Ordering number:EN3879

PNP/NPN Epitaxial Planar Silicon Transistors

2SA1827/2SC4731

100V/4A Switching Applications

Applications

· Relay drivers, high-speed inverters, converters, and other general high-current switching applicaions.

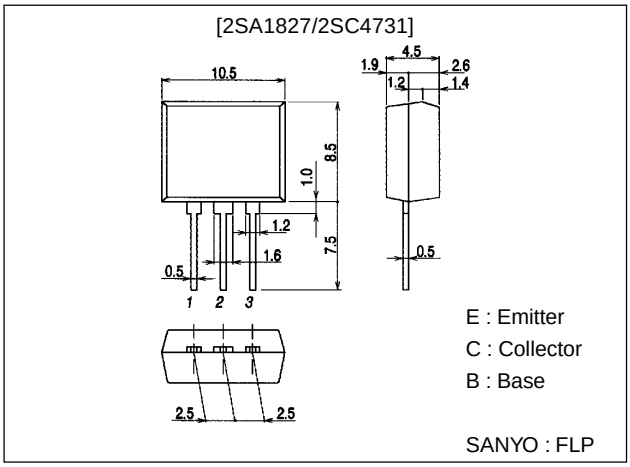
Features

· Low collector-to-emitter saturation voltage.
· High Gain-Bandwidth Product.
· Excellent linearity of DC Current Gain.
· Fast switching speed.

Package Dimensions

unit:mm

2084



( ) : 2SA1827

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–)120	V
Collector-to-Emitter Voltage	V_{CEO}		(–)100	V
Emitter-to-Base Voltage	V_{EBO}		(–)6	V
Collector Current	I_C		(–)4	A
Collector Current (Pulse)	I_{CP}		(–)8	A
Base Current	I_B		(–)0.8	A
Collector Dissipation	P_C		1.5	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}=(–)100V, 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=(–)500mA	100*		400*	
	$h_{FE}2$	V_{CE}=(–)5V, I_C=(–)3A	40			
Gain-Bandwidth Product	f_T	V_{CE}=(–)10V, I_C=(–)500mA		(130)		MHz
				180		MHz

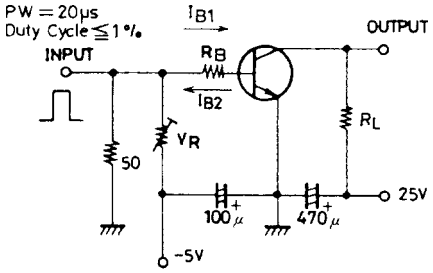
* : The 2SA827/2SC4731 are classified by 500mA h_{FE} as follows :

100	R	200	140	S	280	200	T	400

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output Capacitance	C_{ob}	V_{CB}=(–)10V, f=1MHz		(65)40		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)2A, I_B=(–)0.2A		(–200)	(–500)	mV
				150	400	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=(–)2A, I_B=(–)0.2A		(–)0.9	(–)1.2	mV
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)10μA, I_E=0	(–)120			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)1mA, R_{BE}=∞	(–)100			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		100		ns
Storage Time	t_{stg}	See specified Test CIrcuit		(800)		ns
				900		ns
Fall Time	t_f	See specified Test Circuit		50		ns

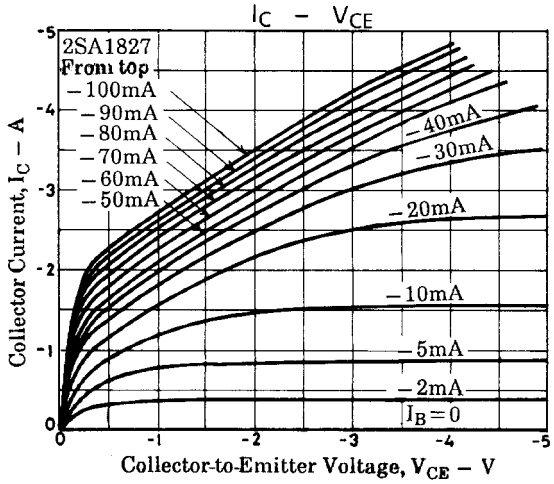
Switching Time Test Circuit

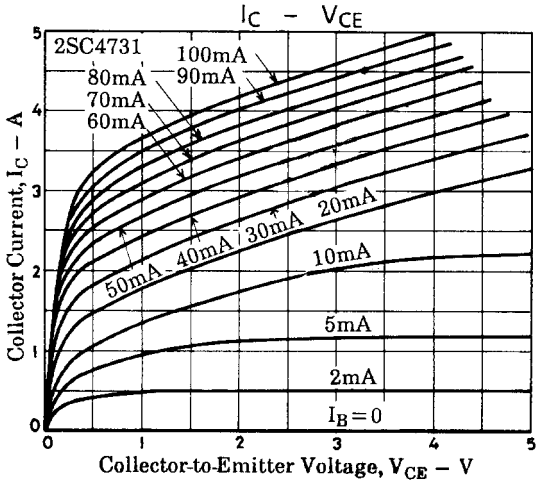


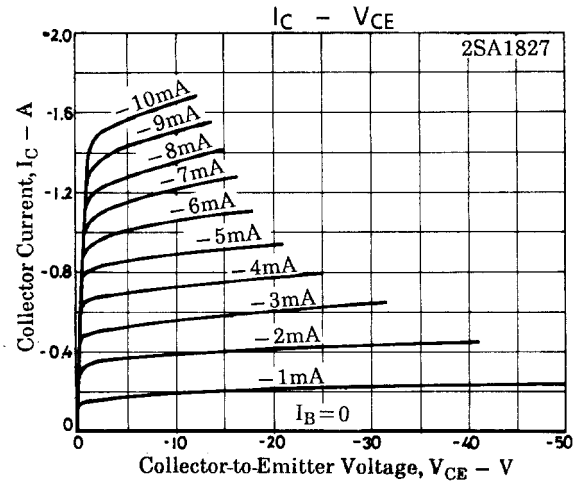
$I_C = 10I_B1 = -10I_B2 = 2A$

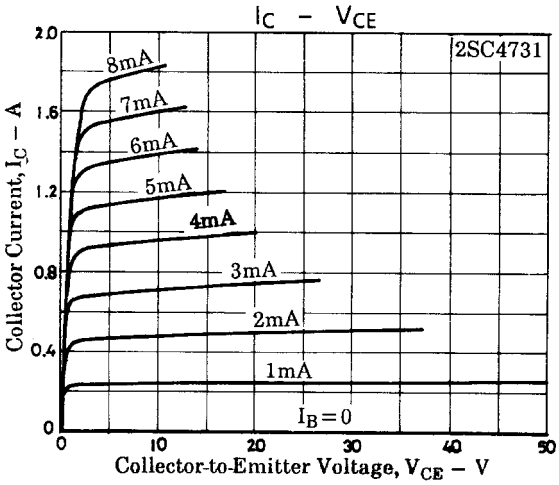
(For PNP, the polarity is reversed).

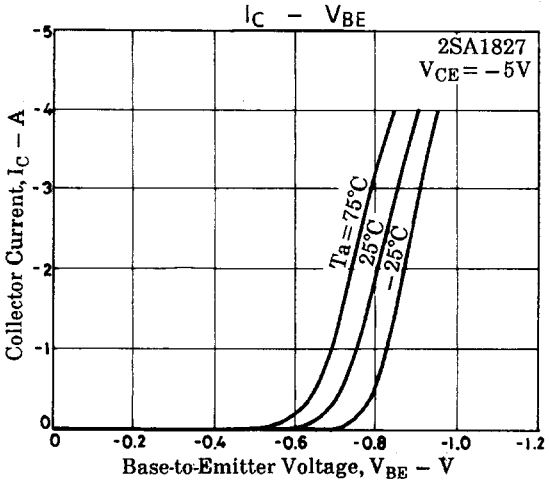
Unit (resistance : Ω, capacitance : F)

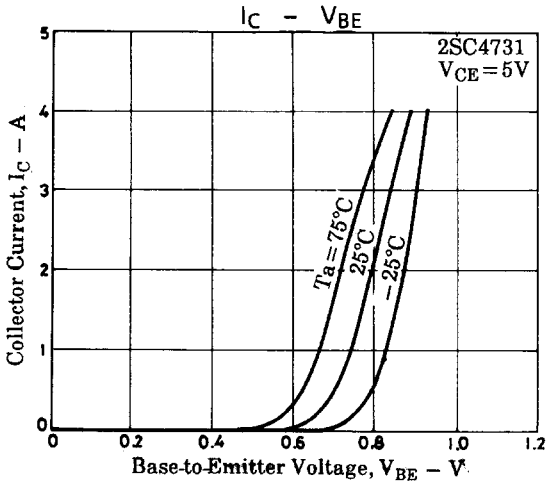


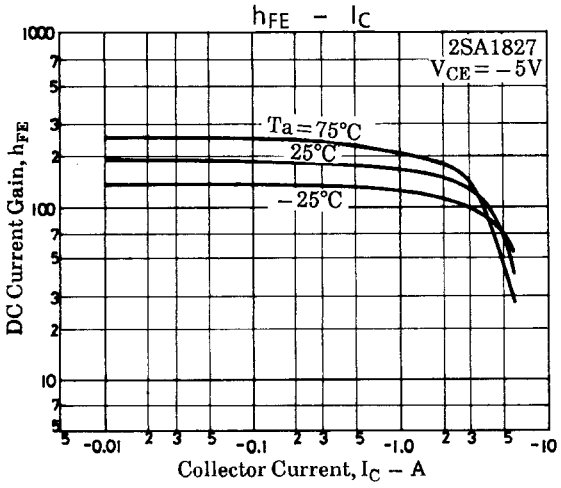


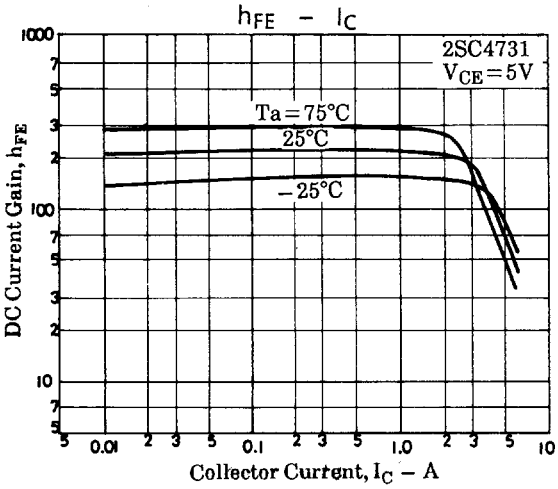


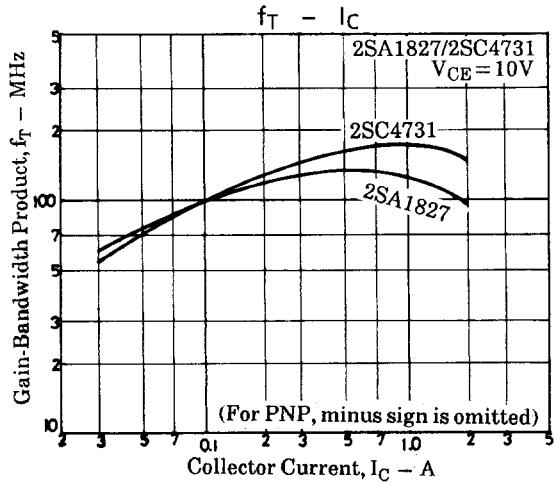


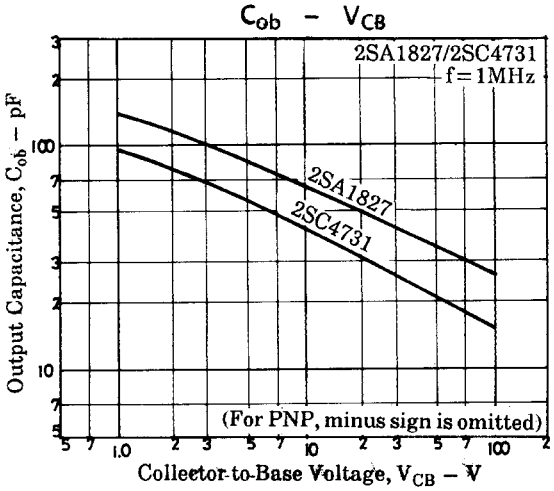

I_C – V_{BE}
2SA1827
V_{CE} = –5V
Ta = 75°C
25°C
–25°C
Collector Current, I_C – A
Base-to-Emitter Voltage, V_{BE} – V

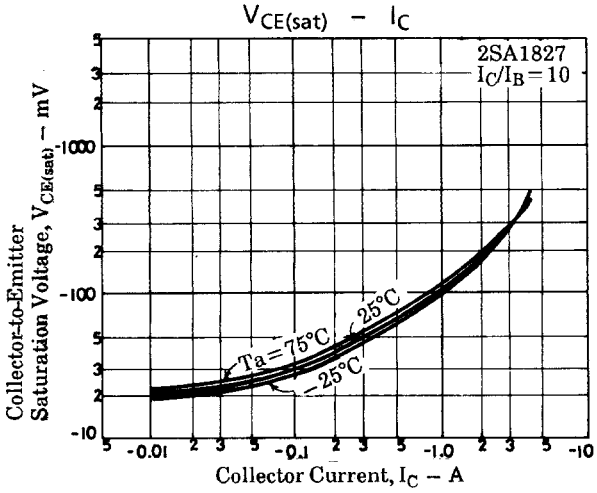

I_C – V_{BE}
2SC4731
V_{CE} = 5V
Ta = 75°C
25°C
–25°C
Collector Current, I_C – A
Base-to-Emitter Voltage, V_{BE} – V

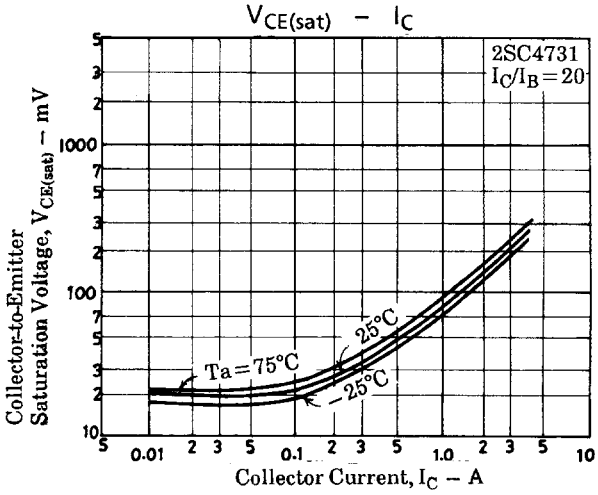

h_{FE} – I_C
2SA1827
V_{CE} = –5V
Ta = 75°C
25°C
–25°C
DC Current Gain, h_{FE}
Collector Current, I_C – A


h_{FE} – I_C
2SC4731
V_{CE} = 5V
Ta = 75°C
25°C
–25°C
DC Current Gain, h_{FE}
Collector Current, I_C – A


f_T – I_C
2SA1827/2SC4731
V_{CE} = 10V
2SC4731
2SA1827
(For PNP, minus sign is omitted)
Gain-Bandwidth Product, f_T – MHz
Collector Current, I_C – A


C_{ob} – V_{CB}
2SA1827/2SC4731
f = 1MHz
2SA1827
2SC4731
(For PNP, minus sign is omitted)
Output Capacitance, C_{ob} – pF
Collector-to-Base Voltage, V_{CB} – V


$V_{CE(sat)}$ – I_C
2SA1827
I_C/I_B = 10
Ta = 75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, $V_{CE(sat)}$ – mV
Collector Current, I_C – A


$V_{CE(sat)}$ – I_C
2SC4731
I_C/I_B = 20
Ta = 75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, $V_{CE(sat)}$ – mV
Collector Current, I_C – A