

Dual high slew rate, low noise operational amplifier

BA15218/BA15218F/BA15218N

The BA15218, BA15218F, and BA15218N are monolithic ICs with two built-in low-noise, low-distortion operational amplifiers featuring internal phase compensation.

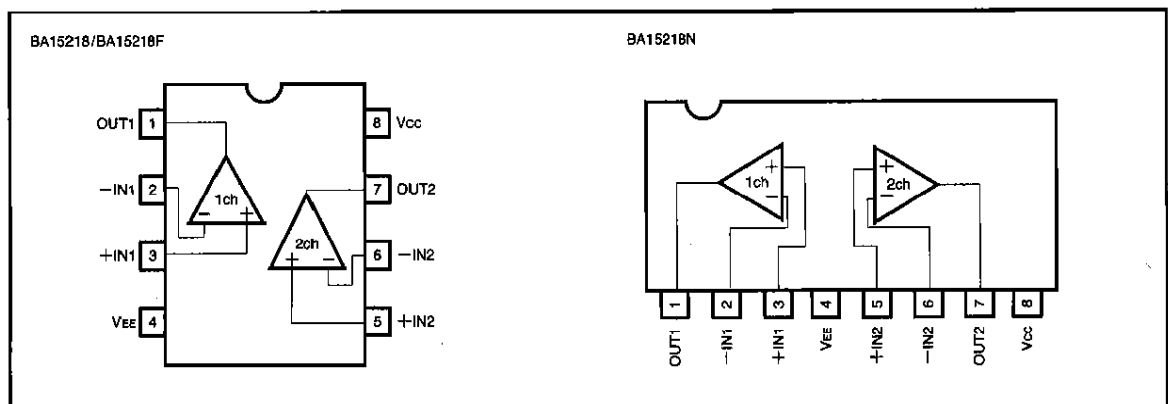
Either a dual or single power supply can be driven, and these products can be driven by a digital system 5V single power supply.

The following packages are available : 8-pin DIP (BA15218), 8-pin SOP (BA15218F), and 8-pin SIP (BA15218N).

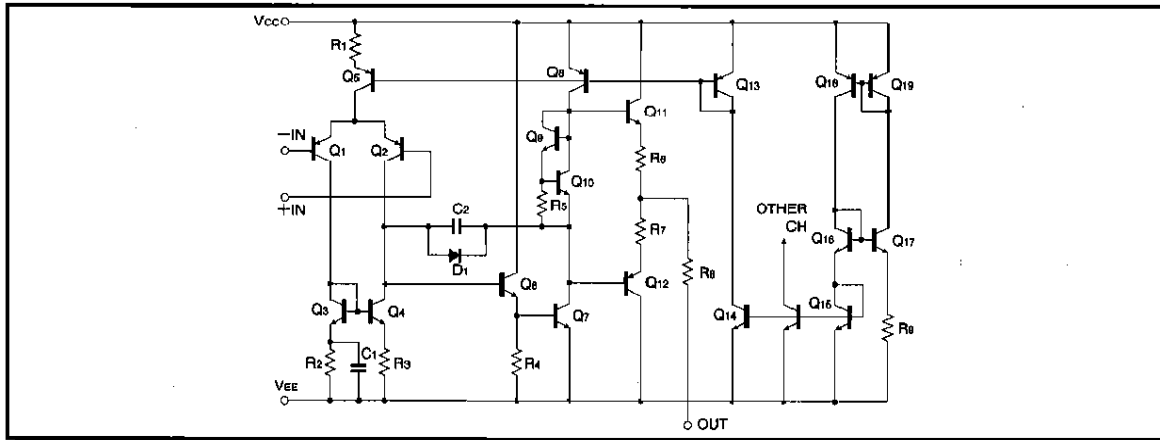
●Features

- 1) Low-voltage operation and single power supply drive enabled.
(Single power supply : 4 to 32V, dual power supply : ± 3 to ± 16 V)
- 2) Low noise level. ($V_n = 1.0 \mu V_{rms}$ typ. : RIAA)
- 3) High slew rate. (SR = 3V/ μ s, GBW = 10MHz typ.)
- 4) Low offset voltage. ($V_{io} = 0.5mV$ typ.)
- 5) High gain and low distortion. ($G_{vo} = 110dB$, THD = 0.0015%)
- 6) Pin connections are the same as with standard dual operational amplifiers, and outstanding characteristics make these products compatible with the 4558 and 4560 models.

●Block diagram



● Internal circuit configuration diagram



● Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits			Unit
		BA15218	BA15218F	BA15218N	
Power supply voltage	V _{CC}	±18	±18	±18	V
Power dissipation	P _d	600*	550*	900*	mW
Differential input voltage	V _{IO}	±V _{CC}	±V _{CC}	±V _{CC}	V
In-phase input voltage	V _I	-V _{CC} ~V _{CC}	-V _{CC} ~V _{CC}	-V _{CC} ~V _{CC}	V
Load current	I _{OMA}	±50	±50	±50	mA
Operating temperature	T _{opr}	-40~85	-40~85	-40~85	°C
Storage temperature	T _{stg}	-55~125	-55~125	-55~125	°C

* For P_d values, please see P_d characteristic diagram.

Values are those when BA15218F is mounted on a glass epoxy PCB (50 mm x 50 mm x 1.6 mm).

●Electrical characteristics (unless otherwise noted, $T_a=25^{\circ}\text{C}$, $V_{CC}=+15\text{V}$, $V_{EE}=-15\text{V}$)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input offset voltage	V_{IO}	—	0.5	5	mV	$R_s \leq 10\text{k}\Omega$
Input offset current	I_{IO}	—	5	200	nA	—
Input bias current	I_B	—	50	500	nA	—
High-amplitude voltage gain	A_v	86	110	—	dB	$R_L \geq 2\text{k}\Omega$, $V_o = \pm 10\text{V}$
Common mode input voltage range	V_{ICM}	± 12	± 14	—	V	—
Maximum output voltage	V_{OM}	± 12	± 14	—	V	$R_L \geq 10\text{k}\Omega$
Maximum output voltage	V_{OM}	± 10	± 13	—	V	$R_L \geq 2\text{k}\Omega$
Common mode rejection ratio	CMRR	70	90	—	dB	$R_s \leq 10\text{k}\Omega$
Power supply voltage rejection ratio	PSRR	76	90	—	dB	$R_s \leq 10\text{k}\Omega$
Quiescent circuit current	I_Q	—	5	8	mA	$V_{IN}=0\text{V}$, $R_L=\infty$
Slew rate	S.R.	—	3	—	V / μs	$A_v=1$, $R_L=2\text{k}\Omega$
Channel separation	CS	—	120	—	dB	$f=1\text{kHz}$ input conversion
Voltage gain band width	GBW	—	10	—	MHz	$f=10\text{kHz}$
Maximum frequency	f_r	—	7	—	MHz	—
Input noise voltage	V_n	—	1.0	—	μV_{rms}	RIAA, $R_s=1\text{k}\Omega$, 10Hz~30kHz

●Electrical characteristic curves

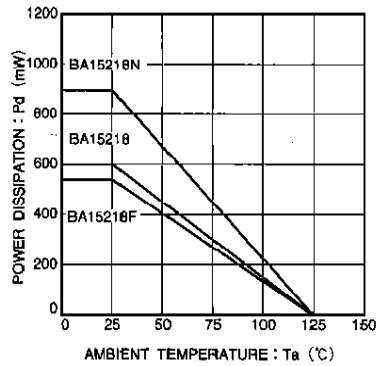


Fig.1 Power dissipation - ambient temperature characteristic

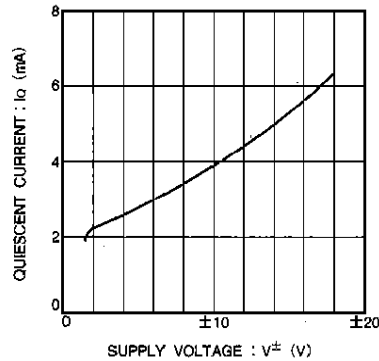


Fig.2 Quiescent current - power supply voltage characteristic

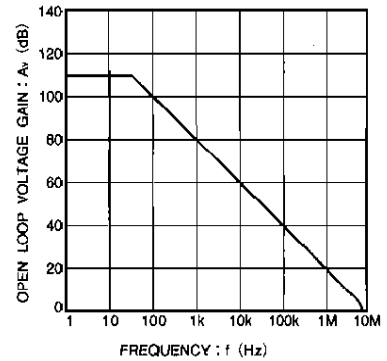


Fig.3 Open loop voltage gain - frequency characteristic

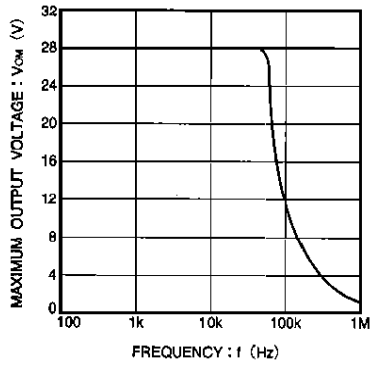


Fig.4 Maximum output voltage - frequency characteristic

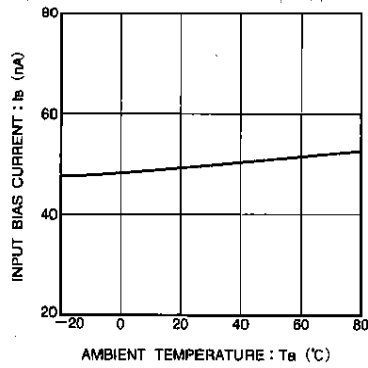


Fig.5 Input bias current - ambient temperature characteristic

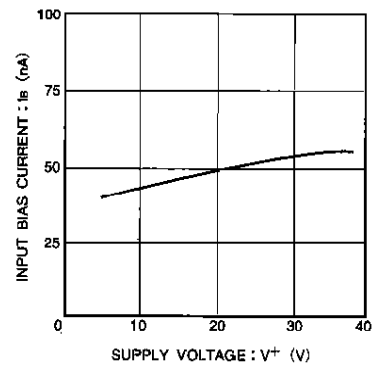


Fig.6 Input bias current - power supply voltage characteristic

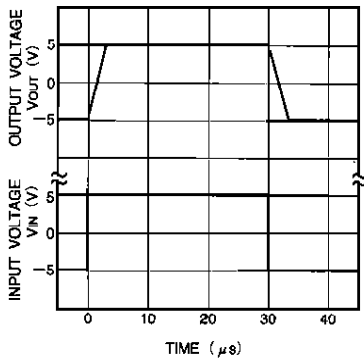


Fig.7 Output response characteristic

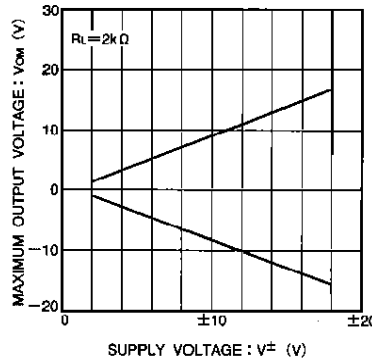


Fig.8 Maximum output voltage - power supply voltage characteristic

● Operation notes

• Unused circuit connections

If there are any circuits which are not being used, we recommend making connections as shown in Figure 9, with the non-inverted input pin connected to the potential within the in-phase input voltage range (V_{ICM}).

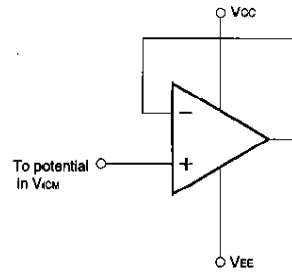
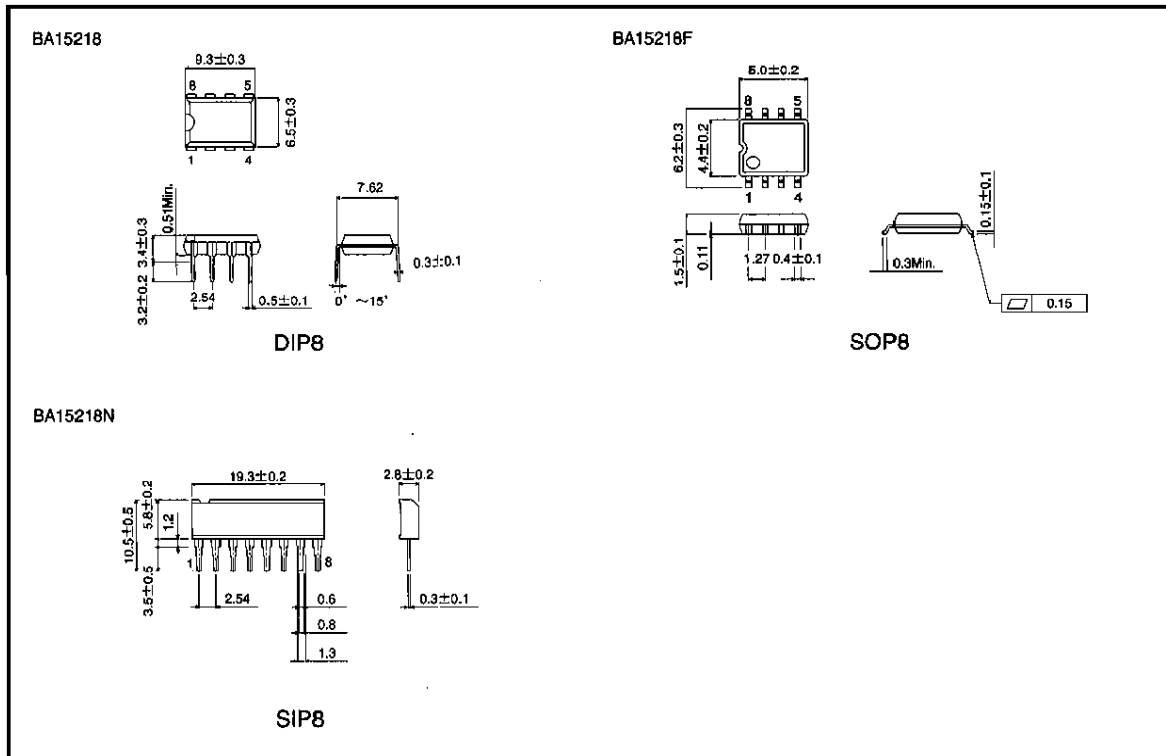


Fig.9 Unused circuit connections

● External dimensions (Units: mm)



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 in this manual are manufactured with silicon as the main material.
- The products in this manual are not of radiation resistant design.

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.