Medium Power Transistor (Motor, Relay drive) (60±10V, 2A)

2SD2212 / 2SD2143 / 2SD1866

●Features

1) Built-in zener diode between collector and base.
2) Strong protection against reverse surges due to "L" loads.
3) Built-in resistor between base and emitter.
4) Built-in damper diode.

●Absolute maximum ratings (Ta=25°C)

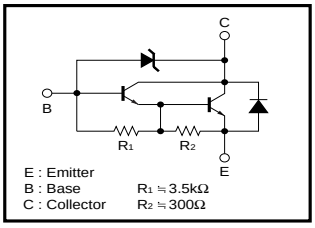
Parameter		Symbol	Limits	Unit
Collector-base voltage		V_{CBO}	60±10	V
Collector-emitter voltage		V_{CEO}	60±10	V
Emitter-base voltage		V_{EBO}	6	V
Collector current		I_C	2	A (DC)
			3 *1	A (Pulse)
Collector power dissipation	2SD2212	P_C	0.5	W
			2 *2	
	2SD2143		1	W
			10	W (Tc=25°C)
	2SD1866		1 *3	W
Junction temperature		Tj	150	°C
Storage temperature		Tstg	−55 to +150	°C

*1 Single pulse Pw=100ms
*2 When mounted on a 40×40×0.7mm ceramic board.
*3 Printed circuit board 1.7mm thick, collector plating 1cm² or larger.

●Packaging specifications and h_{FE}

Type	2SD2212	2SD2143	2SD1866
Package	MPT3	CPT3	ATV
h_{FE}	1k to 10k	1k to 10k	1k to 10k
Marking	DR	–	–
Code	T100	TL	TV2
Basic ordering unit (pieces)	1000	2500	2500

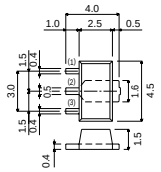
●Equivalent circuit



E : Emitter
B : Base
C : Collector
R1 ≒ 3.5kΩ
R2 ≒ 300Ω

●External dimensions (Unit : mm)

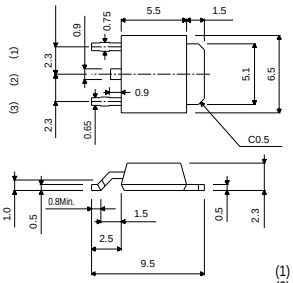
2SD2212



ROHM : MPT3
EIAJ : SC-62

(1) Base(Gate)
(2) Collector(Drain)
(3) Emitter(Source)

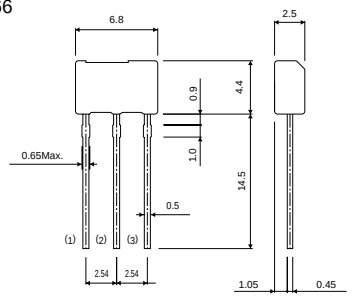
2SD2143



ROHM : CPT3
EIAJ : SC-63

(1) Base(Gate)
(2) Collector(Drain)
(3) Emitter(Source)

2SD1866



Taping specifications

ROHM : ATV

(1) Emitter
(2) Collector
(3) Base

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	50	–	70	V	I_C=50μA
Collector-emitter breakdown voltage	BV_{CEO}	50	–	70	V	I_C=5mA
Collector cutoff current	I_{CBO}	–	–	1.0	μA	V_{CB}=40V
Emitter cutoff current	I_{EBO}	–	–	3	mA	V_{EB}=5V
Collector-emitter saturation voltage	$V_{CE(sat)}$	–	–	1.5	V	I_C/I_B=1A/1mA ＊
DC current transfer ratio	h_{FE}	1000	–	10000	–	V_{CE}=2V, I_C=1A
Transition frequency	f_T	–	80	–	MHz	V_{CE}=5V, I_E= –0.1A, f=30MHz
Output capacitance	Cob	–	25	–	pF	V_{CB}=10V, I_E=0A, f=1MHz

＊ Measured using pulse current.

●Electrical characteristics curves

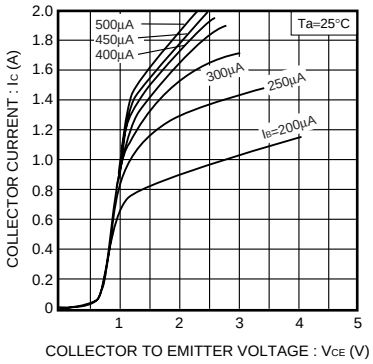


Fig.1 Groundede emitter output characteristics (I)

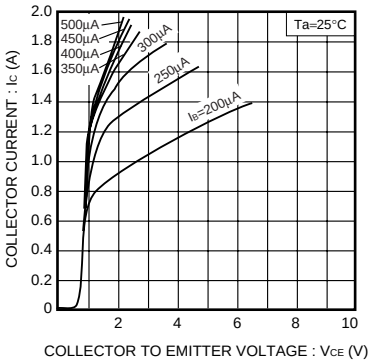


Fig.2 Grounded emitter output characteristics (II)

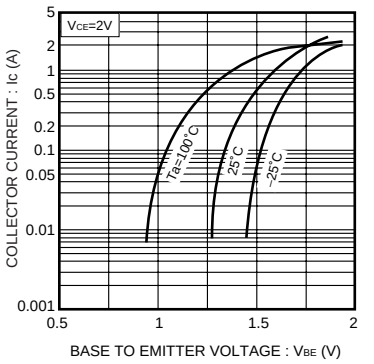


Fig.3 Grounded emitter propagation characteristics

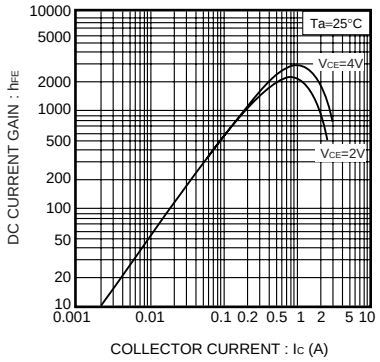


Fig.4 DC current gain vs. collector current (I)

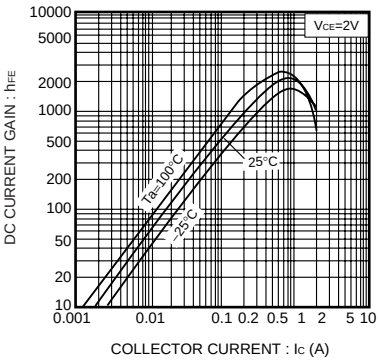


Fig.5 DC current gain vs. collector current (II)

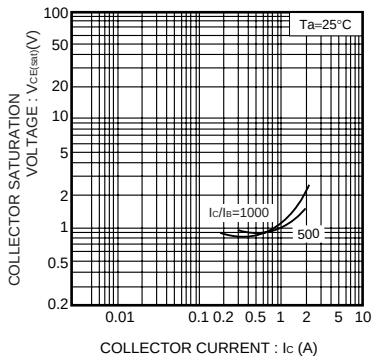


Fig.6 Collector-emitter saturation voltage vs. collector current

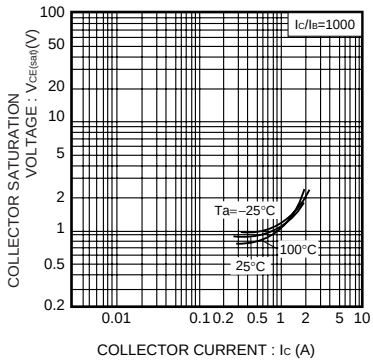


Fig.7 Collector-emitter saturation voltage vs. collector current

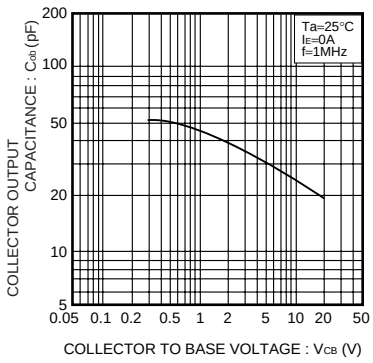


Fig.8 Collector output capacitance vs. collector-base voltage

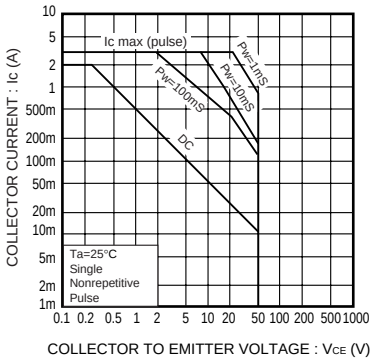


Fig.9 Safe operating area (A. S. O) 2SD2212 (MPT)

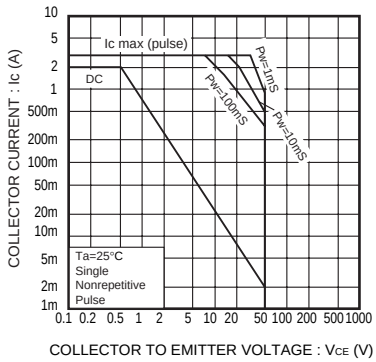


Fig.10 Safe operating area (A. S. O) 2SD2143 (CPT)

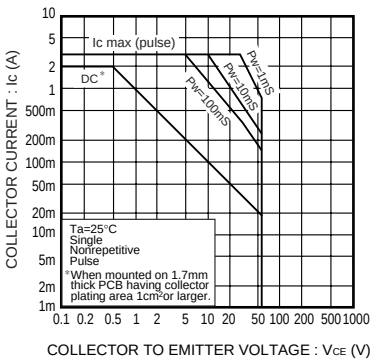


Fig.11 Safe operating area (A. S. O) 2SD1866 (ATV)

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