Dual high slew rate, low noise operational amplifier

BA15218 / BA15218F / BA15218N

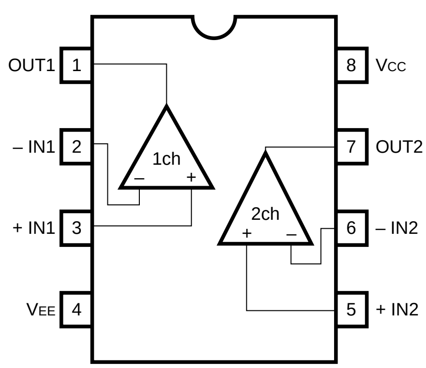
The BA15218, BA15218F, and BA15218N are monolithic ICs with two built-in low-noise, low-distortion operational amplifiers featuring internal phase compensation.
Either a dual or single power supply can be driven, and these products can be driven by a digital system 5V single power supply.
The following packages are available: 8-pin DIP (BA15218), 8-pin SOP (BA15218F), and 8-pin SIP (BA15218N).

● Features

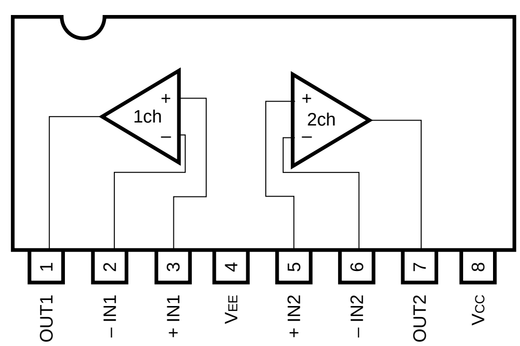
1) Low-voltage operation and single power supply drive enabled.
(Single power supply: 4 to 32V, dual power supply: ±3 to ±16V)
2) Low noise level. (V_n = 1.0µV_{rms} typ. : RIAA)
3) High slew rate. (SR = 3V / µs, GBW = 10MHz typ.)
4) Low offset voltage. (V_{IO} = 0.5mV typ.)
5) High gain and low distortion. (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

BA15218 / BA15218F



BA15218N



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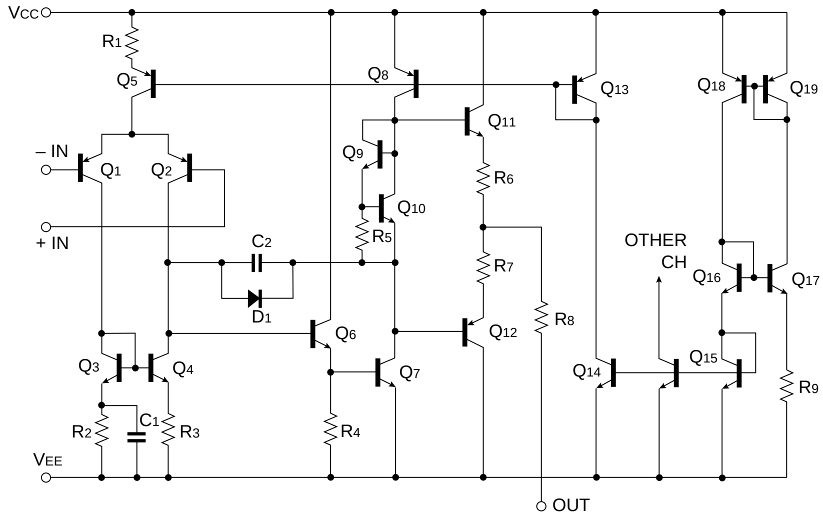
●Internal circuit configuration



●Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits			Unit
		BA15218	BA15218F	BA15218N	
Power supply voltage	V_{CC}	± 18	± 18	± 18	V
Power dissipation	Pd	800*	550*	900*	mW
Differential input voltage	V_{ID}	± V_{CC}	± V_{CC}	± V_{CC}	V
Common-mode input voltage	V_I	– V_{CC} ~ V_{CC}	– V_{CC} ~ V_{CC}	– V_{CC} ~ V_{CC}	V
Load current	I_{OMAX}	± 50	± 50	± 50	mA
Operating temperature	Topr	– 40 ~ + 85	– 40 ~ + 85	– 40 ~ + 85	°C
Storage temperature	Tstg	– 55 ~ + 125	– 55 ~ + 125	– 55 ~ + 125	°C

* Refer to Pd characteristics diagram.
The values for the BA15218F are those when it is mounted on a glass epoxy board (50mm × 50mm × 1.6mm).

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● Electrical characteristics (unless otherwise noted, Ta = 25°C, V_{CC} = +15V, V_{EE} = -15V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input offset voltage	V_{IO}	—	0.5	5	mV	$R_S \leqq 10k\Omega$
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	$R_L \geqq 2k\Omega$, $V_O = \pm 10V$
Common-mode input voltage	V_{ICM}	± 12	± 14	—	V	—
Maximum output voltage	V_{OH}	± 12	± 14	—	V	$R_L \geqq 10k\Omega$
Maximum output voltage	V_{OL}	± 10	± 13	—	V	$R_L \geqq 2k\Omega$
Common-mode rejection ratio	CMRR	70	90	—	dB	$R_S \leqq 10k\Omega$
Power supply voltage rejection ratio	PSRR	76	90	—	dB	$R_S \leqq 10k\Omega$
Quiescent current	I_Q	—	5	8	mA	V_{IN} = 0V, $R_L = \infty$
Slew rate	S.R.	—	3	—	V / µs	A_V = 1, R_L = 2kΩ
Channel separation	CS	—	120	—	dB	f = 1kHz input conversion
Voltage gain band width	GBW	—	10	—	MHz	f = 10kHz
Input conversion noise voltage	V_n	—	1.0	—	µVrms	RIAA, R_S = 1kΩ, 10Hz ~ 30kHz

● Electrical characteristic curves

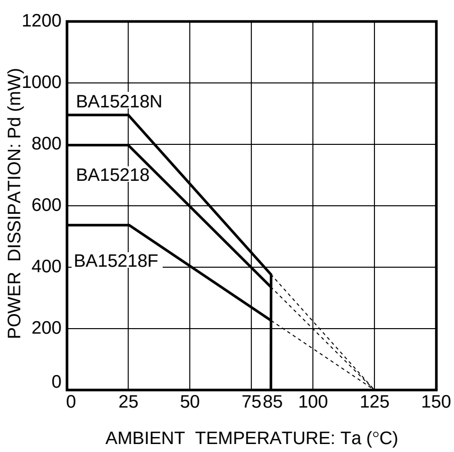

Fig.1 Power dissipation vs. ambient temperature

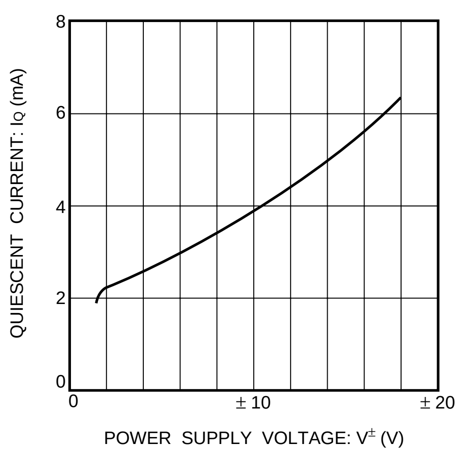

Fig.2 Quiescent current vs. power supply voltage

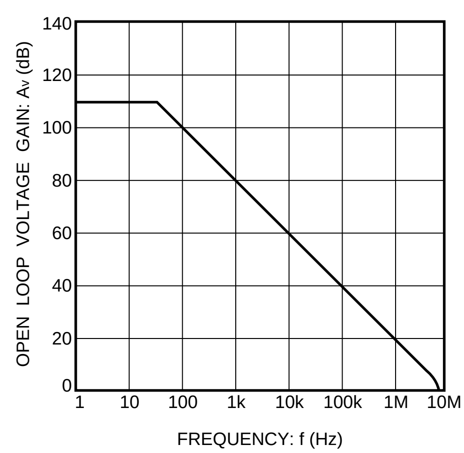

Fig.3 Open loop voltage gain vs. frequency

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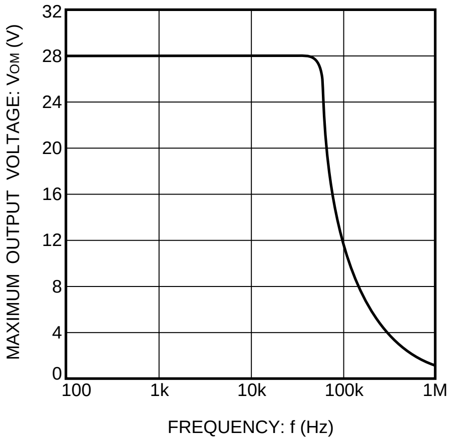

Fig.4 Maximum output voltage vs. frequency

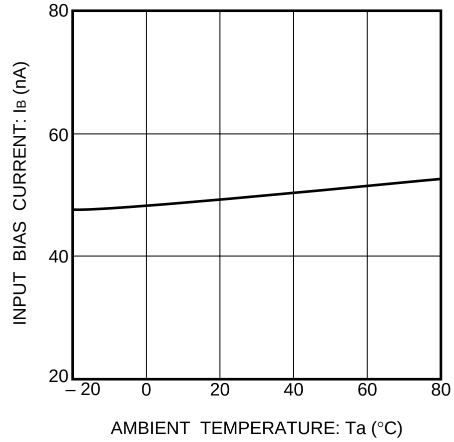

Fig.5 Input bias current vs. ambient temperature

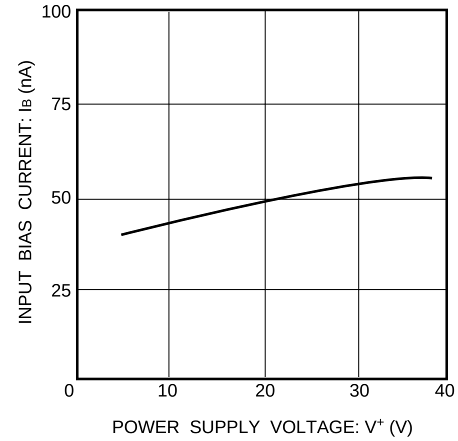

Fig.6 Input bias current vs. power supply voltage

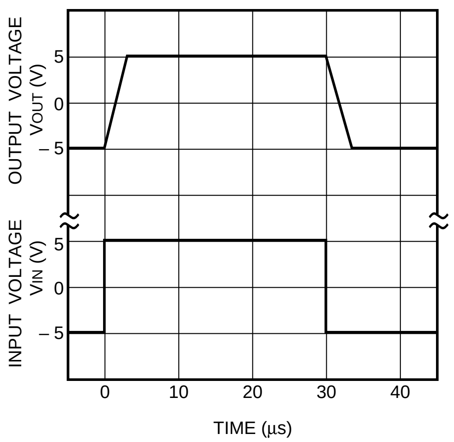

Fig.7 Output response characteristics

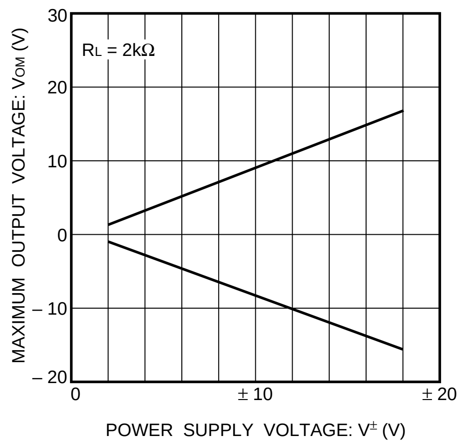

Fig.8 Maximum output voltage vs. power supply voltage

●Operation notes

(1) 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}).

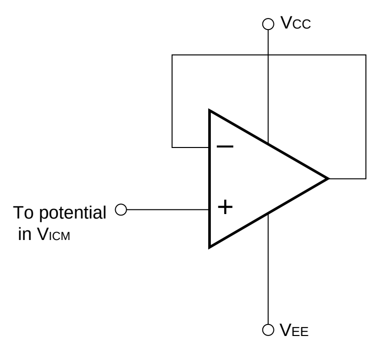

Fig.9 Unused circuit connections

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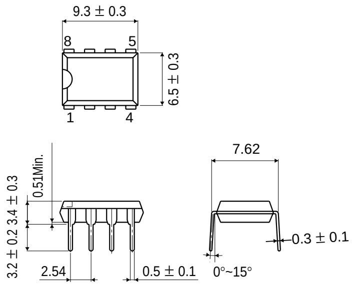
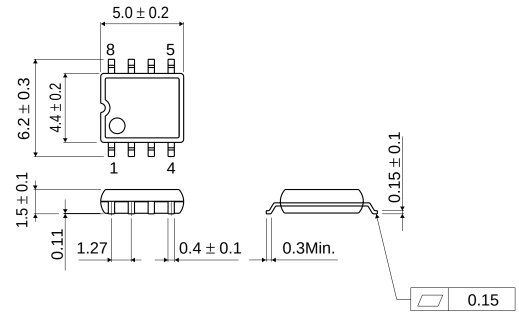
●External dimensions (Units: mm)

BA15218



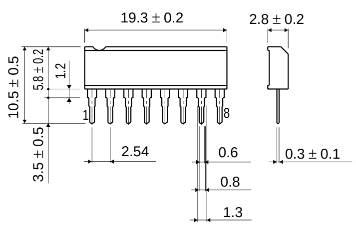
DIP8

BA15218F



SOP8

BA15218N



SIP8

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