

# Power Transistor (160V , 1.5A)

## 2SD2211 / 2SD1918 / 2SD1857A

### ●Features

- 1) High breakdown voltage.( $BV_{CEO} = 160V$ )
- 2) Low collector output capacitance.  
(Typ. 20pF at  $V_{CB} = 10V$ )
- 3) High transition frequency.( $f_T = 80MHz$ )
- 4) Complements the 2SB1275 / 2SB1236A.

### ●Absolute maximum ratings ( $T_a = 25^\circ C$ )

Parameter	Symbol	Limits	Unit
Collector-base voltage	$V_{CBO}$	160	V
Collector-emitter voltage	$V_{CEO}$	160	V
Emitter-base voltage	$V_{EBO}$	5	V
Collector current	$I_C$	1.5	A(DC)
		3	A(Pulse) *1
		1	W
		0.5	W
		2	W
Collector power dissipation	$P_C$	1	W
		10	W( $T_C = 25^\circ C$ )
		150	$^\circ C$
		-55 ~ +150	$^\circ C$
Junction temperature	$T_J$	150	$^\circ C$
Storage temperature	$T_{stg}$	-55 ~ +150	$^\circ C$

\* 1  $P_W = 200msec$  duty=1/2

\* 2 Printed circuit board 1.7mm thick, collector plating 1cm<sup>2</sup> or larger.

\* 3 When mounted on a 40 x 40 x 0.7mm ceramic board.

### ●Packaging specifications and $h_{FE}$

Type	2SD2211	2SD1918	2SD1857A
Package	MPT3	CPT3	ATV
$h_{FE}$	QR	QR	PQ
Marking	DQ*	—	—
Code	T100	TL	TV2
Basic ordering unit (pieces)	1000	2500	2500

\* Denotes  $h_{FE}$

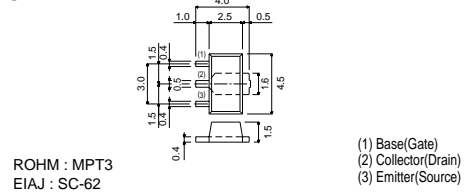
### ●Electrical characteristics ( $T_a = 25^\circ C$ )

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	$BV_{CBO}$	160	—	—	V	$I_C = 50\mu A$
Collector-emitter breakdown voltage	$BV_{CEO}$	160	—	—	V	$I_C = 1mA$
Emitter-base breakdown voltage	$BV_{EBO}$	5	—	—	V	$I_E = 50\mu A$
Collector cutoff current	$I_{CBO}$	—	—	1	$\mu A$	$V_{CB} = 120V$
Emitter cutoff current	$I_{EBO}$	—	—	1	$\mu A$	$V_{EB} = 4V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	2	V	$I_C/I_E = 1A/0.1A$ *
Base-emitter saturation voltage	$V_{BE(sat)}$	—	—	1.5	V	$I_C/I_E = 1A/0.1A$ *
DC current transfer ratio	$h_{FE}$	120	—	390	—	$V_{CE}/I_C = 5V/0.1A$
		82	—	270	—	
Transition frequency	$f_T$	—	80	—	MHz	$V_{CE} = 5V$ , $I_E = -0.1A$ , $f = 30MHz$
Output capacitance	$C_{ob}$	—	20	—	pF	$V_{CB} = 10V$ , $I_E = 0A$ , $f = 1MHz$

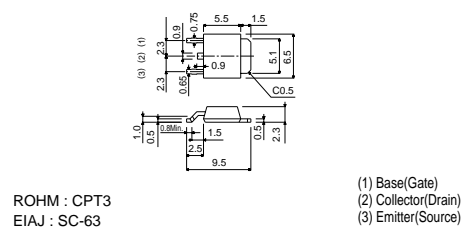
\* Measured using pulse current.

### ●External dimensions (Unit : mm)

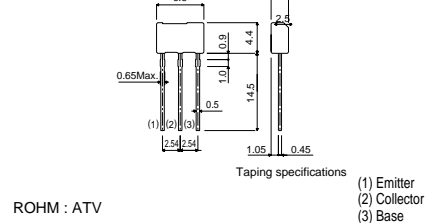
#### 2SD2211



#### 2SD1918



#### 2SD1857A



Transistors

●Electrical characteristic curves

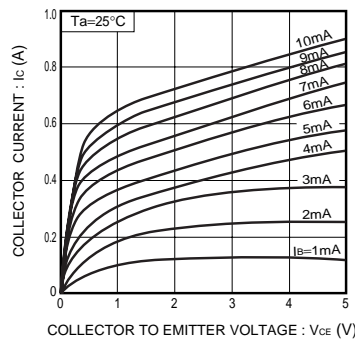


Fig.1 Ground emitter output characteristics

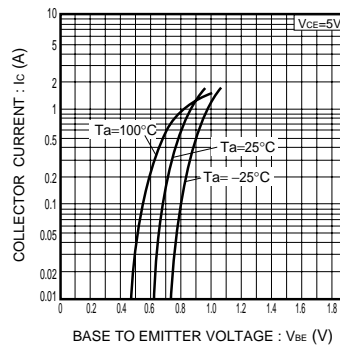


Fig.2 Ground emitter propagation characteristics

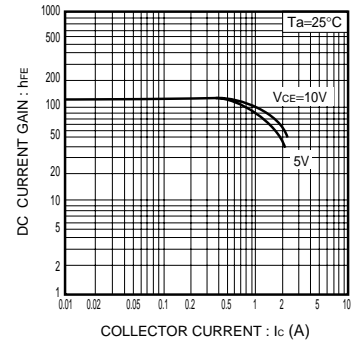


Fig.3 DC current gain vs. collector current ( I )

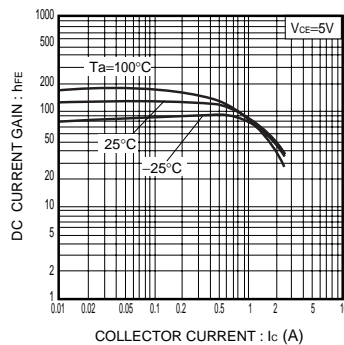


Fig.4 DC current gain vs. collector current ( II )

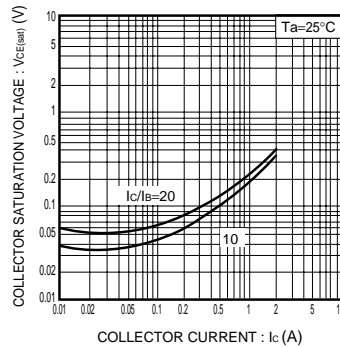


Fig.5 Collector-emitter saturation voltage vs. collector current

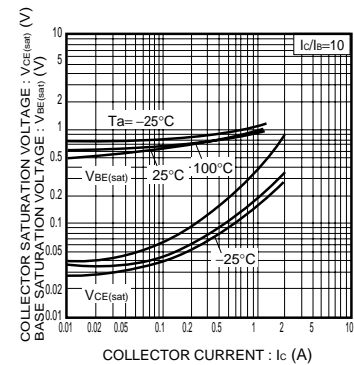


Fig.6 Collector-emitter saturation voltage vs. collector current

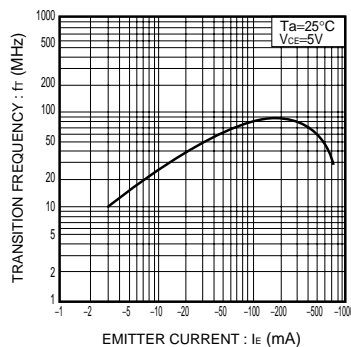


Fig.7 Gain bandwidth products vs. emitter current

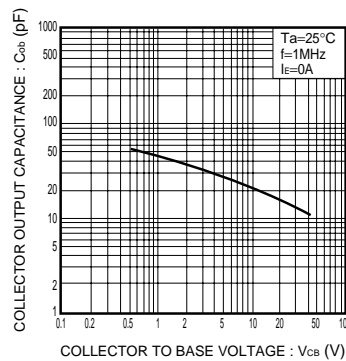


Fig.8 Collector output capacitance vs. collector-base voltage

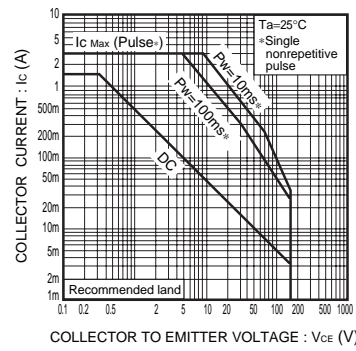


Fig.9 Safe operating area (2SD2211)

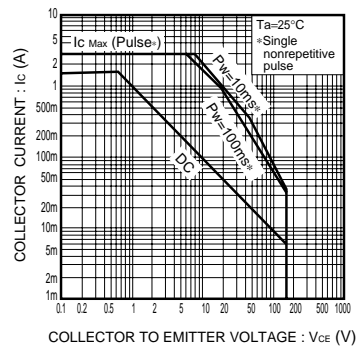


Fig.10 Safe operating area (2SD1918)

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