

High voltage switching transistor (400V, 2A)

2SC5161

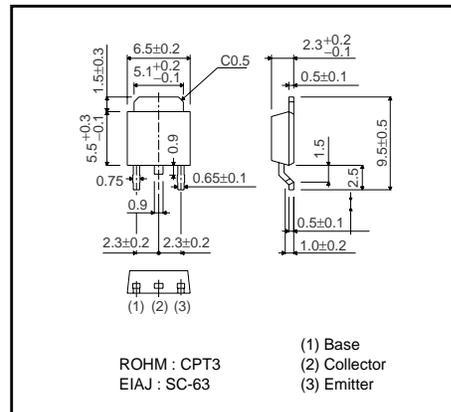
●Features

- 1) Low $V_{CE(sat)}$.
 $V_{CE(sat)}=0.15V$ (Typ.)
($I_C/I_B=1A/0.2A$)
- 2) High breakdown voltage.
 $V_{CEO}=400V$
- 3) Fast switching.
 $t_r \leq 1.0\mu s$
($I_C=0.8A$)

●Structure

Three-layer, diffused planar type
NPN silicon transistor

●External dimensions (Unit : mm)



●Absolute maximum ratings ($T_a=25^\circ C$)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	400	V
Collector-emitter voltage	V_{CEO}	400	V
Emitter-base voltage	V_{EBO}	7	V
Collector current	I_C	2	A(DC)
	I_{CP}	4	A(Pulse) *
Collector power dissipation	P_C	1	W
		10	W($T_C=25^\circ C$)
Junction temperature	T_J	150	$^\circ C$
Storage temperature	T_{stg}	-55 to +150	$^\circ C$

* Single pulse $P_w=10ms$

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●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV _{CB0}	400	-	-	V	I _C =50μA
Collector-emitter breakdown voltage	BV _{CEO}	400	-	-	V	I _C =1mA
Emitter-base breakdown voltage	BV _{EB0}	7	-	-	V	I _E =50μA
Collector cutoff current	I _{CB0}	-	-	10	μA	V _{CB} =400V
Emitter cutoff current	I _{EB0}	-	-	10	μA	V _{EB} =5V
Collector-emitter saturation voltage	V _{CE(sat)}	-	-	1	V	I _C /I _B =1A/0.2A
Base-emitter saturation voltage	V _{BE(sat)}	-	-	1.5	V	I _C /I _B =1A/0.2A
DC current transfer ratio	h _{FE}	25	-	50	-	V _{CE} =5V, I _C =0.1A
Transition frequency	f _T	-	10	-	MHz	V _{CE} =10V, I _E =-0.5A, f=5MHz *1
Output capacitance	C _{ob}	-	30	-	pF	V _{CB} =10V, I _E =0A, f=1MHz
Turn-on time	t _{ON}	-	-	1	μs	I _C =0.8A, R _L =250Ω
Storage time	t _{stg}	-	-	2.5	μs	I _{B1} =-I _{B2} =0.08A V _{CC} ≒ 200V
Fall time	t _r	-	-	1	μs	Refer to measurement circuit diagram

*1 Measured using pulse current

●Packaging specifications and h_{FE}

Type	h _{FE}	Package name	Taping
		Code	TL
		Basic ordering unit (pieces)	2500
2SC5161	B		○

h_{FE} values are classified as follows :

Item	B
h _{FE}	25 to 50

●Electrical characteristic curves

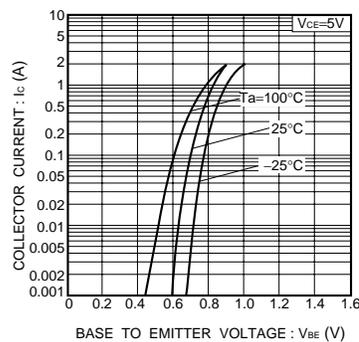


Fig.1 Grounded emitter propagation characteristics

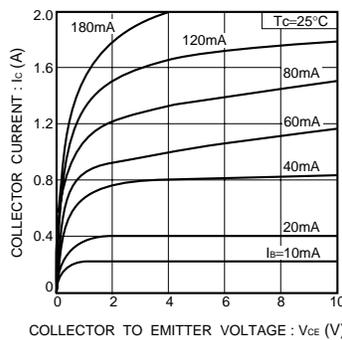


Fig.2 Grounded emitter output characteristics

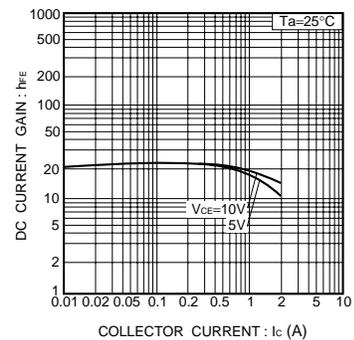


Fig.3 DC current gain vs. collector current (I)

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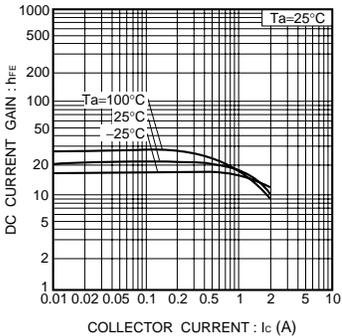


Fig.4 DC current gain vs. collector current (II)

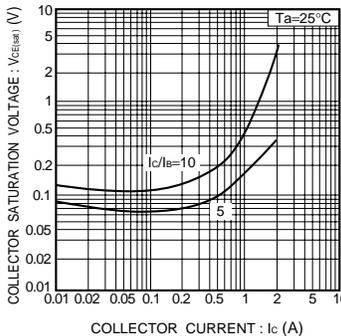


Fig.5 Collector-emitter saturation voltage vs. collector current

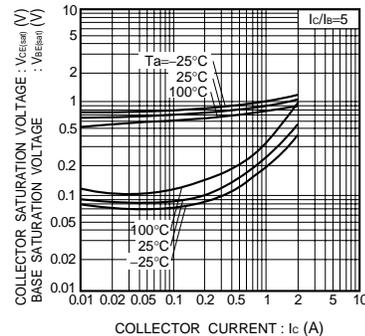


Fig.6 Collector-emitter saturation voltage vs. collector current
Base-emitter saturation voltage vs. collector current

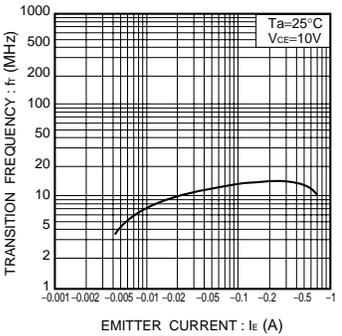


Fig.7 Gain bandwidth product vs. emitter current

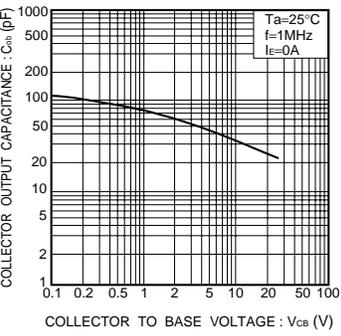


Fig.8 Collector output capacitance vs. collector-base voltage

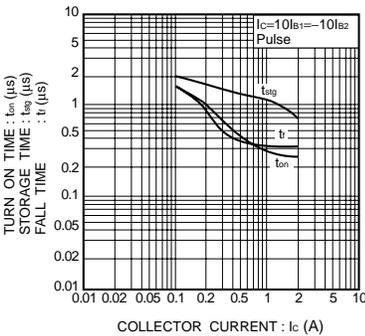
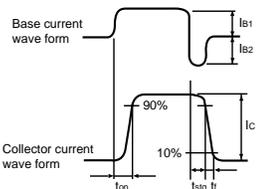
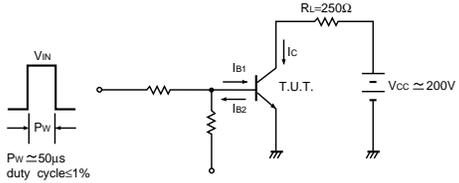


Fig.9 Switching time vs. collector current

● Switching characteristic measurement circuit



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