High voltage switching transistor (400V, 2A)

2SC5161

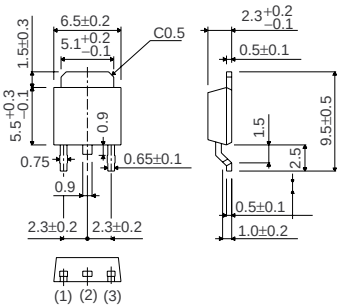
●**Features**

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 ≤1.0μs
   (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}**

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**

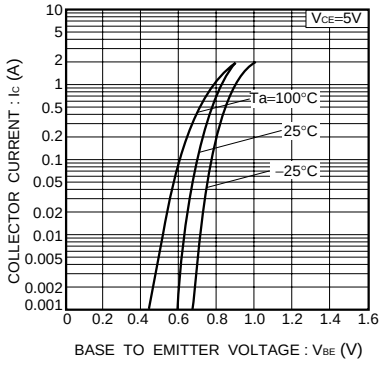


Fig.1 Grounded emitter propagation characteristics

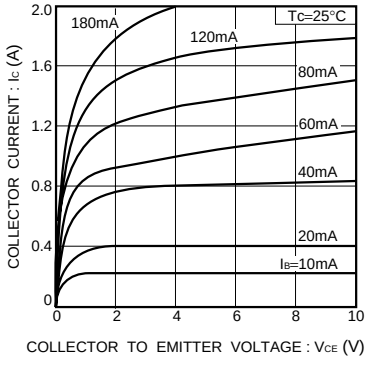


Fig.2 Grounded emitter output characteristics

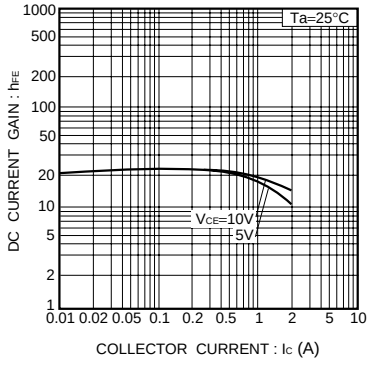


Fig.3 DC current gain vs. collector current (I)

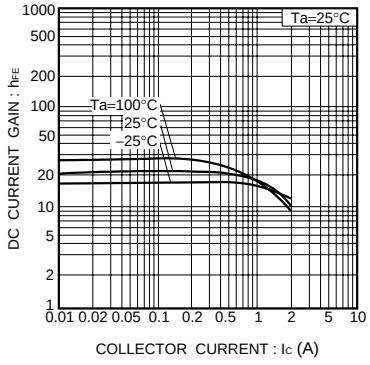


Fig.4 DC current gain vs. collector current (II)

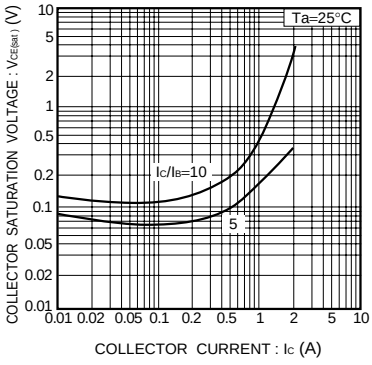


Fig.5 Collector-emitter saturation voltage vs. collector current

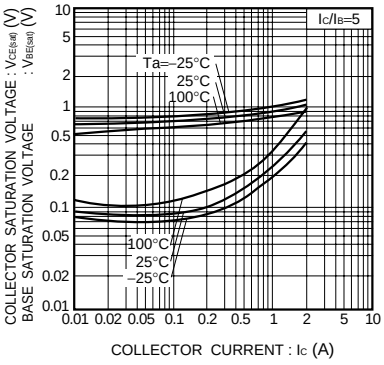


Fig.6 Collector-emitter saturation voltage vs. collector current
Base-emitter saturation voltage vs. collector current

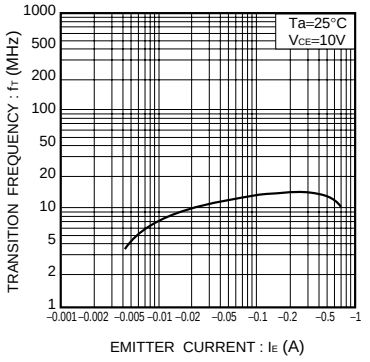


Fig.7 Gain bandwidth product vs. emitter current

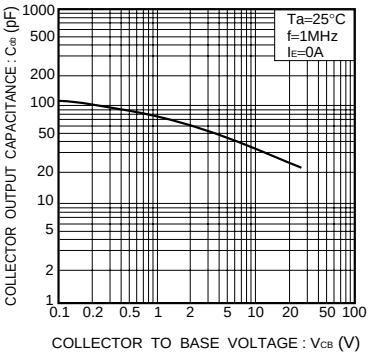


Fig.8 Collector output capacitance vs. collector-base voltage

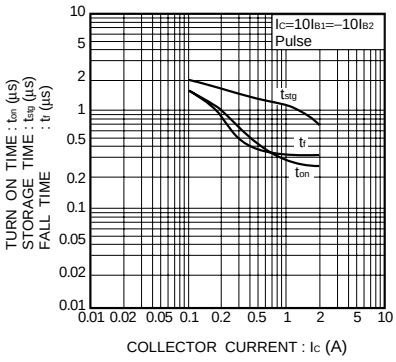


Fig.9 Switching time vs. collector current

●Switching characteristic measurement circuit