



# 2SA1606/2SC4159

## High-Voltage Switching, AF 100W Driver Applications

### Applications

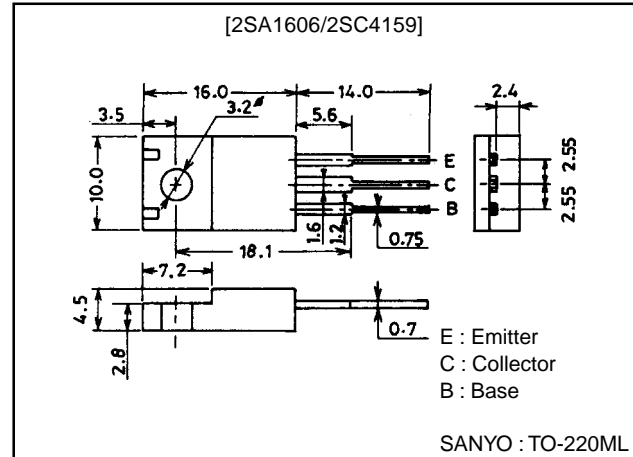
- High-voltage switching, AF power amplifier, 100W output predrivers.

### Features

- Micaless package facilitating mounting.

### Package Dimensions

unit:mm  
2041



( ) : 2SA1606

### Specifications

#### Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CB0}$		(-)180	V
Collector-to-Emitter Voltage	$V_{CEO}$		(-)160	V
Emitter-to-Base Voltage	$V_{EBO}$		(-)6	V
Collector Current	$I_C$		(-)1.5	A
Collector Current (Pulse)	$I_{CP}$		(-)3	A
Collector Dissipation	$P_C$	$T_c=25^\circ C$	15	W
Junction Temperature	$T_j$		150	°C
Storage Temperature	$T_{stg}$		-55 to +150	°C

#### Electrical Characteristics at Ta = 25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=-120V, I_E=0$			(-)10	$\mu A$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=-4V, I_C=0$			(-)10	$\mu A$
DC Current Gain	$h_{FE}$	$V_{CE}=-5V, I_C=-300mA$	60*		200*	
Gain-Bandwidth Product	$f_T$	$V_{CE}=-10V, I_C=-50mA$		100		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=-10V, f=1MHz$		(30)23		pF
Base-to-Emitter Voltage	$V_{BE}$	$V_{CE}=-5V, I_C=-10mA$			(-)1.5	V

\* : The 2SA1606/2SC4159 are classified by 300mA  $h_{FE}$  as follows :

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60	D	120	100	E	200
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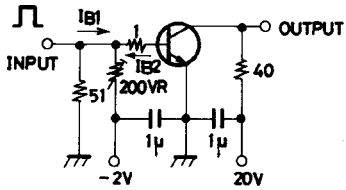
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)500mA, I_B=(-)50mA$		(-0.5)		V
				0.3		V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)1mA, I_E=0$	(-180)			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-160)			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)1mA, I_C=0$	(-6)			V
Turn-ON Time	$t_{on}$	See specified test circuit.		(0.29)		$\mu s$
		See specified test circuit.		0.15		$\mu s$
Fall Time	$t_f$	See specified test circuit.		(0.19)		$\mu s$
		See specified test circuit.		0.48		$\mu s$
Storage Time	$t_{stg}$	See specified test circuit.		(0.48)		$\mu s$
		See specified test circuit.		0.81		$\mu s$

## Switching Time Test Circuit

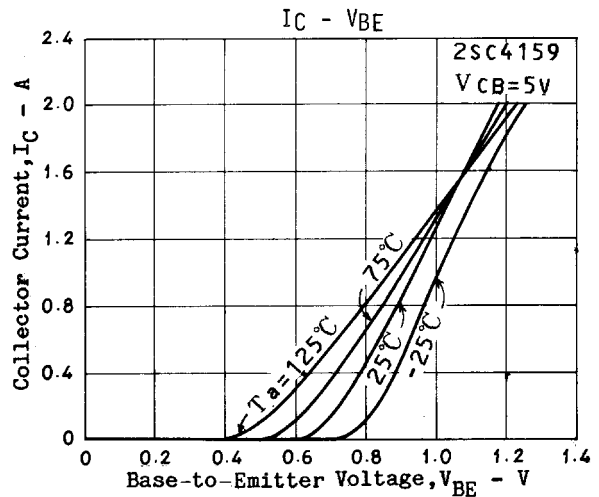
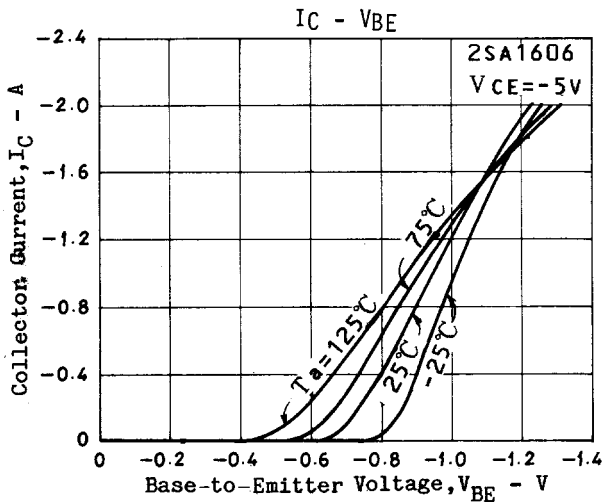
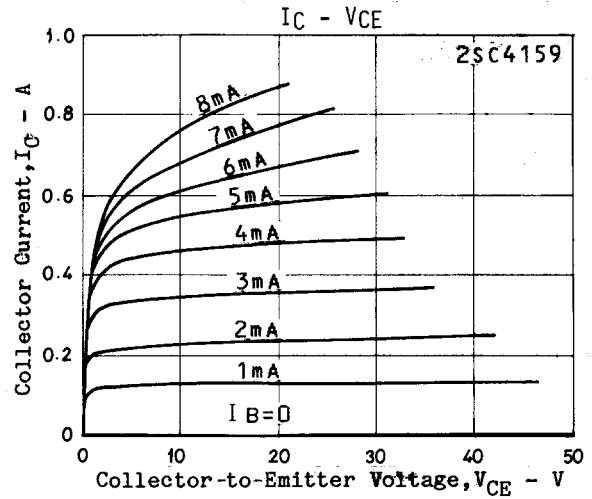
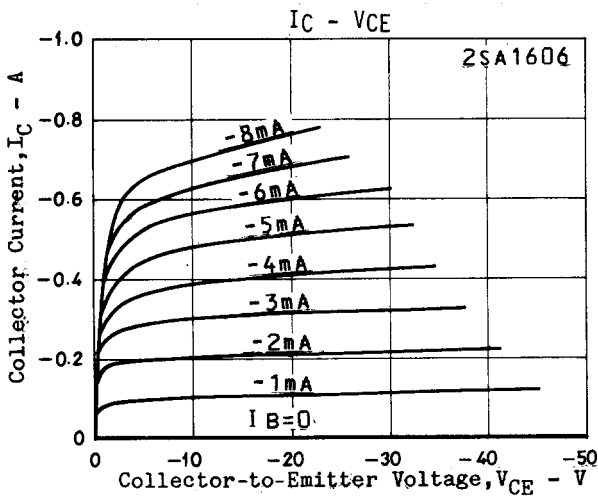


$$10I_{B1} = -10I_{B2} = I_C = 0.5A$$

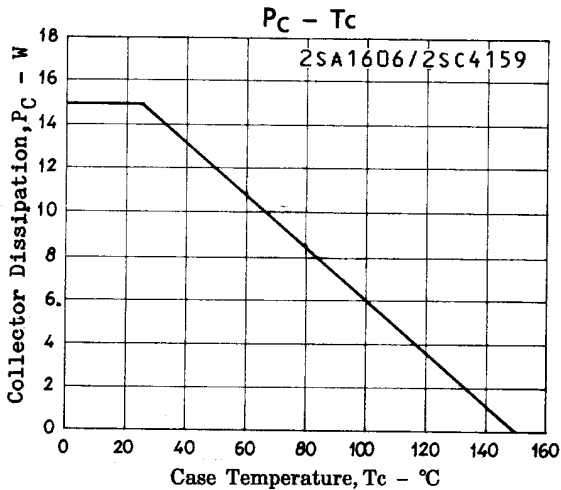
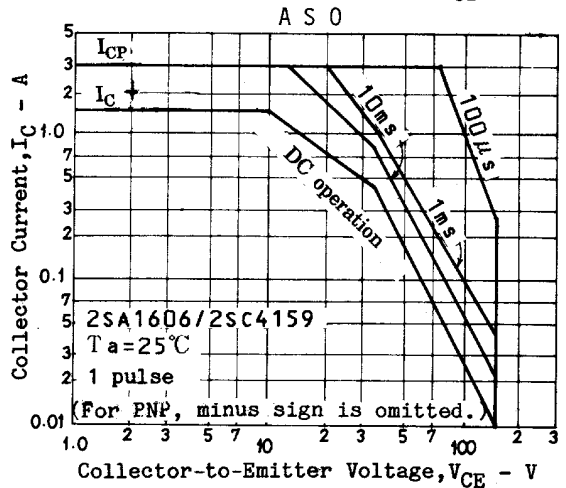
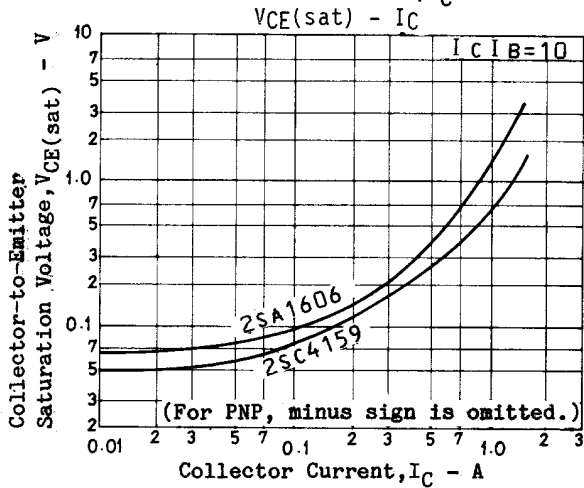
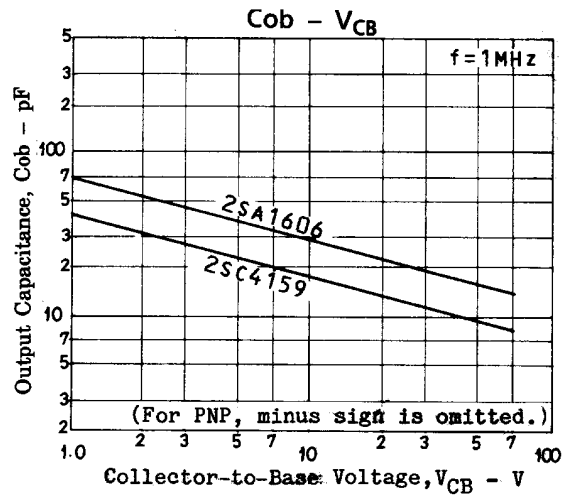
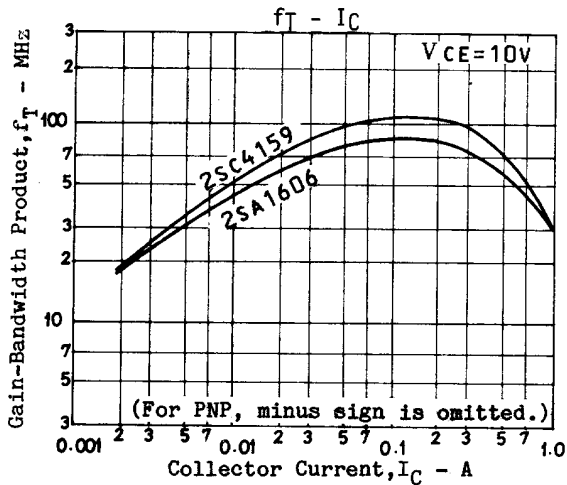
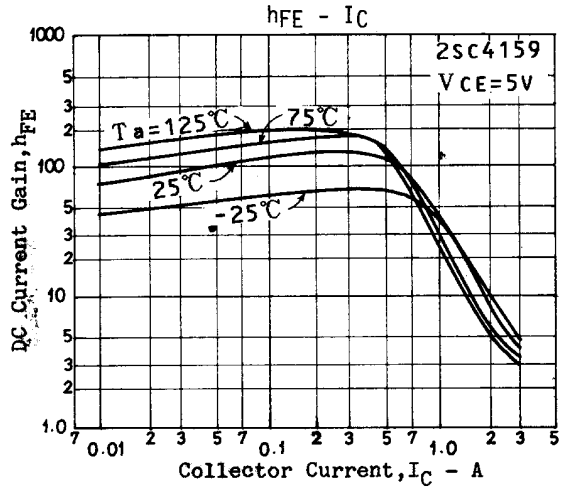
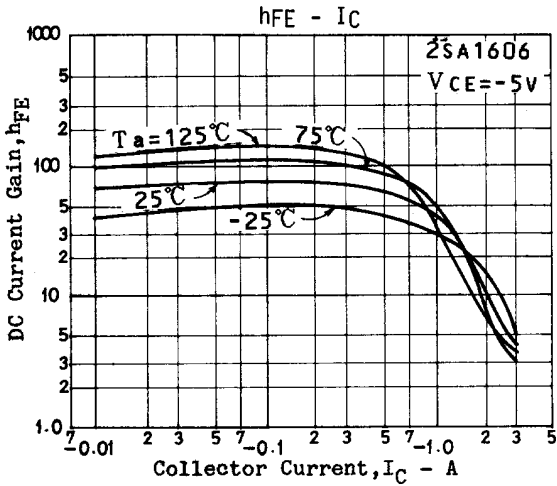
$$PW = 20\mu s$$

For PNP, the polarity is reversed.

Unit (resistance :  $\Omega$ , capacitance : F)



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