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Renesas Electronics website: <http://www.renesas.com>

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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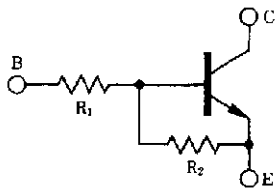
Phase-out/Discontinued

COMPOUND TRANSISTOR AB1 SERIES

**on-chip resistor NPN silicon epitaxial transistor
For mid-speed switching**

FEATURES

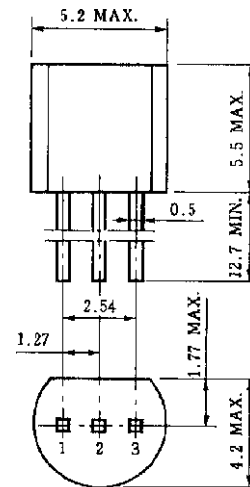
- Current drive available up to 0.7 A
- On-chip bias resistor
- Low power consumption during drive



AB1 SERIES LISTS

Products	R ₁ (KΩ)	R ₂ (KΩ)
AB1A4A	—	10
AB1L2Q	0.47	4.7
AB1A3M	1.0	1.0
AB1F3P	2.2	10
AB1J3P	3.3	10
AB1L3N	4.7	10
AB1A4M	10	10

PACKAGE DRAWING (UNIT: mm)



Electrode Connection

1. Emitter EIAJ : SC-43B
2. Collector JEDEC : TO-92
3. Base IEC : PA33

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Parameter	Symbol	Ratings	Unit
Collector to base voltage	V _{CBO}	30	V
Collector to emitter voltage	V _{CEO}	25	V
Emitter to base voltage	V _{EBO}	10	V
Collector current (DC)	I _{C(DC)}	0.7	A
Collector current (Pulse)	I _{C(pulse)} *	1.0	A
Base current (DC)	I _{B(DC)}	0.02	A
Total power dissipation	P _T	750	mW
Junction temperature	T _j	150	°C
Storage temperature	T _{stg}	-55 to +150	°C

* PW ≤ 10 ms, duty cycle ≤ 50 %

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AB1A4A

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	ICBO	V _{CB} = 30 V, I _E = 0			100	nA
DC current gain	h _{FE1} **	V _{CE} = 2.0 V, I _C = 0.1 A	300			–
DC current gain	h _{FE2} **	V _{CE} = 2.0 V, I _C = 0.5 A	300			–
DC current gain	h _{FE3} **	V _{CE} = 2.0 V, I _C = 0.7 A	135			–
Collector saturation voltage	V _{CE(sat)} **	I _C = 5.0 A, I _E = 5 mA		0.27	0.4	V
Low level input voltage	V _{IL} **	V _{CE} = 5.0 V, I _C = 100 μA			0.3	V
Input resistance	R ₁		–	–	–	Ω
E-to-B resistance	R ₂		7	10	13	kΩ

** PW ≤ 350 μs, duty cycle ≤ 2 %

AB1L2Q

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	ICBO	V _{CB} = 30 V, I _E = 0			100	nA
DC current gain	h _{FE1} **	V _{CE} = 2.0 V, I _C = 0.1 A	150	400		–
DC current gain	h _{FE2} **	V _{CE} = 2.0 V, I _C = 0.5 A	300	700		–
DC current gain	h _{FE3} **	V _{CE} = 2.0 V, I _C = 0.7 A	135	600		–
Low level output voltage	V _{OL} **	V _{IN} = 5.0 V, I _C = 0.5 A		0.2	0.3	V
Low level input voltage	V _{IL} **	V _{CE} = 5.0 V, I _C = 100 μA			0.3	V
Input resistance	R ₁		329	470	611	Ω
E-to-B resistance	R ₂		3.29	4.7	6.11	kΩ

** PW ≤ 350 μs, duty cycle ≤ 2 %

AB1A3M

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	ICBO	V _{CB} = 30 V, I _E = 0			100	nA
DC current gain	h _{FE1} **	V _{CE} = 2.0 V, I _C = 0.1 A	80			–
DC current gain	h _{FE2} **	V _{CE} = 2.0 V, I _C = 0.5 A	100			–
DC current gain	h _{FE3} **	V _{CE} = 2.0 V, I _C = 0.7 A	135			–
Low level output voltage	V _{OL} **	V _{IN} = 5.0 V, I _C = 0.5 A		0.3	0.4	V
Low level input voltage	V _{IL} **	V _{CE} = 5.0 V, I _C = 100 μA			0.3	V
Input resistance	R ₁		0.7	1.0	1.3	kΩ
E-to-B resistance	R ₂		0.7	1.0	1.3	kΩ

** PW ≤ 350 μs, duty cycle ≤ 2 %

AB1F3P

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	I _{CB0}	V _{CB} = 30 V, I _E = 0			100	nA
DC current gain	h _{FE1} **	V _{CE} = 2.0 V, I _C = 0.1 A	300			—
DC current gain	h _{FE2} **	V _{CE} = 2.0 V, I _C = 0.5 A	300			—
DC current gain	h _{FE3} **	V _{CE} = 2.0 V, I _C = 0.7 A	135			—
Low level output voltage	V _{OL} **	V _{IN} = 5.0 V, I _C = 0.3 A			0.3	V
Low level input voltage	V _{IL} **	V _{CE} = 5.0 V, I _C = 100 μA			0.3	V
Input resistance	R ₁		1.54	2.2	2.86	kΩ
E-to-B resistance	R ₂		7	10	13	kΩ

** PW ≤ 350 μs, duty cycle ≤ 2 %

AB1J3P

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	I _{CB0}	V _{CB} = 30 V, I _E = 0			100	nA
DC current gain	h _{FE1} **	V _{CE} = 2.0 V, I _C = 0.1 A	300	600		—
DC current gain	h _{FE2} **	V _{CE} = 2.0 V, I _C = 0.5 A	300	700		—
DC current gain	h _{FE3} **	V _{CE} = 2.0 V, I _C = 0.7 A	135	600		—
Low level output voltage	V _{OL} **	V _{IN} = 5.0 V, I _C = 0.2 A		0.14	0.3	V
Low level input voltage	V _{IL} **	V _{CE} = 5.0 V, I _C = 100 μA			0.3	V
Input resistance	R ₁		2.31	3.3	4.29	kΩ
E-to-B resistance	R ₂		7	10	13	kΩ

** PW ≤ 350 μs, duty cycle ≤ 2 %

AB1L3N

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	I _{CB0}	V _{CB} = 30 V, I _E = 0			100	nA
DC current gain	h _{FE1} **	V _{CE} = 2.0 V, I _C = 0.1 A	300			—
DC current gain	h _{FE2} **	V _{CE} = 2.0 V, I _C = 0.5 A	300			—
DC current gain	h _{FE3} **	V _{CE} = 2.0 V, I _C = 0.7 A	135			—
Low level output voltage	V _{OL} **	V _{IN} = 5.0 V, I _C = 0.2 A			0.3	V
Low level input voltage	V _{IL} **	V _{CE} = 5.0 V, I _C = 100 μA			0.3	V
Input resistance	R ₁		3.29	4.7	6.11	kΩ
E-to-B resistance	R ₂		7	10	13	kΩ

** PW ≤ 350 μs, duty cycle ≤ 2 %

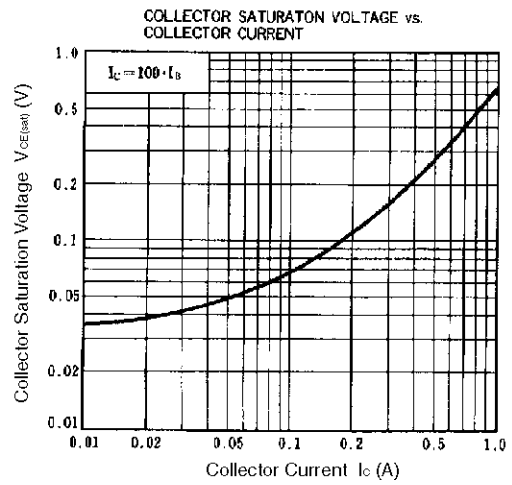
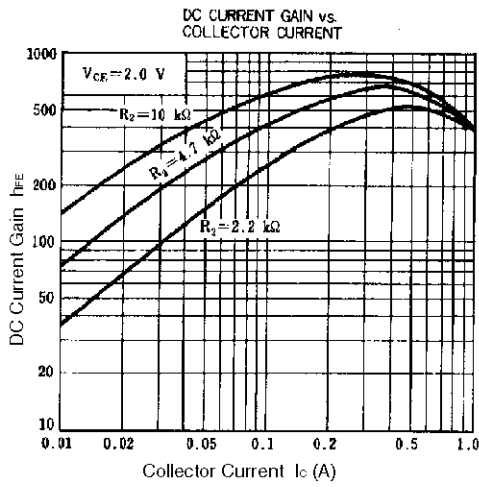
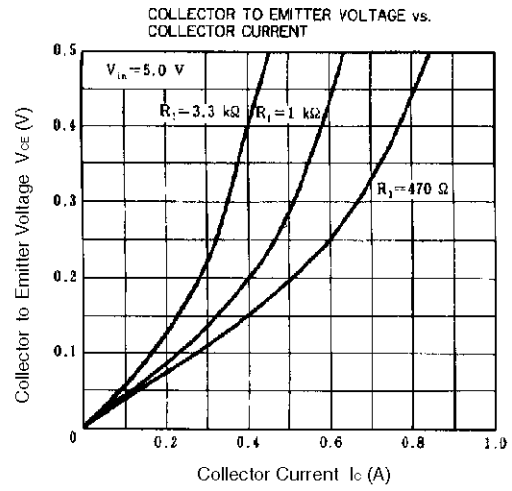
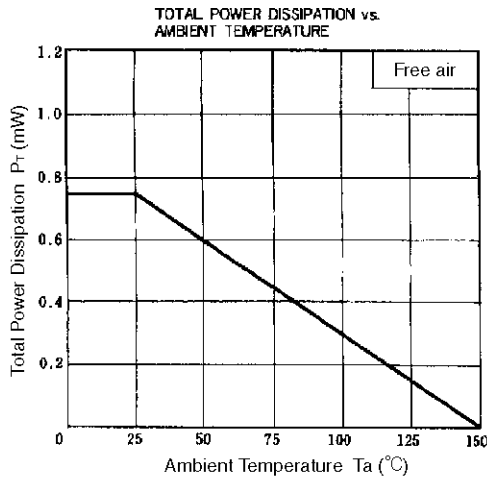
AB1A4M

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	I_{CBO}	$V_{CB} = 30\text{ V}, I_E = 0$			100	nA
DC current gain	h_{FE1}^{**}	$V_{CE} = 2.0\text{ V}, I_C = 0.1\text{ A}$	300			—
DC current gain	h_{FE2}^{**}	$V_{CE} = 2.0\text{ V}, I_C = 0.5\text{ A}$	300			—
DC current gain	h_{FE3}^{**}	$V_{CE} = 2.0\text{ V}, I_C = 0.7\text{ A}$	135			—
Low level output voltage	V_{OL}^{**}	$V_{IN} = 5.0\text{ V}, I_C = 0.2\text{ A}$			0.3	V
Low level input voltage	V_{IL}^{**}	$V_{CE} = 5.0\text{ V}, I_C = 100\text{ }\mu\text{A}$			0.3	V
Input resistance	R_1		7	10	13	k Ω
E-to-B resistance	R_2		7	10	13	k Ω

** PW \leq 350 μ s, duty cycle \leq 2 %

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



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