Ordering number : EN2262D

SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

PNP / NPN Epitaxial Planar Silicon Transistors

2SA1552 / 2SC4027 — High-Voltage Switching Applications

Applications

- Converters, inverters, color TV audio output.

Features

- Adoption of FBET, MBIT processes.
- High voltage and large current capacity.
- Ultrahigh-speed switching.
- Small and slim package permitting 2SA1552 / 2SC4027-applied sets to be made more compact.

Specifications ( ) : 2SA1552

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}		(-)2.5	A
Collector Dissipation	P_C		1	W
		Tc=25°C	15	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		-55 to +150	°C

SANYO Semiconductor Co., Ltd.
http://semicon.sanyo.com/en/network

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=(-)120V, I_E=0A			(-)1.0	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(-)4V, I_C=0A			(-)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	80			
Gain-Bandwidth Product	f_T	V_{CE}=(-)10V, I_C=(-)50mA		120		MHz
Output Capacitance	Cob	V_{CB}=(-)10V, f=1MHz		(22)12		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C=(-)500mA, I_B=(-)50mA		(-0.2)0.13	(-0.5)0.45	V
Base-to-Emitterr Saturation Voltage	V_{BE}(sat)	I_C=(-)500mA, I_B=(-)50mA		(-)0.85	(-)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(-)10μA, I_E=0A	(-)180			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(-)1mA, R_{BE}=∞	(-)160			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=(-)10μA, I_C=0A	(-)6			V
Turn-On Time	t_{on}	See specified Test Circuit.		60		ns
Storage Time	t_{stg}	See specified Test Circuit.		(0.7)1.2		μs
Fall Time	t_f	See specified Test Circuit.		(50)80		ns

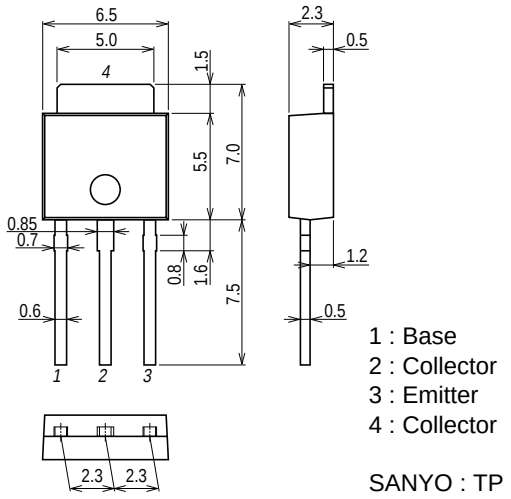
* ; The 2SA1552 / 2SC4027 are classified by 100mA h_{FE} as follws:

Rank	R	S	T
h_{FE}	100 to 200	140 to 280	200 to 400

Package Dimensions

unit : mm (typ)

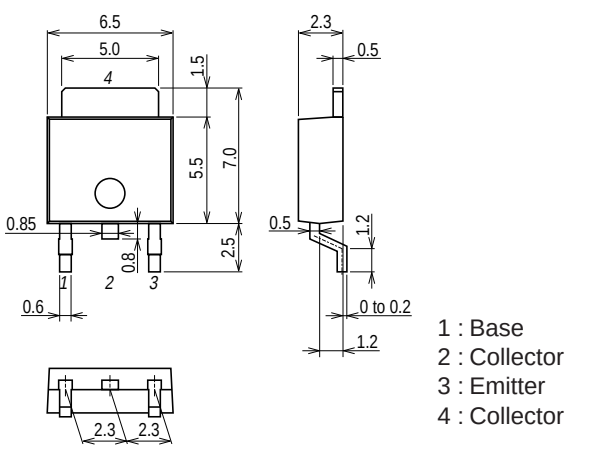
7518-003



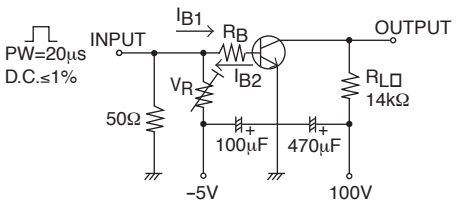
Package Dimensions

unit : mm (typ)

7003-003

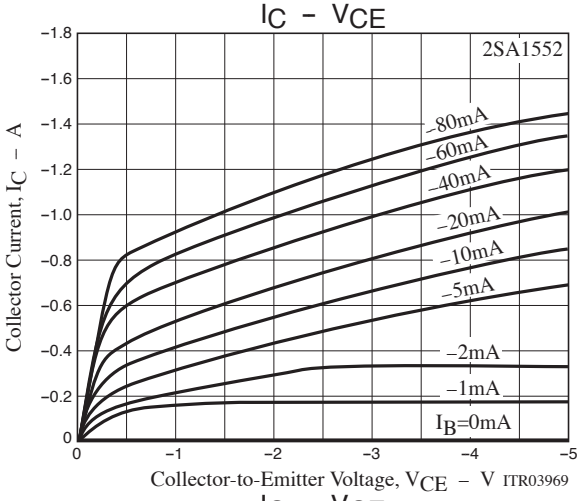


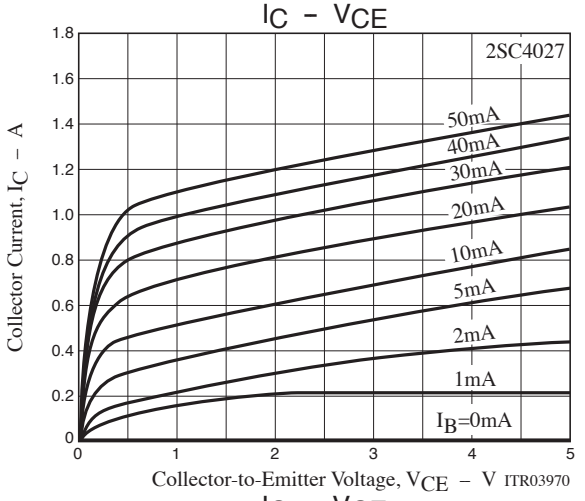
Switching Time Test Circuit

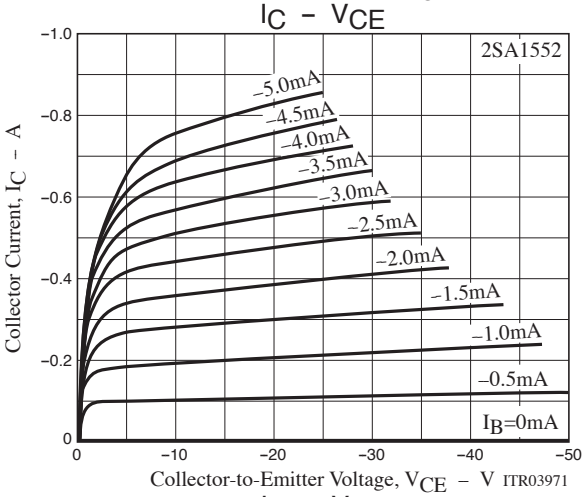


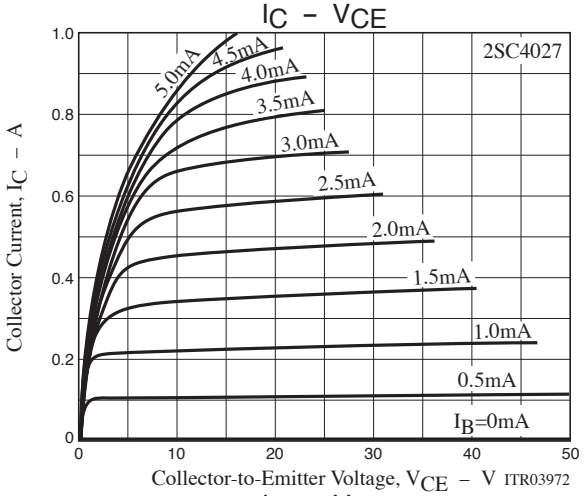
$10I_{B1}$= –$10I_{B2}$=I_C=0.7A□

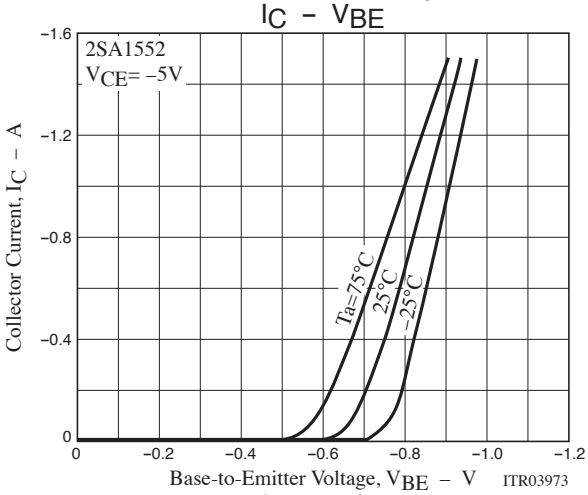
For PNP, the polarity is reversed.

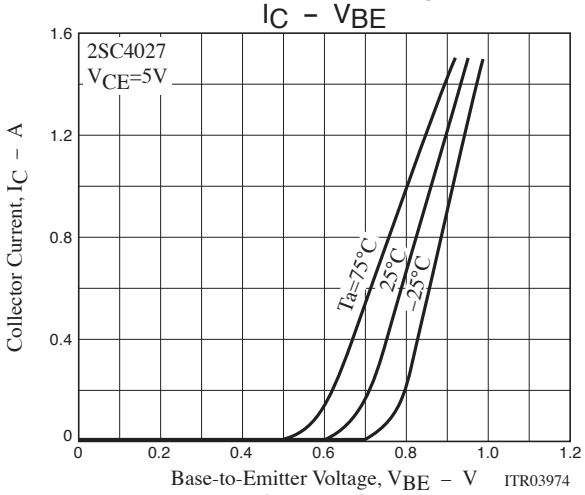

IC – VCE
2SA1552
–80mA
–60mA
–40mA
–20mA
–10mA
–5mA
–2mA
–1mA
IB=0mA
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
ITR03969

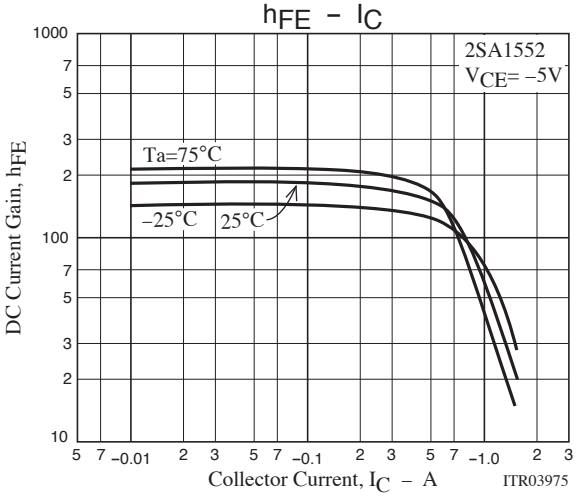

IC – VCE
2SC4027
50mA
40mA
30mA
20mA
10mA
5mA
2mA
1mA
IB=0mA
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
ITR03970

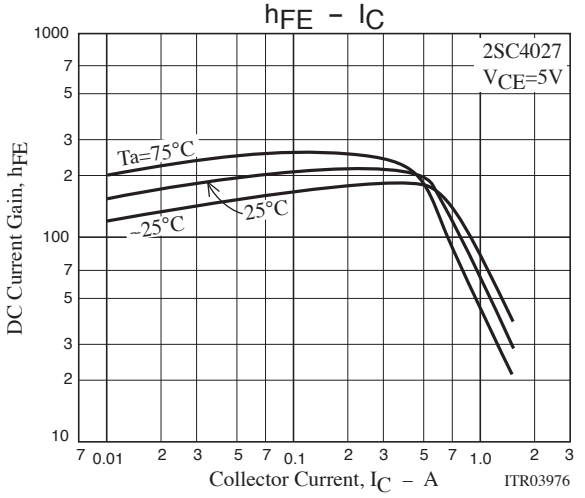

IC – VCE
2SA1552
–5.0mA
–4.5mA
–4.0mA
–3.5mA
–3.0mA
–2.5mA
–2.0mA
–1.5mA
–1.0mA
–0.5mA
IB=0mA
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
ITR03971

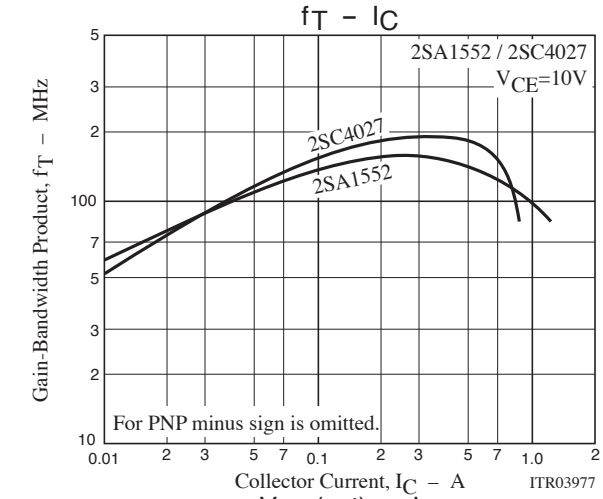

IC – VCE
2SC4027
5.0mA
4.5mA
4.0mA
3.5mA
3.0mA
2.5mA
2.0mA
1.5mA
1.0mA
0.5mA
IB=0mA
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
ITR03972

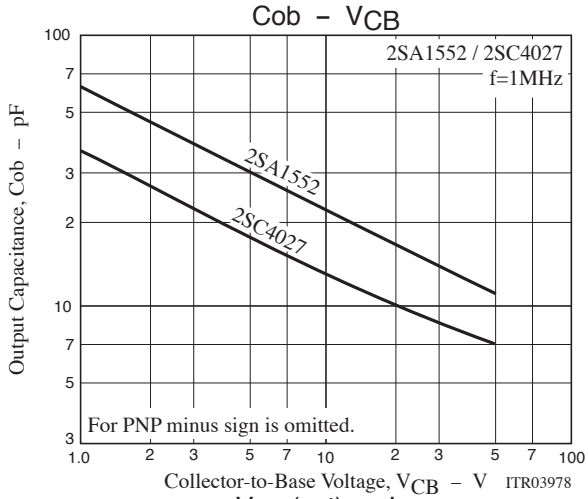

IC – VBE
2SA1552
VCE= –5V
Ta=75°C
25°C
–25°C
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
ITR03973

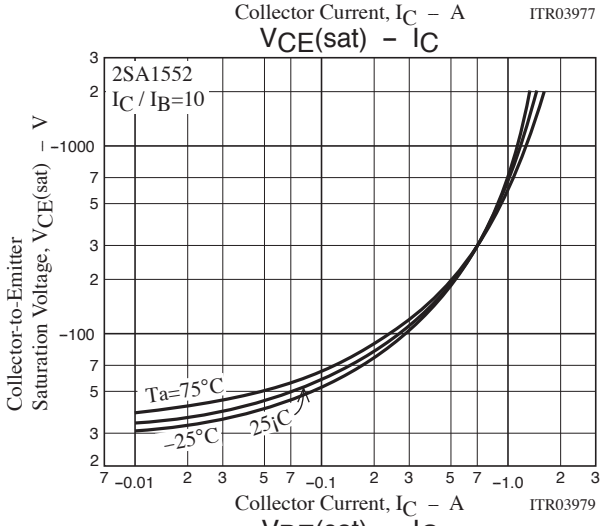

IC – VBE
2SC4027
VCE=5V
Ta=75°C
25°C
–25°C
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
ITR03974

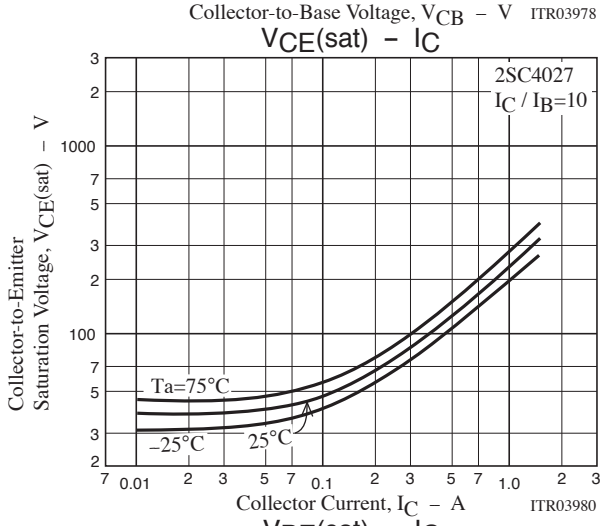

hFE – IC
2SA1552
VCE= –5V
Ta=75°C
–25°C
25°C
DC Current Gain, hFE
Collector Current, IC – A
ITR03975

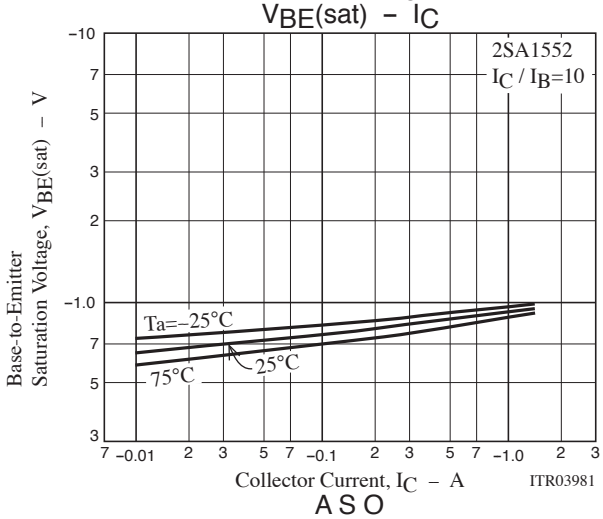

hFE – IC
2SC4027
VCE=5V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
ITR03976

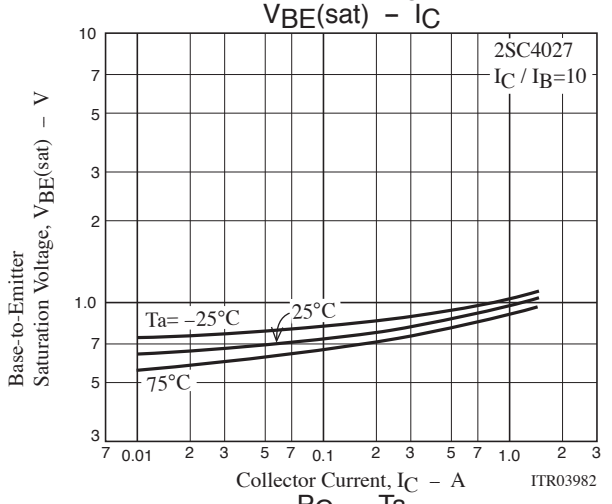

fT – IC
2SA1552 / 2SC4027
VCE=10V
2SC4027
2SA1552
For PNP minus sign is omitted.
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
ITR03977

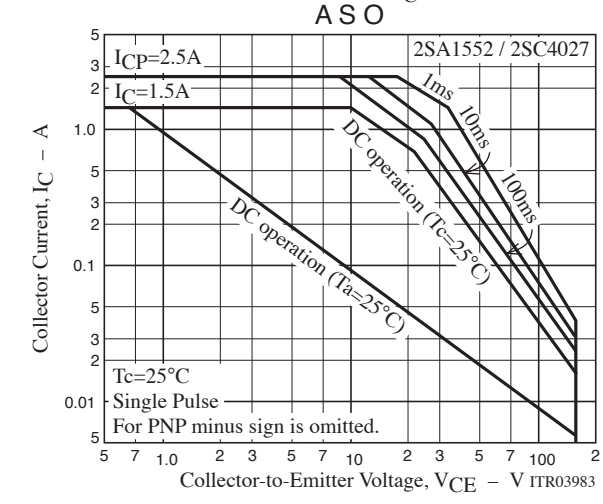

Cob – VCB
2SA1552 / 2SC4027
f=1MHz
2SA1552
2SC4027
For PNP minus sign is omitted.
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
ITR03978

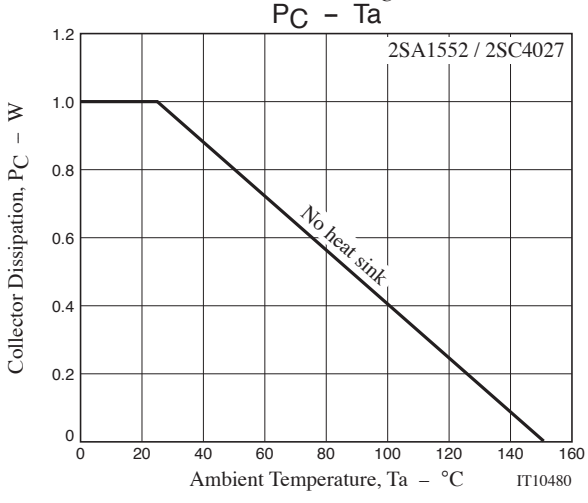

VCE(sat) – IC
2SA1552
IC / IB=10
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
ITR03979


VCE(sat) – IC
2SC4027
IC / IB=10
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
ITR03980


VBE(sat) – IC
2SA1552
IC / IB=10
Ta=–25°C
25°C
75°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
ITR03981


VBE(sat) – IC
2SC4027
IC / IB=10
Ta= –25°C
25°C
75°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
ITR03982


A S O
2SA1552 / 2SC4027
ICP=2.5A
IC=1.5A
1ms
10ms
100ms
DC operation (Tc=25°C)
DC operation (Ta=25°C)
Tc=25°C
Single Pulse
For PNP minus sign is omitted.
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
ITR03983


PC – Ta
2SA1552 / 2SC4027
No heat sink
Collector Dissipation, PC – W
Ambient Temperature, Ta – °C
IT10480