Ordering number:EN3872

PNP/NPN Epitaxial Planar Silicon Transistors

2SA1824/2SC4728

50V/5A Switching Applications

Applications

· Relay drivers, high-speed inverters, converters, and other general high-current switching applications.

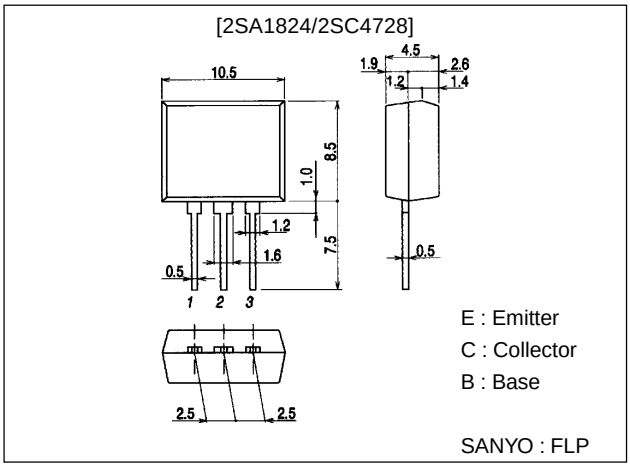
Features

· Low collector-to-emitter saturation voltage.
· High Gain-Bandwidth Product.
· Excellent linearity of DC Current Gain.
· Fast switching speed.

Package Dimensions

unit:mm

2084



( ) : 2SA1824

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–)60	V
Collector-to-Emitter Voltage	V_{CEO}		(–)50	V
Emitter-to-Base Voltage	V_{EBO}		(–)6	V
Collector Current	I_C		(–)5	A
Collector Current (Pulse)	I_{CP}		(–)8	A
Base Current	I_B		(–)1	A
Collector Dissipation	P_C		1.5	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}=(–)40V, I_E=0			(–)1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(–)4V, I_C=0			(–)1	μA
DC Current Gain	$h_{FE}1$	V_{CE}=(–)2V, I_C=(–)500mA	100*		400*	
	$h_{FE}2$	V_{CE}=(–)2V, I_C=(–)4A	35			
Gain-Bandwidth Product	f_T	V_{CE}=(–)5V, I_C=(–)1A		(130)		MHz
				180		MHz
Output Capacitance	C_{ob}	V_{CB}=(–)10V, f=1MHz		(60)40		pF

■ Any and all SANYO products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your SANYO representative nearest you before using any SANYO products described or contained herein in such applications.

■ SANYO assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges,or other parameters) listed in products specifications of any and all SANYO products described or contained herein.

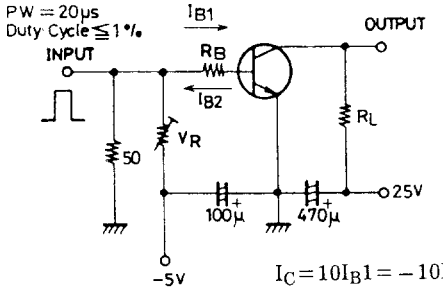
SANYO Electric Co.,Ltd. Semiconductor Bussiness Headquaters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)3A, I_B=(–)0.15A		(–280)	(–550)	mV
				220	400	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=(–)3mA, I_B=(–)0.15A		(–)0.95	(–)1.3	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)10μA, I_E=0	(–)60			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)1mA, R_{BE}=∞	(–)50			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		50		ns
Storage Time	t_{stg}	See specified Test CIrcuit		(450)		ns
				500		ns
Fall Time	t_f	See specified Test Circuit		20		ns

* : The 2SA1824/2SC4728 are classified by 500mA h_{FE} as follows :

100 R 200	140 S 280	200 T 400

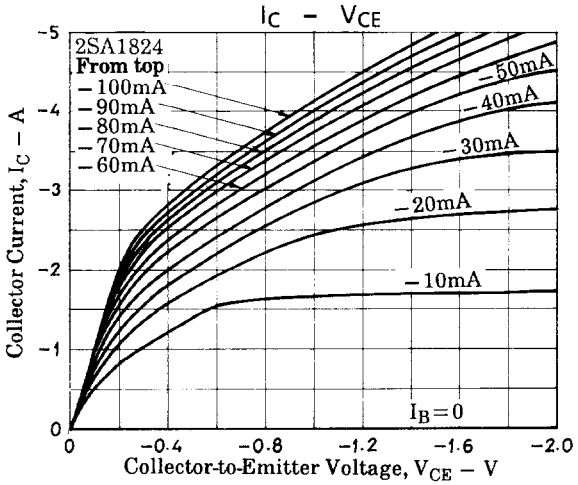
Switching Time Test Circuit

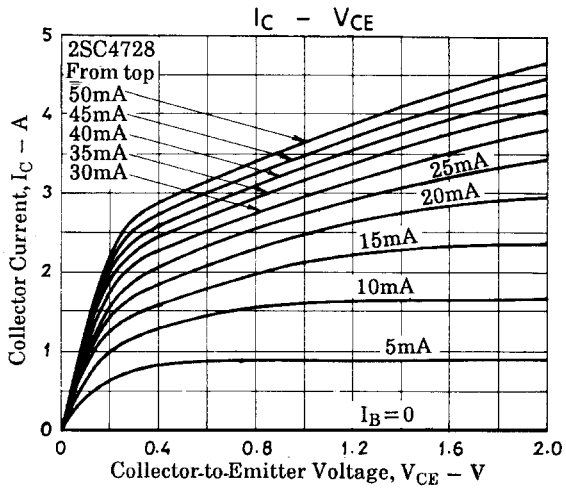


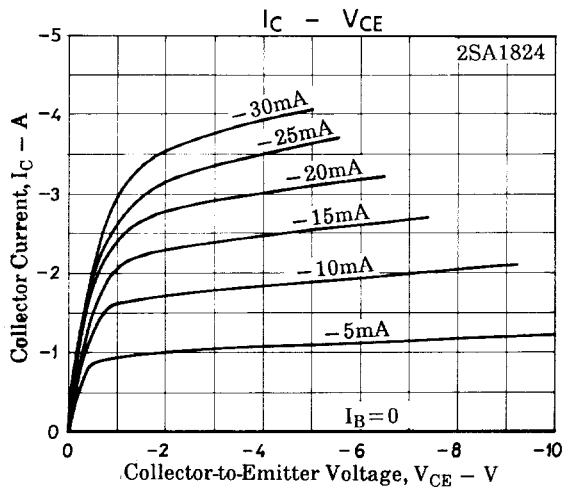
$I_C = 10I_B1 = -10I_B2 = 2A$

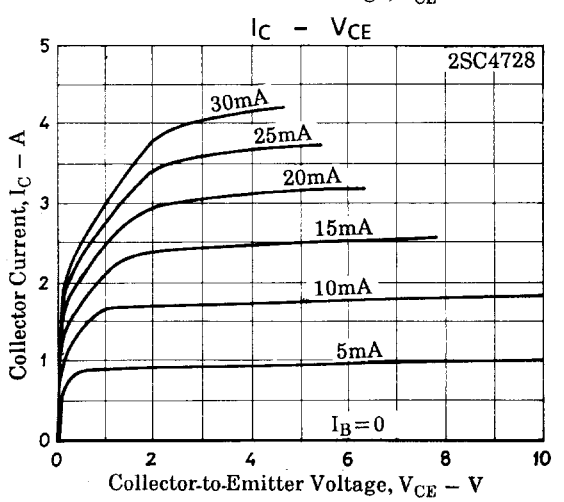
(For PNP, the polarity is reversed).

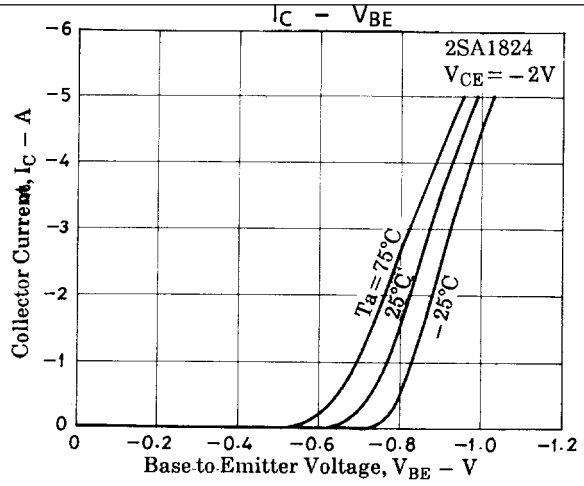
Unit (resistance : Ω, capacitance : F)

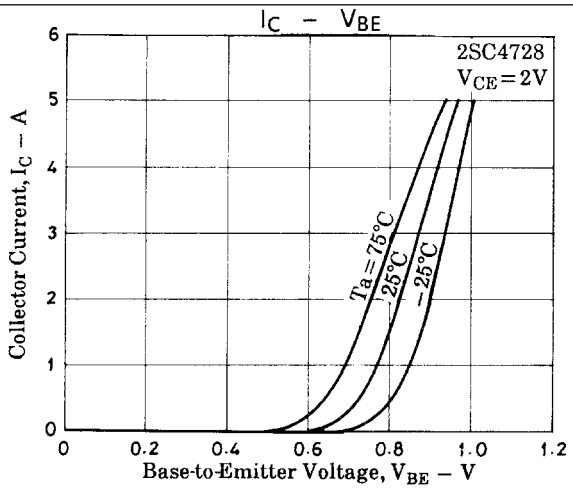


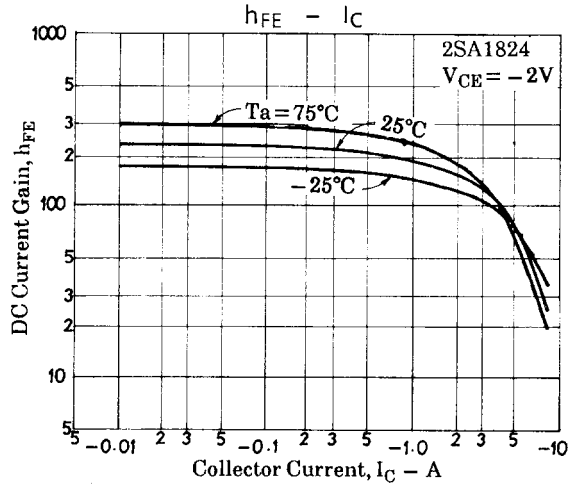


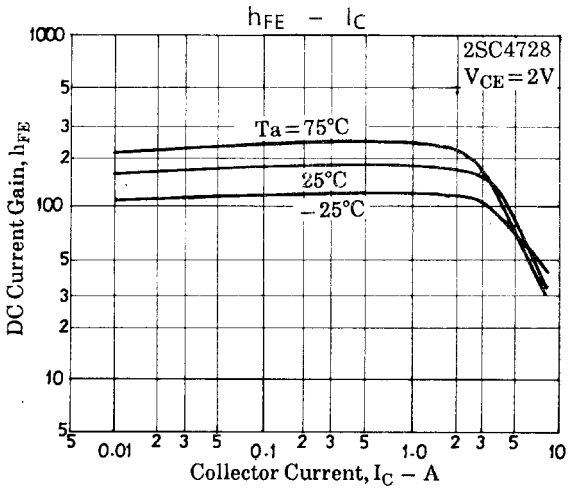


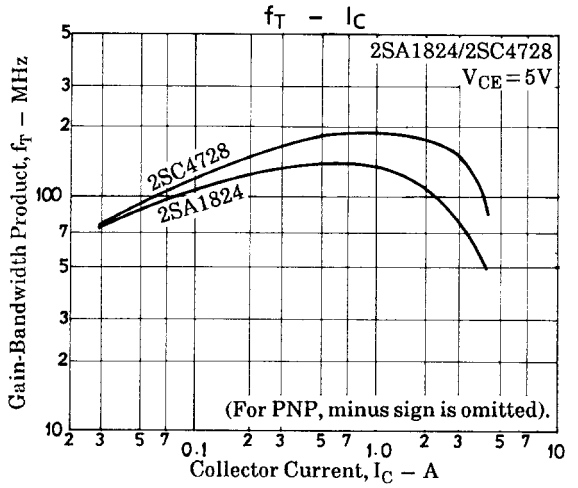


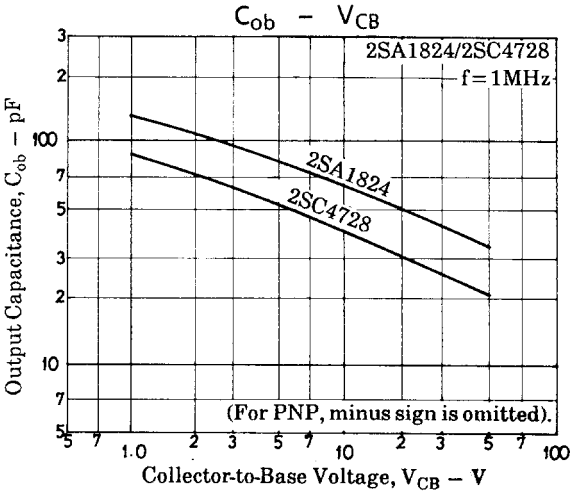

IC – VBE
2SA1824
VCE = –2V
Ta = 75°C
25°C
–25°C
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V

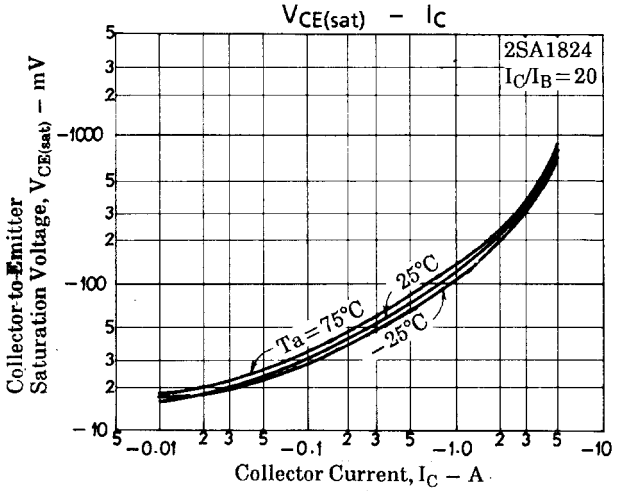

IC – VBE
2SC4728
VCE = 2V
Ta = 75°C
25°C
–25°C
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V

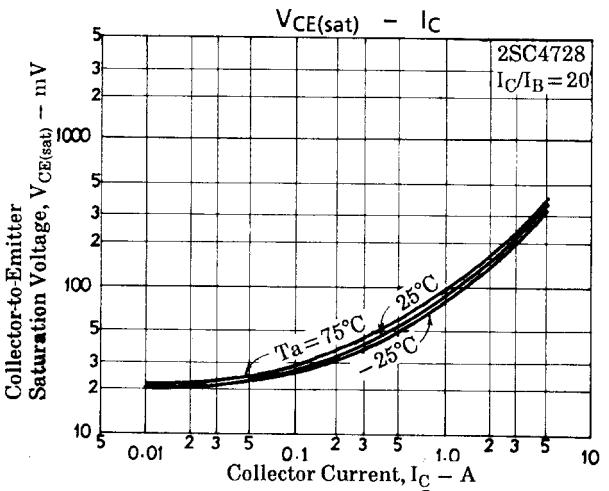

hFE – IC
2SA1824
VCE = –2V
Ta = 75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A


hFE – IC
2SC4728
VCE = 2V
Ta = 75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A


fT – IC
2SA1824/2SC4728
VCE = 5V
2SC4728
2SA1824
(For PNP, minus sign is omitted).
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A


Cob – VCB
2SA1824/2SC4728
f = 1MHz
2SA1824
2SC4728
(For PNP, minus sign is omitted).
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V


VCE(sat) – IC
2SA1824
IC/IB = 20
Ta = 75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A


VCE(sat) – IC
2SC4728
IC/IB = 20
Ta = 75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A