

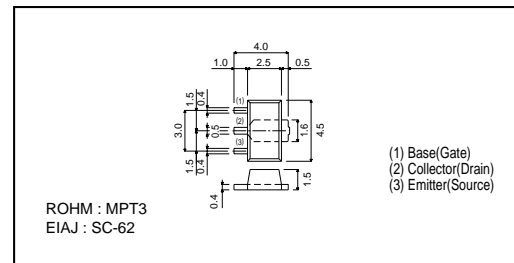
# Medium Power Transistor (Motor, Relay drive) ( $90^{+20}_{-10}$ , 2A)

## 2SD2170

### ●Features

- 1) Built-in zener diode between collector and base.
- 2) Zener diode has low 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 (Units : mm)



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

Parameter	Symbol	Limits	Unit
Collector-base voltage	V <sub>CB0</sub>	90 $\frac{+20}{-10}$	V
Collector-emitter voltage	V <sub>CE0</sub>	90 $\frac{+20}{-10}$	V
Emitter-base voltage	V <sub>EB0</sub>	6	V
Collector current	I <sub>C</sub>	2	A (DC)
		3	A (Pulse) <sup>*1</sup>
Collector power dissipation	P <sub>C</sub>	2	W <sup>*2</sup>
Junction temperature	T <sub>J</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55~+150	°C

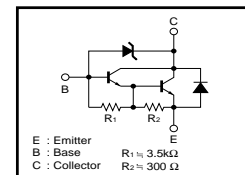
<sup>\*1</sup> Single pulse Pw = 10ms, Duty = 1 / 2

<sup>\*2</sup> When mounted on a 40 x 40 x 0.7 mm ceramic board.

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

Type	2SD2170
Package	MPT3
h <sub>FE</sub>	1k~10k
Marking	DM
Code	T100
Basic ordering unit (pieces)	1000

### ●Circuit diagram



### ●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV <sub>CB0</sub>	80	-	110	V	I <sub>C</sub> = 50μA
Collector-emitter breakdown voltage	BV <sub>CE0</sub>	80	-	110	V	I <sub>C</sub> = 1mA
Collector cutoff current	I <sub>CA0</sub>	-	-	10	μA	V <sub>CB</sub> = 70V
Emitter cutoff current	I <sub>EA0</sub>	-	-	3	mA	V <sub>EB</sub> = 5V
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	-	-	1.5	V	I <sub>C</sub> /I <sub>B</sub> = 1A/1mA <sup>*1</sup>
DC current transfer ratio	h <sub>FE</sub>	1000	-	10000	-	V <sub>CE</sub> = 2V, I <sub>C</sub> = 1A <sup>*1</sup>
Transition frequency	f <sub>T</sub>	-	80	-	MHz	V <sub>CE</sub> = 5V, I <sub>E</sub> = -0.1A, f = 30MHz <sup>*2</sup>
Output capacitance	C <sub>ob</sub>	-	25	-	pF	V <sub>CB</sub> = 10V, I <sub>E</sub> = 0A, f = 1MHz

<sup>\*1</sup> Measured using pulse current.

<sup>\*2</sup> Transition frequency of the device.