



## 2SA1477/2SC3787

### 160V/140mA Switching Applications

#### Applications

- Predrivers for 100W power amplifiers.

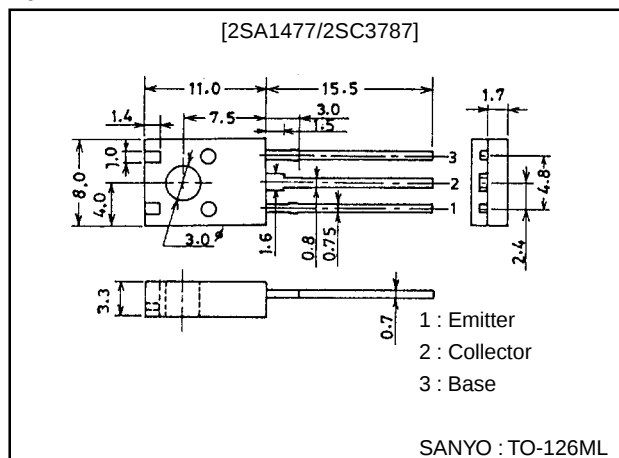
#### Features

- 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 $T_a = 25^\circ\text{C}$

| 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                |
|                              |           | $T_c=25^\circ\text{C}$ | 10          | W                |
| Junction Temperature         | $T_j$     |                        | 150         | $^\circ\text{C}$ |
| Storage Temperature          | $T_{stg}$ |                        | -55 to +150 | $^\circ\text{C}$ |

##### Electrical Characteristics at $T_a = 25^\circ\text{C}$

| Parameter                               | Symbol        | Conditions                                 | Ratings |         |         | Unit          |
|-----------------------------------------|---------------|--------------------------------------------|---------|---------|---------|---------------|
|                                         |               |                                            | min     | typ     | max     |               |
| Collector Cutoff Current                | $I_{CBO}$     | $V_{CB}=(-)120\text{V}, I_E=0$             |         |         | (-)-100 | nA            |
| Emitter Cutoff Current                  | $I_{EBO}$     | $V_{EB}=(-)4\text{V}, I_C=0$               |         |         | (-)-100 | nA            |
| DC Current Gain                         | $h_{FE}$      | $V_{CE}=(-)5\text{V}, I_C=(-)10\text{mA}$  | 100     |         | 400     |               |
| Gain-Bandwidth Product                  | $f_T$         | $V_{CE}=(-)10\text{V}, I_C=(-)10\text{mA}$ |         | 150     |         | MHz           |
| Output Capacitance                      | $C_{ob}$      | $V_{CB}=(-)10\text{V}, f=1\text{MHz}$      |         | (4.0)   |         | pF            |
|                                         |               |                                            |         | 3.0     |         | pF            |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=(-)50\text{mA}, I_B=(-)5\text{mA}$    |         | (-)-140 | (-)-400 | mV            |
|                                         |               |                                            |         | 70      | 300     | mV            |
| Base-to-Emitter Saturation Voltage      | $V_{BE(sat)}$ | $I_C=(-)50\text{mA}, I_B=(-)5\text{mA}$    |         |         | 1.2     | V             |
| Collector-to-Base Breakdown Voltage     | $V_{(BR)CBO}$ | $I_C=(-)10\mu\text{A}, I_E=0$              | (-)-180 |         |         | V             |
| Collector-to-Emitter Breakdown Voltage  | $V_{(BR)CEO}$ | $I_C=(-)1\text{mA}, R_{BE}=\infty$         | (-)-160 |         |         | V             |
| Emitter-to-Base Breakdown Voltage       | $V_{(BR)EBO}$ | $I_E=(-)10\mu\text{A}, I_C=0$              | (-)-5   |         |         | V             |
| Rise Time                               | $t_{on}$      | See specified Test Circuit                 |         | 0.1     |         | $\mu\text{s}$ |
| Storage Time                            | $t_{stg}$     | See specified Test Circuit                 |         | 0.5     |         | $\mu\text{s}$ |
| Fall Time                               | $t_f$         | See specified Test Circuit                 |         | 0.1     |         | $\mu\text{s}$ |

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

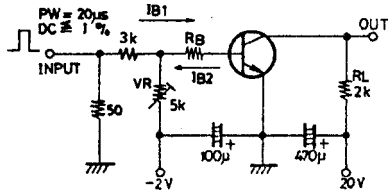
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|-----|---|-----|-----|---|-----|-----|---|-----|
| 100 | R | 200 | 140 | S | 280 | 200 | T | 400 |
|-----|---|-----|-----|---|-----|-----|---|-----|

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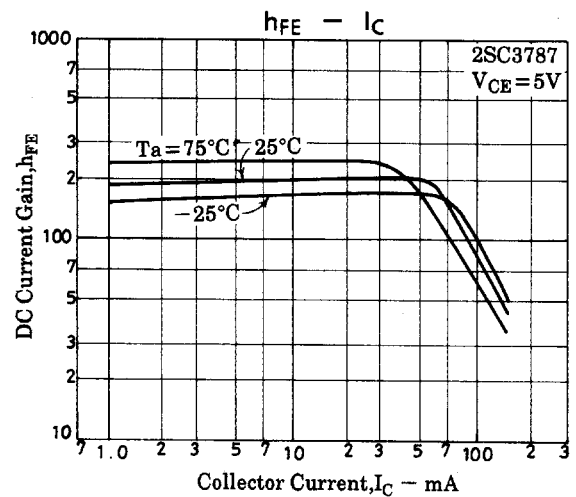
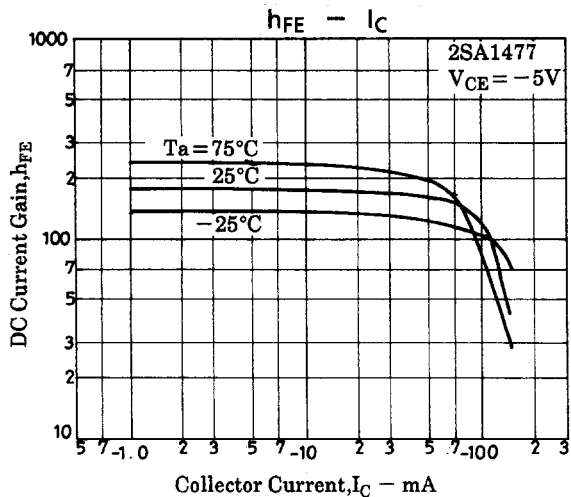
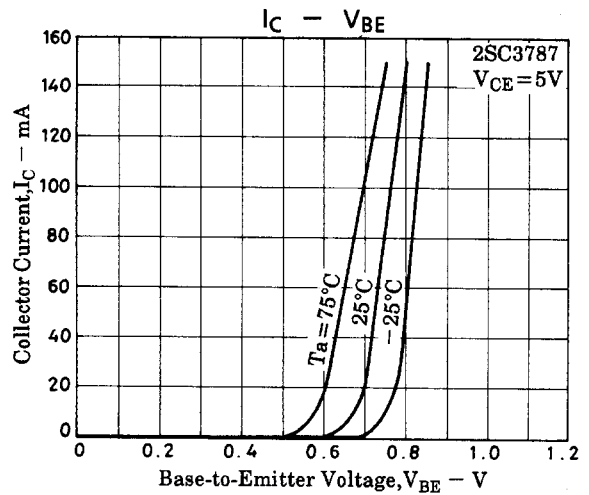
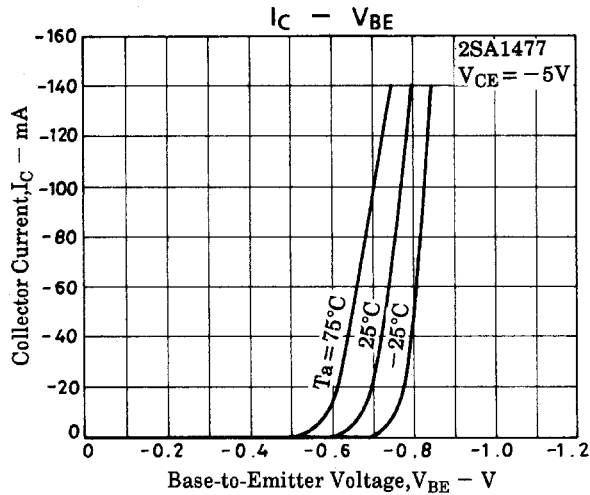
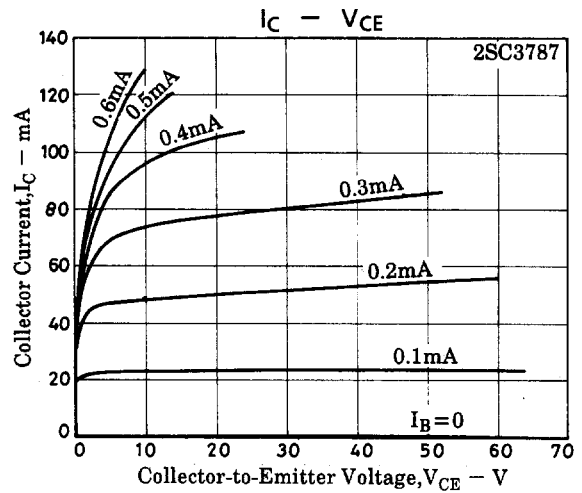
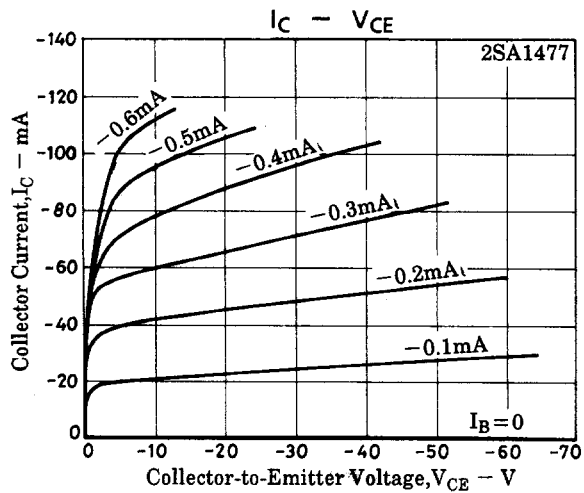
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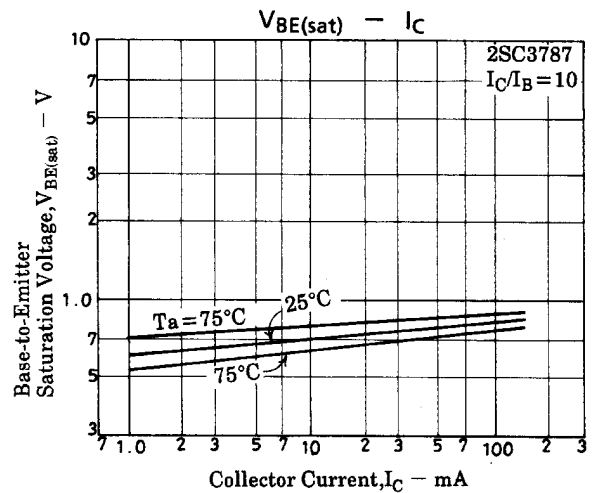
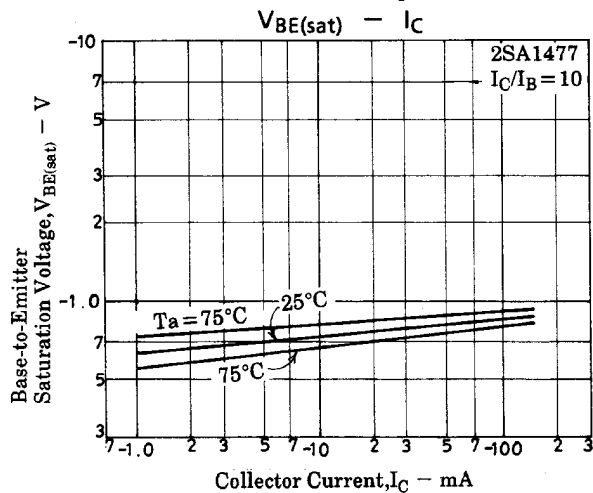
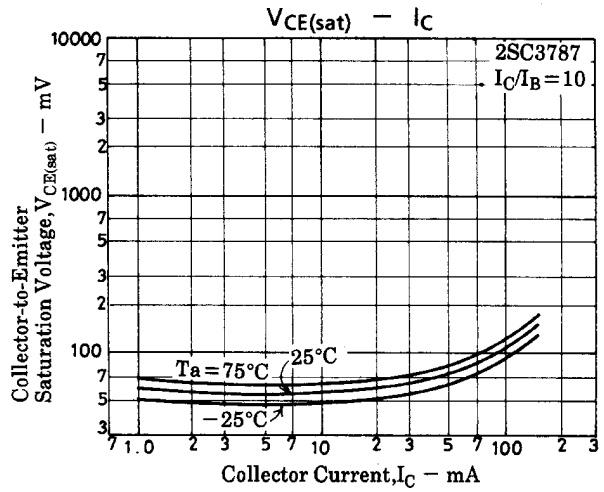
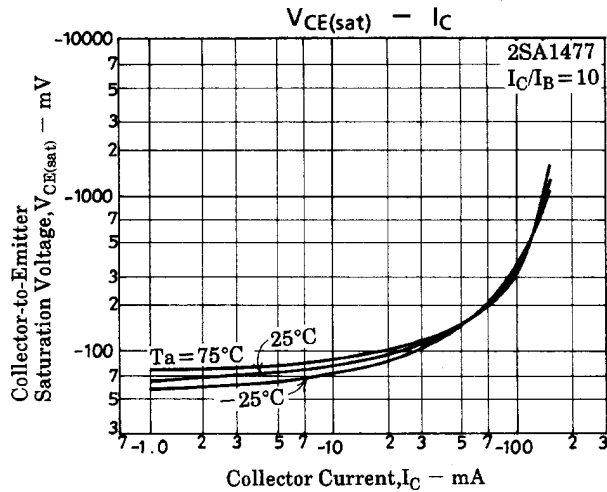
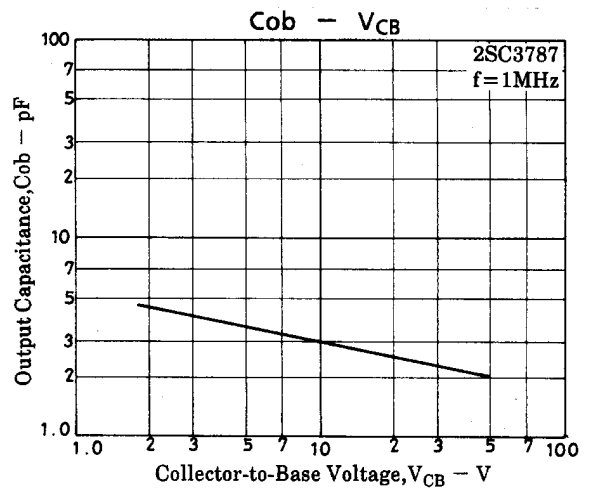
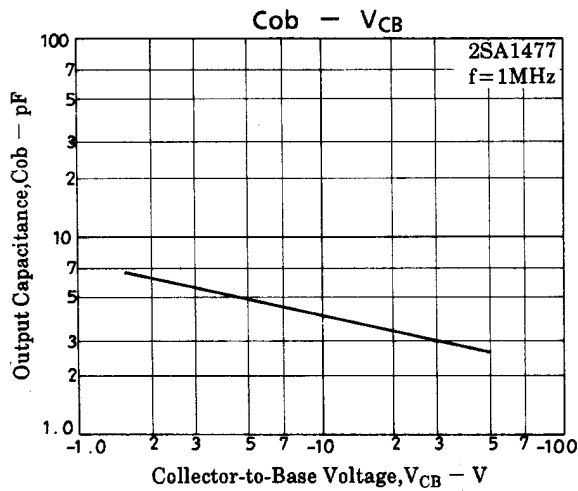
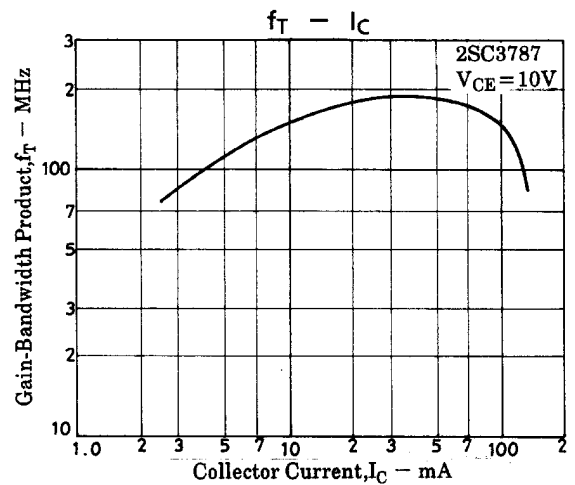
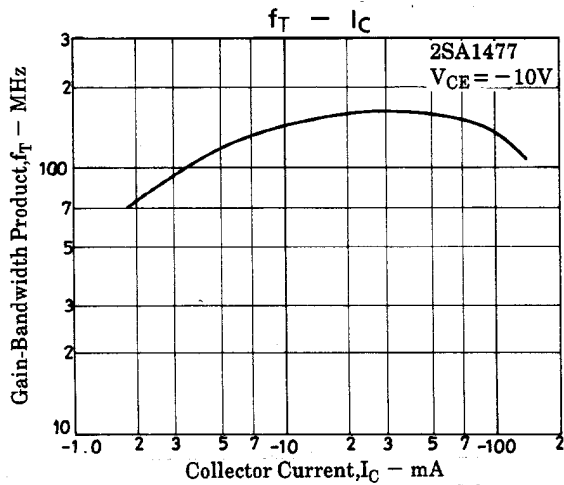
# Switching Time Test Circuit



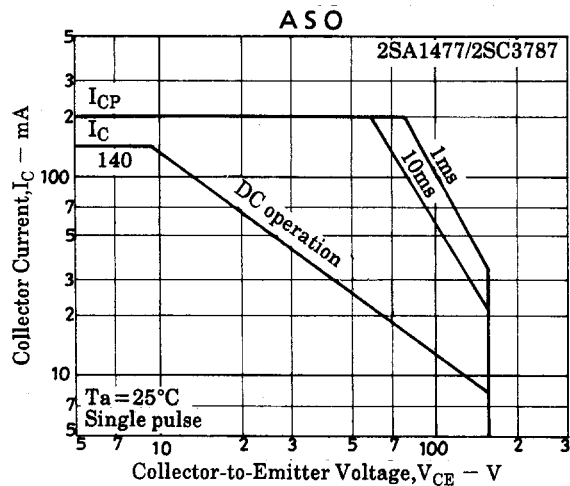
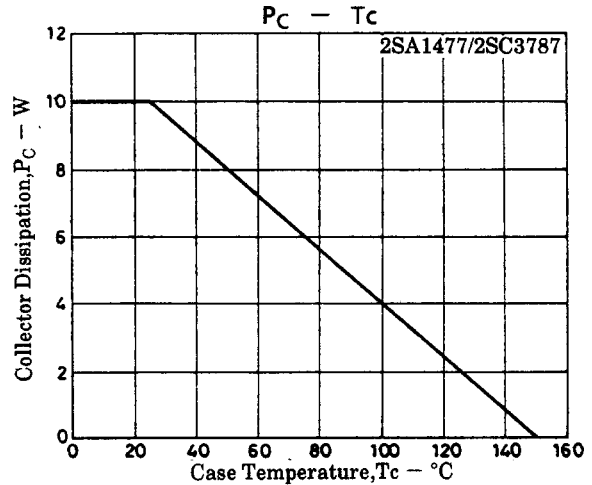
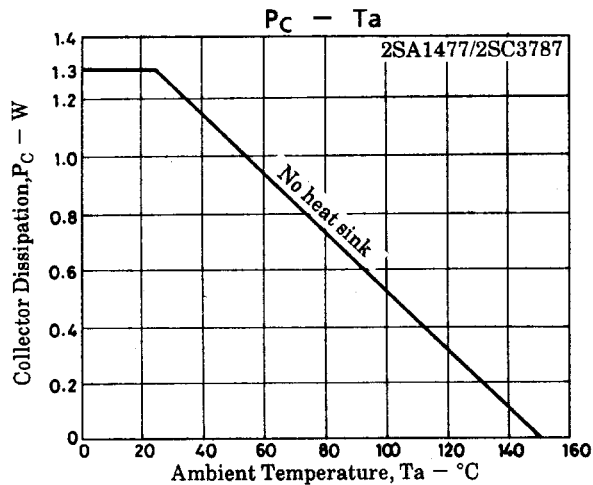
$I_C = 10I_{B1} = 10I_{B2} = 10\text{mA}$   
(For PNP, the polarity is reversed)  
Unit (resistance :  $\Omega$ , capacitance : F)



# 2SA1477/2SC3787



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