Dual high slew rate, low noise operational amplifier

BA15532 / BA15532F / BA15532N

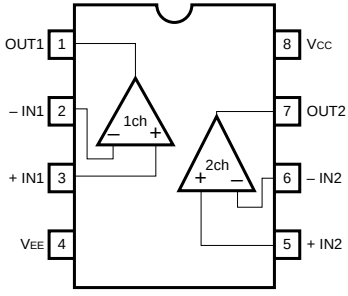
The BA15532, BA15532F, and BA15532N are low-noise dual operational amplifiers designed especially for applications involving high-grade audio equipment. Since they feature low noise, a wide band width, and high power output, these products can also be used in measuring instruments and control circuits. The following packages are available : 8-pin DIP (BA15532), 8-pin SOP (BA15532F), and 8-pin SIP (BA15532N).

●Features

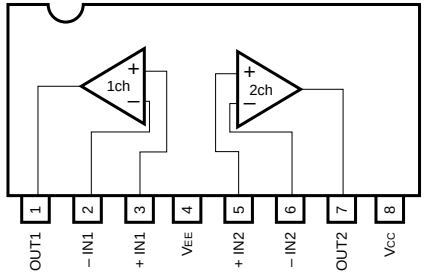
1) High output current capacity.
2) High slew rate.
3) Low noise.

●Block diagram

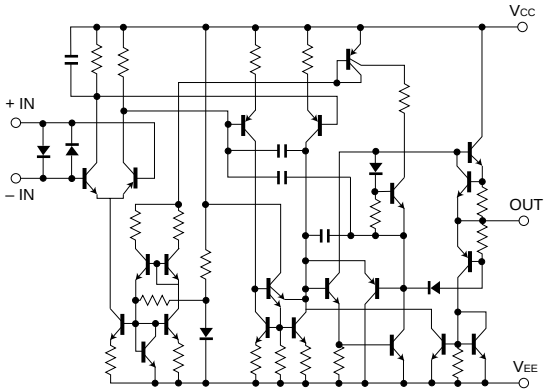
BA15532 / BA15532F



BA15532N



●Internal circuit configuration



●Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits			Unit
		BA15532	BA15532F	BA15532N	
Power supply voltage	V_{CC}	± 21	± 21	± 21	V
Power dissipation	Pd	800*	550*	900*	mW
Differential input voltage	V_{ID}	± 0.5	± 0.5	± 0.5	V
Common-mode input voltage	V_I	– V_{CC} ~ V_{CC}	– V_{CC} ~ V_{CC}	– V_{CC} ~ V_{CC}	V
Operating temperature	Topr	– 20 ~ + 75	– 20 ~ + 75	– 20 ~ + 75	°C
Storage temperature	Tstg	– 55 ~ + 125	– 55 ~ + 125	– 55 ~ + 125	°C

* Refer to Pd characteristics diagram.
The values for the BA15532F are those when it is mounted on a glass epoxy board (50mm × 50mm × 1.6mm).

●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	4	mV	R_S = 50Ω, R_L ≧ 10kΩ
Input offset current	I_{IO}	—	10	150	nA	R_L ≧ 10kΩ
Input bias current	I_B	—	200	800	nA	R_L ≧ 10kΩ
High-amplitude voltage gain	A_V	80	94	—	dB	R_L ≧ 600Ω, V_O = ± 10V
Common-mode input voltage	V_{ICM}	± 12	± 13	—	V	R_L ≧ 10kΩ
Maximum output voltage	V_{OM}	± 12	± 13	—	V	R_L ≧ 600Ω
Maximum output voltage	V_{OM}	± 15	± 16	—	V	R_L ≧ 600Ω, V_{CC} = 18V, V_{EE} = – 18V
Common-mode rejection ratio	CMRR	70	100	—	dB	R_L ≧ 10kΩ
Power supply voltage rejection ratio	PSRR	80	100	—	dB	R_S = 50Ω, R_L ≧ 10kΩ
Quiescent current	I_Q	—	8	16	mA	R_L = ∞, on All Op - Amps
Output short-circuit current	I_{OS}	—	38	—	mA	
Slew rate	S. R.	—	8	—	V / µs	A_V = 1, R_L = 600Ω, C_L = 100pF
Voltage gain band width	GBW	—	20	—	MHz	C_L = 100pF, R_L = 600Ω, f = 10kHz
Maximum frequency	f_T	—	7	—	MHz	
Input conversion noise voltage	V_n	—	0.7	1.5	µV	RIAA, R_S = 100Ω, BW = 20Hz ~ 30kHz
Channel separation	CS	—	110	—	dB	RIAA, f = 1kHz

●Electrical characteristic curves

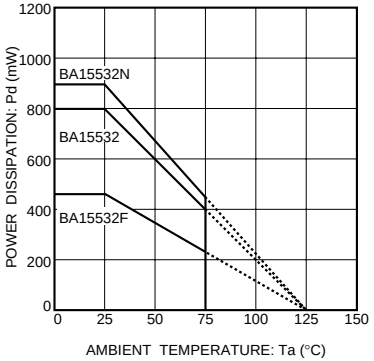


Fig.1 Power dissipation vs. ambient temperature

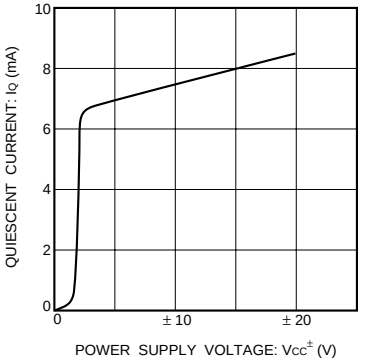


Fig.2 Quiescent current vs. power supply voltage

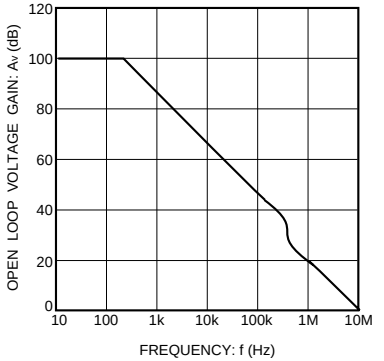


Fig.3 Open loop voltage gain vs. frequency

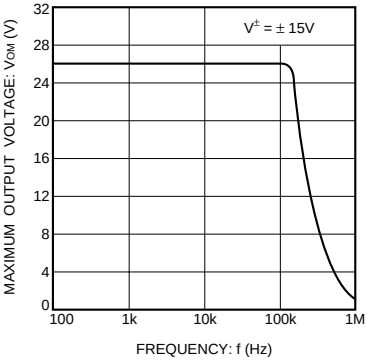


Fig.4 Maximum output voltage vs. frequency

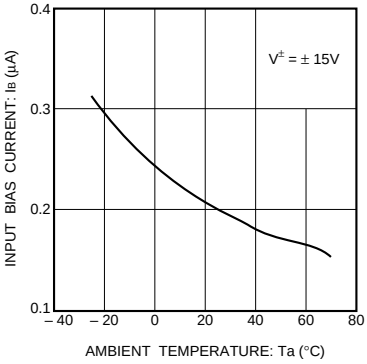


Fig.5 Input bias current vs. ambient temperature

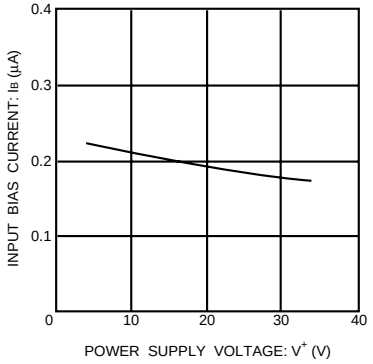


Fig.6 Input bias current vs. power supply voltage

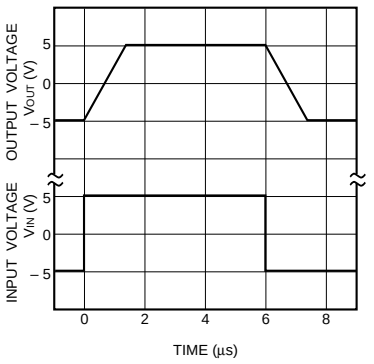


Fig.7 Output response characteristics

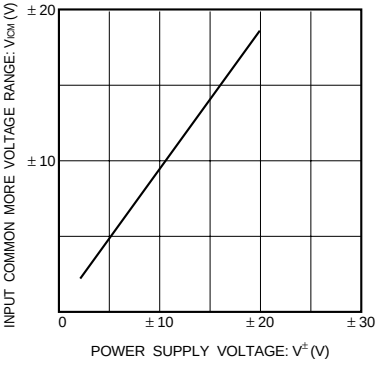


Fig.8 Common mode input voltage vs. power supply voltage

●Operation notes

(1) Handling unused circuits

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}).

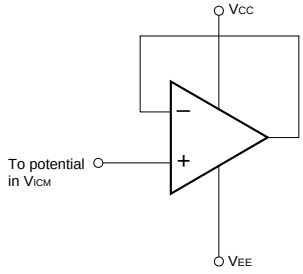
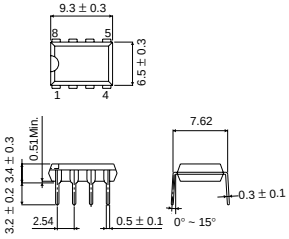


Fig.9 Unused circuit connections

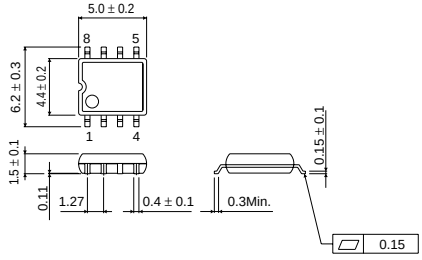
●External dimensions (Units: mm)

BA15532



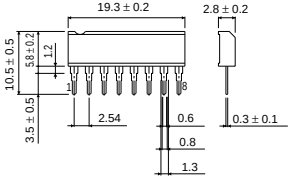
DIP8

BA15532F



SOP8

BA15532N



SIP8