Ordering number : ENN7988

SANYO Semiconductors
DATA SHEET

2SA2125 / 2SC5964 — PNP / NPN Epitaxial Planar Silicon Transistors
DC / DC Converter Applications

Applications

- DC / DC converter, relay drivers, lamp drivers, motor drivers, flash.

Features

- Adoption of MBIT process.
- High current capacitance.
- Low collector-to-emitter saturation voltage.
- High-speed switching.

Specifications ( ) : 2SA2125

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–50)100	V
Collector-to-Emitter Voltage	V_{CES}		(–50)100	V
Collector-to-Emitter Voltage	V_{CEO}		(–)50	V
Emitter-to-Base Voltage	V_{EBO}		(–)6	V
Collector Current	I_C		(–)3	A
Collector Current (Pulse)	I_{CP}		(–)6	A
Base Current	I_B		(–)600	mA
Collector Dissipation	P_C	Mounted on a ceramic board (250mm²×0.8m)	1.3	W
		Tc=25°C	3.5	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}	V_{CE}=(–)2V, I_C=(–)100mA	200		560	
Gain-Bandwidth Product	f_T	V_{CE}=(–)10V, I_C=(–)500mA		(390)380		MHz
Output Capacitance	Cob	V_{CB}=(–)10V, f=1MHz		(24)13		pF

Continued on next page.

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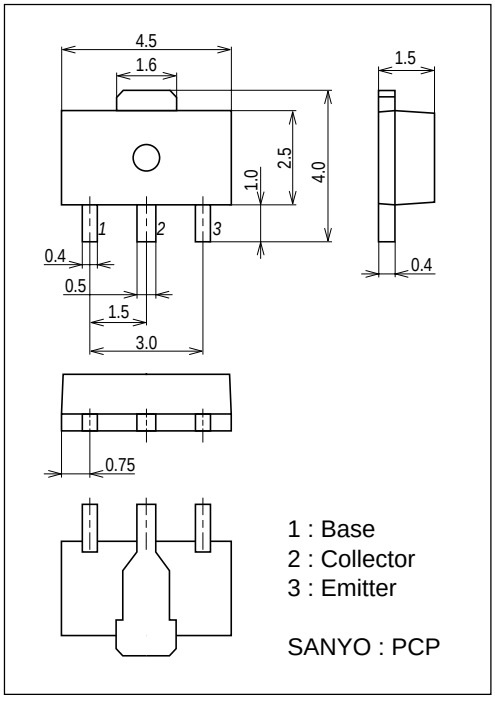
Continued from preceding page.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)1	I_C=(-)1A, I_B=(-)50mA		(-125)100	(-230)150	mV
	V_{CE}(sat)2	I_C=(-)2A, I_B=(-)100mA		(-250)190	(-500)290	mV
Base-to-Emitterr Saturation Voltage	V_{BE}(sat)	V_{CE}=(-)2V, I_B=(-)100mA		(-)0.94	(-)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(-)10μA, I_E=0	(-50)100			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CES}$	I_C=(-)100μA, R_{BE}=0	(-50)100			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.		(30)35		ns
Storage Time	t_{stg}	See specified test circuit.		(230)300		ns
Fall Time	t_f	See specified test circuit.		(18)25		ns

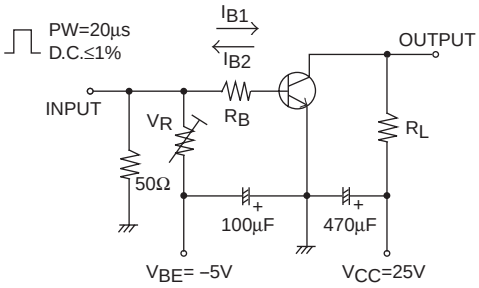
Package Dimensions

unit : mm

2038B

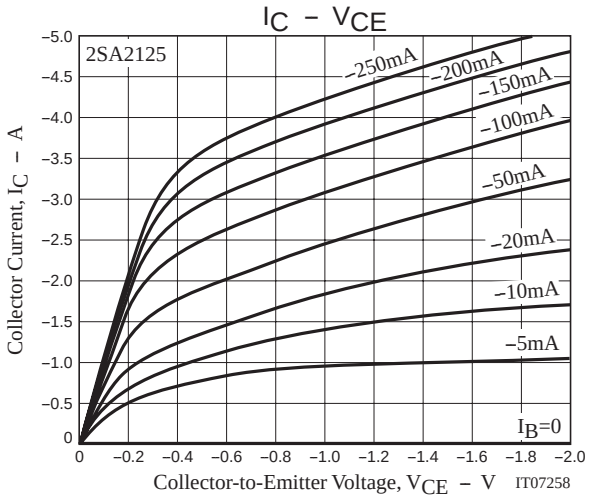


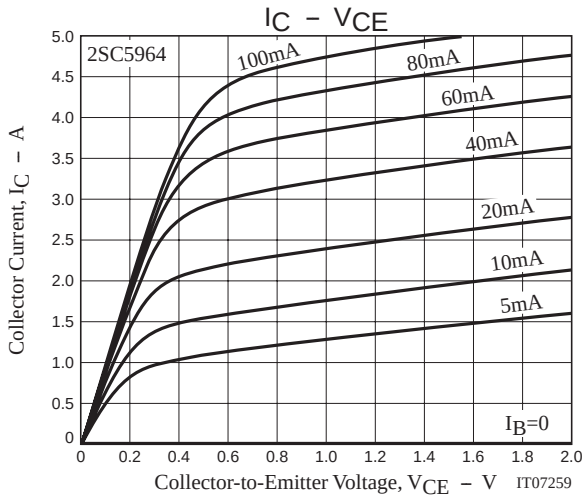
Switching Time Test Circuit

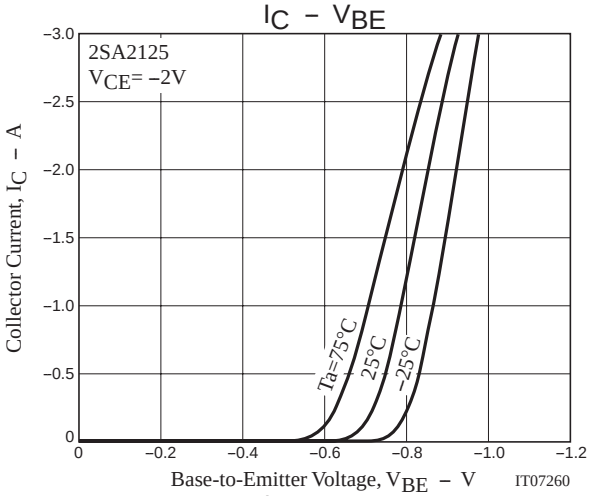


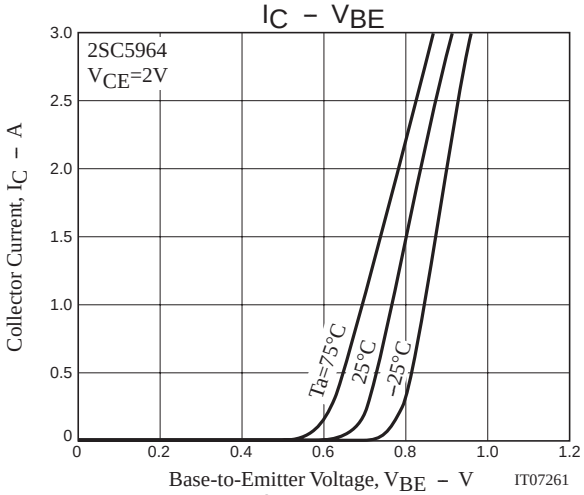
I_C=10I_{B1}= −10I_{B2}=1A

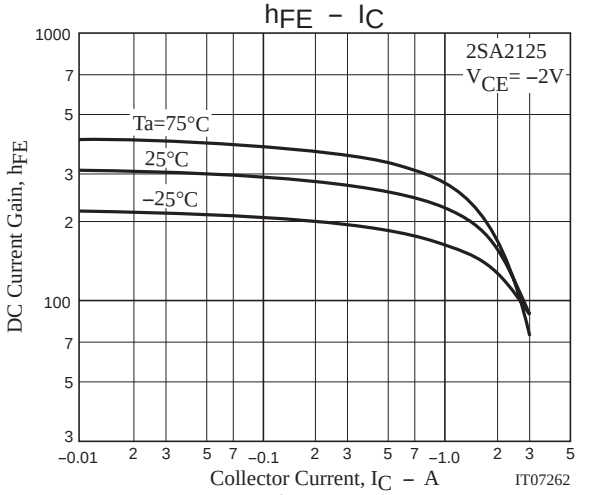
For PNP, the polarity is reversed.

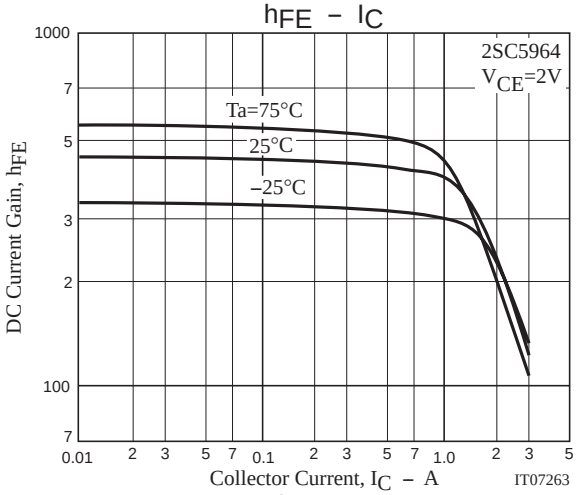


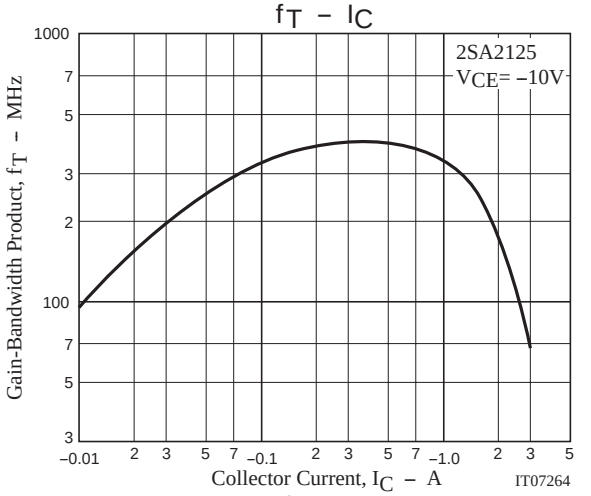


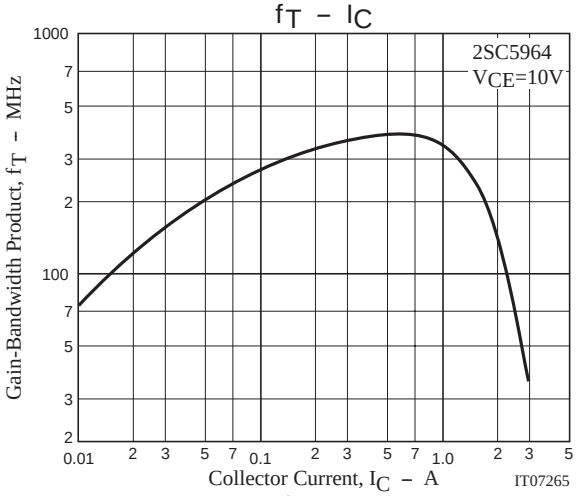

IC – VBE
2SA2125
VCE= –2V
Ta=75°C
25°C
–25°C
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
IT07260

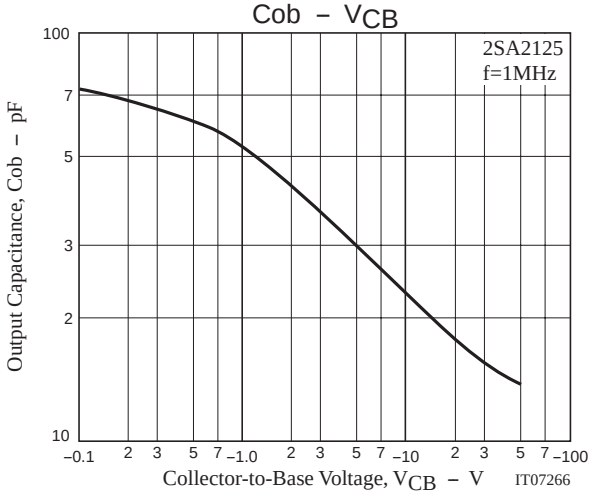

IC – VBE
2SC5964
VCE=2V
Ta=75°C
25°C
–25°C
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
IT07261

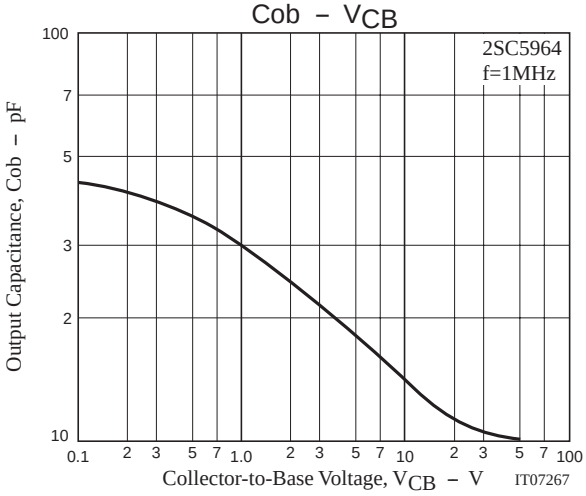

hFE – IC
2SA2125
VCE= –2V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT07262

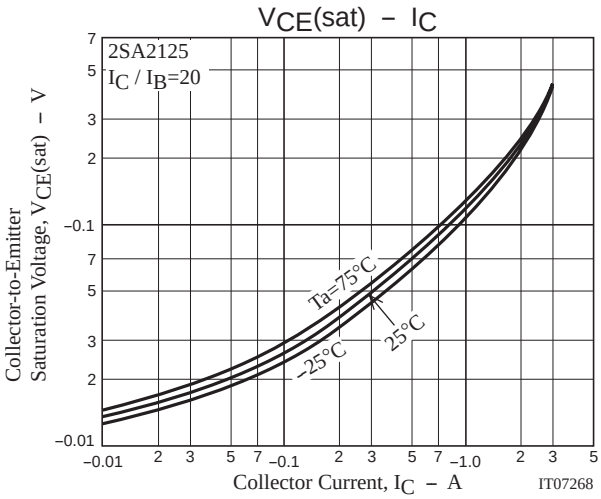

hFE – IC
2SC5964
VCE=2V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT07263

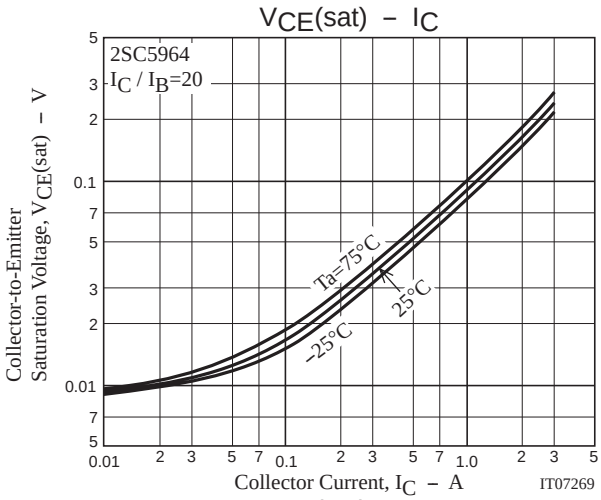

fT – IC
2SA2125
VCE= –10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT07264

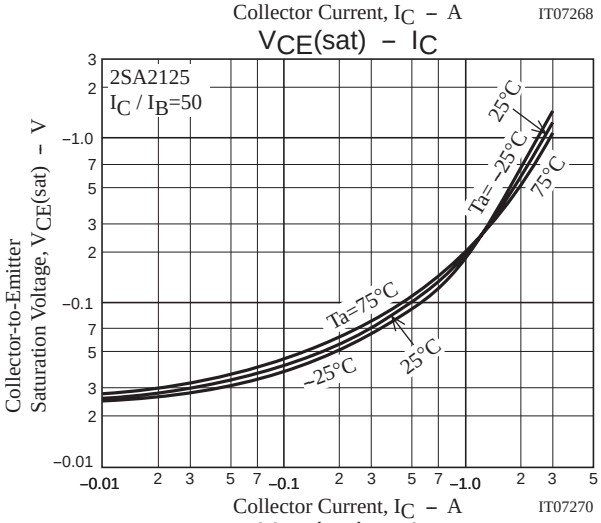

fT – IC
2SC5964
VCE=10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT07265

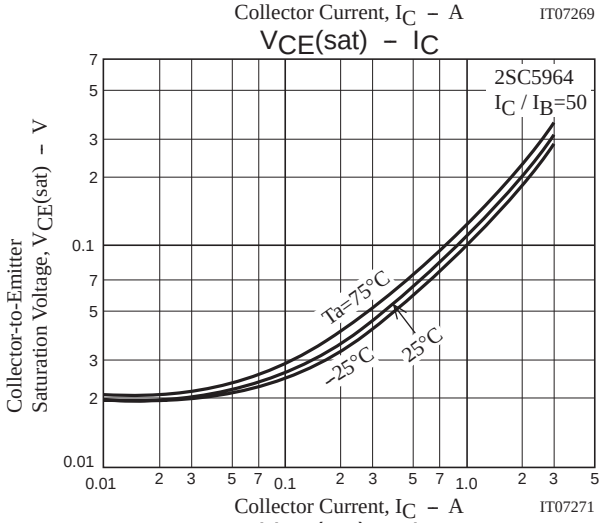

Cob – VCB
2SA2125
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT07266

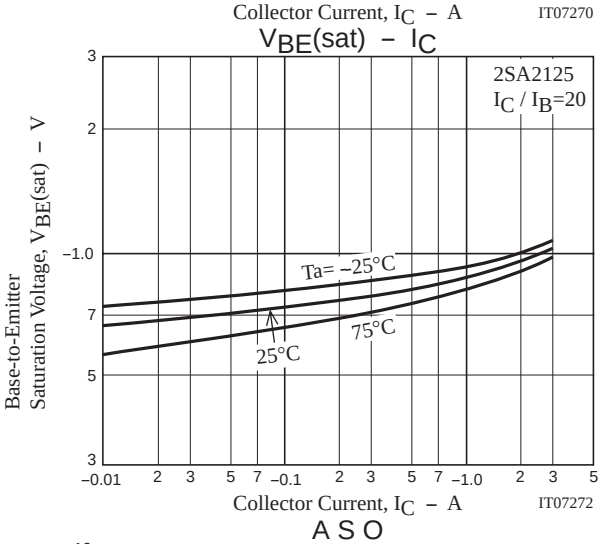

Cob – VCB
2SC5964
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT07267

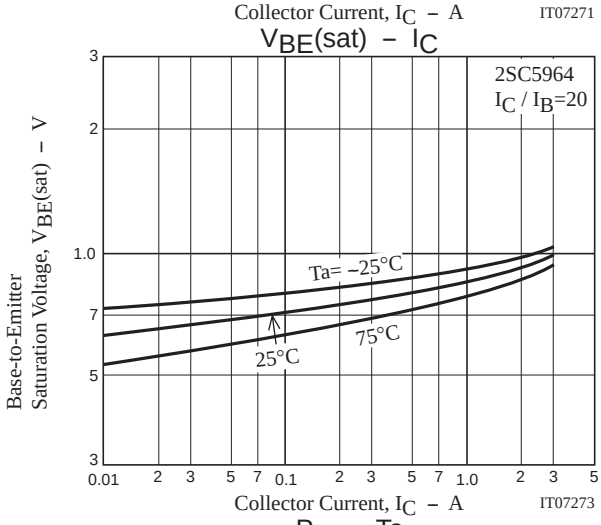

VCE(sat) – IC
2SA2125
IC / IB=20
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT07268

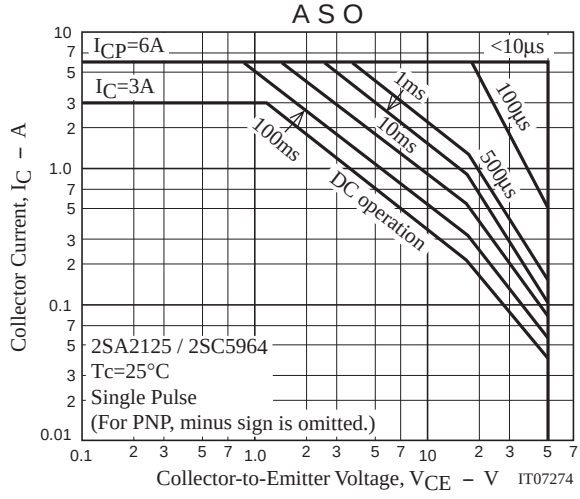

VCE(sat) – IC
2SC5964
IC / IB=20
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT07269

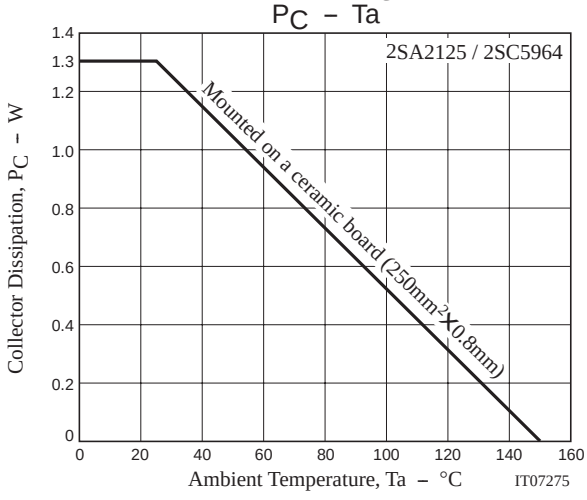

VCE(sat) – IC
2SA2125
IC / IB=50
25°C
Ta= –25°C
75°C
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT07270

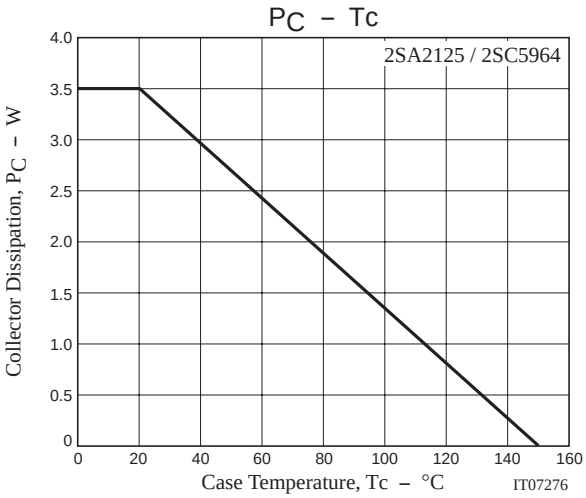

VCE(sat) – IC
2SC5964
IC / IB=50
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT07271


VBE(sat) – IC
2SA2125
IC / IB=20
Ta= –25°C
75°C
25°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
IT07272


VBE(sat) – IC
2SC5964
IC / IB=20
Ta= –25°C
75°C
25°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
IT07273


A S O
ICP=6A
IC=3A
<10µs
1ms
100µs
10ms
100ms
500µs
DC operation
2SA2125 / 2SC5964
Tc=25°C
Single Pulse
(For PNP, minus sign is omitted.)
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT07274


PC – Ta
2SA2125 / 2SC5964
Mounted on a ceramic board (250mm²×0.8mm)
Collector Dissipation, PC – W
Ambient Temperature, Ta – °C
IT07275



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