High voltage switching transistor (400V, 2A)

2SC5161

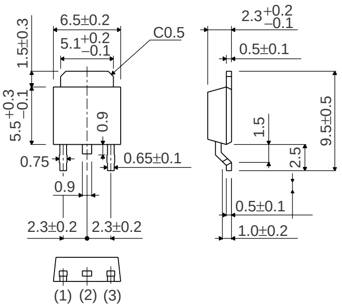
●Features

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.
   $t_f \leq 1.0\mu s$
   (I_C=0.8A)

●Structure

Three-layer, diffused planar type
NPN silicon transistor

●External dimensions (Unit : mm)



ROHM : CPT3
EIAJ : SC-63

(1) Base
(2) Collector
(3) Emitter

●Absolute maximum ratings (Ta=25°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(Tc=25°C)
Junction temperature	Tj	150	°C
Storage temperature	Tstg	−55 to +150	°C

* Single pulse Pw=10ms

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	400	–	–	V	I_C=50μA
Collector-emitter breakdown voltage	BV_{CEO}	400	–	–	V	I_C=1mA
Emitter-base breakdown voltage	BV_{EBO}	7	–	–	V	I_E=50μA
Collector cutoff current	I_{CBO}	–	–	10	μA	V_{CB}=400V
Emitter cutoff current	I_{EBO}	–	–	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	Cob	–	30	–	pF	V_{CB}=10V, I_E=0A, f=1MHz
Turn-on time	t_{ON}	–	–	1	μs	I_C=0.8A, R_L=250Ω I_{B1}=–I_{B2}=0.08A V_{CC} ≒ 200V Refer to measurement circuit diagram
Storage time	t_{stg}	–	–	2.5	μs	
Fall time	t_f	–	–	1	μs	

∗1 Measured using pulse current

●Packaging specifications and h_{FE}

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

h_{FE} values are classified as follows :

Item	B
h_{FE}	25 to 50

●Electrical characteristic curves

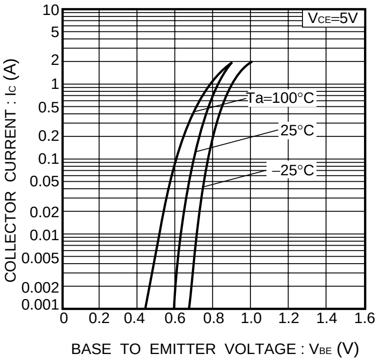


Fig.1 Grounded emitter propagation characteristics

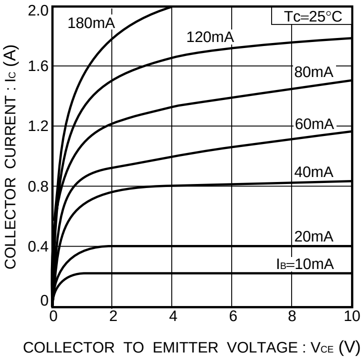


Fig.2 Grounded emitter output characteristics

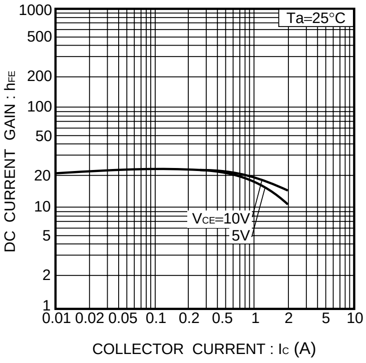


Fig.3 DC current gain vs. collector current (I)

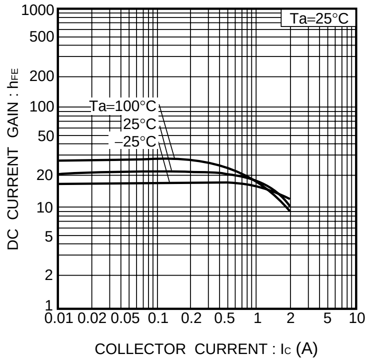


Fig.4 DC current gain vs. collector current (II)

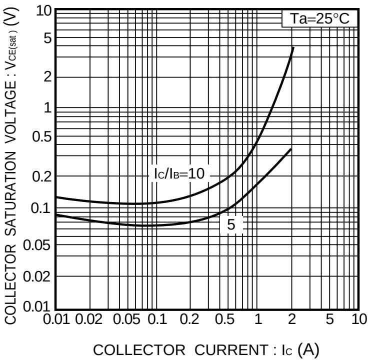


Fig.5 Collector-emitter saturation voltage vs. collector current

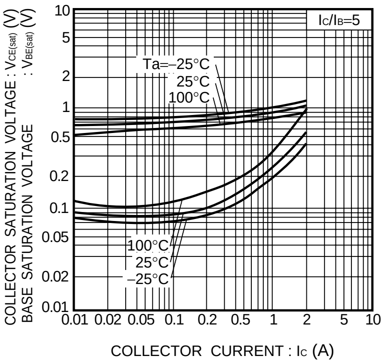


Fig.6 Collector-emitter saturation voltage vs. collector current Base-emitter saturation voltage vs. collector current

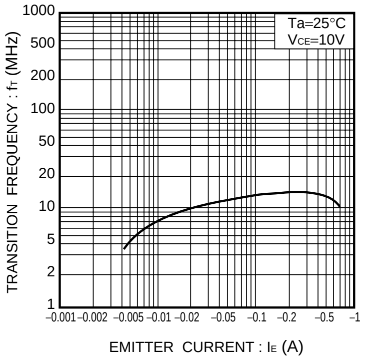


Fig.7 Gain bandwidth product vs. emitter current

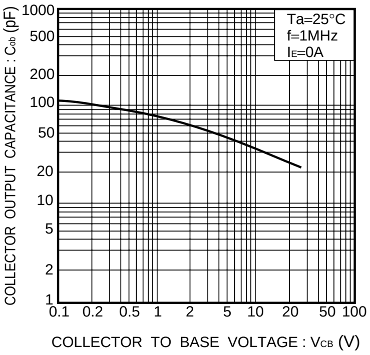


Fig.8 Collector output capacitance vs. collector-base voltage

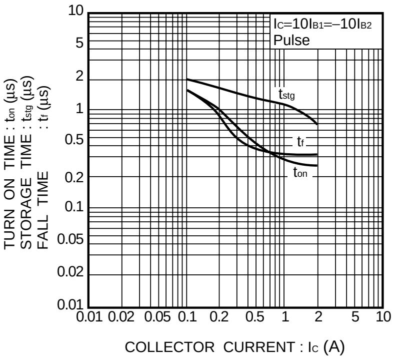
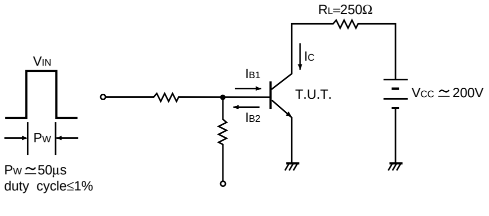
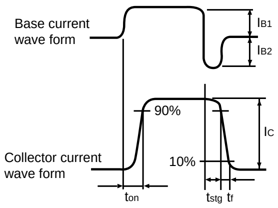


Fig.9 Switching time vs. collector current

●Switching characteristic measurement circuit





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