub> = 0	(-)60			V
C-E Breakdown Voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> = (-)1mA, R <sub>BE</sub> = ∞	(-)50			V
E-B Breakdown Voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> = (-)10μA, I <sub>C</sub> = 0	(-)5			V
Delay Time	t <sub>d</sub>	See specified Test Circuit.		40		ns
Rise Time	t <sub>r</sub>	∥		(120)80		ns
Storage Time	t <sub>stg</sub>	∥		(190)230		ns
Fall Time	t <sub>f</sub>	∥		(200)160		ns

\* : The 2SA1331/2SC3361 are classified by 1mA h<sub>FE</sub> as follows :

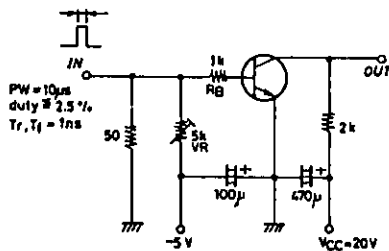
90	4	180	135	5	270	200	6	400
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Marking 2SA1331 : O

2SC3361 : S

h<sub>FE</sub> rank : 4,5,6

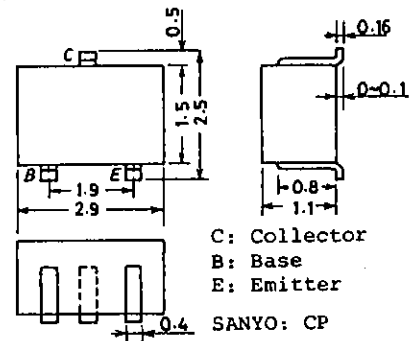
**Switching Time Test Circuit**



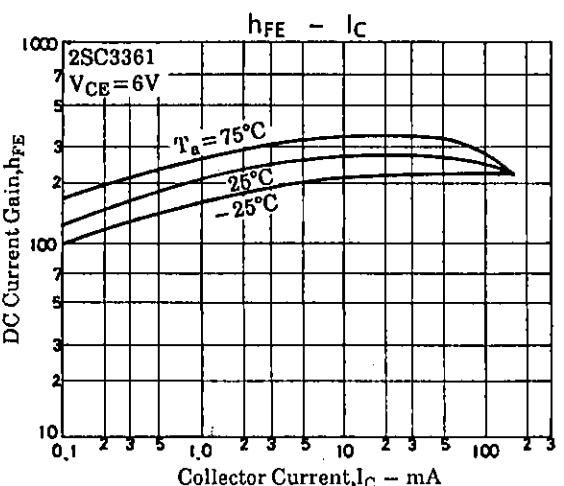
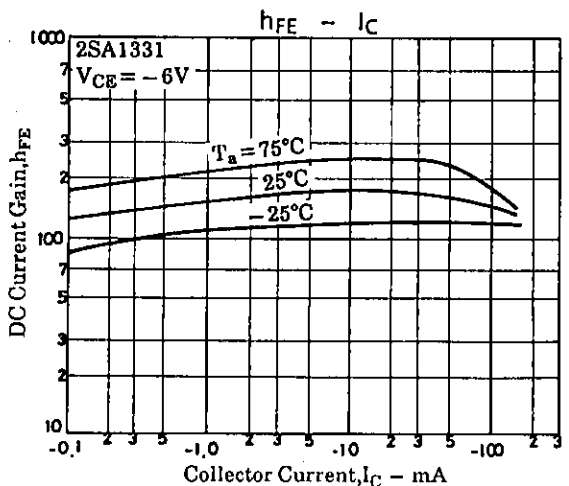
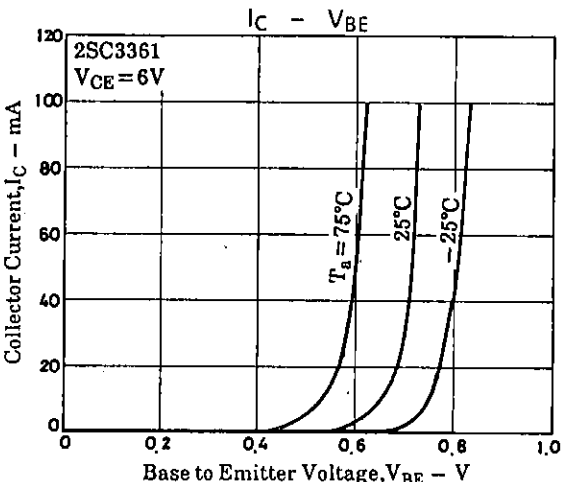
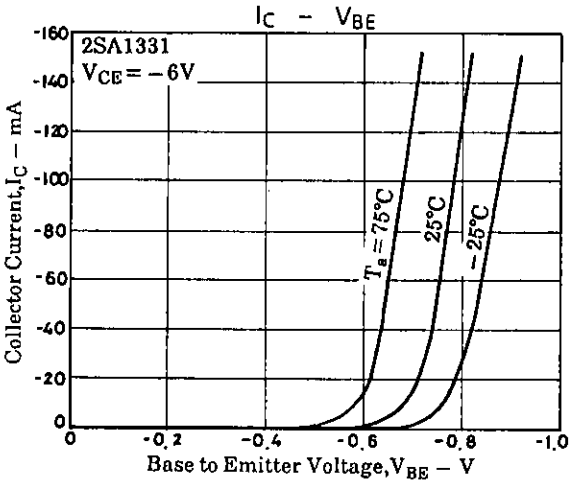
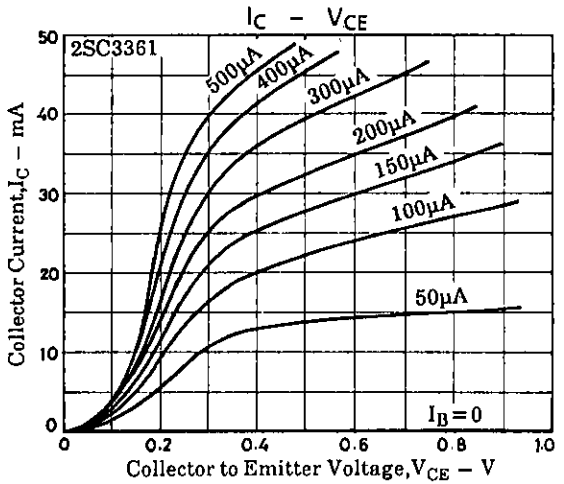
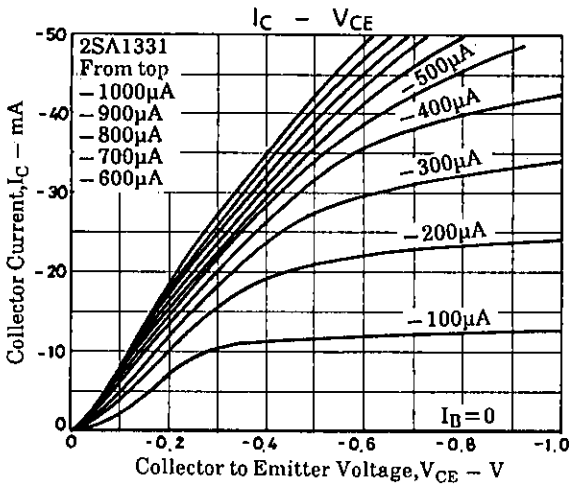
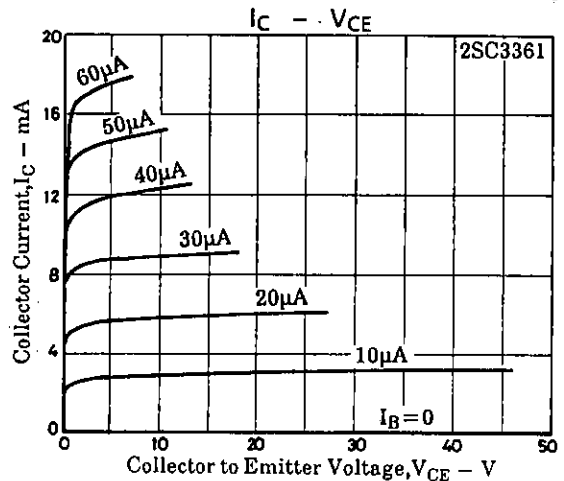
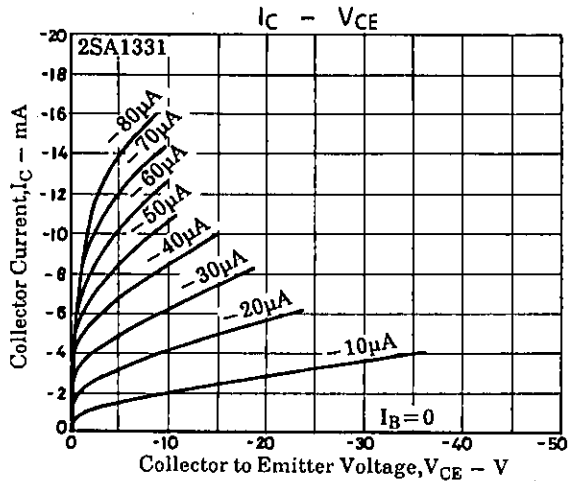
10I<sub>B1</sub> = -10I<sub>B2</sub> = I<sub>C</sub> = 10mA Unit (Resistance : Ω, Capacitance : F)  
 (For PNP, the polarity is reversed.)

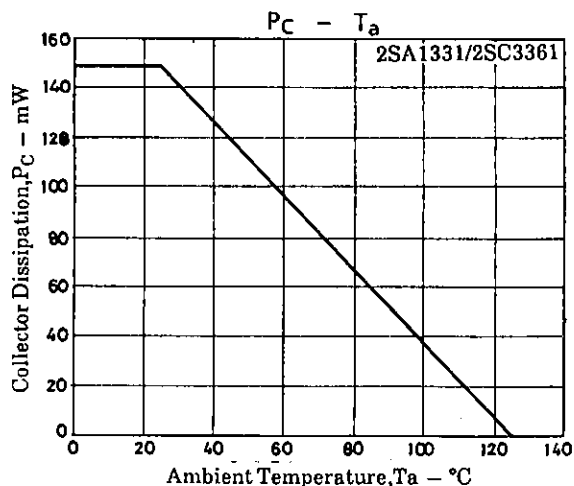
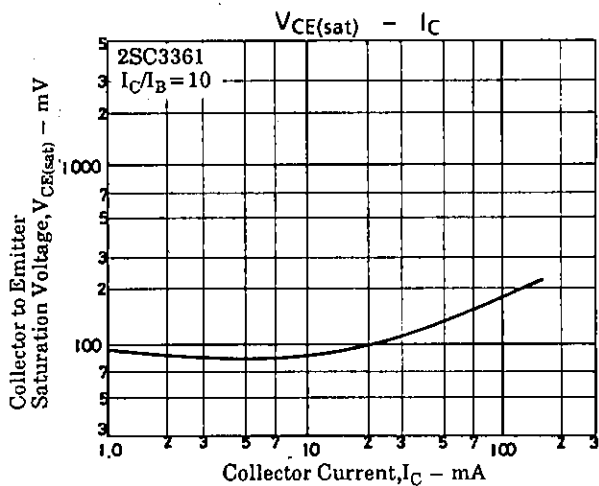
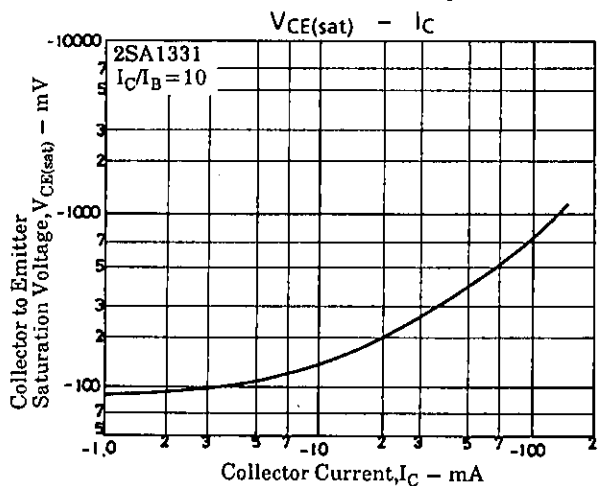
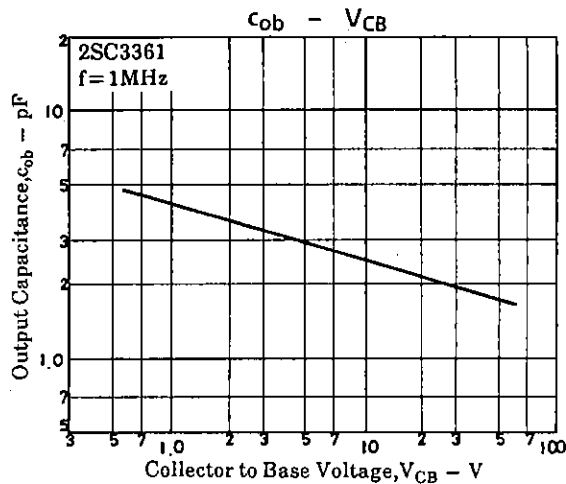
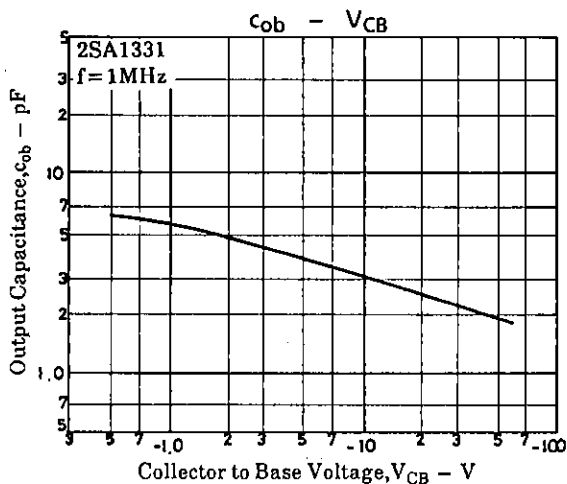
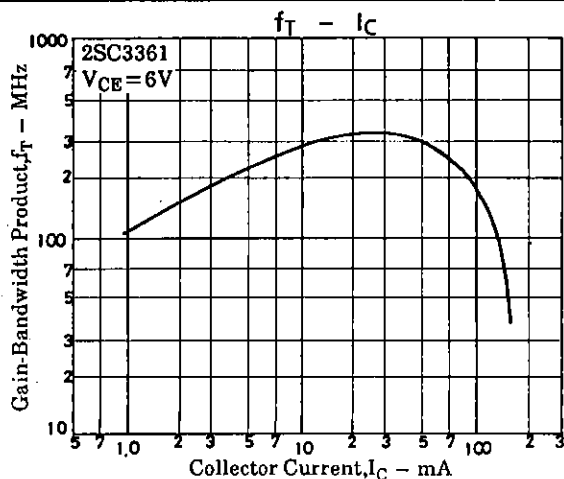
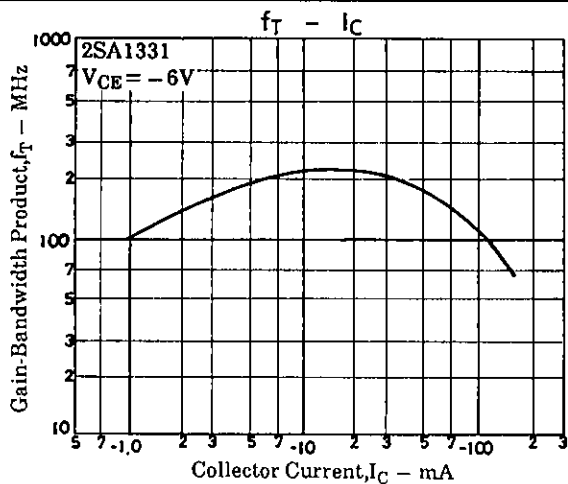
**Package Dimensions 2018A**

(unit : mm)



2SA1331/2SC3361





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