Ordering number:ENN2089B

PNP/NPN Epitaxial Planar Silicon Transistors

2SA1477/2SC3787

160V/140mA Switching Applications

Applications

· Predrivers for 100W power amplifiers.

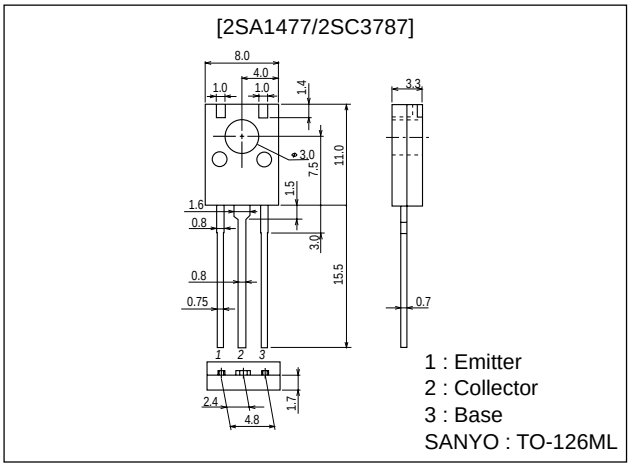
Features

· 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

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

Continued on next page.

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

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

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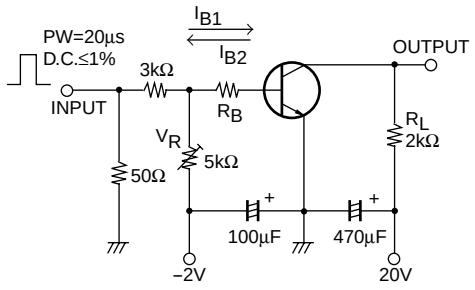
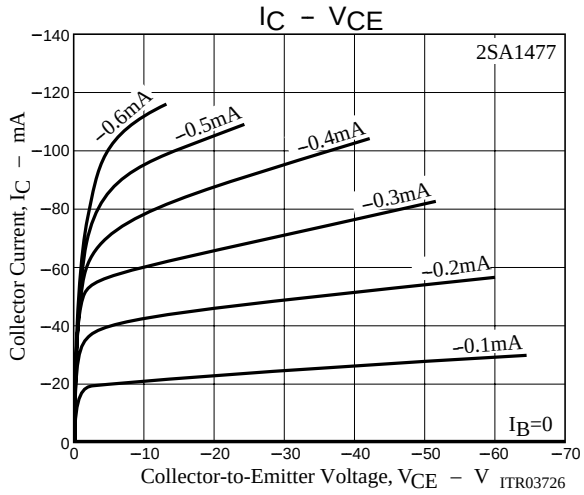
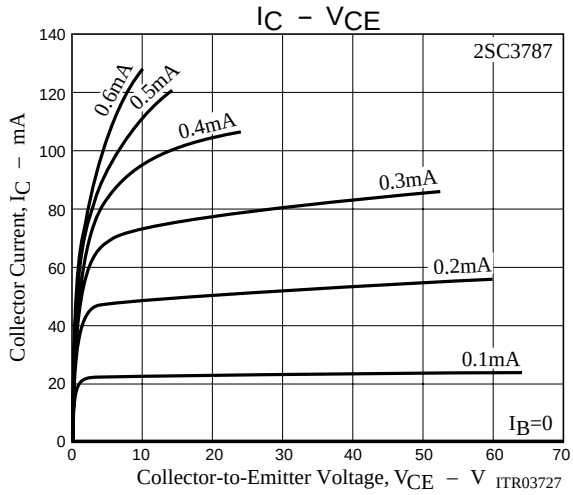
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output Capacitance	C_{ob}	V_{CB}=(–)10V, f=1MHz		(4.0)		pF
				3.0		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)50mA, I_B=(–)5mA		(–140)	(–400)	mV
				70	300	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=(–)50mA, 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

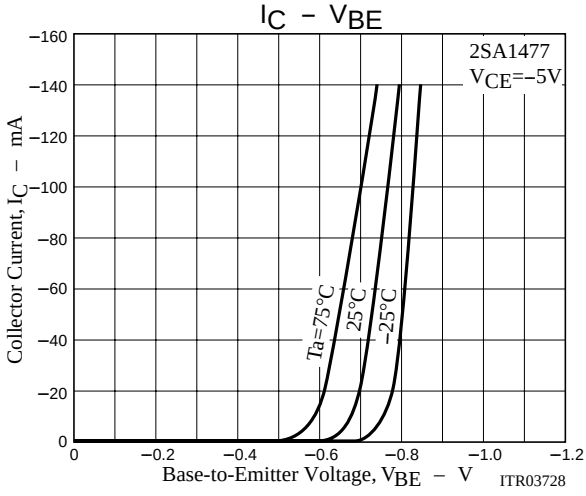
Switching Time Test Circuit

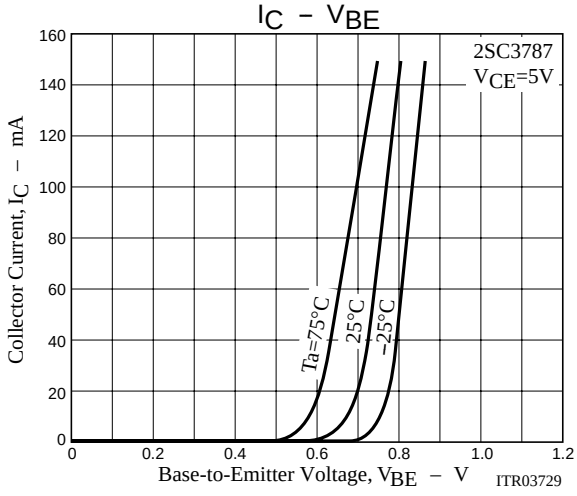


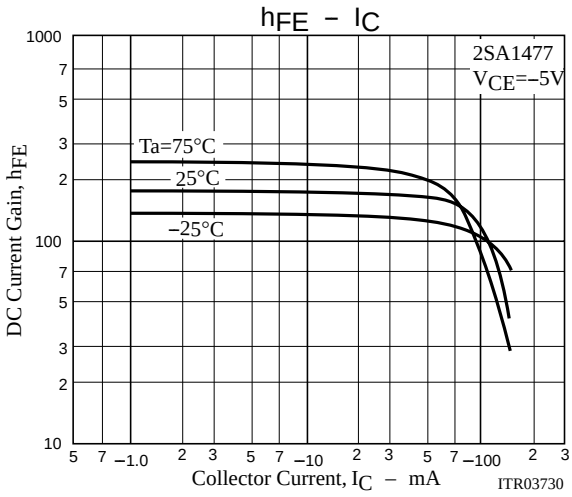
I_C=10I_{B1}=10I_{B2}=10mA
(For PNP, the polarity is reversed.)

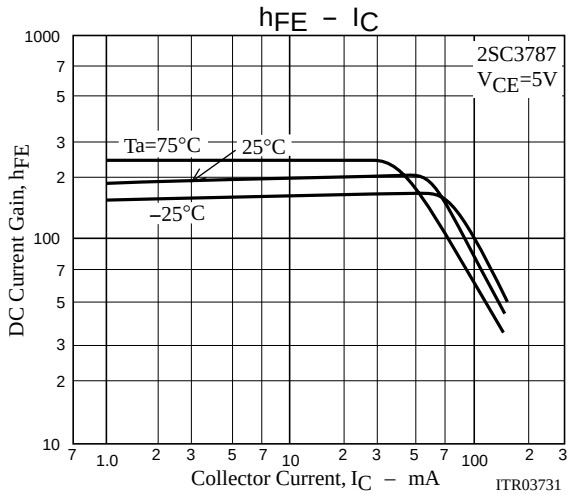


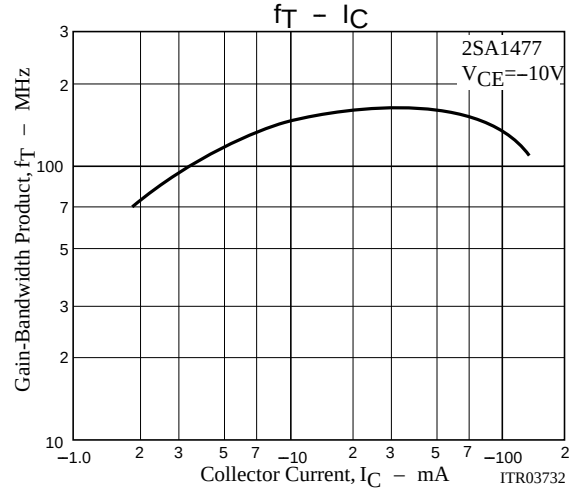


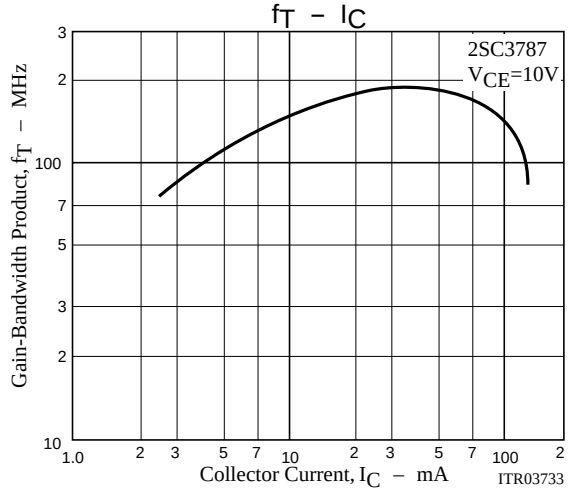


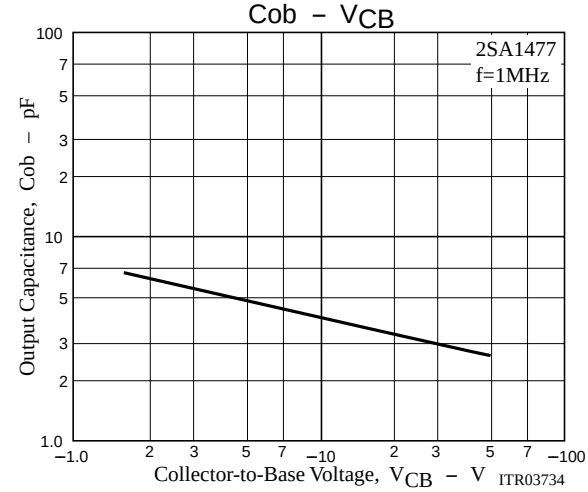


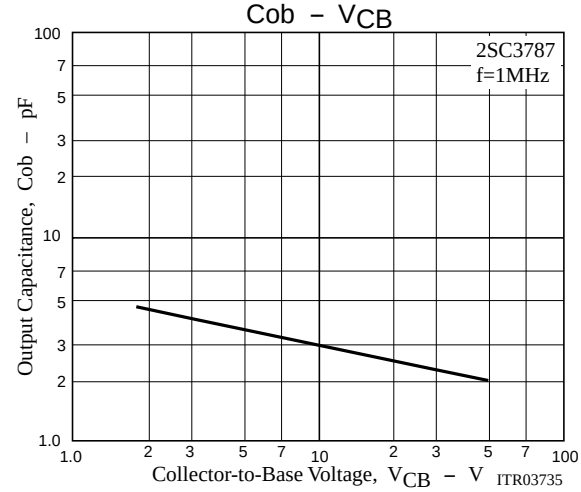

hFE – IC
2SA1477
VCE=–5V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – mA
ITR03730

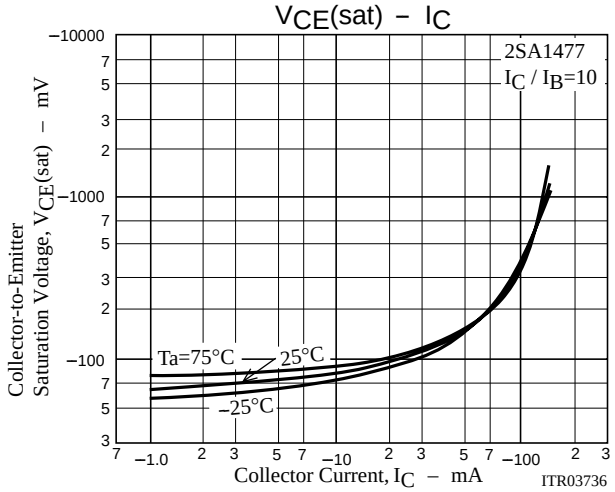

hFE – IC
2SC3787
VCE=5V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – mA
ITR03731

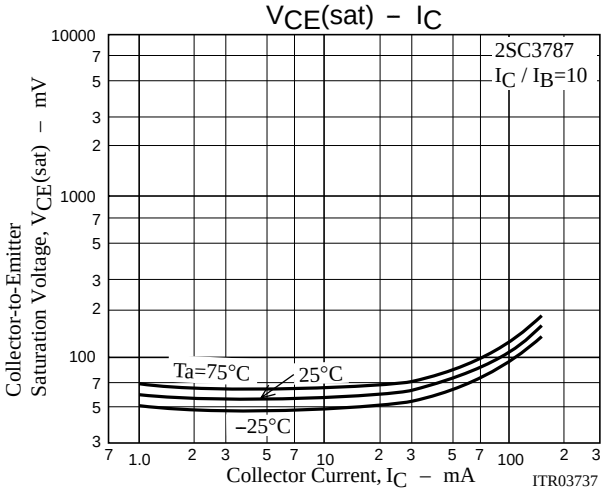

fT – IC
2SA1477
VCE=–10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – mA
ITR03732


fT – IC
2SC3787
VCE=10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – mA
ITR03733

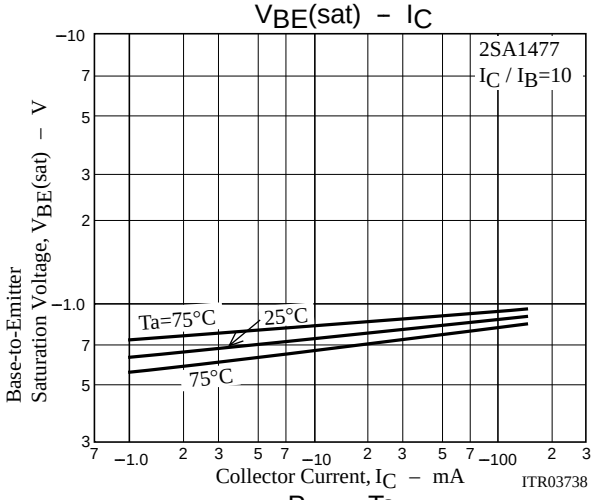

Cob – VCB
2SA1477
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
ITR03734


Cob – VCB
2SC3787
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
ITR03735

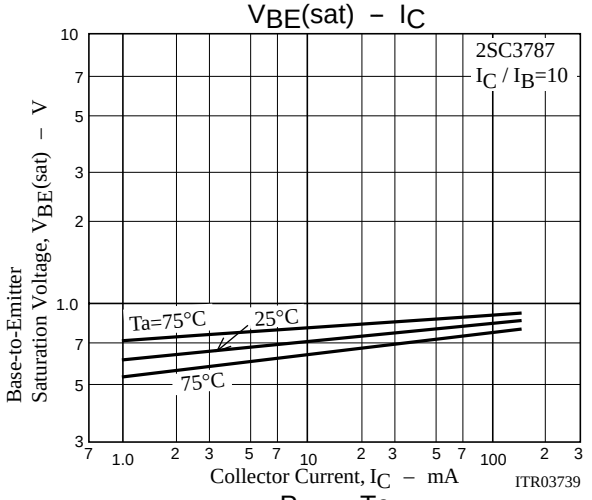

VCE(sat) – IC
2SA1477
IC / IB=10
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – mA
ITR03736


VCE(sat) – IC
2SC3787
IC / IB=10
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – mA
ITR03737

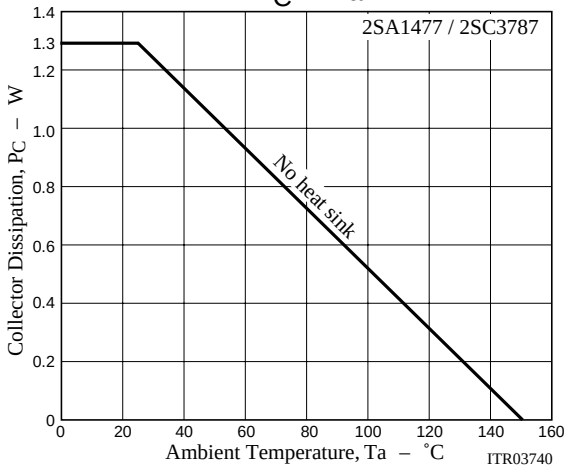
$V_{BE}(sat)$ – I_C



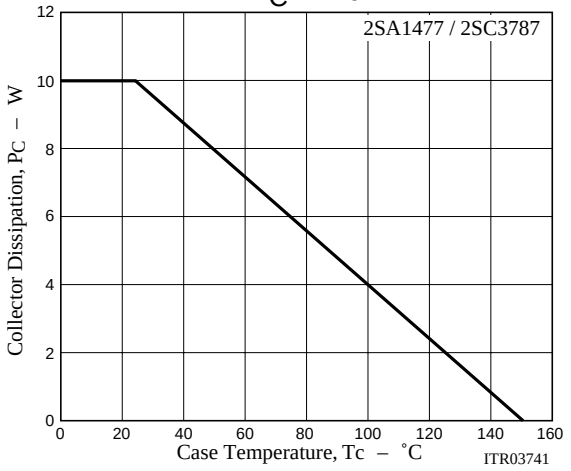
$V_{BE}(sat)$ – I_C



P_C – Ta



P_C – Tc



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