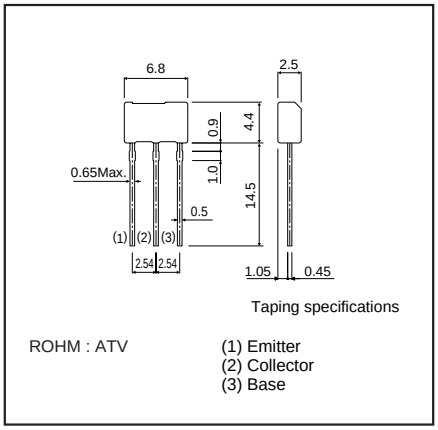
Power transistor (90±10V, 3A)

2SC5060

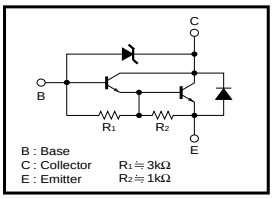
●Features

1) Built-in zener diode between collector and base.
2) Zener diode has low voltage dispersion.
3) Strong protection against reverse power surges due to "L" loads.
4) Darlington connection for high DC current gain.
5) Built-in resistor between base and emitter.
6) Built-in damper diode.

●External dimensions (Unit : mm)



●Equivalent circuit



●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit	
Collector-base voltage	V_{CBO}	90±10	V	
Collector-emitter voltage	V_{CEO}	90±10	V	
Emitter-base voltage	V_{EBO}	6	V	
Collector current	I_C	1	A(DC)	
	I_{CP}	2	A(Pulse)	*1
Collector power dissipation	P_C	1	W	*2
Junction temperature	Tj	150	°C	
Storage temperature	Tstg	−55 to +150	°C	

*1 Single pulse Pw=10ms
*2 Printed circuit board : 1.7 mm thick, collector copper plating at least 100mm².

●Packaging specifications and h_{FE}

Type	2SC5060
Package	ATV
h_{FE}	M
Code	TV2
Basic ordering unit (pieces)	2500

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	80	–	100	V	I_C=50μA
Collector-emitter breakdown voltage	BV_{CEO}	80	–	100	V	I_C=1mA
Emitter-base breakdown voltage	BV_{EBO}	6	–	–	V	I_E=5mA
Collector cutoff current	I_{CBO}	–	–	10	μA	V_{CB}=70V
Emitter cutoff current	I_{EBO}	–	–	3	mA	V_{EB}=5V
DC current transfer ratio	h_{FE}	1000	–	5000	–	V_{CE}=3V, I_C=0.5A *1
Collector-emitter saturation voltage	$V_{CE(sat)}$	–	–	1.5	V	I_C/I_B=500mA/1mA
Base-emitter saturation voltage	$V_{BE(sat)}$	–	–	2	V	I_C/I_B=500mA/1mA *1
Transition frequency	f_T	–	80	–	MHz	V_{CB}=5V, I_E=−0.1A, f=30MHz *2
Output capacitance	Cob	–	20	–	pF	V_{CE}=10V, I_E=0A, f=1MHz
Turn-on time	t_{on}	–	0.2	–	μs	I_C=0.8A, R_L=50Ω I_{B1}= −I_{B2}=8mA V_{CC} ≒ 40V
Storage time	t_{stg}	–	5	–	μs	
Fall time	t_f	–	0.6	–	μs	

*1 Measured using pulse current. *2 Transition frequency of the device.

●**Electrical characteristics curves**

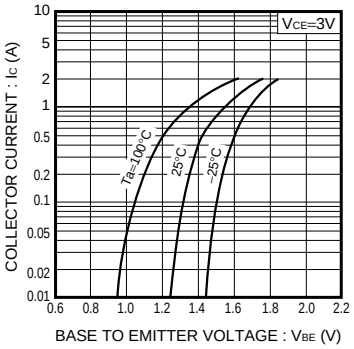


Fig.1 Ground emitter propagation characteristics

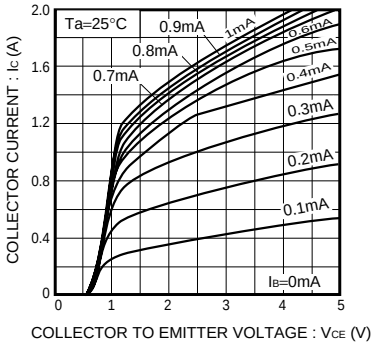


Fig.2 Ground emitter output characteristics(Ⅰ)

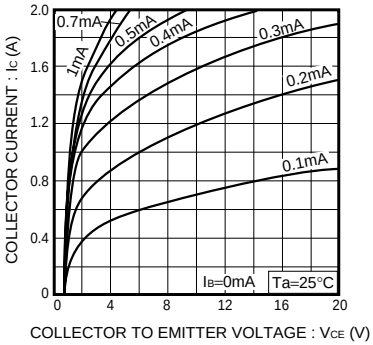


Fig.3 Ground emitter output characteristics(Ⅱ)

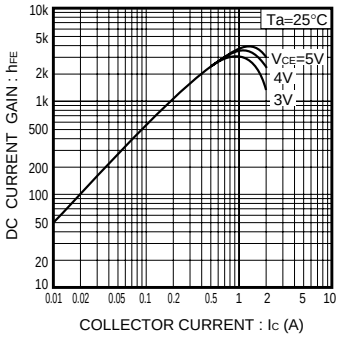


Fig.4 DC current gain vs. collector current (Ⅰ)

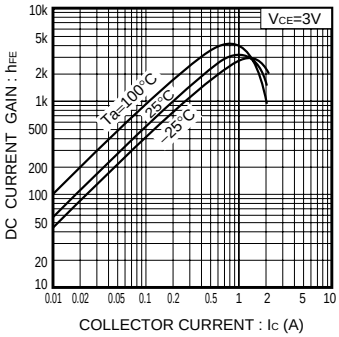


Fig.5 DC current gain vs. collector current(Ⅱ)

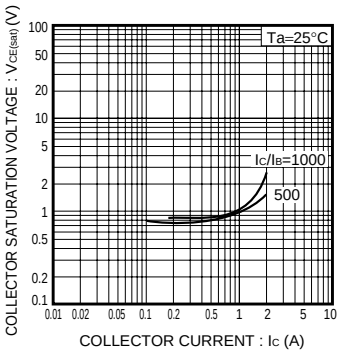


Fig.6 Collector-emitter saturation voltage vs. collector current

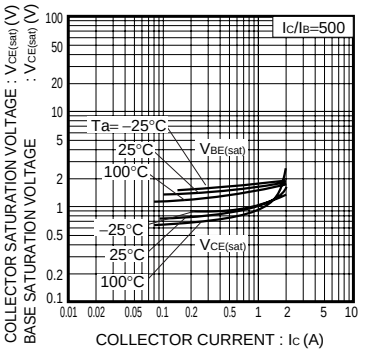


Fig.7 Collector-emitter saturation voltage
Base-emitter saturation voltage vs. collector current

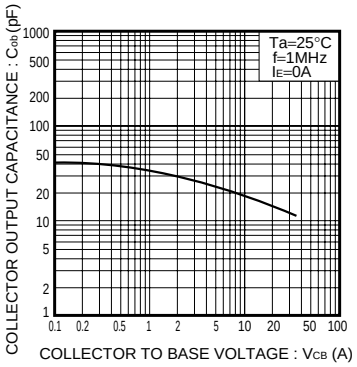


Fig.8 Collector output capacitance vs. collector-base voltage

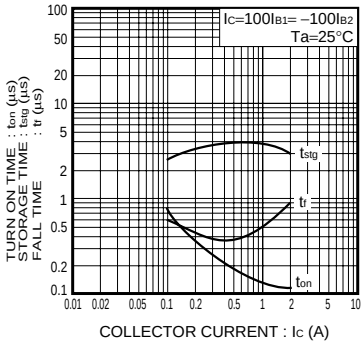


Fig.9 Switching characteristics

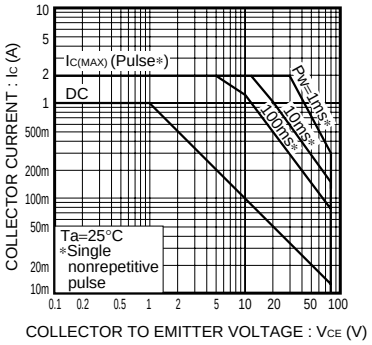


Fig.10 Safe operating area

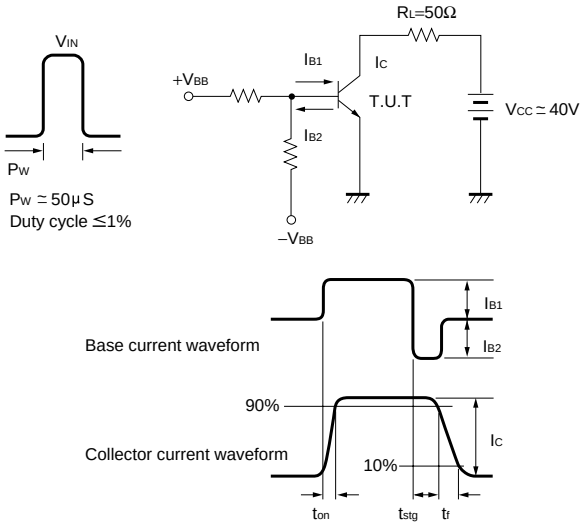


Fig.11 Switching time mesurement circuit

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