Ordering number:EN2089B

PNP/NPN Epitaxial Planar Silicon Transistors

2SA1477/2SC3787

160V/140mA Switching Applications

Applications

· Predrivers for 100W power amplifiers.

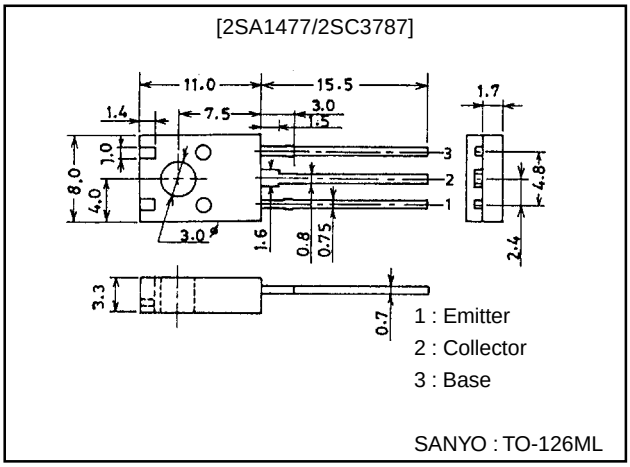
Features

· Adoption of FBET process.
· Excellent linearity of h_{FE}.
· Small C_{ob}.
· Plastic-convered heat sink facilitating high-density mounting (TO-126ML package).

Package Dimensions

unit:mm

2042B



( ) : 2SA1477

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}		(–)5	V
Collector Current	I_C		(–)140	mA
Peak Collector Current	I_{CP}		(–)200	mA
Collector Dissipation	P_C		1.3	W
		Tc=25˚C	10	W
Junction Temperature	Tj		150	˚C
Storage Temperature	Tstg		–55 to +150	˚C

Electrical Characteristics at Ta = 25˚C

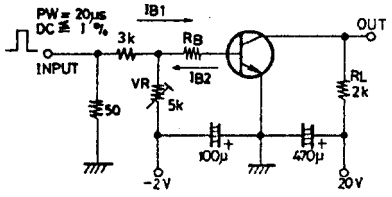
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=(–)120V, I_E=0			(–)100	nA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(–)4V, I_C=0			(–)100	nA
DC Current Gain	h_{FE}	V_{CE}=(–)5V, I_C=(–)10mA	100		400	
Gain-Bandwidth Product	f_T	V_{CE}=(–)10V, I_C=(–)10mA		150		MHz
Output Capacitance	C_{ob}	V_{CB}=(–)10V, f=1MHz		(4.0)		pF
				3.0		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)50mA, I_B=(–)5mA		(–140)	(–400)	mV
				70	300	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=(–)50mA, I_B=(–)5mA			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 Votage	$V_{(BR)EBO}$	I_E=(–)10μA, I_C=0	(–)5			V
Rise Time	t_{on}	See specified Test Circuit		0.1		μs
Storage Time	t_{stg}	See specified Test Circuit		0.5		μs
Fall Time	t_f	See specified Test Circuit		0.1		μs

*: The 2SA1477/2SC3787 are classified by 10mA h_{FE} as follows :

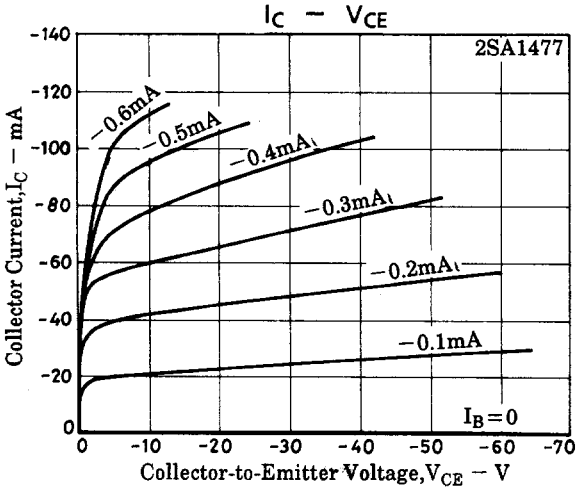
100	R	200	140	S	280	200	T	400

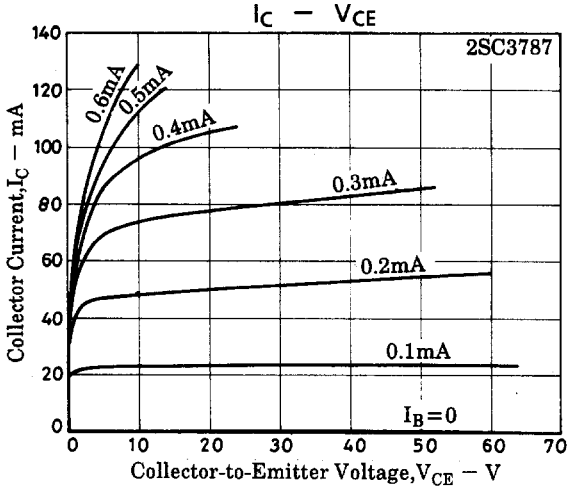
SANYO Electric Co.,Ltd. Semiconductor Bussiness Headquaters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

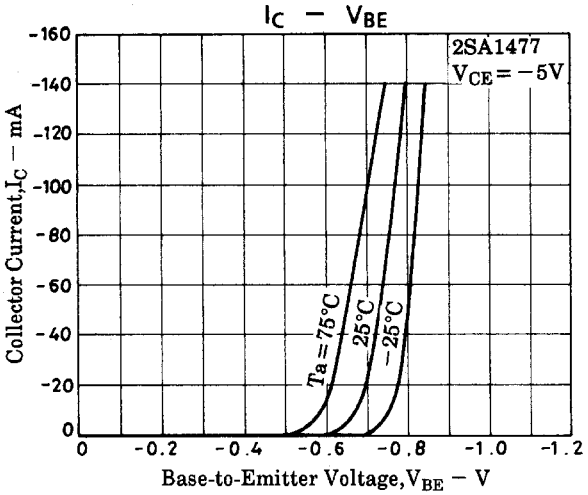
Switching Time Test Circuit

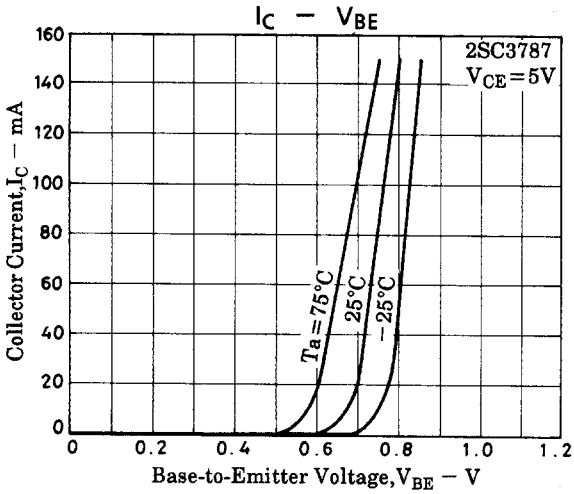


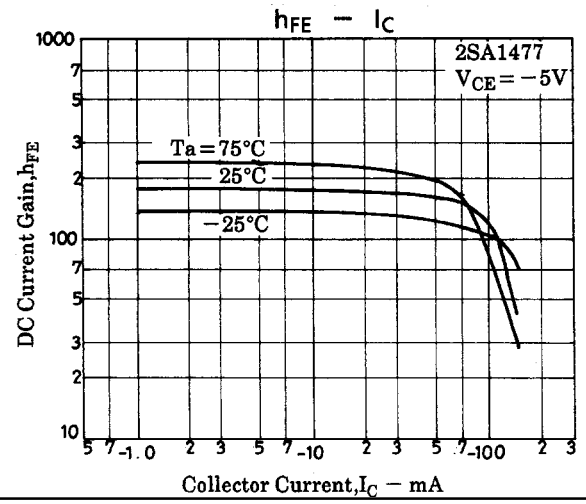
$I_C = 10I_B1 = 10I_B2 = 10mA$
(For PNP, the polarity is reversed)
Unit (resistance : Ω, capacitance : F)

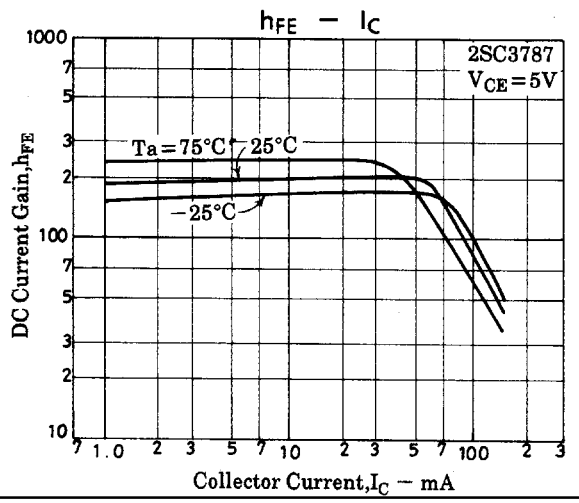


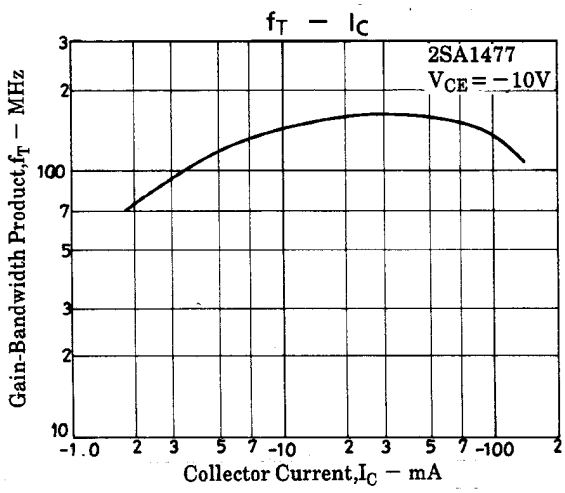


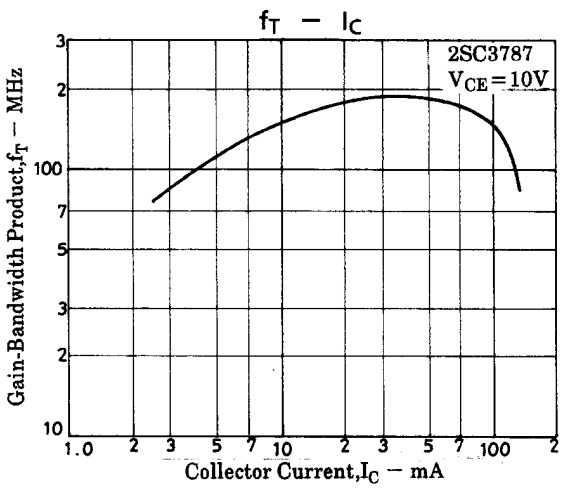


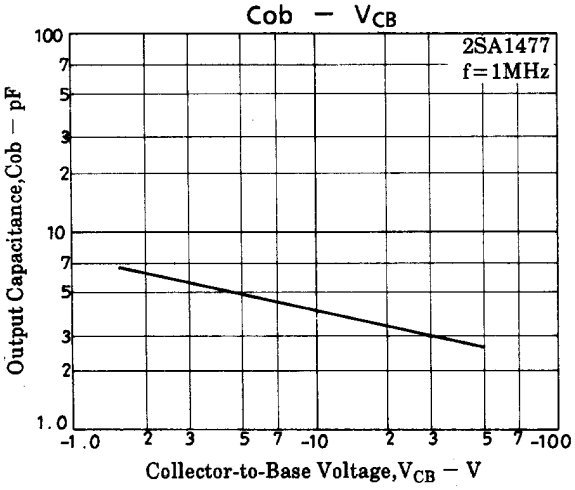


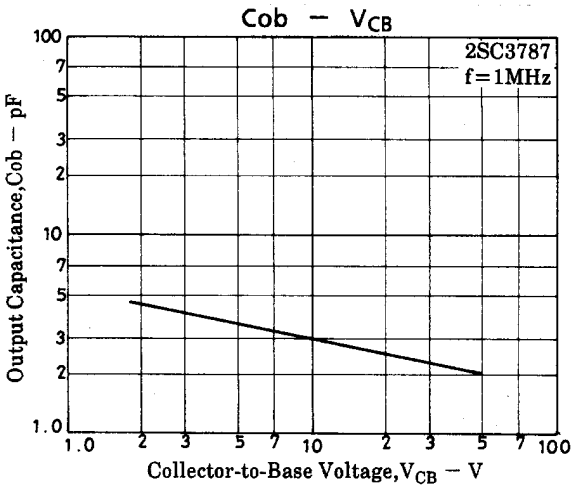


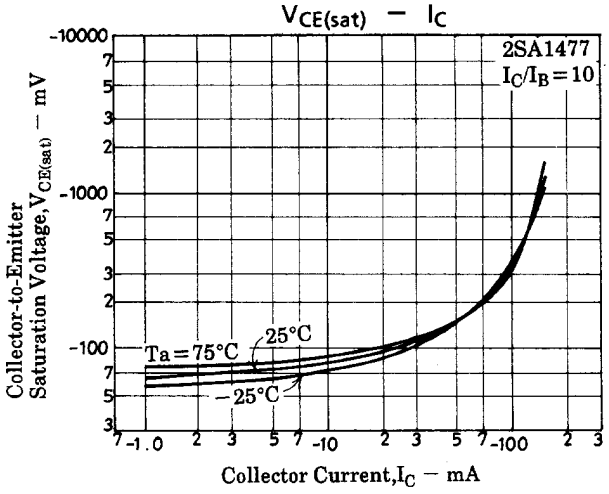


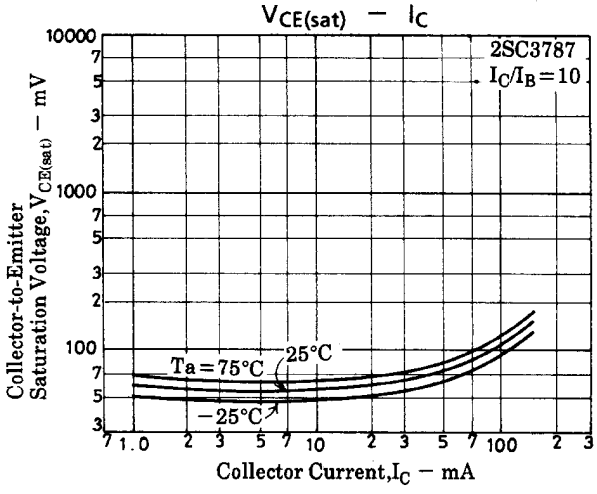

f_T – I_C
2SA1477
V_{CE} = –10V
Gain-Bandwidth Product, f_T – MHz
Collector Current, I_C – mA

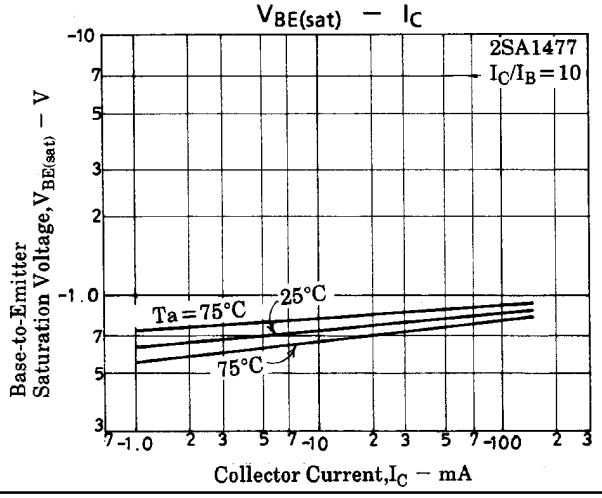

f_T – I_C
2SC3787
V_{CE} = 10V
Gain-Bandwidth Product, f_T – MHz
Collector Current, I_C – mA

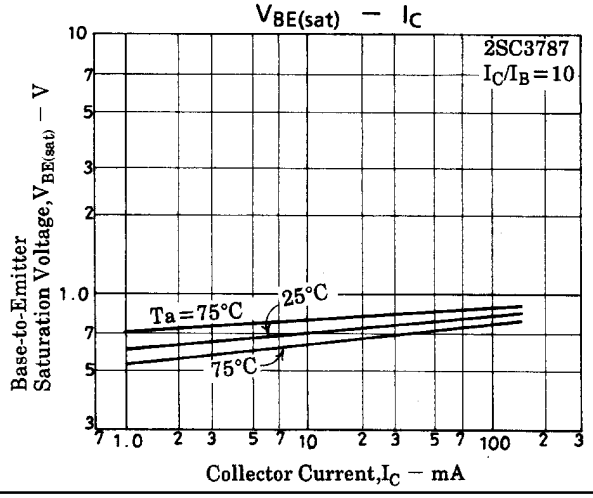

Cob – V_{CB}
2SA1477
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, V_{CB} – V


Cob – V_{CB}
2SC3787
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, V_{CB} – V


$V_{CE(sat)}$ – I_C
2SA1477
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 – mA


$V_{CE(sat)}$ – I_C
2SC3787
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 – mA


$V_{BE(sat)}$ – I_C
2SA1477
I_C/I_B=10
Ta=75°C
25°C
75°C
Base-to-Emitter Saturation Voltage, $V_{BE(sat)}$ – V
Collector Current, I_C – mA


$V_{BE(sat)}$ – I_C
2SC3787
I_C/I_B=10
Ta=75°C
25°C
75°C
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