



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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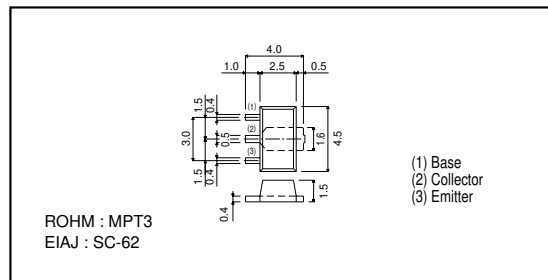
Medium Power Transistor (Motor, Relay drive) (90^{+20}_{-10} , 2A)

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 ($T_a=25^\circ\text{C}$)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CB0}	90	V
Collector-emitter voltage	V_{CE0}	90	V
Emitter-base voltage	V_{EB0}	6	V
Collector current	I_C	2	A (DC)
		3	A (Pulse) *1
Collector power dissipation	P_C	2	W *2
Junction temperature	T_J	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55~+150	$^\circ\text{C}$

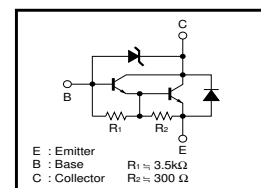
*1 Single pulse $P_w = 10\text{ms}$, Duty = 1 / 2

*2 When mounted on a 40 x 40 x 0.7 mm ceramic board.

●Packaging specifications and h_{FE}

Type	2SD2170
Package	MPT3
h_{FE}	1K~10K
Marking	DM
Code	T100
Basic ordering unit (pieces)	1000

●Equivalent circuit



●Electrical characteristics ($T_a=25^\circ\text{C}$)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	80	-	110	V	$I_C = 50\mu\text{A}$
Collector-emitter breakdown voltage	BV_{CEO}	80	-	110	V	$I_C = 1\text{mA}$
Collector cutoff current	I_{CBO}	-	-	10	μA	$V_{CB} = 70\text{V}$
Emitter cutoff current	I_{EBO}	-	-	3	mA	$V_{EB} = 5\text{V}$
Collector-emitter saturation voltage	$V_{CE(sat)}$	-	-	1.5	V	$I_C/I_B = 1\text{A}/1\text{mA}$ *1
DC current transfer ratio	h_{FE}	1000	-	10000	-	$V_{CE} = 2\text{V}$, $I_C = 1\text{A}$ *1
Transition frequency	f_T	-	80	-	MHz	$V_{CE} = 5\text{V}$, $I_E = -0.1\text{A}$, $f = 30\text{MHz}$ *2
Output capacitance	C_{ob}	-	25	-	pF	$V_{CB} = 10\text{V}$, $I_E = 0\text{A}$, $f = 1\text{MHz}$

*1 Measured using pulse current.

*2 Transition frequency of the device.