Ordering number:EN3361

FC140

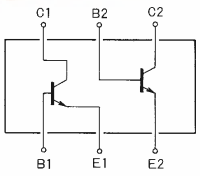
NPN Epitaxial Planar Silicon Composite Transistor

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.

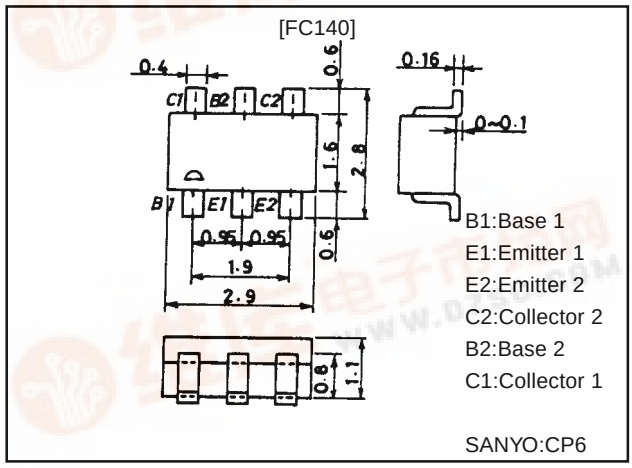
Electrical Connection



Package Dimensions

unit:mm

2074



Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		40	V
Collector-to-Emitter Voltage	V_{CES}		40	V
Collector-to-Emitter Voltage	V_{CEO}		15	V
Emitter-to-Base Voltage	V_{EBO}		5	V
Collector Current	I_C		200	mA
Collector Current (Pulse)	I_{CP}		500	mA
Base Current	I_B		40	mA
Collector Dissipation	P_C	1 unit	200	mW
Total Power Dissipation	P_T		300	mW
Junction Temperature	Tj		150	˚C
Storage Temperature	Tstg		–55 to +150	˚C

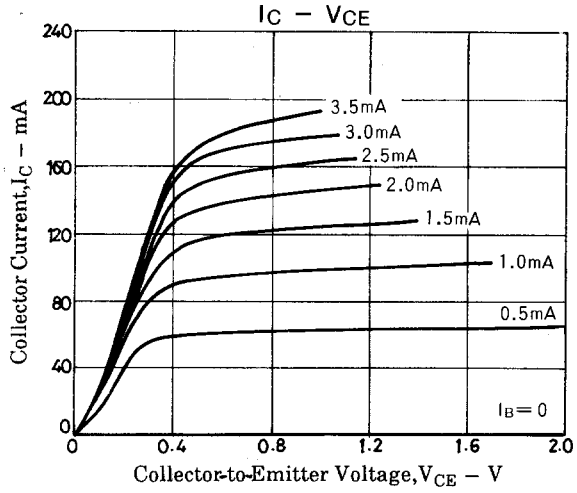
Electrical Characteristics at Ta = 25˚C

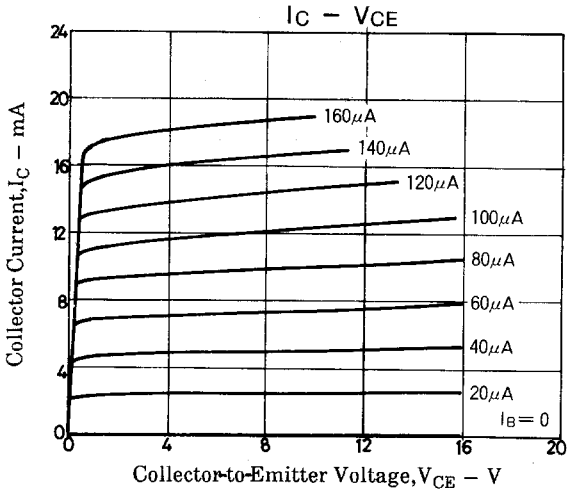
Parameter	Symbol	Conditons	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=20V, I_E=0			0.1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=3V, I_C=0			0.1	μA
DC Current Gain	h_{FE}	V_{CE}=1V, I_C=10mA	90		240	
DC Current Gain Ratio	$h_{FE(small/large)}$	VCE=1V, IC=10mA	0.6	0.98		
Gain-Bandwidth Product	f_T	V_{CE}=10V, I_C=10mA	450	750		MHz
Output Capacitance	Cob	V_{CB}=5V, f=1MHz		1.4	4.0	pF
C-E Saturation Voltage	$V_{CE(sat)}$	I_C=10mA, I_B=1mA		0.13	0.25	V
B-E Saturation Voltage	$V_{BE(sat)}$	I_C=10mA, I_B=1mA		0.80	0.85	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	I_C=10μA, I_E=0	40			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	I_C=1mA, R_{BE}=∞	15			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	I_E=10μA, I_C=0	5			V
Turn-ON Time	t_{on}	See specified Test Circuit.		8.0		ns
Storage Time	t_{stg}	See specified Test Circuit.		6.0		ns
Turn-OFF Time	t_{off}	See specified Test Circuit.		12		ns

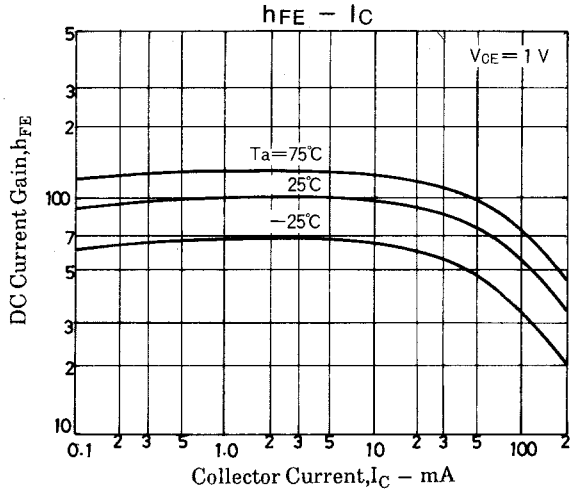
Note:The specifications shown above are for each individual transistor.

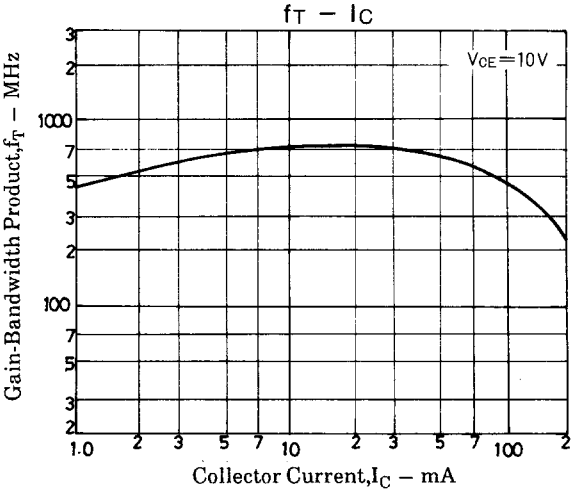
Marking:140

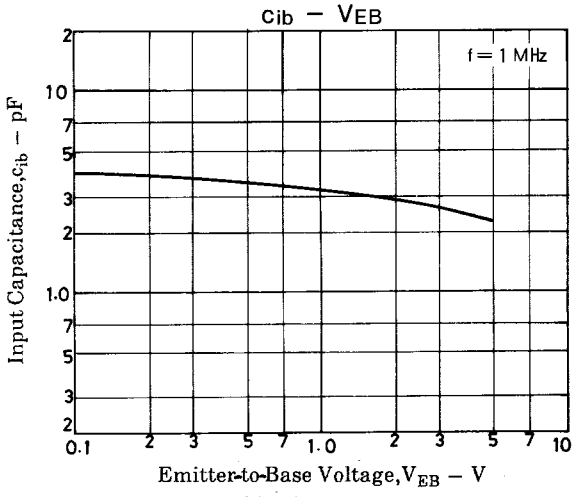
FC140

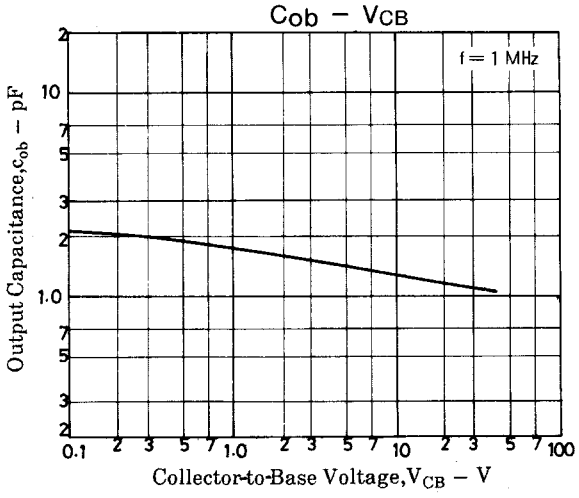

IC – VCE
Collector Current,IC – mA
Collector-to-Emitter Voltage,VCE – V
3.5mA
3.0mA
2.5mA
2.0mA
1.5mA
1.0mA
0.5mA
IB=0

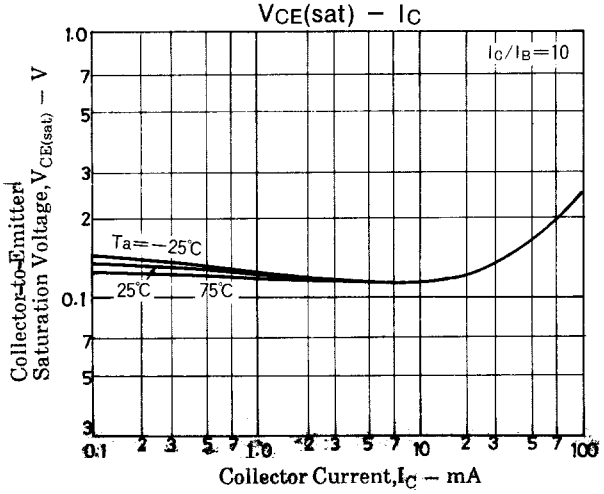

IC – VCE
Collector Current,IC – mA
Collector-to-Emitter Voltage,VCE – V
160μA
140μA
120μA
100μA
80μA
60μA
40μA
20μA
IB=0

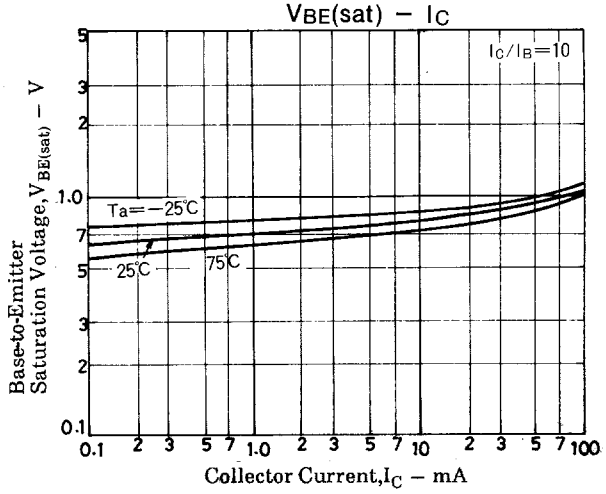

hFE – IC
DC Current Gain,hFE
Collector Current,IC – mA
VCE=1 V
Ta=75℃
25℃
–25℃

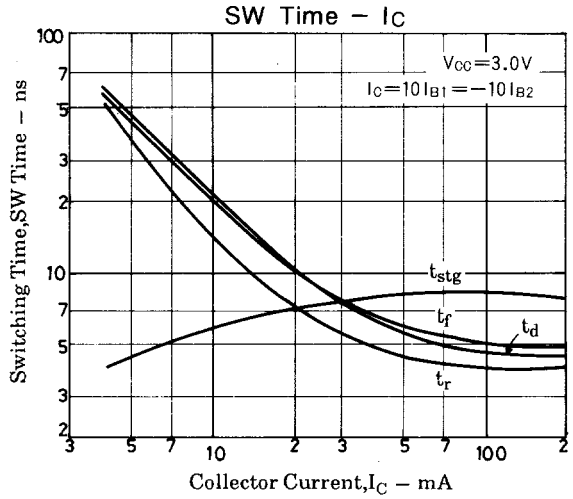

fT – IC
Gain-Bandwidth Product,fT – MHz
Collector Current,IC – mA
VCE=10V

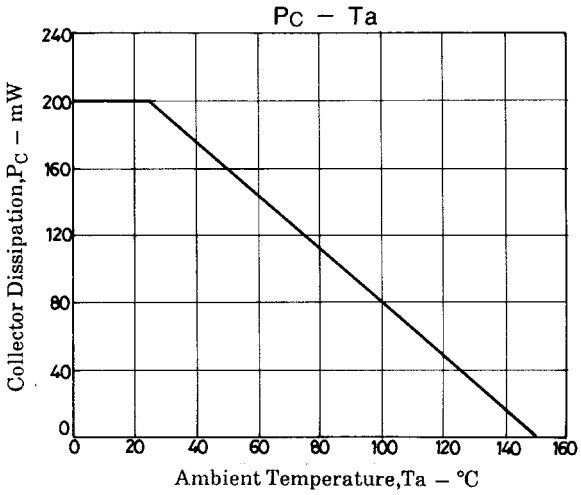

Cib – VEB
Input Capacitance,Cib – pF
Emitter-to-Base Voltage,VEB – V
f=1 MHz


Cob – VCB
Output Capacitance,Cob – pF
Collector-to-Base Voltage,VCB – V
f=1 MHz

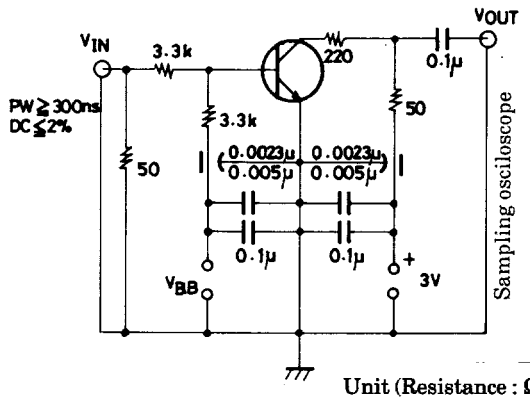

VCE(sat) – IC
Collector-to-Emitter
Saturation Voltage,VCE(sat) – V
Collector Current,IC – mA
IC/IB=10
Ta=–25℃
25℃
75℃


VBE(sat) – IC
Base-to-Emitter
Saturation Voltage,VBE(sat) – V
Collector Current,IC – mA
IC/IB=10
Ta=–25℃
25℃
75℃

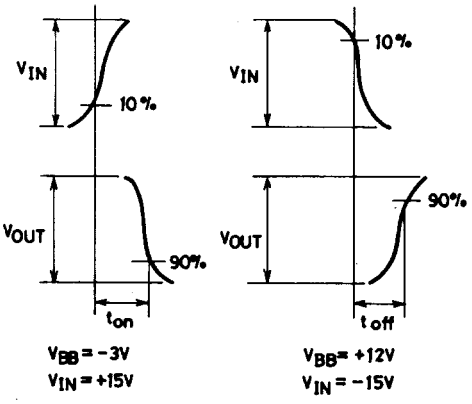




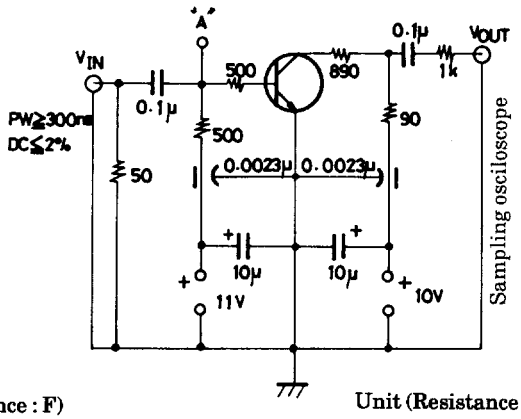
ton, toff Test Current



Unit (Resistance : Ω, Capacitance : F)



tstg Test Cirsuit



Unit (Resistance : Ω, Capacitance : F)