



## 2SA1786/2SC4646

### High Voltage Driver Applications

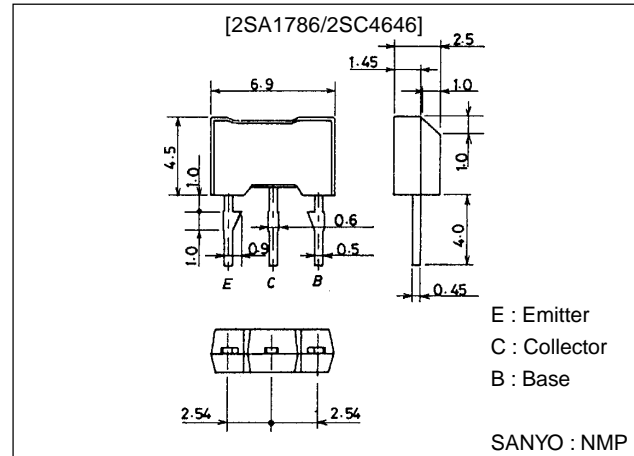
#### Features

- Large current capacity ( $I_C=2A$ ).
- High breakdown voltage ( $V_{CEO} \geq 400V$ ).

#### Package Dimensions

unit:mm

2064



() : 2SA1786

#### Specifications

##### Absolute Maximum Ratings at $T_a = 25^\circ C$

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CBO}$		(-400)	V
Collector-to-Emitter Voltage	$V_{CEO}$		(-400)	V
Emitter-to-Base Voltage	$V_{EBO}$		(-5)	V
Collector Current	$I_C$		(-2)	A
Collector Current (Pulse)	$I_{CP}$		(-4)	A
Collector Dissipation	$P_C$		1	W
Junction Temperature	$T_J$		150	$^\circ C$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ C$

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = (-)300V, I_E = 0$			(-1.0)	$\mu A$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = (-)4V, I_C = 0$			(-1.0)	$\mu A$
DC Current Gain	$h_{FE}$	$V_{CE} = (-)10V, I_C = (-)100mA$	40*		200*	
Gain-Bandwidth Product	$f_T$	$V_{CE} = (-)10V, I_C = (-)100mA$		(40)60		MHz
Output Capacitance	$C_{ob}$	$V_{CB} = (-)30V, f = 1MHz$		(25)15		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = (-)500mA, I_B = (-)50mA$			(-1.0)	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = (-)500mA, I_B = (-)50mA$			(-1.0)	V

\* : The 2SA1786/2SC4646 are classified by 100mA  $h_{FE}$  as follows :

40	C	80	60	D	120	100	E	200
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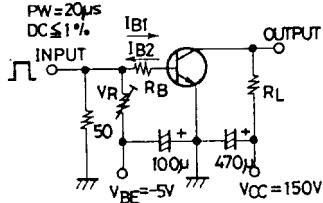
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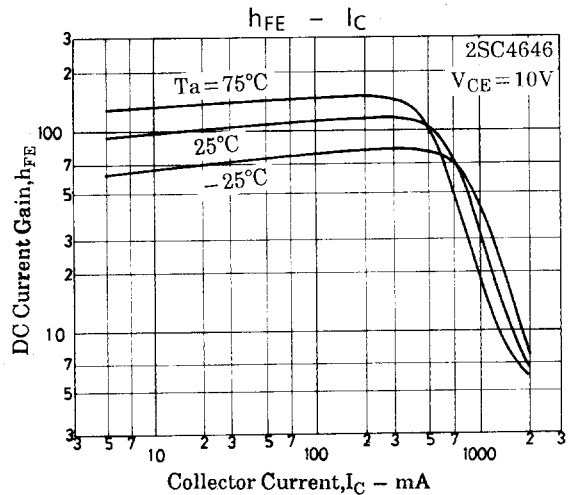
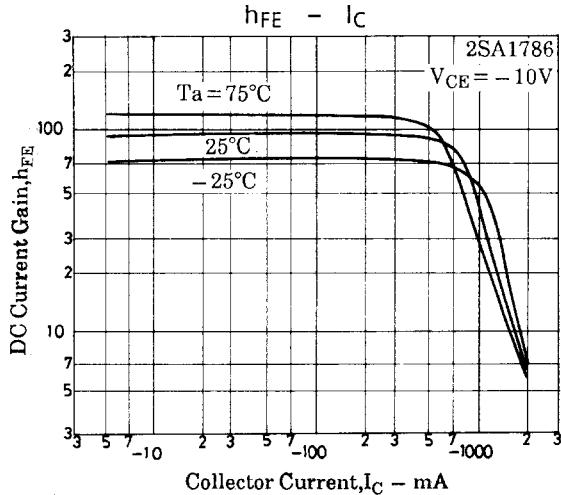
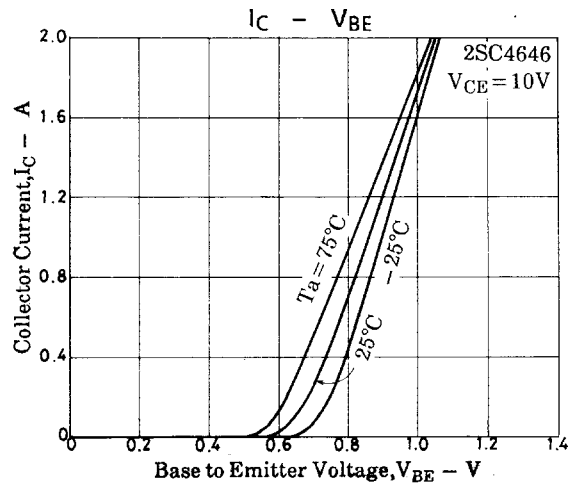
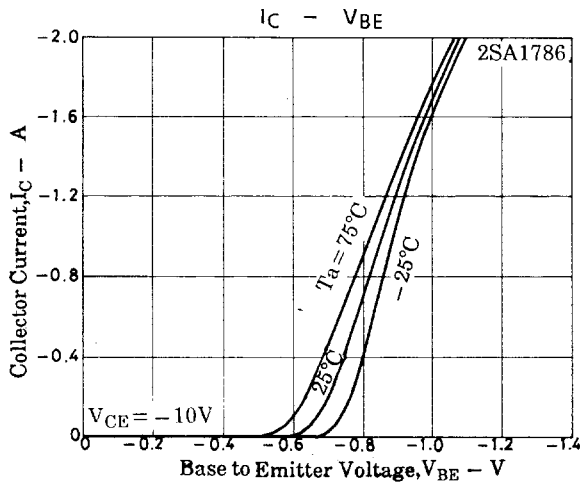
## 2SA1786/2SC4646

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = (-)10\mu A, I_E = 0$	(-)400			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = (-)1mA, R_{BE} = \infty$	(-)400			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = (-)10\mu A, I_C = 0$	(-)5			V
Turn-ON Time	$t_{on}$	See specified Test Circuit.		(0.12)		$\mu s$
				0.085		$\mu s$
Storage Time	$t_{stg}$	See specified Test Circuit.		(3.0)		$\mu s$
				4.0		$\mu s$
Turn-OFF Time	$t_{off}$	See specified Test Circuit.		(0.3)		$\mu s$
				0.6		$\mu s$

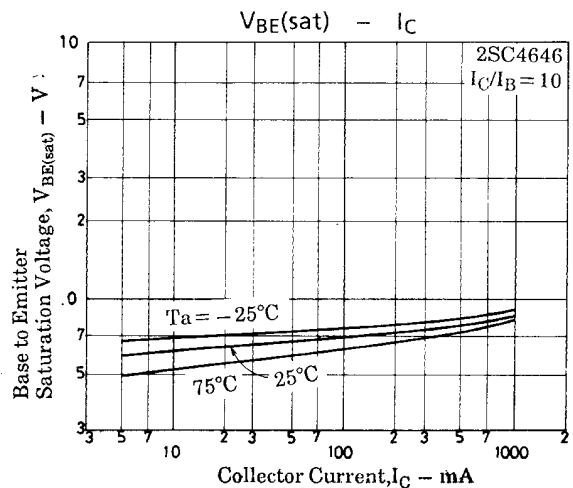
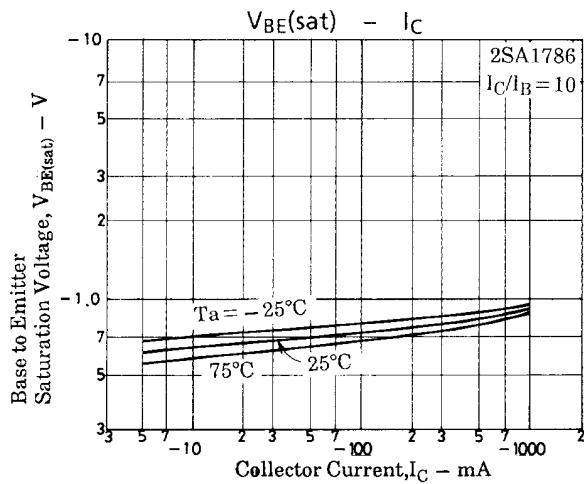
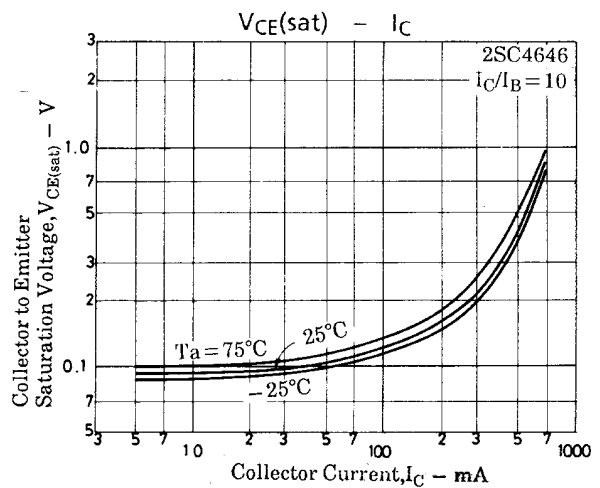
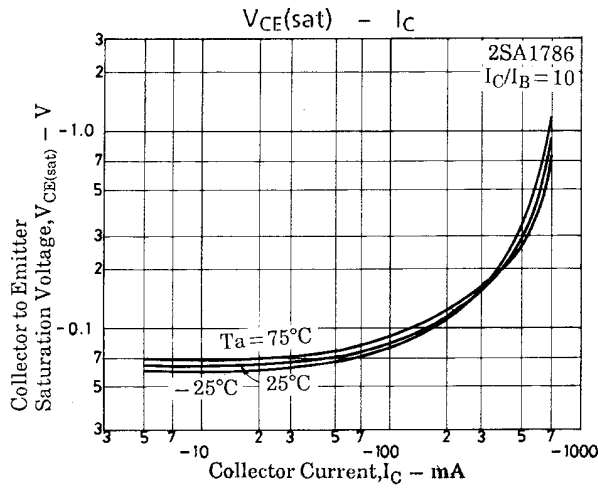
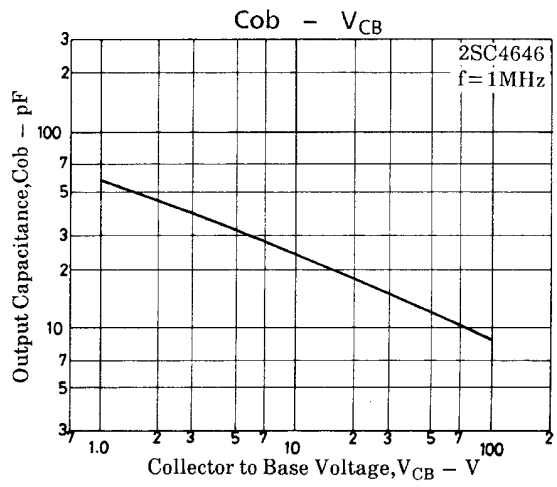
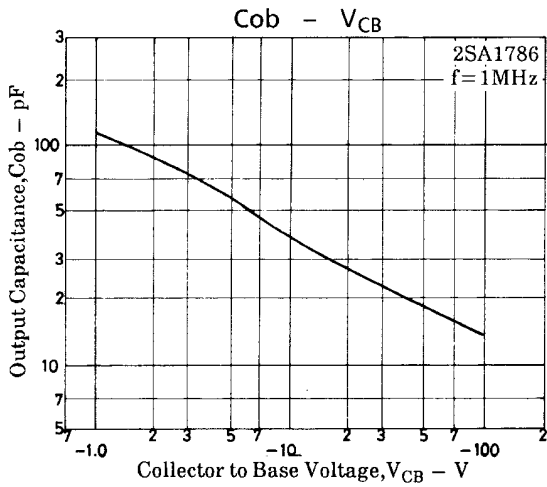
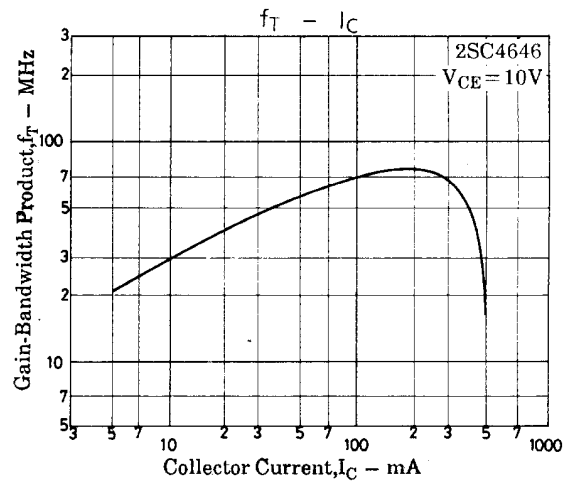
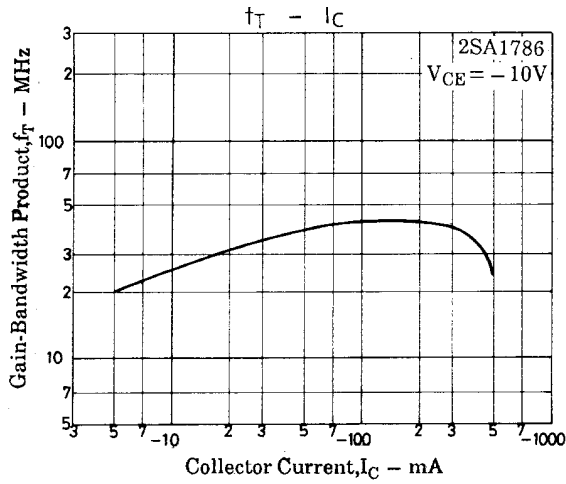
### Switching Time Test Circuit



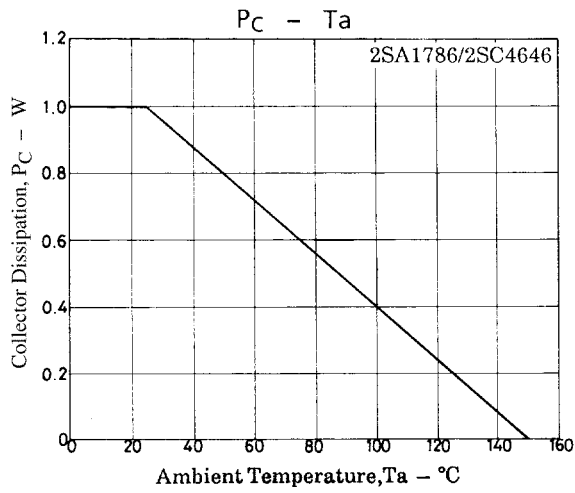
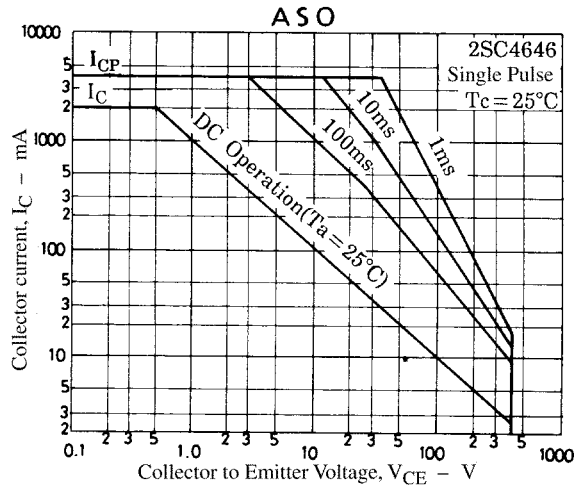
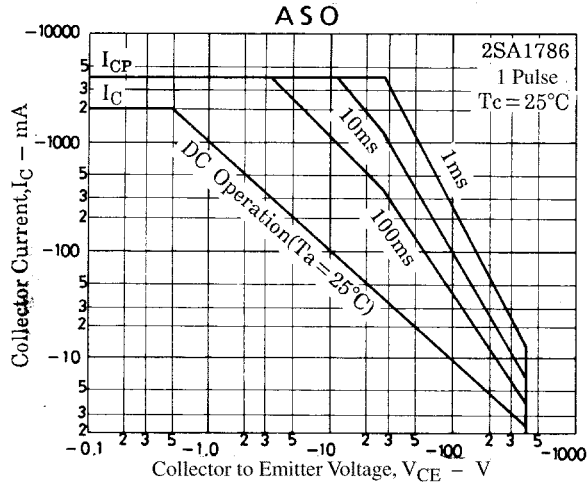
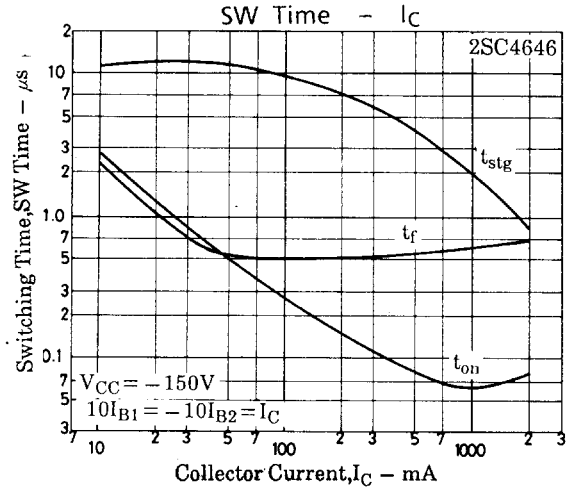
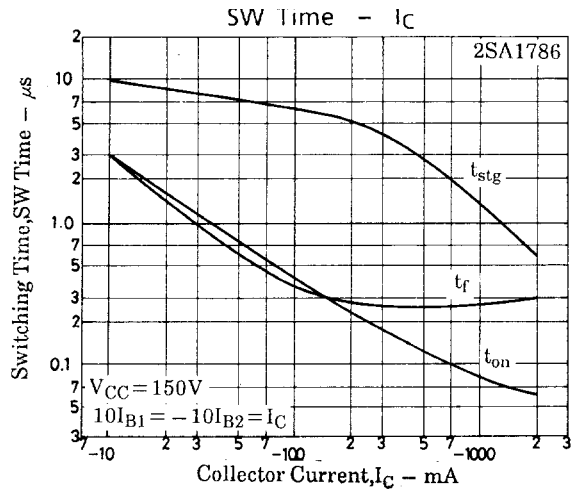
$10I_{B1} = -10I_{B2} = I_C = 500mA$   
 $R_L = 300\Omega, R_B = 20\Omega, \text{ at } I_C = 500mA$   
 (For PNP, the polarity is reversed.)  
 Unit (resistance :  $\Omega$ , capacitance : F)



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