

Low frequency transistor (−20V, −5A)

2SB1386 / 2SB1412 / 2SB1326

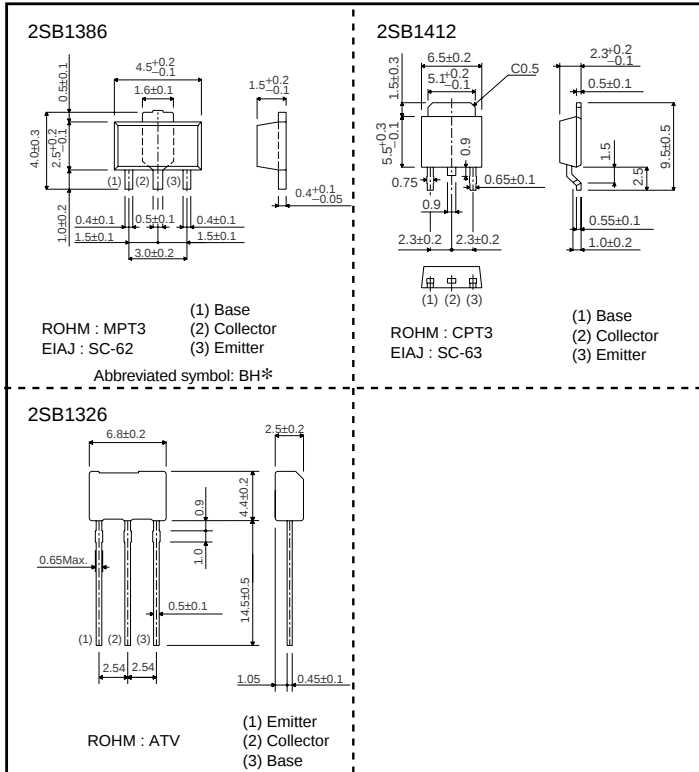
●Features

- 1) Low $V_{CE(sat)}$.
 $V_{CE(sat)} = -0.35V$ (Typ.)
 $(I_C/I_B = -4A / -0.1A)$
- 2) Excellent DC current gain characteristics.
- 3) Complements the 2SD2098 / 2SD2118 / 2SD2097.

●Structure

Epitaxial planar type
 PNP silicon transistor

●External dimensions (Unit : mm)



* Denotes h_{FE}

Transistors

●Absolute maximum ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Collector-base voltage		V_{CB0}	-30	V
Collector-emitter voltage		V_{CE0}	-20	V
Emitter-base voltage		V_{EB0}	-6	V
Collector current		I_c	-5	A(DC)
			-10	A(Pulse) *1
Collector power dissipation	2SB1386	P_c	0.5	W
			2	W *2
	2SB1412		1	W
	2SB1326		10	W(Tc=25°C)
Junction temperature		T_j	150	°C
Storage temperature		T_{stg}	-55 to 150	°C

*1 Single pulse, $P_w=10ms$

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

*3 Printed circuit board glass epoxy board 1.6 mm thick with copper plating 100mm² or larger.

●Electrical characteristics (Ta=25°C)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage		BV_{CB0}	-30	-	-	V	$I_c = -50\mu A$
Collector-emitter breakdown voltage		BV_{CE0}	-20	-	-	V	$I_c = -1mA$
Emitter-base breakdown voltage		BV_{EB0}	-6	-	-	V	$I_E = -50\mu A$
Collector cutoff current		I_{CBO}	-	-	-0.5	μA	$V_{CB} = -20V$
Emitter cutoff current		I_{EBO}	-	-	-0.5	μA	$V_{EB} = -5V$
Collector-emitter saturation voltage		$V_{CE(sat)}$	-	0.35	-1.0	V	$I_c/I_E = -4A/-0.1A$ *
DC current transfer ratio	2SB1386, 2SB1412	h_{FE}	82	-	390	-	$V_{CE} = -2V, I_c = -0.5A$ *
	2SB1326		120	-	390	-	*
Transition frequency		f_T	-	120	-	MHz	$V_{CE} = -6V, I_E = 50mA, f = 100MHz$
Output capacitance		C_{ob}	-	60	-	pF	$V_{CB} = -20V, I_E = 0A, f = 1MHz$

* Measured using pulse current.

●Packaging specifications and h_{FE}

Type	h_{FE}	Package	Taping		
		Code	T100	TL	TV2
		Basic ordering unit (pieces)	1000	2500	2500
2SB1386	PQR		○	-	-
2SB1412	PQR		-	○	-
2SB1326	QR		-	-	○

 h_{FE} values are classified as follows :

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

Transistors

●Electrical characteristic curves

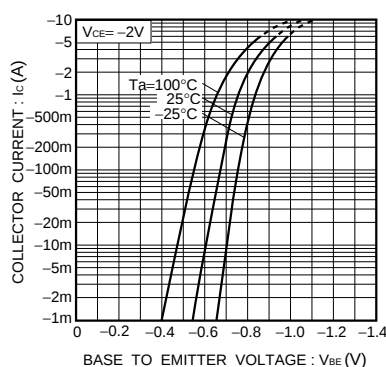


Fig.1 Grounded emitter propagation characteristics

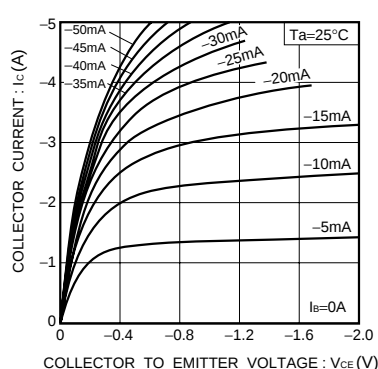


Fig.2 Grounded emitter output characteristics

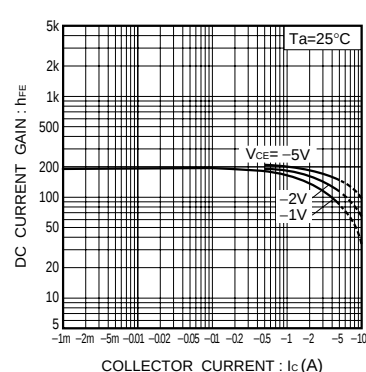


Fig.3 DC current gain vs. collector current (I)

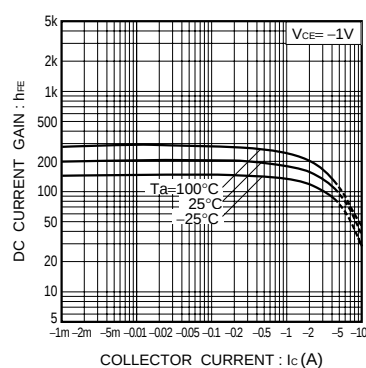


Fig.4 DC current gain vs. collector current (II)

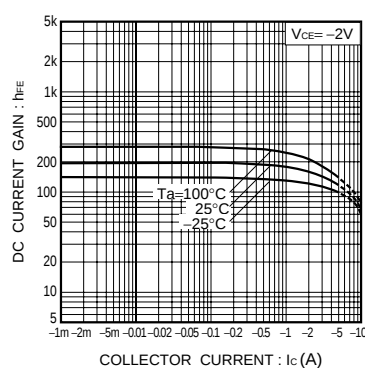


Fig.5 DC current gain vs. collector current (III)

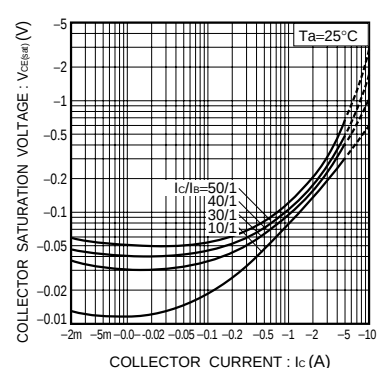


Fig.6 Collector-emitter saturation voltage vs. collector current (I)

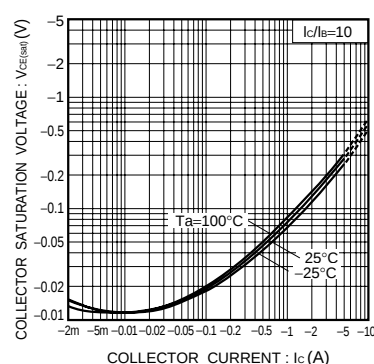


Fig.7 Collector-emitter saturation voltage vs. collector current (II)

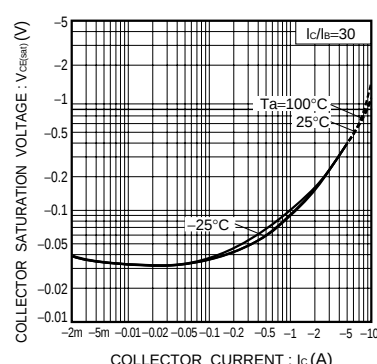


Fig.8 Collector-emitter saturation voltage vs. collector current (III)

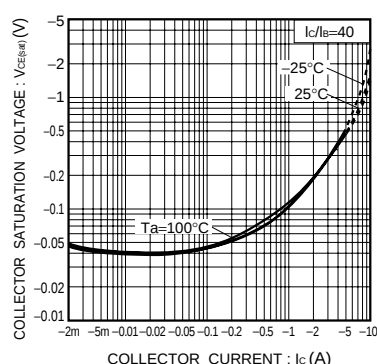


Fig.9 Collector-emitter saturation voltage vs. collector current (IV)

Transistors

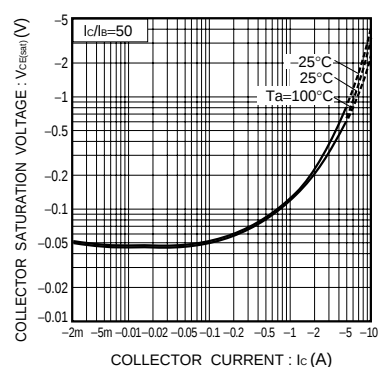


Fig.10 Collector-emitter saturation voltage vs. collector current (V)

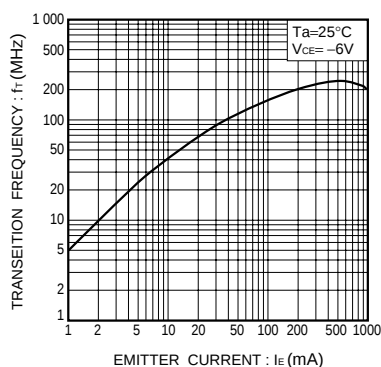


Fig.11 Gain bandwidth product vs. emitter current

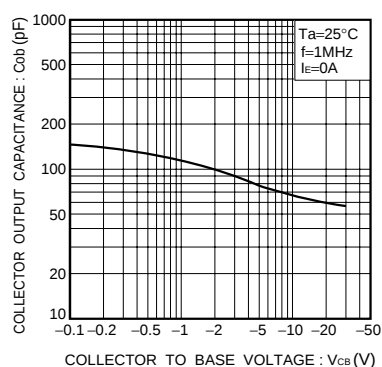


Fig.12 Collector output capacitance vs. collector-base voltage

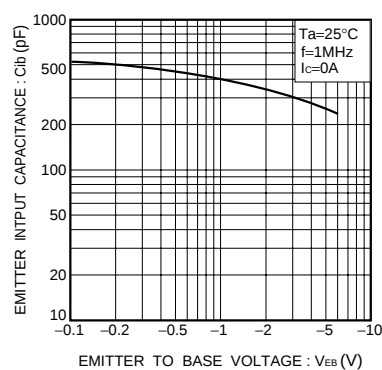


Fig.13 Emitter input capacitance vs. emitter-base voltage

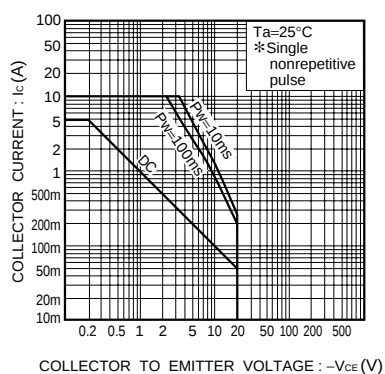


Fig.14 Safe operation area (2SB1412)

Notes

- No technical content pages of this document may be reproduced in any form or transmitted by any means without prior permission of ROHM CO.,LTD.
- The contents described herein are subject to change without notice. The specifications for the product described in this document are for reference only. Upon actual use, therefore, please request that specifications to be separately delivered.
- Application circuit diagrams and circuit constants contained herein are shown as examples of standard use and operation. Please pay careful attention to the peripheral conditions when designing circuits and deciding upon circuit constants in the set.
- Any data, including, but not limited to application circuit diagrams information, described herein 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 devices shall be free from infringement of any third party's intellectual property rights or other proprietary rights, and further, assumes no liability of whatsoever nature 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 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.
- Products listed in this document are no antiradiation design.

The products listed in this document 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 and other safety devices), please be sure to consult with our sales representative in advance.

About Export Control Order in Japan

Products described herein are the objects of controlled goods in Annex 1 (Item 16) of Export Trade Control Order in Japan.

In case of export from Japan, please confirm if it applies to "objective" criteria or an "informed" (by MITI clause) on the basis of "catch all controls for Non-Proliferation of Weapons of Mass Destruction.