Ordering number:EN1032A

PNP/NPN Epitaxial Planar Silicon Transistors

2SA1248/2SC3116

160V/700mA Switching Applications

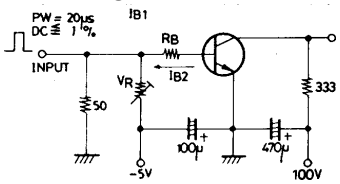
Uses

· Color TV sound output, converters, inverters.

Features

· High breakdown voltage.
· Large current capacity.
· Using MBIT process

Switching Time Test Circuit



I_C=20I_{B1}=–20I_{B2}=300mA
(For PNP, the polarity is reversed)
Unit (resistance : Ω, capacitance : F)

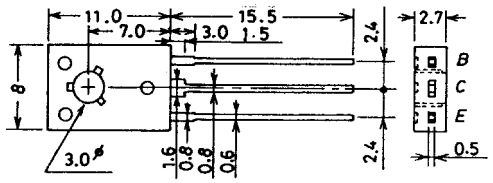
( ) : 2SA1248

Package Dimensions

unit:mm

2009A

[2SA1248/2SC3116]



JEDEC:TO-126

B:Base
C:Collector
E:Emitter

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		(–)0.7	A
Collector Current (Pulse)	I_{CP}		(–)1.5	A
Collector Dissipation	P_C		1	W
		Tc=25˚C	10	W
Junction Temperature	Tj		150	˚C
Storage Temperature	Tstg		–55 to +150	˚C

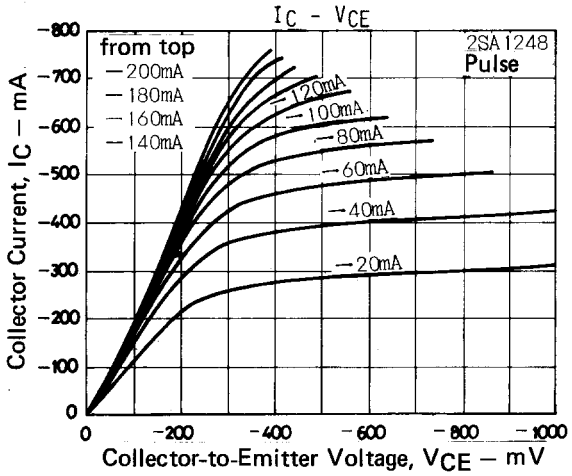
Electrical Characteristics at Ta = 25˚C

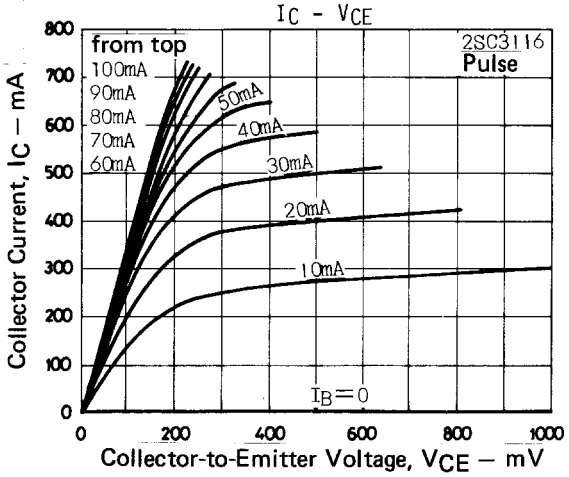
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=(–)120V, I_E=0			(–)1.0	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(–)4V, I_C=0			(–)1.0	μA
DC Current Gain	$h_{FE}1$	V_{CE}=(–)5V, I_C=(–)100mA	100*		400*	
	$h_{FE}2$	V_{CE}=(–)5V, I_C=(–)10mA	90			
Gain-Bandwidth Product	f_T	V_{CE}=(–)10V, I_C=(–)50mA		120		MHz
Common Base Output Capacitance	C_{ob}	V_{CB}=(–)10V, f=1MHz		8 (11)		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)250mA, I_B=(–)25mA		0.12 (–0.2)	0.4 (–0.5)	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=(–)250mA, I_B=(–)25mA		(–)0.85	(–)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)10μA, I_E=0	(–)180			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	IC=(–)1mA, R_{BE}=∞	(–)160			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=(–)10μA, I_C=0	(–)6			V
Turn-ON Time	t_{on}	See Specified Test Circuit		(60)50		ns
Storage Time	t_{stg}	See Specified Test Circuit		(900) 1000		ns
Fall Time	t_f	See Specified Test Circuit		(60)60		ns

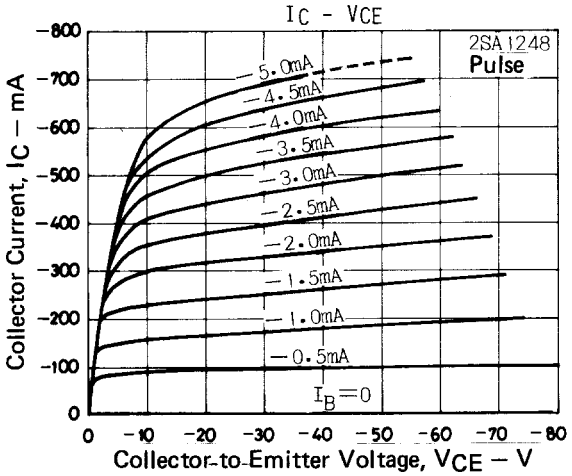
* : 2SA1248/2SC3116 are classified by follows according to h_{FE} at 100mA.

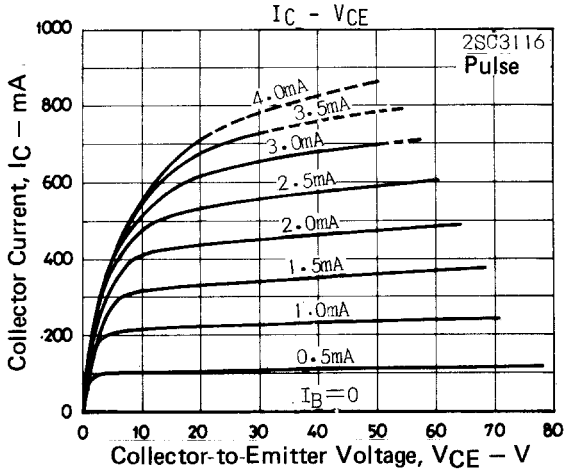
100	R	200	140	S	280	200	T	400

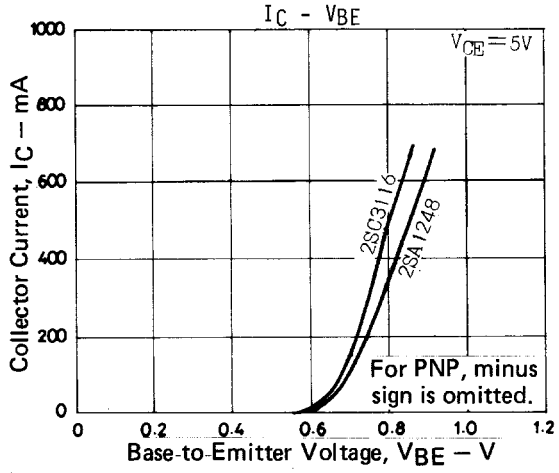
SANYO Electric Co.,Ltd. Semiconductor Bussiness Headquaters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

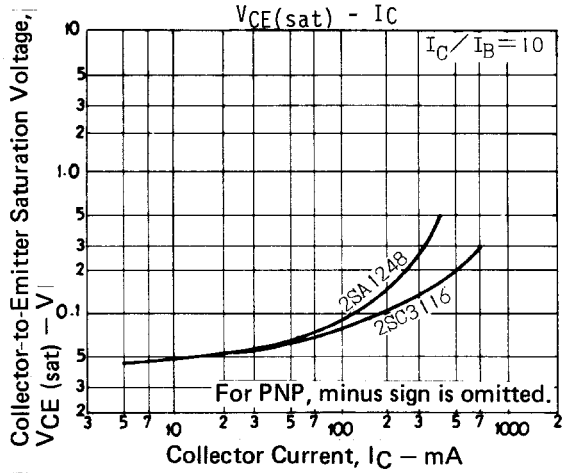

IC - VCE
2SA1248
Pulse
from top
−200mA
−180mA
−160mA
−140mA
−120mA
−100mA
−80mA
−60mA
−40mA
−20mA
Collector Current, IC − mA
Collector-to-Emitter Voltage, VCE − mV

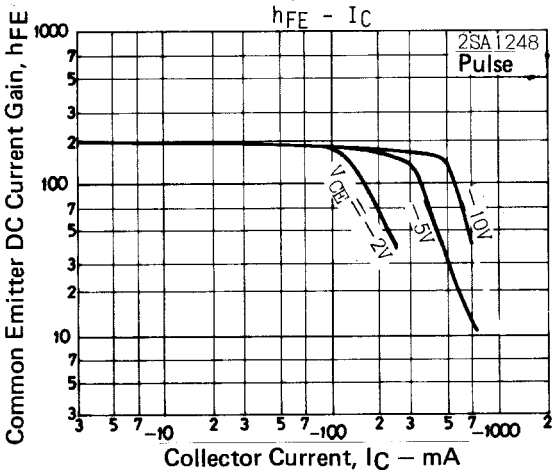

IC - VCE
2SC3116
Pulse
from top
100mA
90mA
80mA
70mA
60mA
50mA
40mA
30mA
20mA
10mA
IB=0
Collector Current, IC − mA
Collector-to-Emitter Voltage, VCE − mV

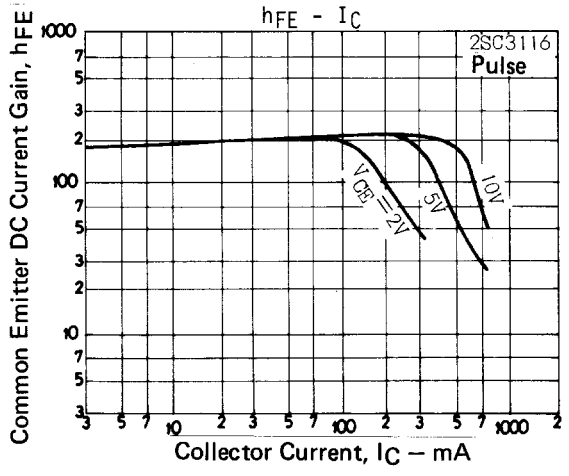

IC - VCE
2SA1248
Pulse
−5.0mA
−4.5mA
−4.0mA
−3.5mA
−3.0mA
−2.5mA
−2.0mA
−1.5mA
−1.0mA
−0.5mA
IB=0
Collector Current, IC − mA
Collector-to-Emitter Voltage, VCE − V


IC - VCE
2SC3116
Pulse
4.0mA
3.5mA
3.0mA
2.5mA
2.0mA
1.5mA
1.0mA
0.5mA
IB=0
Collector Current, IC − mA
Collector-to-Emitter Voltage, VCE − V


IC - VBE
VCE=5V
2SC3116
2SA1248
For PNP, minus sign is omitted.
Collector Current, IC − mA
Base-to-Emitter Voltage, VBE − V


VCE(sat) - IC
IC / IB=10
2SA1248
2SC3116
For PNP, minus sign is omitted.
Collector-to-Emitter Saturation Voltage, VCE (sat) − V
Collector Current, IC − mA


hFE - IC
2SA1248
Pulse
VCE=−2V
−5V
−10V
Common Emitter DC Current Gain, hFE
Collector Current, IC − mA


hFE - IC
2SC3116
Pulse
VCE=2V
5V
10V
Common Emitter DC Current Gain, hFE
Collector Current, IC − mA