Ordering number : EN2262F

2SA1552/2SC4027

Bipolar Transistor

(–)160V, (–)1.5A, Low V_{CE}(sat) (PNP)NPN Single TP/TP-FA

ON Semiconductor®

http://onsemi.com

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

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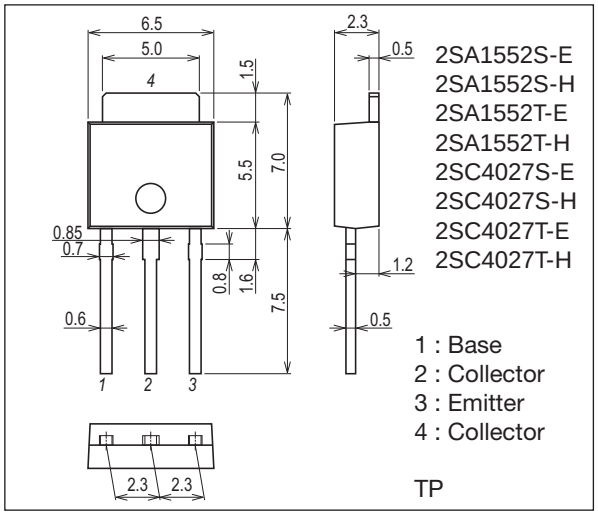
Package Dimensions unit : mm (typ)
7518-003

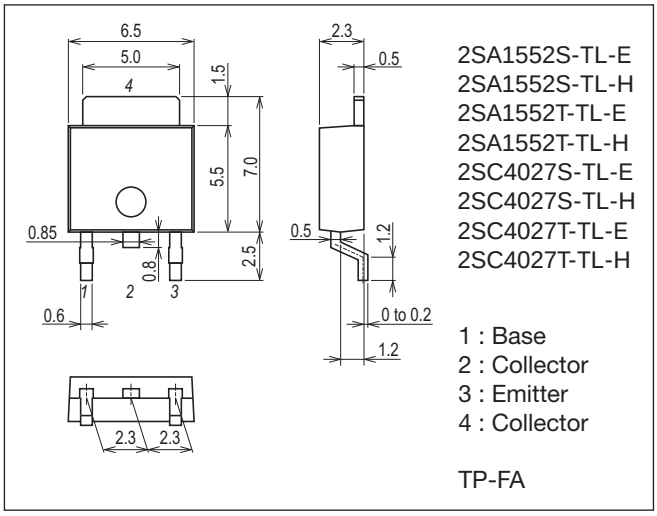


2SA1552S-E
2SA1552S-H
2SA1552T-E
2SA1552T-H
2SC4027S-E
2SC4027S-H
2SC4027T-E
2SC4027T-H

1 : Base
2 : Collector
3 : Emitter
4 : Collector

TP

Package Dimensions unit : mm (typ)
7003-003



2SA1552S-TL-E
2SA1552S-TL-H
2SA1552T-TL-E
2SA1552T-TL-H
2SC4027S-TL-E
2SC4027S-TL-H
2SC4027T-TL-E
2SC4027T-TL-H

1 : Base
2 : Collector
3 : Emitter
4 : Collector

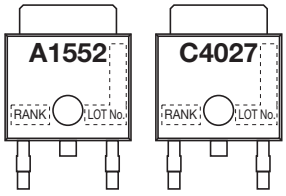
TP-FA

Product & Package Information

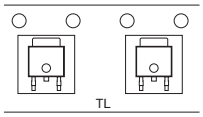
- Package : TP
- JEITA, JEDEC : SC-64, TO-251
- Minimum Packing Quantity : 500 pcs./bag

- Package : TP-FA
- JEITA, JEDEC : SC-63, TO-252
- Minimum Packing Quantity : 700 pcs./reel

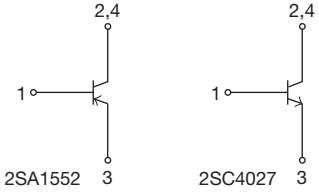
Marking (TP, TP-FA)



Packing Type (TP-FA) : TL



Electrical Connection



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Parameter	Symbol	Conditions	Ratings	Unit
Collector Dissipation	P_C		1	W
		Tc=25°C	15	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		−55 to +150	°C

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

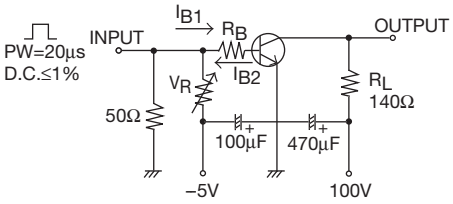
Electrical Characteristics at Ta=25°C

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	140*		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 Emitter 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}			(0.7)1.2		μs
Fall Time	t_f			(50)80		ns

* : The 2SA1552 / 2SC4027 are classified by 100mA h_{FE} as follows : (unit : μA)

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

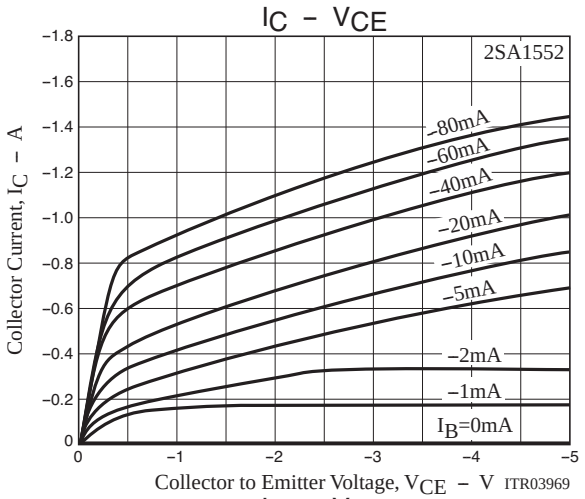
Switching Time Test Circuit

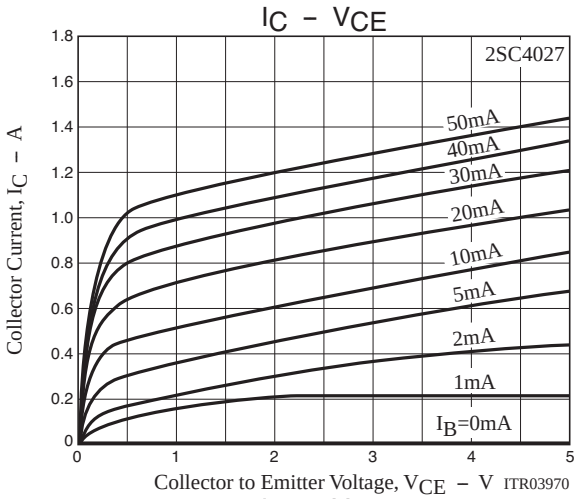


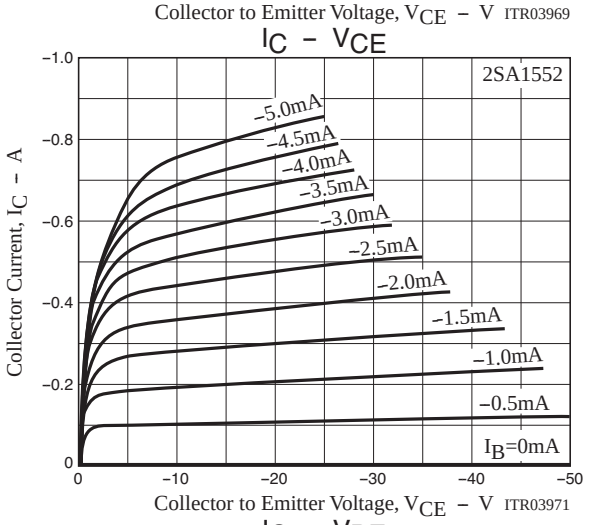
$10I_{B1}$= −$10I_{B2}$=I_C=0.7A
For PNP, the polarity is reversed.

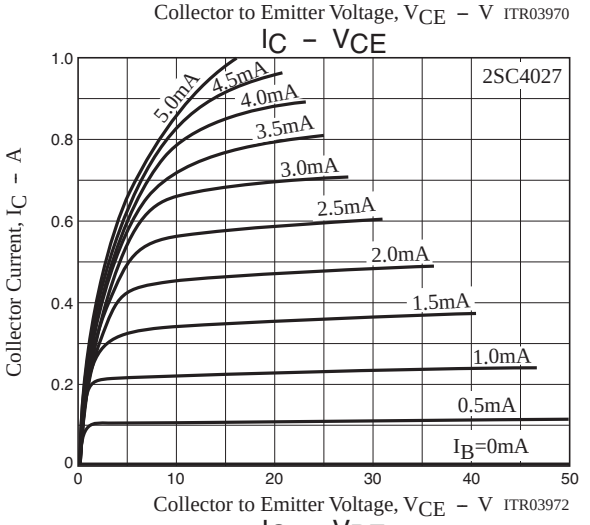
Ordering Information

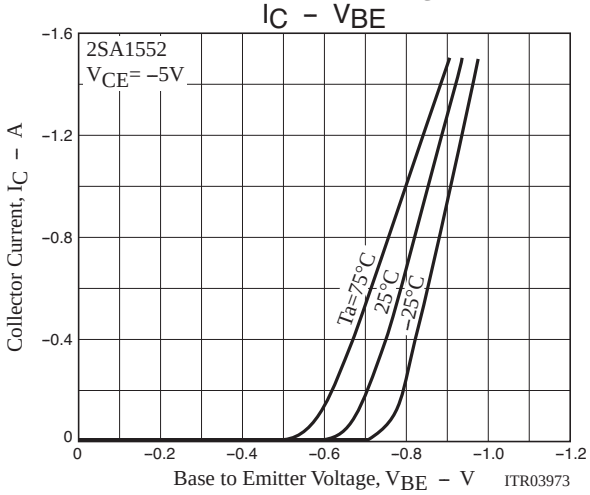
Device	Package	Shipping	memo
2SA1552S-E	TP	500pcs./bag	Pb Free
2SA1552S-H	TP	500pcs./bag	Pb Free and Halogen Free
2SA1552T-E	TP	500pcs./bag	Pb Free
2SA1552T-H	TP	500pcs./bag	Pb Free and Halogen Free
2SC4027S-E	TP	500pcs./bag	Pb Free
2SC4027S-H	TP	500pcs./bag	Pb Free and Halogen Free
2SC4027T-E	TP	500pcs./bag	Pb Free
2SC4027T-H	TP	500pcs./bag	Pb Free and Halogen Free
2SA1552S-TL-E	TP-FA	700pcs./reel	Pb Free
2SA1552S-TL-H	TP-FA	700pcs./reel	Pb Free and Halogen Free
2SA1552T-TL-E	TP-FA	700pcs./reel	Pb Free
2SA1552T-TL-H	TP-FA	700pcs./reel	Pb Free and Halogen Free
2SC4027S-TL-E	TP-FA	700pcs./reel	Pb Free
2SC4027S-TL-H	TP-FA	700pcs./reel	Pb Free and Halogen Free
2SC4027T-TL-E	TP-FA	700pcs./reel	Pb Free
2SC4027T-TL-H	TP-FA	700pcs./reel	Pb Free and Halogen Free

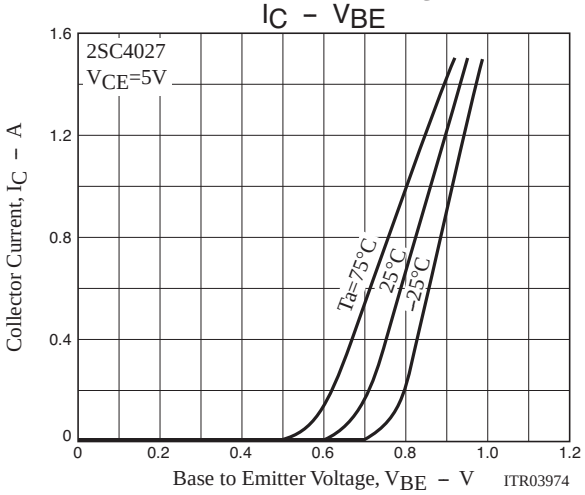

IC – VCE
2SA1552
–80mA
–60mA
–40mA
–20mA
–10mA
–5mA
–2mA
–1mA
IB=0mA
Collector Current, IC – A
Collector to Emitter Voltage, VCE – V
ITR03969

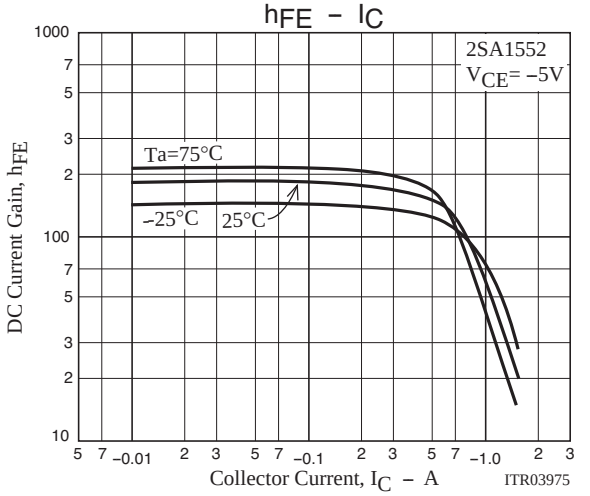

IC – VCE
2SC4027
50mA
40mA
30mA
20mA
10mA
5mA
2mA
1mA
IB=0mA
Collector Current, IC – A
Collector to Emitter Voltage, VCE – V
ITR03970

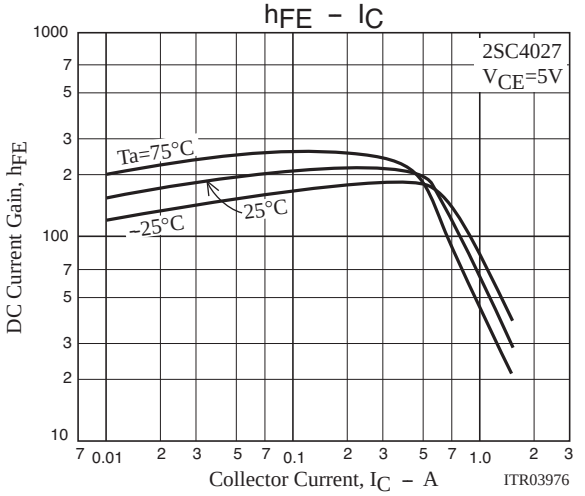

IC – VCE
2SA1552
–5.0mA
–4.5mA
–4.0mA
–3.5mA
–3.0mA
–2.5mA
–2.0mA
–1.5mA
–1.0mA
–0.5mA
IB=0mA
Collector Current, IC – A
Collector to Emitter Voltage, VCE – V
ITR03971

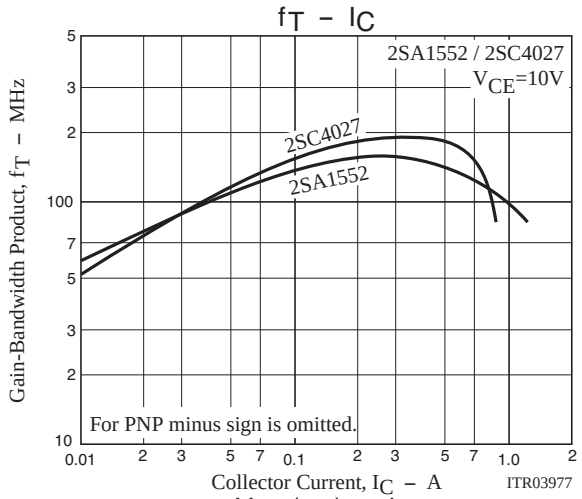

IC – VCE
2SC4027
5.0mA
4.5mA
4.0mA
3.5mA
3.0mA
2.5mA
2.0mA
1.5mA
1.0mA
0.5mA
IB=0mA
Collector Current, IC – A
Collector to Emitter Voltage, VCE – V
ITR03972

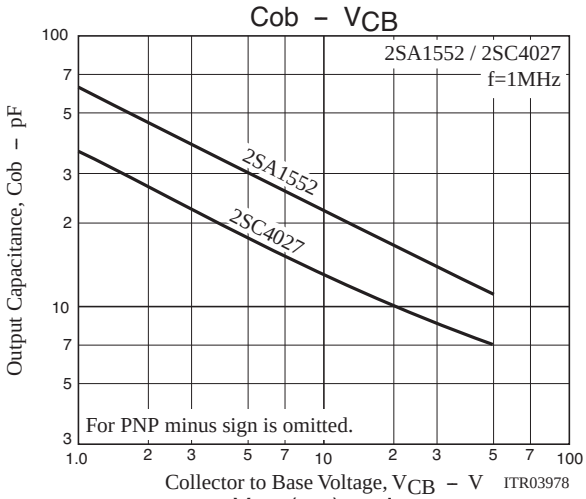

IC – VBE
2SA1552
VCE= –5V
Ta=75°C
25°C
–25°C
Collector Current, IC – A
Base to Emitter Voltage, VBE – V
ITR03973

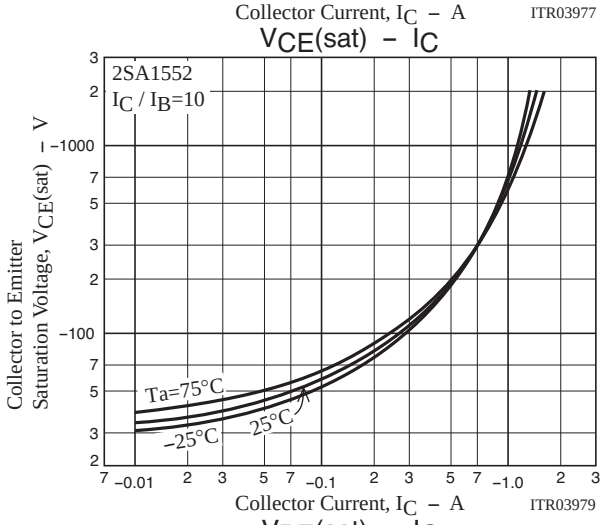

IC – VBE
2SC4027
VCE=5V
Ta=75°C
25°C
–25°C
Collector Current, IC – A
Base to Emitter Voltage, VBE – V
ITR03974

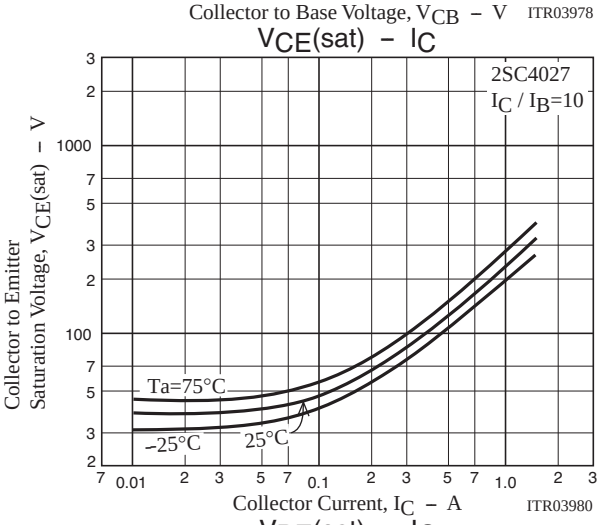

hFE – IC
2SA1552
VCE= –5V
Ta=75°C
–25°C
25°C
DC Current Gain, hFE
Collector Current, IC – A
ITR03975

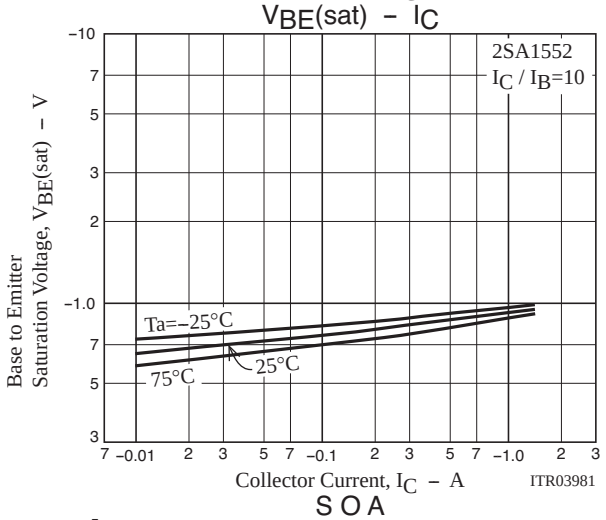

hFE – IC
2SC4027
VCE=5V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
ITR03976

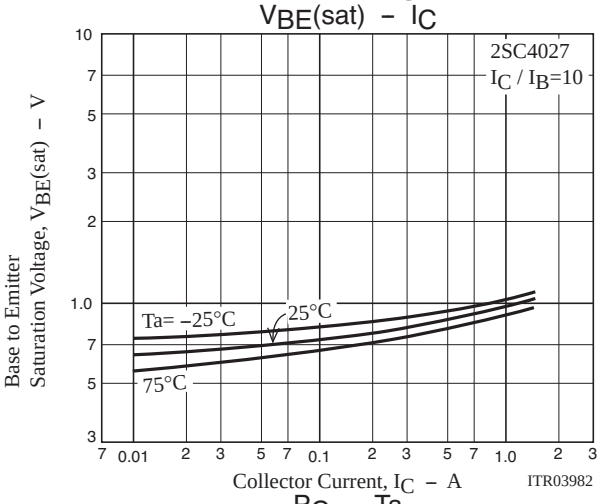

fT – IC
2SA1552 / 2SC4027
VCE=10V
2SC4027
2SA1552
For PNP minus sign is omitted.
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
ITR03977

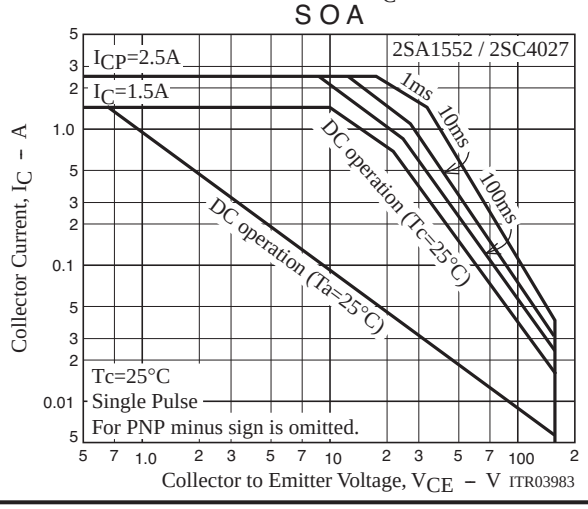

Cob – VCB
2SA1552 / 2SC4027
f=1MHz
2SA1552
2SC4027
For PNP minus sign is omitted.
Output Capacitance, Cob – pF
Collector to Base Voltage, VCB – V
ITR03978

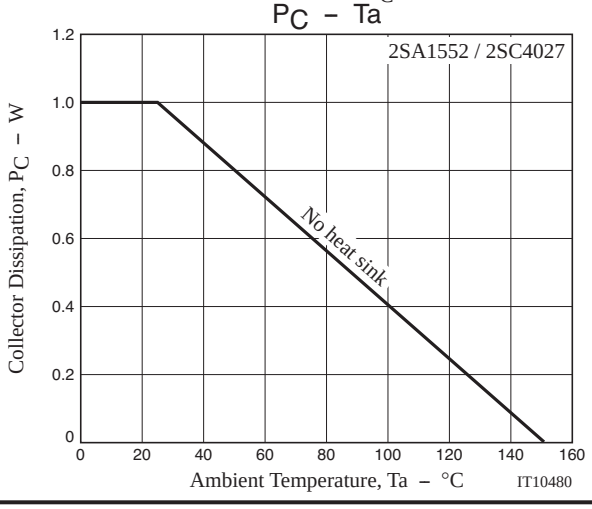

VCE(sat) – IC
2SA1552
IC / IB=10
Ta=75°C
25°C
–25°C
Collector to Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
ITR03979

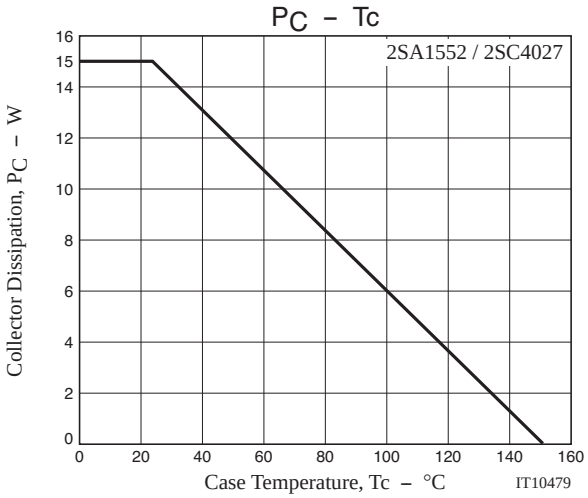

VCE(sat) – IC
2SC4027
IC / IB=10
Ta=75°C
–25°C
25°C
Collector to Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
ITR03980


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


S O A
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

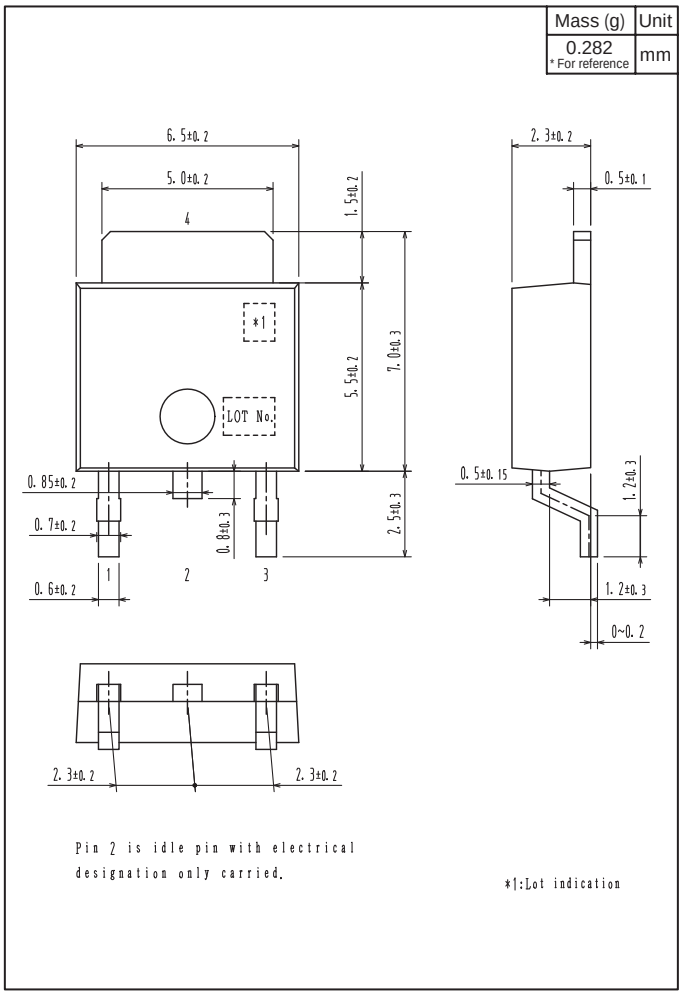

PC – Ta
2SA1552 / 2SC4027
No heat sink
Collector Dissipation, PC – W
Ambient Temperature, Ta – °C
IT10480

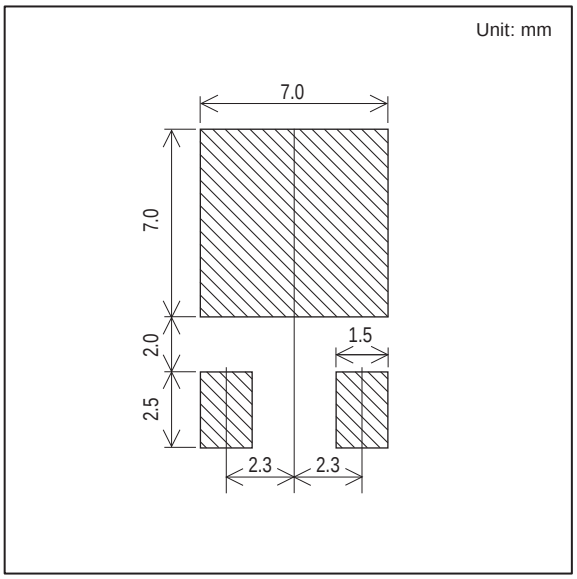

PC – Tc
2SA1552 / 2SC4027
Collector Dissipation, PC – W
16
15
14
12
10
8
6
4
2
0
0
20
40
60
80
100
120
140
160
Case Temperature, Tc – °C
IT10479

Outline Drawing

Land Pattern Example

2SA1552S-TL-E, 2SA1552S-TL-H, 2SA1552T-TL-E, 2SA1552T-TL-H, 2SC4027S-TL-E, 2SC4027S-TL-H, 2SC4027T-TL-E, 2SC4027T-TL-H





Outline Drawing

2SA1552S-E, 2SA1552S-H, 2SA1552T-E, 2SA1552T-H, 2SC4027S-E, 2SC4027S-H, 2SC4027T-E, 2SC4027T-H