Ordering number:EN2535

PNP/NPN Epitaxial Planar Silicon Transistors

2SA1606/2SC4159

High-Voltage Switching, AF 100W Driver Applications

Applications

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

Features

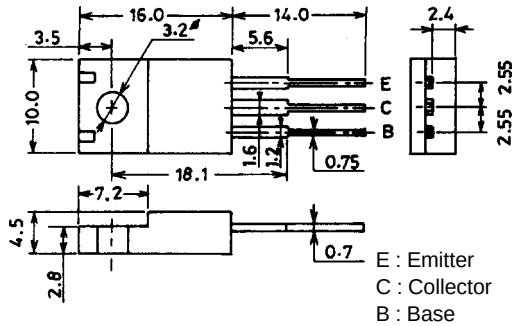
· Micaless package facilitating mounting.

Package Dimensions

unit:mm

2041

[2SA1606/2SC4159]



E : Emitter
C : Collector
B : Base

SANYO : TO-220ML

( ) : 2SA1606

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}		(–)6	V
Collector Current	I_C		(–)1.5	A
Collector Current (Pulse)	I_{CP}		(–)3	A
Collector Dissipation	P_C	Tc=25˚C	15	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			(–)10	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(–)4V, I_C=0			(–)10	μA
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

Continued on next page.

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

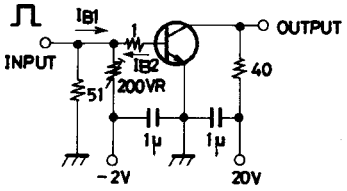
60	D	120	100	E	200

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

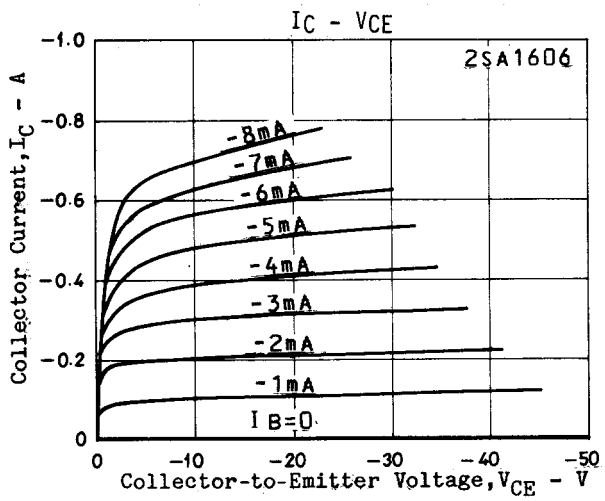
Continued from preceding page.

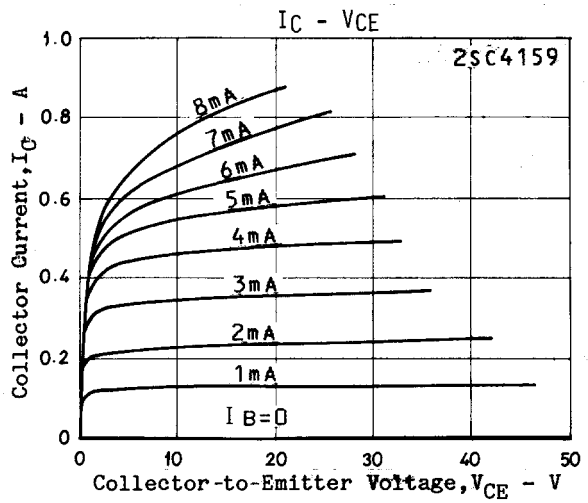
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)500mA, I_B=(–)50mA		(–0.5)		V
				0.3		V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)1mA, I_E=0	(–)180			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)1mA,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

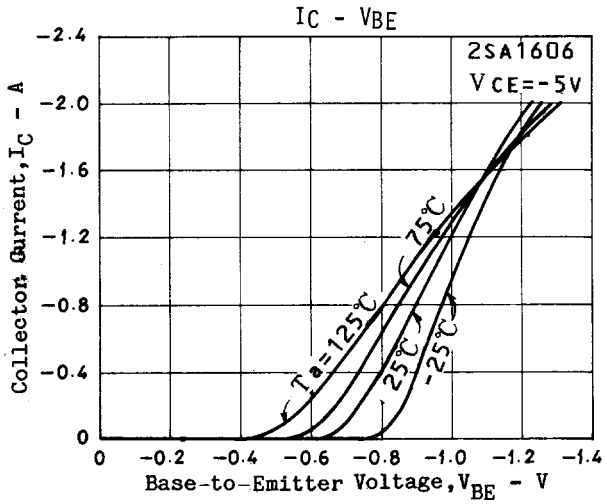
Switching Time Test Circuit

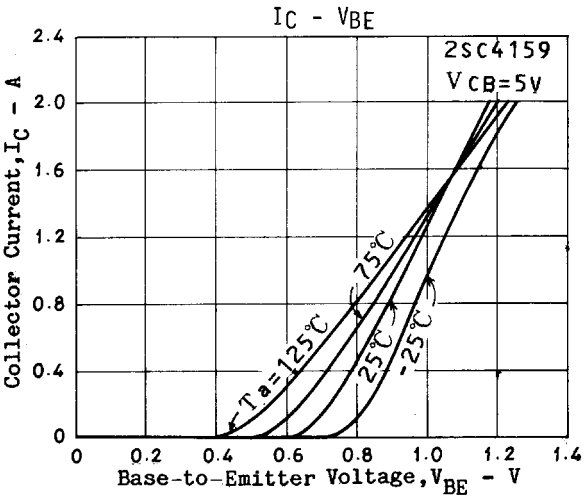


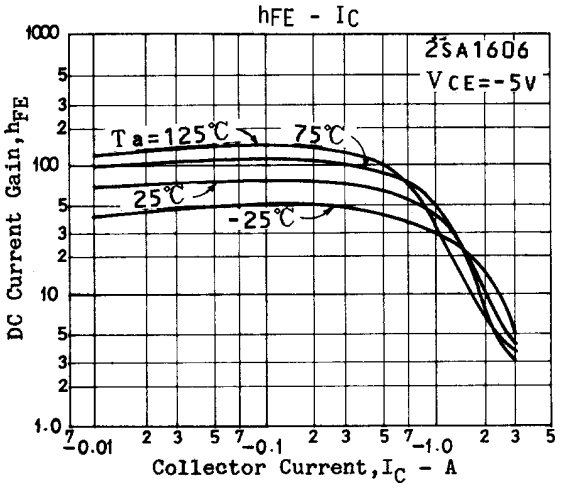
$10I_{B1}$=–$10I_{B2}$=I_C=0.5A
PW=20µs
For PNP, the polarity is reversed.
Unit (resistance : Ω, capacitance : F)

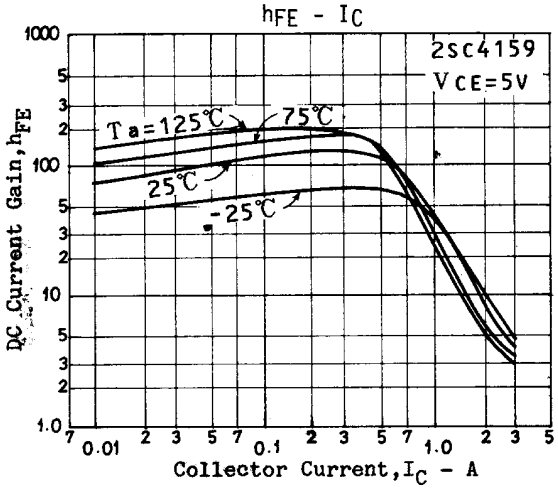


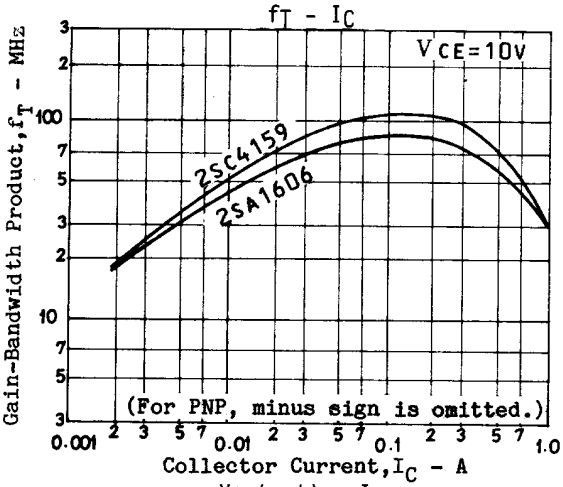


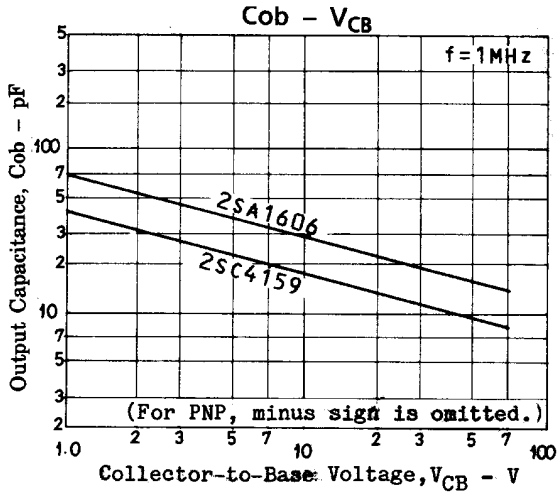


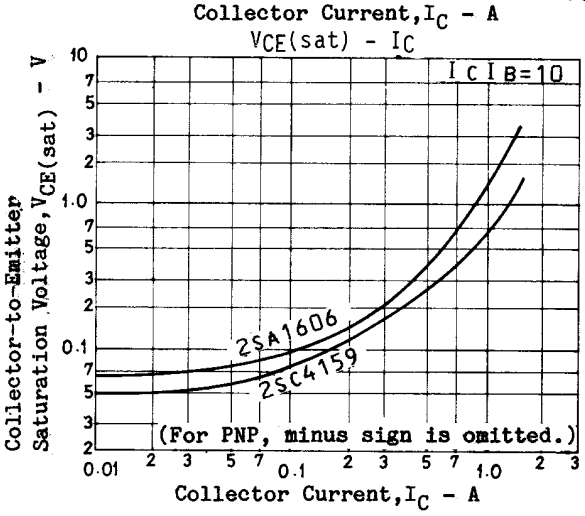


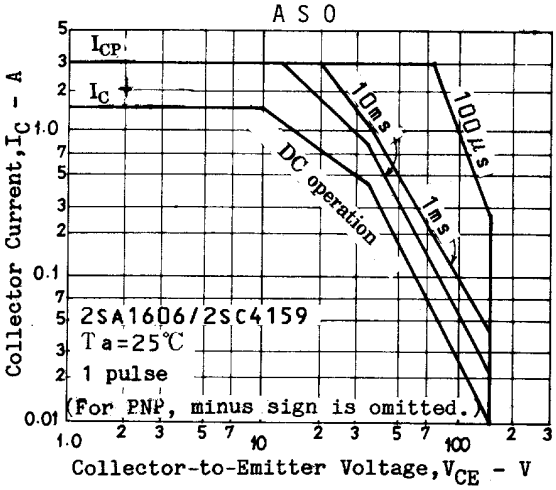

hFE - IC
2SA1606
VCE=-5V
Ta=125℃
75℃
25℃
-25℃
DC Current Gain, hFE
Collector Current, IC - A

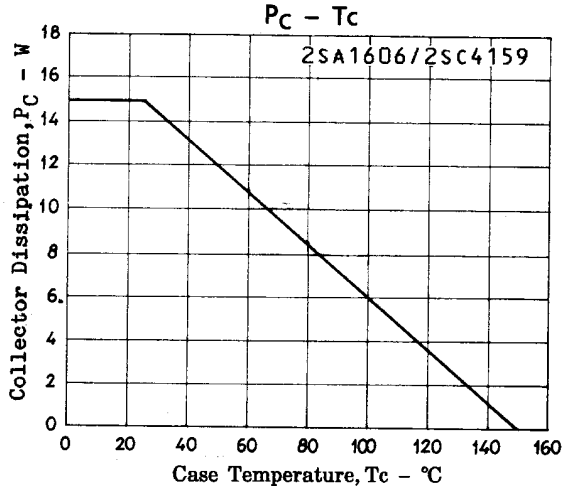

hFE - IC
2SC4159
VCE=5V
Ta=125℃
75℃
25℃
-25℃
DC Current Gain, hFE
Collector Current, IC - A


fT - IC
VCE=10V
2SC4159
2SA1606
(For PNP, minus sign is omitted.)
Gain-Bandwidth Product, fT - MHz
Collector Current, IC - A


Cob - VCB
f=1MHz
2SA1606
2SC4159
(For PNP, minus sign is omitted.)
Output Capacitance, Cob - pF
Collector-to-Base Voltage, VCB - V


VCE(sat) - IC
IC/IB=10
2SA1606
2SC4159
(For PNP, minus sign is omitted.)
Collector-to-Emitter Saturation Voltage, VCE(sat) - V
Collector Current, IC - A


A S O
ICP
IC
10ms
100μs
DC operation
1ms
2SA1606/2SC4159
Ta=25℃
1 pulse
(For PNP, minus sign is omitted.)
Collector Current, IC - A
Collector-to-Emitter Voltage, VCE - V


PC - Tc
2SA1606/2SC4159
Collector Dissipation, PC - W
Case Temperature, Tc - ℃