

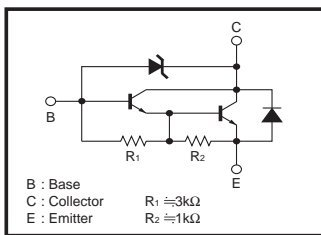
# Power transistor (90±10V, 3A)

## 2SC5060

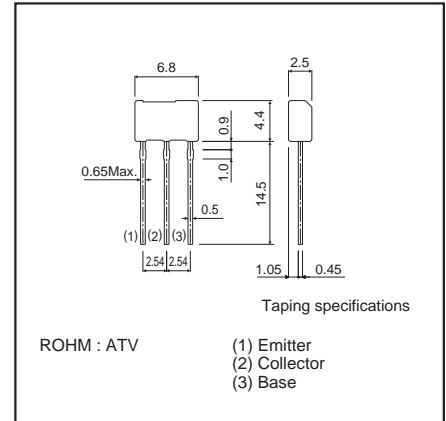
### ●Features

- 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.

### ●Inner circuit



### ●Dimensions (Unit : mm)



### ●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V <sub>CB0</sub>	90±10	V
Collector-emitter voltage	V <sub>CE0</sub>	90±10	V
Emitter-base voltage	V <sub>EB0</sub>	6	V
Collector current	I <sub>c</sub>	1	A(DC)
	I <sub>cP</sub>	2	A(Pulse) *1
Collector power dissipation	P <sub>c</sub>	1	W *2
Junction temperature	T <sub>J</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

\*1 Single pulse P<sub>W</sub>≤10ms

\*2 Printed circuit board : 1.7 mm thick, collector copper plating at least 100mm<sup>2</sup>.

### ●Packaging specifications and h<sub>FE</sub>

Type	2SC5060
Package	ATV
h <sub>FE</sub>	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 <sub>CB0</sub>	80	—	100	V	I <sub>c</sub> =50μA
Collector-emitter breakdown voltage	BV <sub>CE0</sub>	80	—	100	V	I <sub>c</sub> =1mA
Emitter-base breakdown voltage	BV <sub>EB0</sub>	6	—	—	V	I <sub>E</sub> =5mA
Collector cutoff current	I <sub>cBO</sub>	—	—	10	μA	V <sub>CB</sub> =70V
Emitter cutoff current	I <sub>EB0</sub>	—	—	3	mA	V <sub>EB</sub> =5V
DC current transfer ratio	h <sub>FE</sub>	1000	—	2500	—	V <sub>CE</sub> =3V, I <sub>c</sub> =0.5A *1
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	—	—	1.5	V	I <sub>c</sub> /I <sub>E</sub> =500mA/1mA
Base-emitter saturation voltage	V <sub>BE(sat)</sub>	—	—	2	V	I <sub>c</sub> /I <sub>E</sub> =500mA/1mA *1
Transition frequency	f <sub>r</sub>	—	80	—	MHz	V <sub>CB</sub> =5V, I <sub>E</sub> =-0.1A, f=30MHz *2
Output capacitance	C <sub>ob</sub>	—	20	—	pF	V <sub>CE</sub> =10V, I <sub>E</sub> =0A, f=1MHz
Turn-on time	t <sub>on</sub>	—	0.2	—	μs	I <sub>c</sub> =0.8A, R <sub>L</sub> =50Ω
Storage time	t <sub>stg</sub>	—	5	—	μs	I <sub>B1</sub> =-I <sub>B2</sub> =8mA
Fall time	t <sub>f</sub>	—	0.6	—	μs	V <sub>CC</sub> ≈40V

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

●Electrical characteristics curves

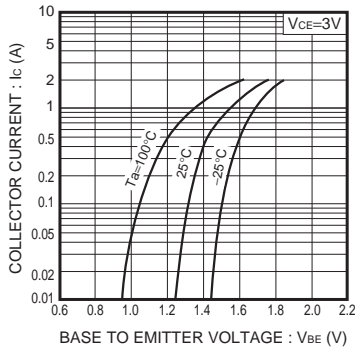


Fig.1 Ground emitter propagation characteristics

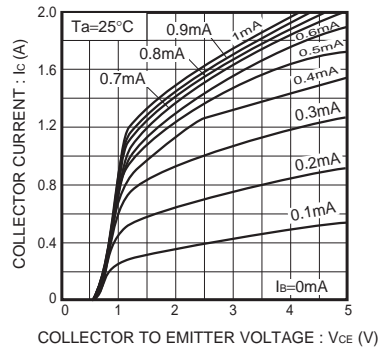


Fig.2 Ground emitter output characteristics(I)

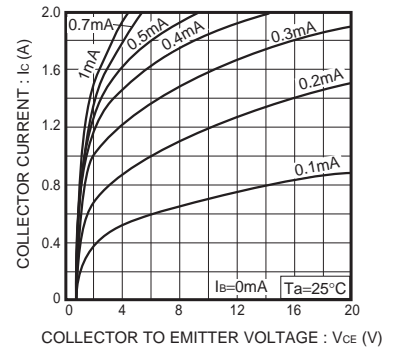


Fig.3 Ground emitter output characteristics(II)

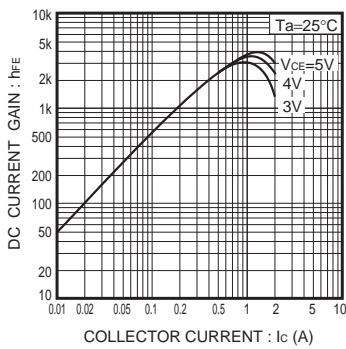


Fig.4 DC current gain vs. collector current (I)

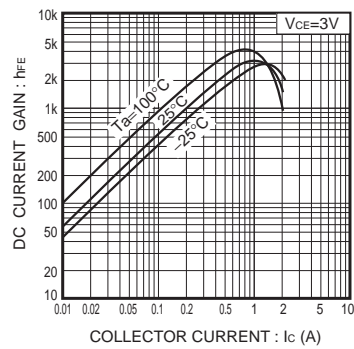


Fig.5 DC current gain vs. collector current(II)

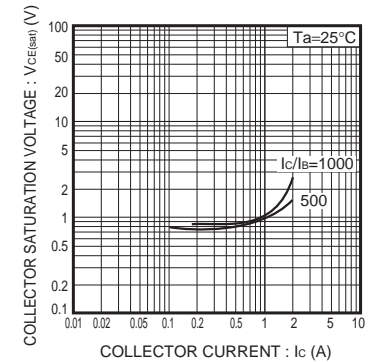


Fig.6 Collector-emitter saturation voltage vs. collector current

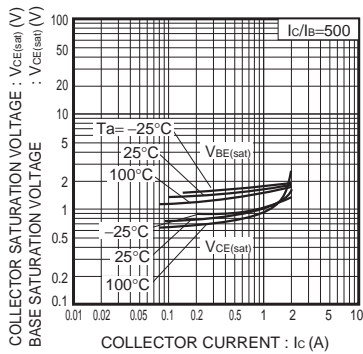


Fig.7 Collector-emitter saturation voltage vs. collector current

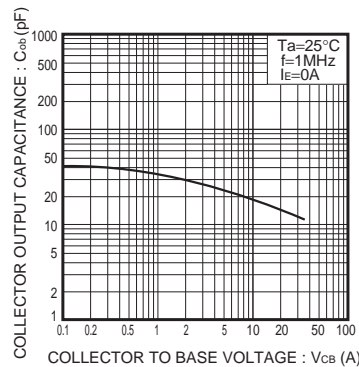


Fig.8 Collector output capacitance vs. collector-base voltage

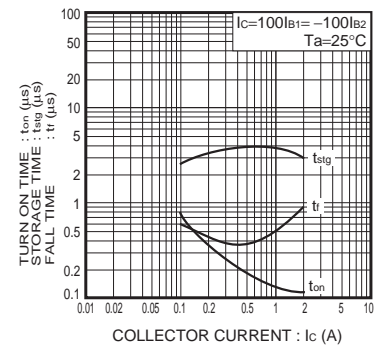


Fig.9 Switching characteristics

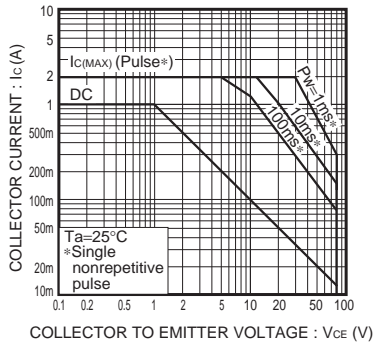


Fig.10 Safe operating area

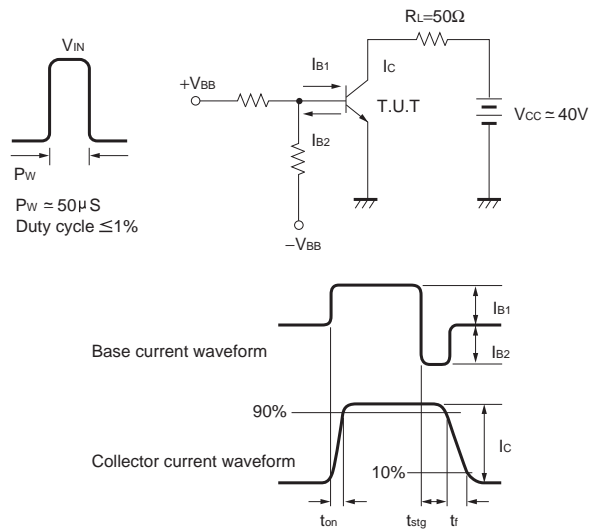


Fig.11 Switching time measurement circuit

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