Medium Power Transistor (32V, 2A)

2SD1766/2SD1758/2SD1862/2SD1189F/ 2SD1055/2SD1919/2SD1227M

●Features

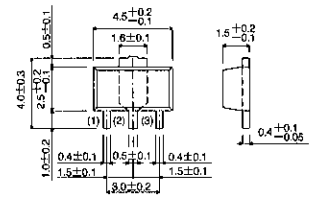
1) Low $V_{CE(sat)}$.
   $V_{CE(sat)}$ = 0.16V (Typ.)
   (I_C/I_B = 2A/0.2A)
2) Complements the
   2SB1188/2SB1182/2SB1240/2SB
   891F/2SB822/2SB1277/2SB911M

●Structure

Epitaxial planar type
NPN silicon transistor

●External dimensions (Units: mm)

2SD1766

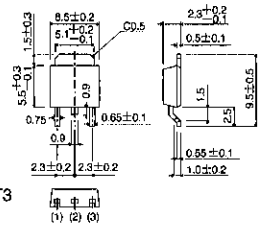


ROHM : MPT3
EIAJ : SC-62

Abbreviated symbol: DB*

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

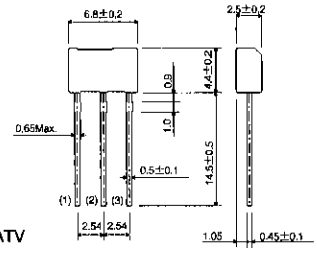
2SD1758



ROHM : CPT3
EIAJ : SC-63

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

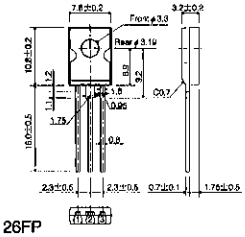
2SD1862



ROHM : ATV

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

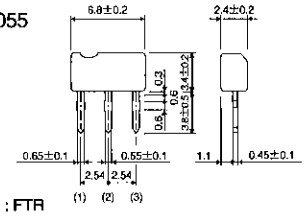
2SD1189F



ROHM : TO-126FP

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

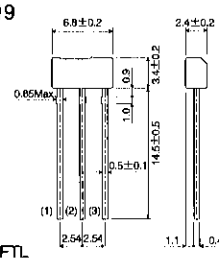
2SD1055



ROHM : FTR

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

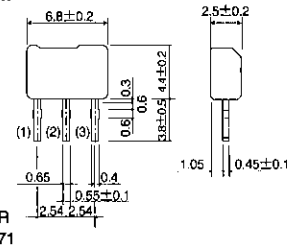
2SD1919



ROHM : FTL

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

2SD1227M



ROHM : ATR
EIAJ : SC-71

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

*Denotes h_{FE}

(96-217-B24)

ROHM

●Absolute maximum ratings (Ta = 25℃)

Parameter		Symbol	Limits	Unit
Collector-base voltage		V_{CBO}	40	V
Collector-emitter voltage		V_{CEO}	32	V
Emitter-base voltage		V_{EBO}	5	V
Collector current		I_C	2	A(DC)
			2.5	A(Pulse) *1
Collector power dissipation	2SD1766	P_C	0.5	W
			2	W *2
	2SD1758		10	W (Tc=25℃)
	2SD1862,2SD1227M		1	W *3
	2SD1189F		1.2	W *3
			5	W (Tc=25℃)
	2SD1055,2SD1919		0.75	W
Junction temperature		Tj	150	℃
Storage temperature		Tstg	−55~150	℃

*1 Single pulse Pw=20ms
*2 On 40 x 40 x 0.7 mm ceramic board.
*3 Printed circuit board: 1.7 mm thick, collector copper plating 1 cm^2 or more.

●Electrical characteristics (Ta = 25℃)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage		BV_{CBO}	40	—	—	V	I_C=50 μA
Collector-emitter breakdown voltage		BV_{CEO}	32	—	—	V	I_C=1mA
Emitter-base breakdown voltage		BV_{EBO}	5	—	—	V	I_E=50 μA
Collector cutoff current		I_{CBO}	—	—	1	μA	V_{CB}=20V
Emitter cutoff current		I_{EBO}	—	—	1	μA	V_{EB}=4V
DC current transfer ratio	2SD1766,2SD1758, 2SD1189F	h_{FE}	82	—	390	—	V_{CE}=3V, I_C=0.5A *
	2SD1862		120	—	390		
	2SD1055		180	—	390		
	2SD1919,2SD1227M		120	—	270		
Collector-emitter saturation voltage		$V_{CE(sat)}$	—	0.5	0.8	V	I_C/I_B=2A/0.2A *
Transition frequency		f_T	—	100	—	MHz	V_{CE}=5V, I_E=−50mA, f=100MHz *
Output capacitance		Cob	—	30	—	pF	V_{CB}=10V, I_E=0A, f=1MHz

*Measured using pulse current.

●Packaging specifications and h_{FE}

Type	h_{FE}	Package	Taping			Bulk		
		Symbol	T100	TL	TV2	—	—	TL2
		Basic ordering unit (pieces)	1000	2500	2500	1000	2000	2500
2SD1766	PQR		○	—	—	—	—	—
2SD1758	PQR		—	○	—	—	—	—
2SD1862	QR		—	—	○	—	—	—
2SD1189F	PQR		—	—	—	○	—	—
2SD1055	R		—	—	—	—	○	—
2SD1919	Q		—	—	—	—	—	○
2SD1227M	Q		—	—	—	—	○	—

h_{FE} values are classified as follows :

Item	P	Q	R
h_{FE}	82~180	120~270	180~390

●Electrical characteristic curves

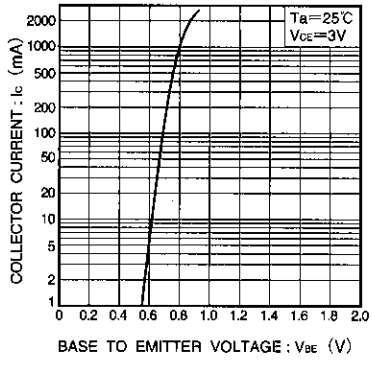


Fig.1 Grounded emitter propagation characteristics

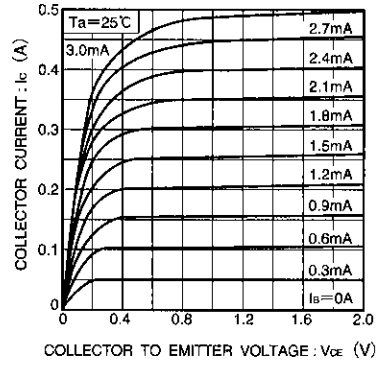


Fig.2 Grounded emitter output characteristics

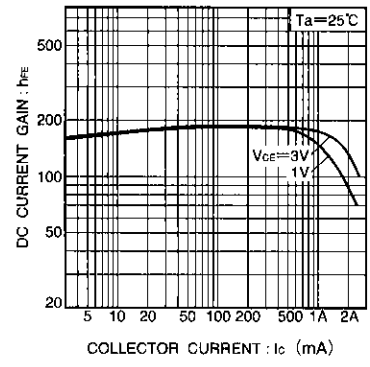


Fig.3 DC current gain vs. collector current

●Electrical characteristic curves

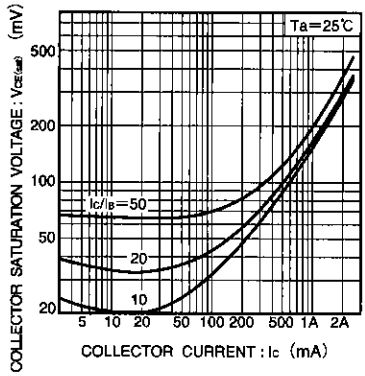


Fig.4 Collector-emitter saturation voltage vs. collector current

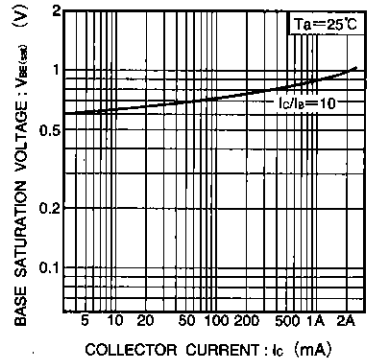


Fig.5 Collector-emitter saturation voltage vs. collector current

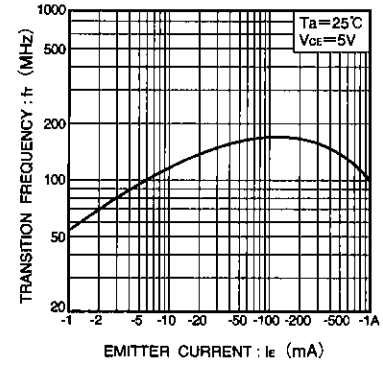


Fig.6 Transition frequency vs. emitter current

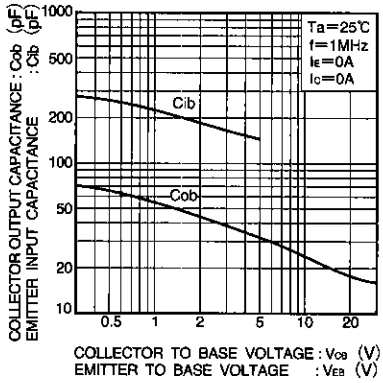


Fig.7 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

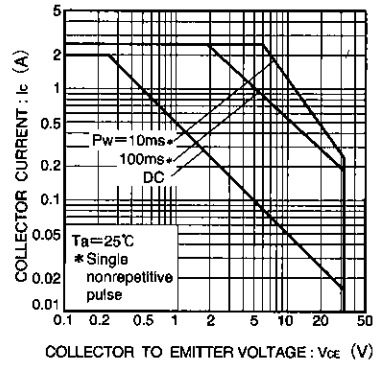


Fig.8 Safe operating area (2SD1766)

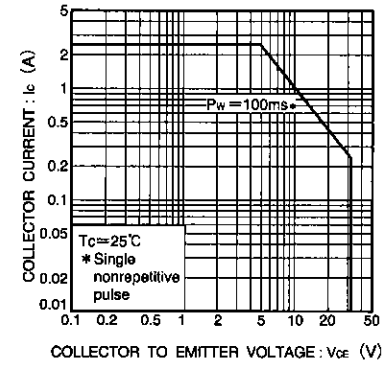


Fig.9 Safe operating area (2SD1758)

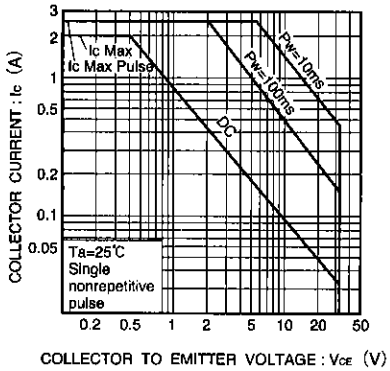


Fig.10 Safe operating area (2SD1862, 2SD1227M)

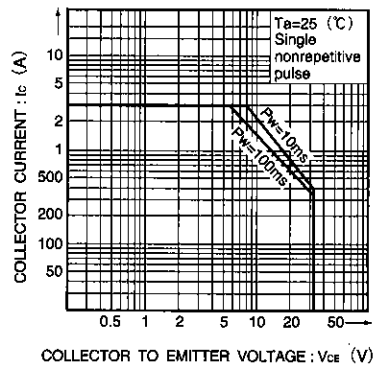


Fig.11 Safe operating area (2SD1189F)

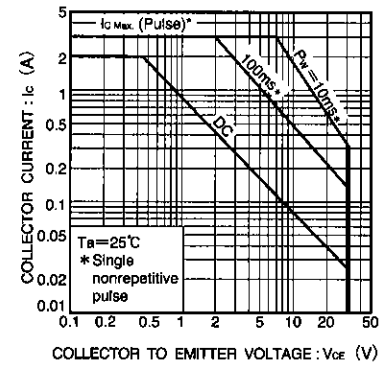


Fig.12 Safe operating area (2SD1055, 2SD1919)

Notes

- The contents described in this catalogue are correct as of March 1997.
- No unauthorized transmission or reproduction of this book, either in whole or in part, is permitted.
- The contents of this book are subject to change without notice. Always verify before use that the contents are the latest specifications. If, by any chance, a defect should arise in the equipment as a result of use without verification of the specifications, ROHM CO., LTD., can bear no responsibility whatsoever.
- Application circuit diagrams and circuit constants contained in this data book are shown as examples of standard use and operation. When designing for mass production, please pay careful attention to peripheral conditions.
- Any and all data, including, but not limited to application circuit diagrams, information, and various data, described in this catalogue are intended only as illustrations of such devices and not as the specifications for such devices. ROHM CO., LTD., disclaims any warranty that any use of such device shall be free from infringement of any third party's intellectual property rights or other proprietary rights, and further, assumes absolutely no liability in the event of any such infringement, or arising from or connected with or related to the use of such devices.
- Upon the sale of any such devices; other than for the buyer's right to use such devices itself, resell or otherwise dispose of the same; no express or implied right or license to practice or commercially exploit any intellectual property rights or other proprietary rights owned or controlled by ROHM CO., LTD., is granted to any such buyer.

The products listed in this catalogue are designed to be used with ordinary electronic equipment or devices (such as audio-visual equipment, office-automation equipment, communications devices, electrical appliances, and electronic toys). Should you intend to use these products with equipment or devices which require an extremely high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers, or other safety devices) please be sure to consult with our sales representatives in advance.

- Notes when exporting
  - It is essential to obtain export permission when exporting any of the above products when it falls under the category of strategic material (or labor) as determined by foreign exchange or foreign trade control laws.
  - Please be sure to consult with our sales representatives to ascertain whether any product is classified as a strategic material.