

High voltage switching transistor (400V, 2A)

2SC5161

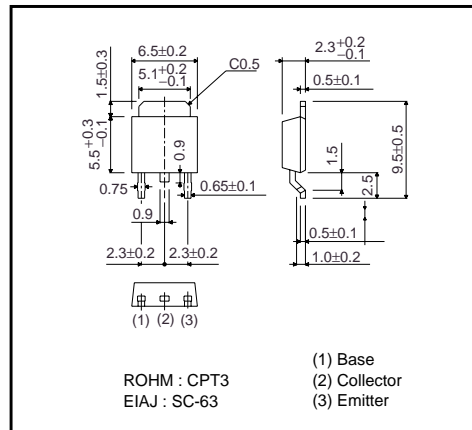
●Features

- 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 (Units : 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~+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_{CBO}	400	-	-	V	$I_C=50\mu A$
Collector-emitter breakdown voltage	BV_{CEO}	400	-	-	V	$I_C=1mA$
Emitter-base breakdown voltage	BV_{EBO}	7	-	-	V	$I_E=50\mu A$
Collector cutoff current	I_{CBO}	-	-	10	μA	$V_{CB}=400V$
Emitter cutoff current	I_{EBO}	-	-	10	μA	$V_{EB}=7V$
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	$V_{CE}=10V, I_E=-0.1A, f=5MHz$ *1
Output capacitance	C_{ob}	-	30	-	pF	$V_{CB}=10V, I_E=0A, f=1MHz$
Turn-on time	t_{ON}	-	-	1	μs	$I_C=0.8A, R_L=250\Omega$
Storage time	t_{stg}	-	-	2.5	μs	$I_{B1}=-I_{B2}=0.08A$ $V_{CC} \approx 200V$
Fall time	t_f	-	-	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}	25~50

●Electrical characteristic curves

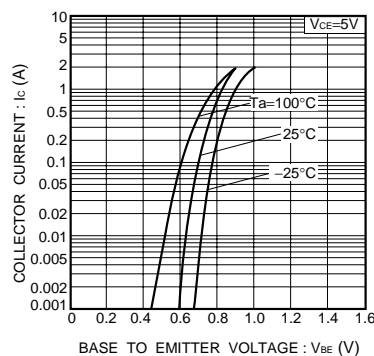


Fig.1 Grounded emitter propagation characteristics

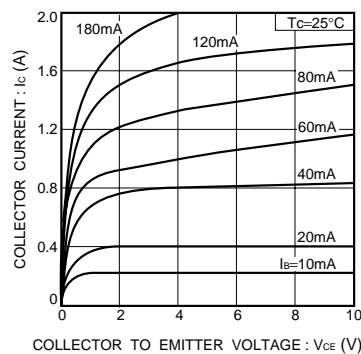


Fig.2 Grounded emitter output characteristics

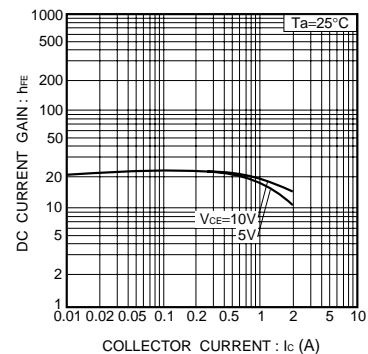


Fig.3 DC current gain vs. collector current (I)

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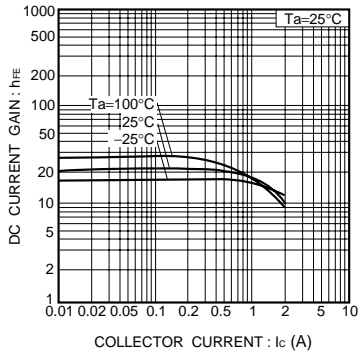


Fig.4 DC current gain vs. collector current (II)

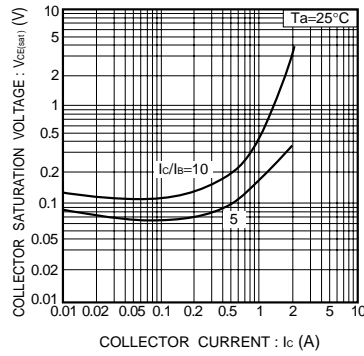


Fig.5 Collector-emitter saturation voltage vs. collector current

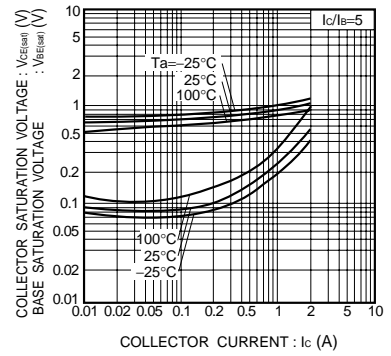


Fig.6 Collector-emitter saturation voltage vs. collector current
Base-emitter saturation voltage vs. collector current

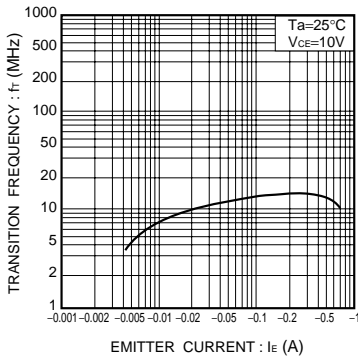


Fig.7 Gain bandwidth product vs. emitter current

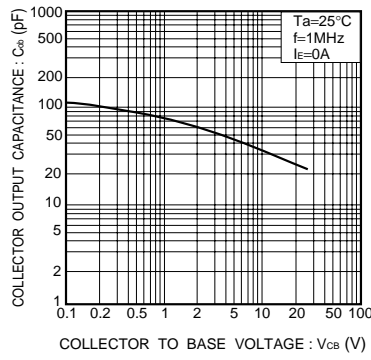


Fig.8 Collector output capacitance vs. collector-base voltage

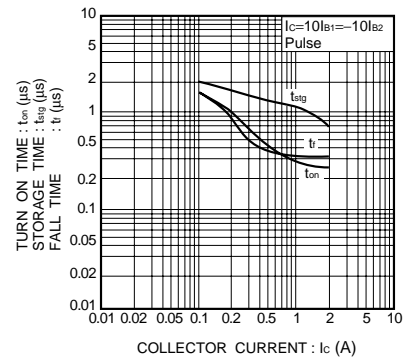


Fig.9 Switching time vs. collector current

●Switching characteristic measurement circuit

