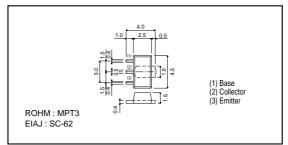
# Medium Power Transistor (Motor, Relay drive) (90<sup>+20</sup><sub>-10</sub>, 2A) **2SD2170**

## 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 (Unit : mm)



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

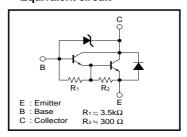
Parameter	Symbol	Limits	Unit	
Collector-base voltage	Vсво	90 +20 -10	V	
Collector-emitter voltage	VCEO	90 +20 -10	V	
Emitter-base voltage	VEBO	6	V	
Collector current	la la	2	A (DC)	
	lc lc	3	A (Pulse)	
Collector power dissipation	Pc	0.5 *1	10/	
	PC	2 *2	W	
Junction temperature	Tj	150	°C	
Storage temperature	Tstg	-55 to +150	°C	

- \*1 Single pulse Pw=10ms,Duty=1/2
- \*2 When mounted on a 40 x 40 x 0.7 mm ceramic board.

## ●Packaging specifications and hFE

Туре	2SD2170
Package	MPT3
hfE	1k to 10k
Marking	DM
Code	T100
Basic ordering unit (pieces)	1000

## ●Equivalent circuit

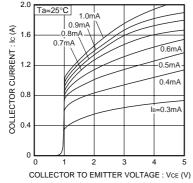


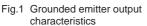
#### ●Electrical characteristics (Ta=25°C)

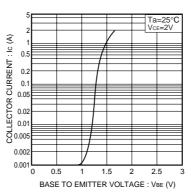
,	,						
Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions	
Collector-base breakdown voltage	ВУсво	80	_	110	V	Ic=50μA	
Collector-emitter breakdown voltage	BVceo	80	-	110	V	Ic=1mA	
Collector cutoff current	Ісво	-	-	10	μА	Vcb=70V	
Emitter cutoff current	Ієво	-	-	3	mA	V <sub>EB</sub> =5V	
Collector-emitter saturation voltage	VCE(sat)	-	-	1.5	V	Ic/I <sub>B</sub> =1A/1mA	*1
DC current transfer ratio	hfe	1000	-	10000	-	Vce=2V , Ic=1A	*1
Transition frequency	f⊤	-	80	-	MHz	Vce=5V , Ie=-0.1A , f=30MHz	*2
Output capacitance	Cob	_	25	_	pF	Vcb=10V . Ie=0A . f=1MHz	

<sup>\*1</sup> Measure using pulse current. \*2 Transition frequency of the device.

# •Electrical characteristic curves







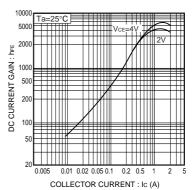


Fig.2 Grounded emitter propagation Fig.3 DC current gain vs. collector current characteristics

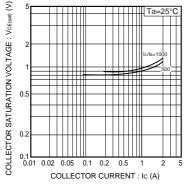


Fig.4 Collector-emitter saturation voltage vs. collector current

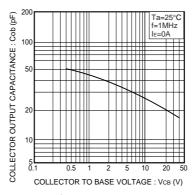


Fig.5 Collector output capacitance vs. collector-base voltage

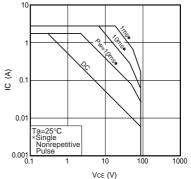


Fig.6 Safe operating area

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