Ordering number:ENN3578

PNP/NPN Epitaxial Planar Silicon Transistors

2SA1770/2SC4614

High-Voltage Switching Applications

An ON Semiconductor Company

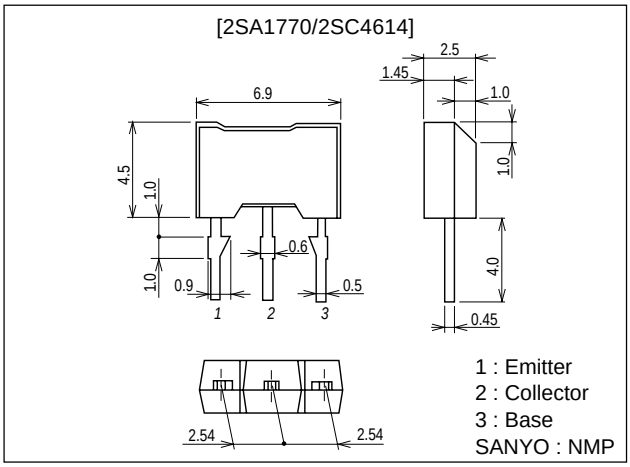
Features

· Adoption of MBIT process.
· High breakdown voltage and large current capacity.

Package Dimensions

unit:mm

2064A



( ) : 2SA1770

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–)180	V
Collector-to-Emitter Voltage	V_{CEO}		(–)160	V
Emitter-to-Base Voltage	V_{EBO}		(–)6	V
Collector Current	I_C		(–)1.5	A
Colletor Current (Pulse)	I_{CP}		(–)2.5	A
Collector Dissipation	P_C		1	W
Junction Temperature	Tj		150	˚C
Storage Temperature	Tstg		–55 to +150	˚C

Electrical Characteristics at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=(–)120V, I_E=0			(–)1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(–)4V, I_C=0			(–)1	μA
DC Current Gain	$h_{FE}1$	V_{CE}=(–)5V, I_C=(–)100mA	100*		400*	
	$h_{FE}2$	V_{CE}=(–)5V, I_C=(–)10mA	80			
Gain-Bandwidth Product	f_T	V_{CE}=(–)10V, I_C=(–)50mA		120		MHz

* ; The 2SA1770/2SC4614 are classified by 100mA h_{FE} as follows :

Continued on next page.

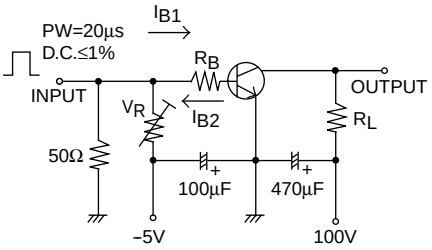
Rank	R	S	T
h_{FE}	100 to 200	140 to 280	200 to 400

SANYO Electric Co.,Ltd. Semiconductor Company
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

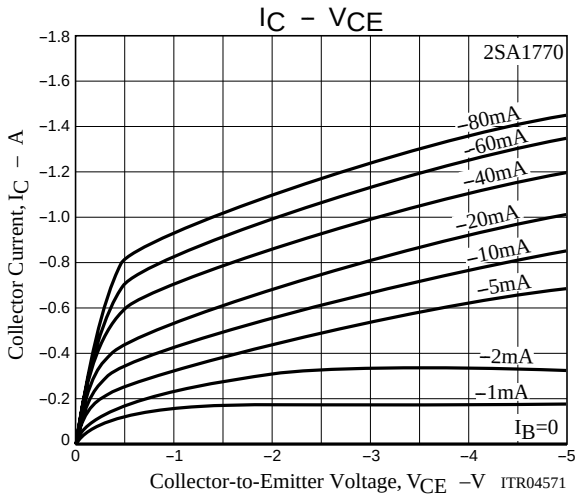
Continued from preceding page.

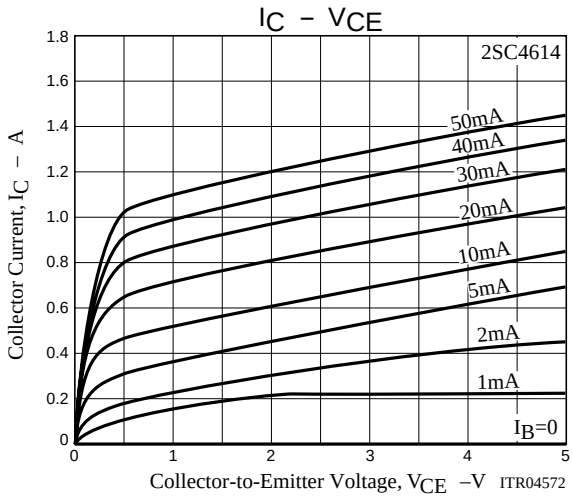
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output Capacitance	C_{ob}	V_{CB}=(–)10V, f=1MHz		(22)14		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)500mA, I_B=(–)50mA		(–200)	(–500)	mV
				130	450	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=(–)500mA, I_B=(–)50mA		(–)0.85	(–)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)10μA, I_E=0	(–)180			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)1mA, R_{BE}=∞	(–)160			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=(–)10μA, I_C=0	(–)6			V
Turn-ON Time	t_{on}	See specified Test Circuit		(40)40		ns
Storage Time	t_{stg}	See specified Test Circuit		(0.7)		μs
				1.2		μs
Fall Time	t_f	See specified Test Circuit		(40)80		ns

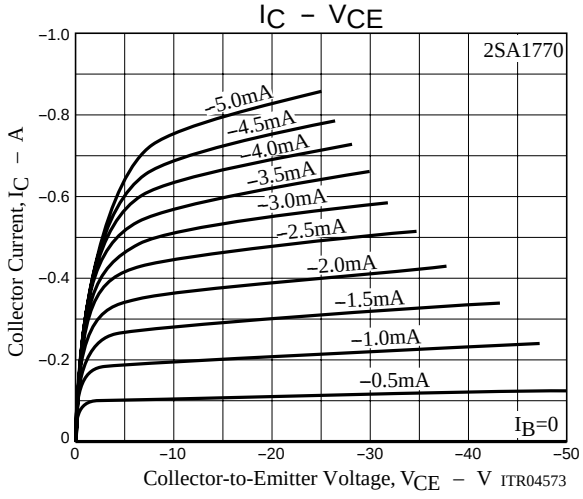
Switching Time Test Circuit

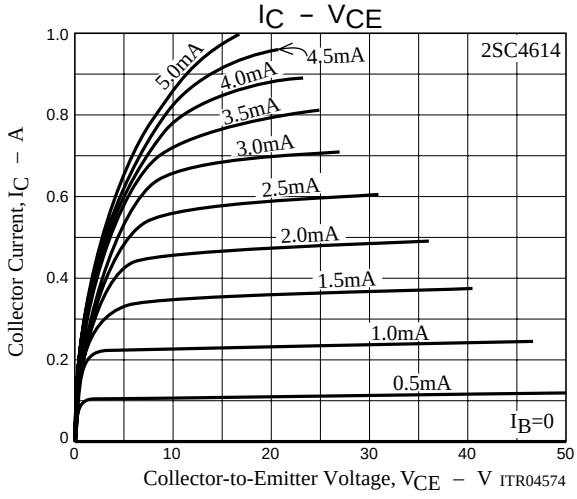


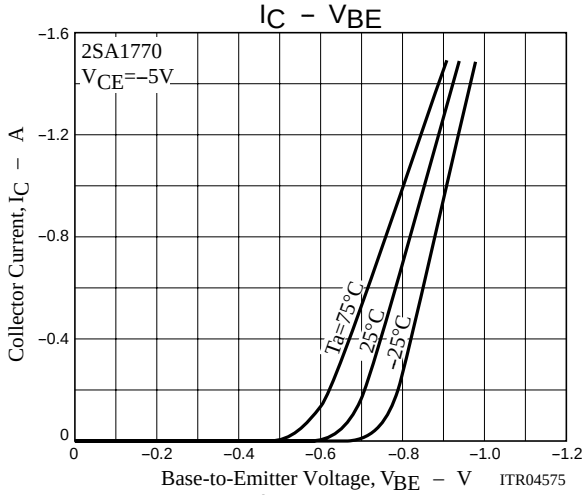
I_C=10I_{B1}= −10I_{B2}= 0.7A
For PNP, the polarity is reversed.

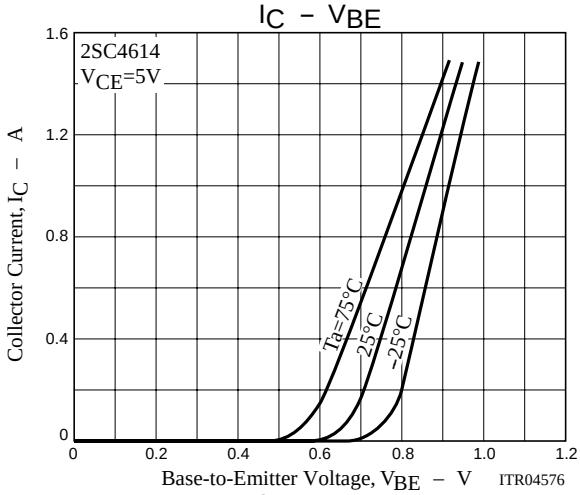


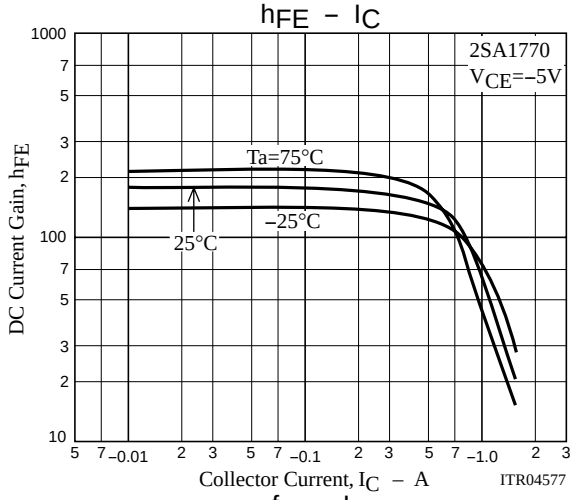


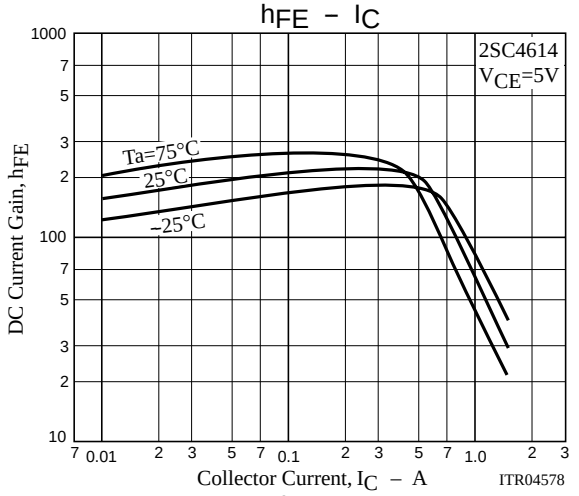


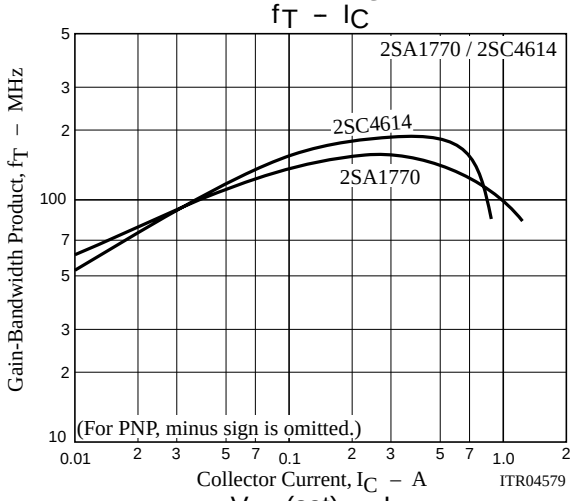


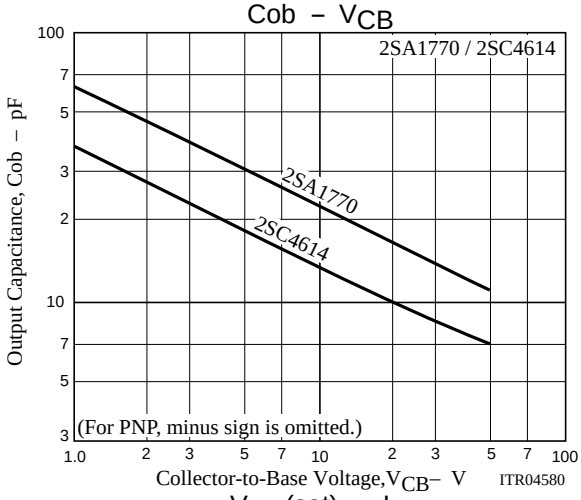

IC – VBE
2SA1770
VCE=–5V
Ta=75°C
25°C
–25°C
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
ITR04575

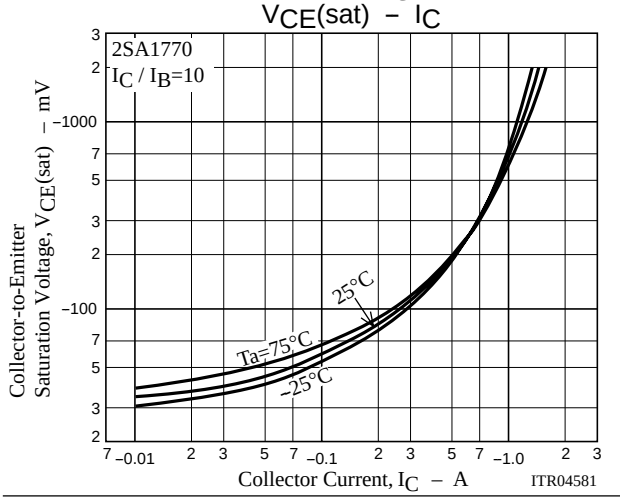

IC – VBE
2SC4614
VCE=5V
Ta=75°C
25°C
–25°C
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
ITR04576

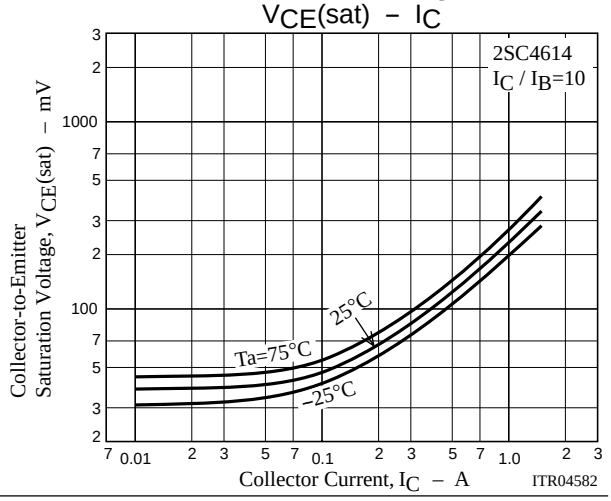

hFE – IC
2SA1770
VCE=–5V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
ITR04577


hFE – IC
2SC4614
VCE=5V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
ITR04578


fT – IC
2SA1770 / 2SC4614
2SC4614
2SA1770
(For PNP, minus sign is omitted.)
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
ITR04579


Cob – VCB
2SA1770 / 2SC4614
2SA1770
2SC4614
(For PNP, minus sign is omitted.)
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
ITR04580


VCE(sat) – IC
2SA1770
IC / IB=10
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
ITR04581


VCE(sat) – IC
2SC4614
IC / IB=10
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
ITR04582