

Ordering number:EN3361



# FC140

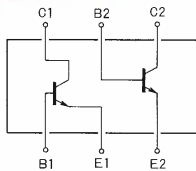
NPN Epitaxial Planar Silicon Composite Transistor

## High-Speed Switching Applications

### Features

- Composite type with 2 transistors contained in the CP package currently in use, improving the mounting efficiency greatly.
- Small output capacitance, high gain-bandwidth product.
- The FC140 is formed with two chips, being equivalent to the 2SC4452, placed in one package.

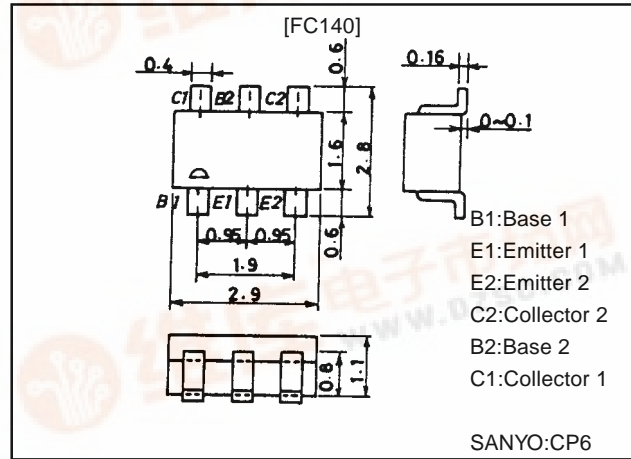
### Electrical Connection



### Package Dimensions

unit:mm

2074



### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V <sub>CB0</sub>		40	V
Collector-to-Emitter Voltage	V <sub>CES</sub>		40	V
Collector-to-Emitter Voltage	V <sub>CEO</sub>		15	V
Emitter-to-Base Voltage	V <sub>EBO</sub>		5	V
Collector Current	I <sub>C</sub>		200	mA
Collector Current (Pulse)	I <sub>CP</sub>		500	mA
Base Current	I <sub>B</sub>		40	mA
Collector Dissipation	P <sub>C</sub>	1 unit	200	mW
Total Power Dissipation	P <sub>T</sub>		300	mW
Junction Temperature	T <sub>J</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I <sub>CB0</sub>	V <sub>CB</sub> =20V, I <sub>E</sub> =0			0.1	μA
Emitter Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> =3V, I <sub>C</sub> =0			0.1	μA
DC Current Gain	h <sub>FE</sub>	V <sub>CE</sub> =1V, I <sub>C</sub> =10mA	90		240	
DC Current Gain Ratio	h <sub>FE</sub> (small/large)	V <sub>CE</sub> =1V, I <sub>C</sub> =10mA	0.6	0.98		
Gain-Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> =10V, I <sub>C</sub> =10mA	450	750		MHz
Output Capacitance	C <sub>ob</sub>	V <sub>CB</sub> =5V, f=1MHz		1.4	4.0	pF
C-E Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =10mA, I <sub>B</sub> =1mA		0.13	0.25	V
B-E Saturation Voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =10mA, I <sub>B</sub> =1mA		0.80	0.85	V
C-B Breakdown Voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> =10μA, I <sub>E</sub> =0	40			V
C-E Breakdown Voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> =1mA, R <sub>BE</sub> =∞	15			V
E-B Breakdown Voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> =10μA, I <sub>C</sub> =0	5			V
Turn-ON Time	t <sub>on</sub>	See specified Test Circuit.		8.0		ns
Storage Time	t <sub>stg</sub>	See specified Test Circuit.		6.0		ns
Turn-OFF Time	t <sub>off</sub>	See specified Test Circuit.		12		ns

Note: The specifications shown above are for each individual transistor.

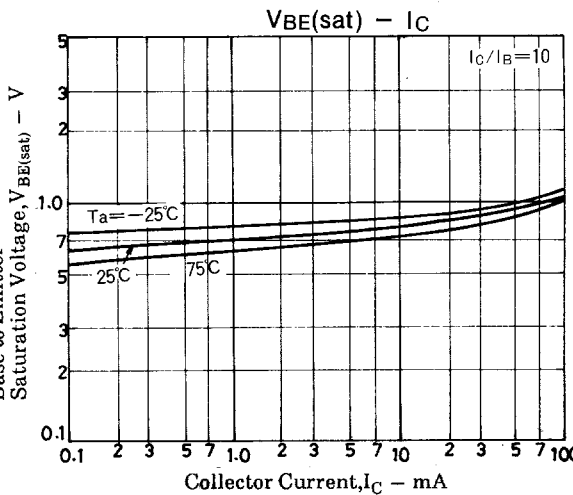
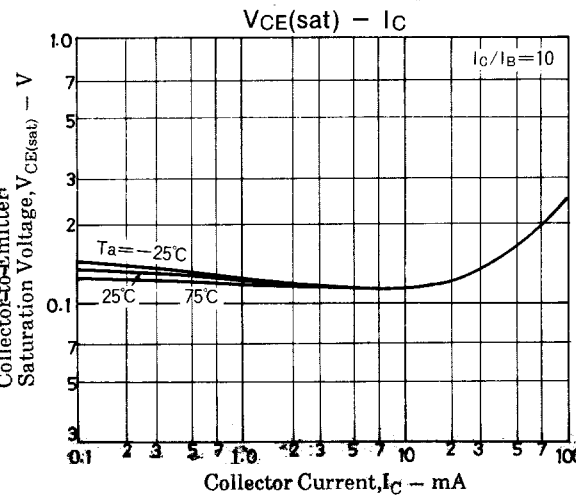
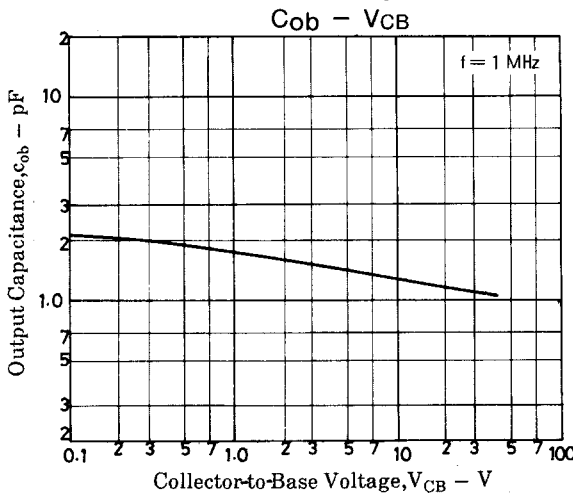
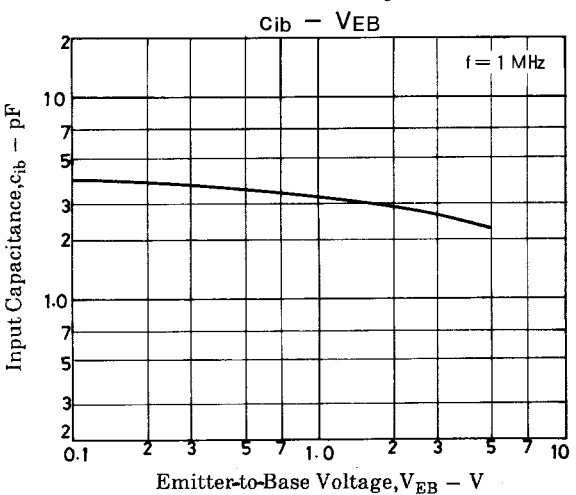
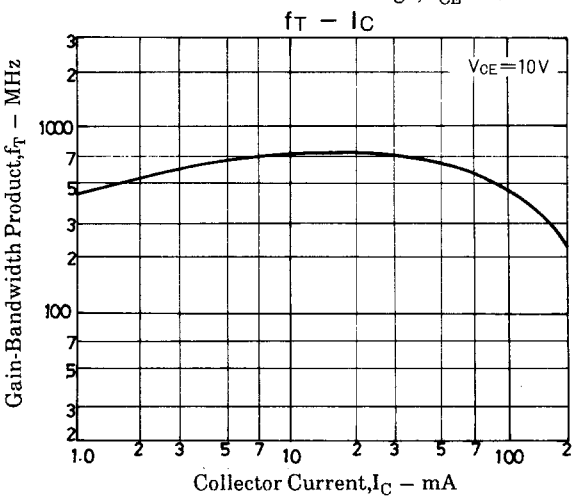
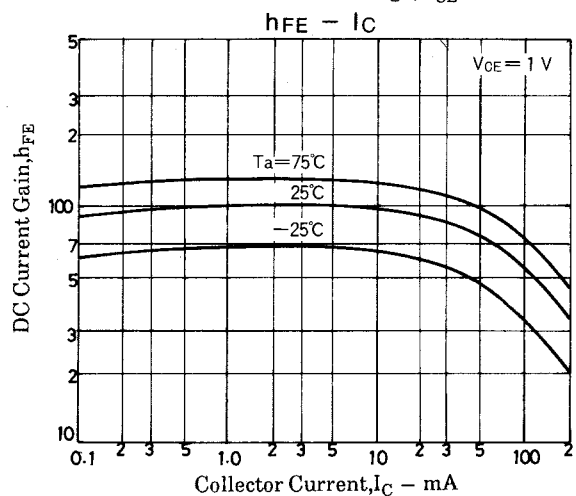
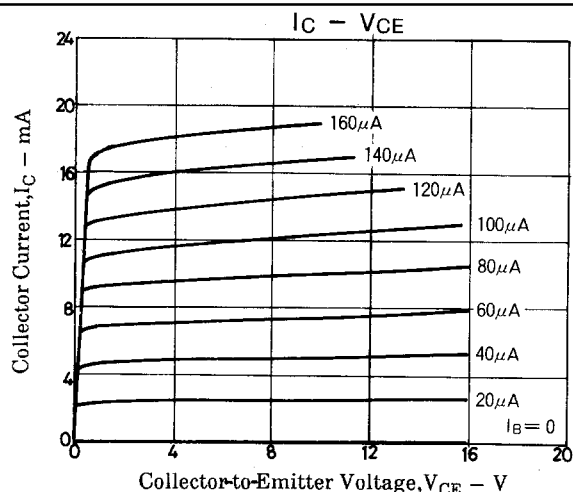
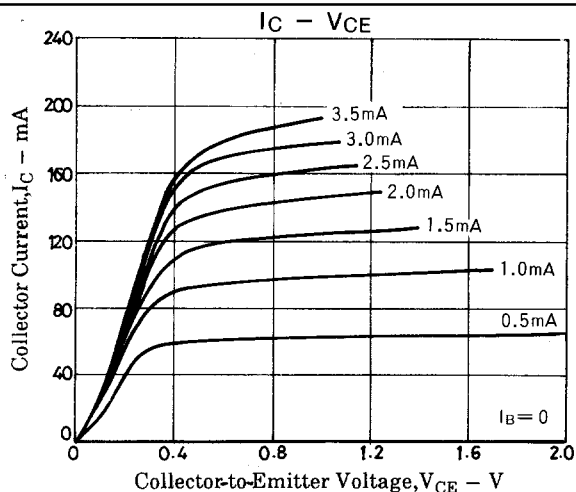
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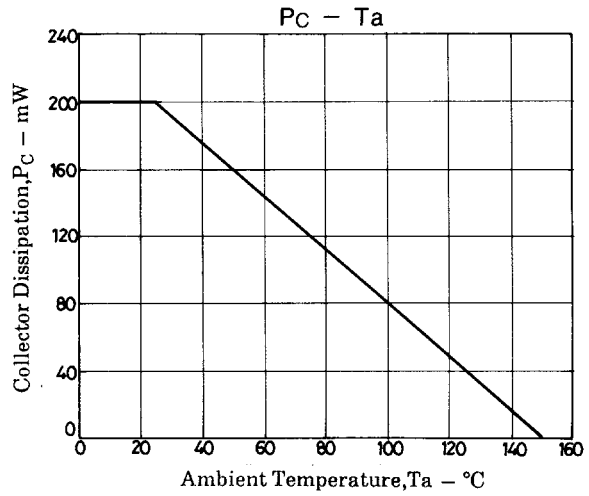
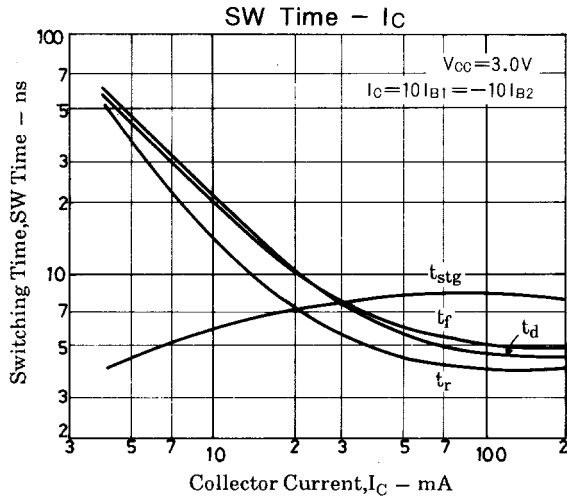
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN



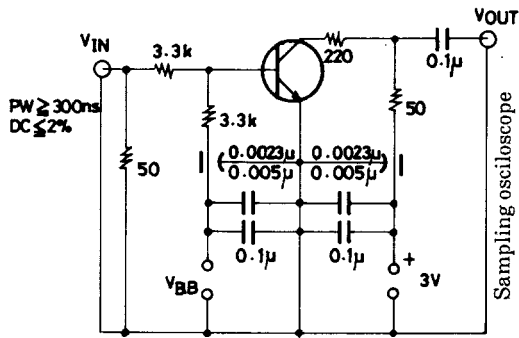
# FC140



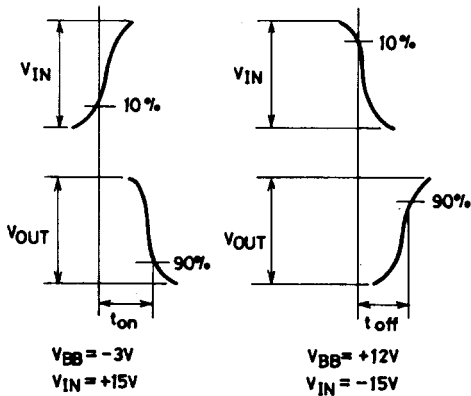
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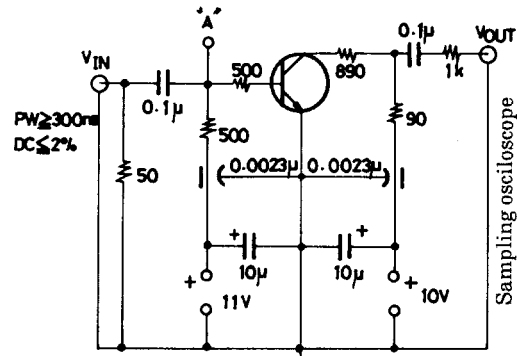
$t_{on}$ ,  $t_{off}$  Test Current



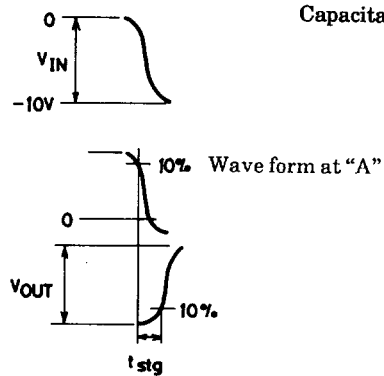
Unit (Resistance : Ω, Capacitance : F)



$t_{stg}$  Test Circuit



Unit (Resistance : Ω, Capacitance : F)



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