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## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



Operational Amplifiers / Comparators

# Full Swing Low Voltage Operation CMOS Operational Amplifiers



BU7261G, BU7261SG, BU7295HFV, BU7295SHFV,  
BU7262F/FVM/NUX, BU7262SF/FVM/NUX, BU7264F, BU7264SF,  
BU7241G, BU7241SG, BU7275HFV, BU7275SHFV,  
BU7242F/FVM/NUX, BU7242S F/FVM/NUX, BU7244F, BU7244SF

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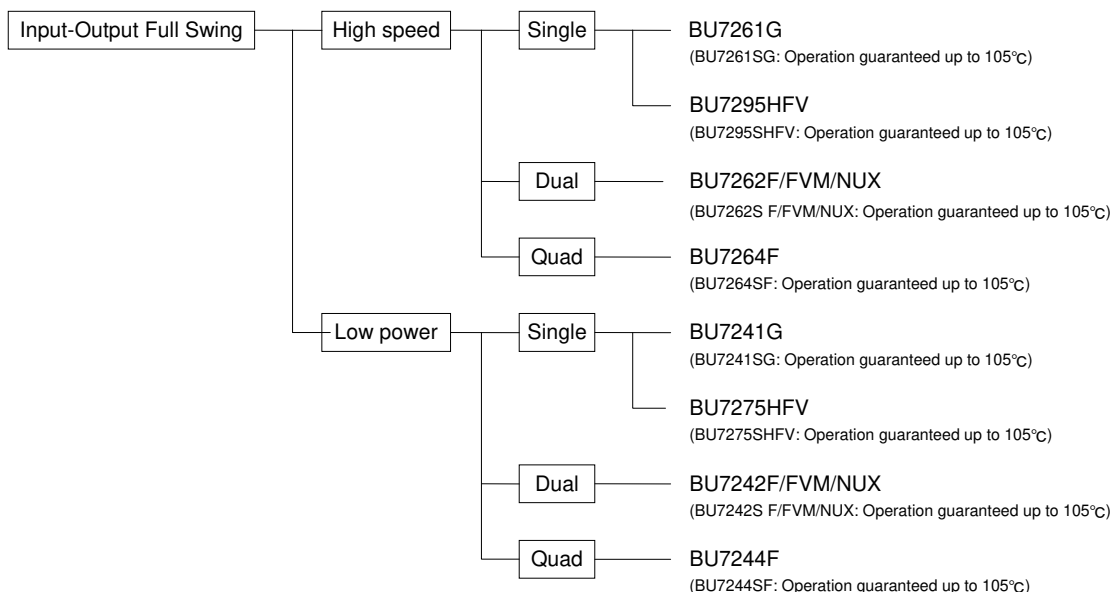
## ●Description

Low Voltage CMOS Op-Amp integrates one or two or four independent output full swing Op-Amps and phase compensation capacitors on a single chip. Especially, this series is operable with low voltage, low supply current and low input bias current.

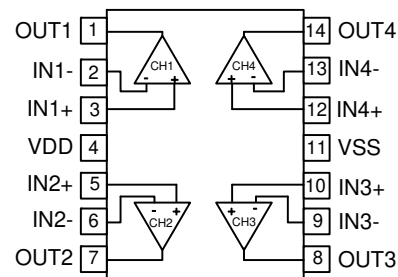
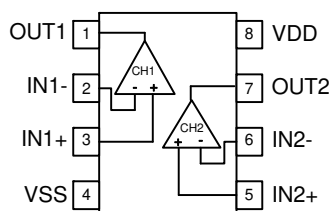
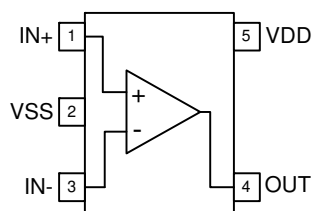
- Input-Output Full Swing : BU7261 (BU7261S) family, BU7241 (BU7241S) family, BU7295 (BU7295S) family, BU7275 (BU7275S) family, BU7262 (BU7262S) family, BU7242 (BU7242S) family, BU7264 (BU7264S) family, BU7244 (BU7244S) family,

## ●Features

- Operable with low voltage  
+1.8[V] ~ +5.5[V] (single supply):  
BU7261/BU7241 family BU7262/BU7242 family  
BU7264/BU7244 family BU7295/BU7275 family
- Operable input-Output full swing
- High slew rate (BU7261 family, BU7262 family)  
(BU7295 family, BU7264 family)
- Internal phase compensation
- Wide temperature range  
-40[°C] ~ +85[°C]  
(BU7261G, BU7262 family, BU7264F, BU7295HFV)  
(BU7241G, BU7242 family, BU7244F, BU7275HFV)  
-40[°C] ~ +105[°C]  
(BU7261SG, BU7262S family, BU7264SF, BU7295SHFV)  
(BU7241SG, BU7242S family, BU7244SF, BU7275SHFV)
- High large signal voltage gain
- Low supply current  
(BU7241 family, BU7242 family)  
(BU7275 family, BU7244 family)
- Low input bias current 1[pA](Typ.)
- Internal ESD protection  
Human body model (HBM)±4000[V](Typ.)



● Pin Assignments



- SSOP5    HVSO5F5    SOP8    MSOP8    VSON008X2030    SOP14

Input type	Package					
	SSOP5	HVSO5F5	SOP8	VSON008X2030	MSOP8	SOP14
Input-output Full Swing	BU7261G BU7261SG BU7241G BU7241SG	BU7275HFV BU7275SHFV BU7295HFV BU7295SHFV	BU7262F BU7262SF BU7242F BU7242SF	BU7262NUX BU7262SNUX BU7242NUX BU7242SNUX	BU7262FVM BU7262SFVM BU7242FVM BU7242SFVM	BU7264F BU7264SF BU7244F BU7244SF

● Absolute maximum rating (Ta=25[°C])

Parameter	Symbol	Ratings		Unit
		BU7261G, BU7241G, BU7262F/FVM/NUX BU7242F/FVM/NUX BU7264F, BU7244F BU7295HFV, BU7275HFV	BU7261SG, BU7241SG, BU7262SF/FVM/NUX BU7242SF/FVM/NUX BU7264SF, BU7244SF BU7295SHFV, BU7275SHFV	
Supply Voltage	VDD-VSS	+7		V
Differential Input Voltage <sup>(*)</sup>	Vid	VDD – VSS		V
Input Common-mode Voltage Range	Vicm	(VSS-0.3)(VDD+0.3)		V
Operating Temperature	Topr	-40 ~ +85	-40 ~ +105	°C
Storage Temperature	Tstg	-55 ~ +125		°C
Maximum Junction Temperature	Tjmax	+125		°C

Note: Absolute maximum rating item indicates the condition which must not be exceeded.

Application of voltage in excess of absolute maximum rating or use out absolute maximum rated temperature environment may cause deterioration of characteristics.

(\*) The voltage difference between inverting input and non-inverting input is the differential input voltage. Then input terminal voltage is set to more than VSS.

●Electrical characteristics

OBU7261 family (Unless otherwise specified VDD=+3[V], VSS=0[V], Ta=25[°C])

Parameter	Symbol	Temperature Range	Limits			Unit	Condition
			BU7261G, BU7261SG				
			Min.	Typ.	Max.		
Input Offset Voltage <sup>(*)</sup> <sup>(*)</sup>	Vio	25°C	—	1	9	mV	VDD=1.8 ~ 5.5[V], VOUT=VDD/2
		Full range	—	—	10		
Input Offset Current <sup>(*)</sup>	Iio	25°C	—	1	—	pA	—
Input Bias Current <sup>(*)</sup>	Ib	25°C	—	1	—	pA	—
Supply Current <sup>(*)</sup>	IDD	25°C	—	250	550	µA	RL=∞ All Op-Amps AV=0[dB], VIN=1.5[V]
		Full range	—	—	600		
High Level Output Voltage	VOH	25°C	VDD-0.1	—	—	V	RL=10[kΩ]
Low Level Output Voltage	VOL	25°C	—	—	VSS+0.1	V	RL=10[kΩ]
Large Signal Voltage Gain	AV	25°C	70	95	—	dB	RL=10[kΩ]
Input Common-mode Voltage Range	Vicm	25°C	0	—	3	V	VDD-VSS=3[V]
Common-mode Rejection Ratio	CMRR	25°C	45	60	—	dB	—
Power Supply Rejection Ratio	PSRR	25°C	60	80	—	dB	—
Output Source Current <sup>(*)</sup>	IOH	25°C	4	10	—	mA	VDD-0.4[V]
Output Sink Current <sup>(*)</sup>	IOL	25°C	5	12	—	mA	VSS+0.4[V]
Slew Rate	SR	25°C	—	1.1	—	V/µs	CL=25[pF]
Gain Band width	FT	25°C	—	2	—	MHz	CL=25[pF], AV=40[dB]
Phase Margin	θ	25°C	—	50	—	°	CL=25[pF], AV=40[dB]

(\*) Absolute value

(\*) Full range: BU7261: Ta=-40[°C] ~ +85[°C] BU7261S: Ta=-40[°C] ~ +105[°C]

(\*) Under the high temperature environment, consider the power dissipation of IC when selecting the output current.

When the terminal short circuits are continuously output, the output current is reduced to climb to the temperature inside IC.

OBU7262 family (Unless otherwise specified VDD=+3[V], VSS=0[V], Ta=25[°C])

Parameter	Symbol	Temperature Range	Limits			Unit	Condition
			BU7262F/FVM/NUX BU7262S F/FVM/NUX				
			Min.	Typ.	Max.		
Input Offset Voltage <sup>(*5)(*6)</sup>	Vio	25°C	—	1	9	mV	VDD=1.8 ~ 5.5[V] VOUT=VDD/2
		Full range	—	—	10		
Input Offset Current <sup>(*5)</sup>	Iio	25°C	—	1	—	pA	—
Input Bias Current <sup>(*5)</sup>	Ib	25°C	—	1	—	pA	—
Supply Current <sup>(*6)</sup>	IDD	25°C	—	550	1100	µA	RL=∞ All Op-Amps AV=0[dB], VIN=1.5[V]
		Full range	—	—	1200		
High Level Output Voltage	VOH	25°C	VDD-0.1	—	—	V	RL=10[kΩ]
Low Level Output Voltage	VOL	25°C	—	—	VSS+0.1	V	RL=10[kΩ]
Large Signal Voltage Gain	AV	25°C	70	95	—	dB	RL=10[kΩ]
Input Common-mode Voltage Range	Vicm	25°C	0	—	3	V	VDD-VSS=3[V]
Common-mode Rejection Ratio	CMRR	25°C	45	60	—	dB	—
Power Supply Rejection Ratio	PSRR	25°C	60	80	—	dB	—
Output Source Current <sup>(*7)</sup>	IOH	25°C	4	10	—	mA	VDD-0.4[V]
Output Sink Current <sup>(*7)</sup>	IOL	25°C	5	12	—	mA	VSS+0.4[V]
Slew Rate	SR	25°C	—	1.1	—	V/µs	CL=25[pF]
Gain Band width	FT	25°C	—	2	—	MHz	CL=25[pF], AV=40[dB]
Phase Margin	θ	25°C	—	50	—	°	CL=25[pF], AV=40[dB]
Total Harmonic Distortion	THD	25°C	—	0.05	—	%	VOUT=0.8[Vp-p], f=1[kHz]
Channel Separation	CS	25°C	—	100	—	dB	AV=40[dB]

(\*5) Absolute value

(\*6) Full range: BU7262: Ta=-40[°C] ~ +85[°C] BU7262S: Ta=-40[°C] ~ +105[°C]

(\*7) Under the high temperature environment, consider the power dissipation of IC when selecting the output current.

When the terminal short circuits are continuously output, the output current is reduced to climb to the temperature inside IC.

OBU7264 family (Unless otherwise specified VDD=+3[V], VSS=0[V], Ta=25[°C])

Parameter	Symbol	Temperature Range	Limits			Unit	Condition
			BU7264F BU7264SF				
			Min.	Typ.	Max.		
Input Offset Voltage <sup>(*8)(*9)</sup>	Vio	25°C	—	1	9	mV	VDD=1.8 ~ 5.5[V] VOUT=VDD/2
		Full range	—	-	10		
Input Offset Current <sup>(*8)</sup>	lio	25°C	—	1	—	pA	—
Input Bias Current <sup>(*8)</sup>	lb	25°C	—	1	—	pA	—
Supply Current <sup>(*9)</sup>	IDD	25°C	—	1100	2300	µA	RL=∞ All Op-Amps AV=0[dB], VIN=1.5[V]
		Full range	—	—	2800		
High Level Output Voltage	VOH	25°C	VDD-0.1	—	—	V	RL=10[kΩ]
Low Level Output Voltage	VOL	25°C	—	—	VSS+0.1	V	RL=10[kΩ]
Large Signal Voltage Gain	AV	25°C	70	95	—	dB	RL=10[kΩ]
Input Common-mode Voltage Range	Vicm	25°C	0	—	3	V	VDD-VSS=3[V]
Common-mode Rejection Ratio	CMRR	25°C	45	60	—	dB	—
Power Supply Rejection Ratio	PSRR	25°C	60	80	—	dB	—
Output Source Current <sup>(*10)</sup>	IOH	25°C	4	10	—	mA	VDD-0.4[V]
Output Sink Current <sup>(*10)</sup>	IOL	25°C	5	12	—	mA	VSS+0.4[V]
Slew Rate	SR	25°C	—	1.1	—	V/µs	CL=25[pF]
Gain Band width	FT	25°C	—	2	—	MHz	CL=25[pF], AV=40[dB]
Phase Margin	θ	25°C	—	50	—	°	CL=25[pF], AV=40[dB]
Total Harmonic Distortion	THD	25°C	—	0.05	—	%	VOUT=0.8[Vp-p], f=1[kHz]
Channel Separation	CS	25°C	—	100	—	dB	AV=40[dB]

(\*8) Absolute value

(\*9) Full range: BU7264: Ta=-40[°C] ~ +85[°C] BU7264S: Ta=-40[°C] ~ +105[°C]

(\*10) Under the high temperature environment, consider the power dissipation of IC when selecting the output current.

When the terminal short circuits are continuously output, the output current is reduced to climb to the temperature inside IC.

OBU7295 family (Unless otherwise specified VDD=+3[V], VSS=0[V], Ta=25[°C])

Parameter	Symbol	Temperature Range	Limits			Unit	Condition
			BU7295HFV BU7295SHFV				
			Min.	Typ.	Max.		
Input Offset Voltage <sup>(*11)</sup>	Vio	25°C	—	1	6	mV	—
Input Offset Current <sup>(*11)</sup>	Iio	25°C	—	1	—	pA	—
Input Bias Current <sup>(*11)</sup>	Ib	25°C	—	1	—	pA	—
Supply Current <sup>(*12)</sup>	IDD	25°C	—	150	300	µA	RL=∞ All Op-Amps AV=0[dB], VIN=1.5[V]
		Full range	—	—	400		
High Level Output Voltage	VOH	25°C	VDD-0.1	—	—	V	RL=10[kΩ]
Low Level Output Voltage	VOL	25°C	—	—	VSS+0.1	V	RL=10[kΩ]
Large Signal Voltage Gain	AV	25°C	60	95	—	dB	RL=10[kΩ]
Input Common-mode Voltage Range	Vicm	25°C	0	—	3	V	VDD-VSS=3[V]
Common-mode Rejection Ratio	CMRR	25°C	45	60	—	dB	—
Power Supply Rejection Ratio	PSRR	25°C	60	80	—	dB	—
Output Source Current <sup>(*13)</sup>	IOH	25°C	4	8	—	mA	VDD-0.4[V]
Output Sink Current <sup>(*13)</sup>	IOL	25°C	9	18	—	mA	VSS+0.4[V]
Slew Rate	SR	25°C	—	1.0	—	V/µs	CL=25[pF]
Gain Band width	FT	25°C	—	1.0	—	MHz	CL=25[pF], AV=40[dB]
Phase Margin	θ	25°C	—	60	—	°	CL=25[pF], AV=40[dB]

(\*11) Absolute value

(\*12) Full range: BU7295: Ta=-40[°C] ~ +85[°C] BU7295S: Ta=-40[°C] ~ +105[°C]

(\*13) Under the high temperature environment, consider the power dissipation of IC when selecting the output current.

When the terminal short circuits are continuously output, the output current is reduced to climb to the temperature inside IC.

OBU7241 family (Unless otherwise specified VDD=+3[V], VSS=0[V], Ta=25[°C])

Parameter	Symbol	Temperature Range	Limits			Unit	Condition
			BU7241G, BU7241SG				
			Min.	Typ.	Max.		
Input Offset Voltage <sup>(*14)(*15)</sup>	Vio	25°C	—	1	9	mV	VDD=1.8 ~ 5.5[V] VOUT=VDD/2
		Full range	—	—	10		
Input Offset Current <sup>(*14)</sup>	Iio	25°C	—	1	—	pA	—
Input Offset Current <sup>(*14)</sup>	Ib	25°C	—	1	—	pA	—
Supply Current <sup>(*15)</sup>	IDD	25°C	—	70	150	µA	RL=∞ All Op-Amps AV=0[dB], VIN=1.5[V]
		Full range	—	—	250		
High Level Output Voltage	VOH	25°C	VDD-0.1	—	—	V	RL=10[kΩ]
Low Level Output Voltage	VOL	25°C	—	—	VSS+0.1	V	RL=10[kΩ]
Large Signal Voltage Gain	AV	25°C	70	95	—	dB	RL=10[kΩ]
Input Common-mode Voltage Range	Vicm	25°C	0	—	3	V	VDD-VSS=3[V]
Common-mode Rejection Ratio	CMRR	25°C	45	60	—	dB	—
Power Supply Rejection Ratio	PSRR	25°C	60	80	—	dB	—
Output Source Current <sup>(*16)</sup>	IOH	25°C	4	10	—	mA	VDD-0.4[V]
Output Sink Current <sup>(*16)</sup>	IOL	25°C	5	12	—	mA	VSS+0.4[V]
Slew Rate	SR	25°C	—	0.4	—	V/µs	CL=25[pF]
Gain Band width	FT	25°C	—	0.9	—	MHz	CL=25[pF], AV=40[dB]
Phase Margin	θ	25°C	—	50	—	°	CL=25[pF], AV=40[dB]
Total Harmonic Distortion	THD	25°C	—	0.05	—	%	VOUT=0.8[Vp-p], f=1[kHz]

(\*14) Absolute value

(\*15) Full range: BU7241: Ta=-40[°C] ~ +85[°C] BU7241S: Ta=-40[°C] ~ +105[°C]

(\*16) Under the high temperature environment, consider the power dissipation of IC when selecting the output current.

When the terminal short circuits are continuously output, the output current is reduced to climb to the temperature inside IC.



OBU7242 family (Unless otherwise specified VDD=+3[V], VSS=0[V], Ta=25[°C])

Parameter	Symbol	Temperature Range	Limits			Unit	Condition
			BU7242F/FVM/NUX BU7242S F/FVM/NUX				
			Min.	Typ.	Max.		
Input Offset Voltage <sup>(*17) (*18)</sup>	Vio	25°C	—	1	9	mV	VDD=1.8 ~ 5.5[V] VOUT=VDD/2
		Full range	—	—	10		
Input Offset Current <sup>(*17)</sup>	Iio	25°C	—	1	—	pA	—
Input Bias Current <sup>(*17)</sup>	Ib	25°C	—	1	—	pA	—
Supply Current <sup>(*18)</sup>	IDD	25°C	—	180	360	µA	RL=∞ All Op-Amps AV=0[dB], VIN=1.5[V]
		Full range	—	—	600		
High Level Output Voltage	VOH	25°C	VDD-0.1	—	—	V	RL=10[kΩ]
Low Level Output Voltage	VOL	25°C	—	—	VSS+0.1	V	RL=10[kΩ]
Large Signal Voltage Gain	AV	25°C	70	95	—	dB	RL=10[kΩ]
Input Common-mode Voltage Range	Vicm	25°C	0	—	3	V	VDD-VSS=3[V]
Common-mode Rejection Ratio	CMRR	25°C	45	60	—	dB	—
Power Supply Rejection Ratio	PSRR	25°C	60	80	—	dB	—
Output Source Current <sup>(*19)</sup>	IOH	25°C	4	10	—	mA	VDD-0.4[V]
Output Sink Current <sup>(*19)</sup>	IOL	25°C	5	12	—	mA	VSS+0.4[V]
Slew Rate	SR	25°C	—	0.4	—	V/µs	CL=25[pF]
Gain Band width	FT	25°C	—	0.9	—	MHz	CL=25[pF], AV=40[dB]
Phase Margin	θ	25°C	—	50	—	°	CL=25[pF], AV=40[dB]
Total Harmonic Distortion	THD	25°C	—	0.05	—	%	VOUT=0.8[Vp-p], f=1[kHz]
Channel Separation	CS	25°C	—	100	—	dB	AV=40[dB]

(\*17) Absolute value

(\*18) Full range: BU7242: Ta=-40[°C] ~ +85[°C] BU7242S: Ta=-40[°C] ~ +105[°C]

(\*19) Under the high temperature environment, consider the power dissipation of IC when selecting the output current.

When the terminal short circuits are continuously output, the output current is reduced to climb to the temperature inside IC.

OBU7244 family (Unless otherwise specified VDD=+3[V], VSS=0[V], Ta=25[°C])

Parameter	Symbol	Temperature Range	Limits			Unit	Condition
			BU7244F BU7244SF				
			Min.	Typ.	Max.		
Input Offset Voltage <sup>(*20)</sup> <sup>(*21)</sup>	Vio	25°C	—	1	9	mV	VDD=1.8 ~ 5.5[V] VOUT=VDD/2
		Full range	—	—	10		
Input Offset Current <sup>(*20)</sup>	lio	25°C	—	1	—	pA	—
Input Bias Current <sup>(*20)</sup>	lb	25°C	—	1	—	pA	—
Supply Current <sup>(*21)</sup>	IDD	25°C	—	360	750	µA	RL=∞ All Op-Amps AV=0[dB], VIN=1.5[V]
		Full range	—	—	1200		
High Level Output Voltage	VOH	25°C	VDD-0.1	—	—	V	RL=10[kΩ]
Low Level Output Voltage	VOL	25°C	—	—	VSS+0.1	V	RL=10[kΩ]
Large Signal Voltage Gain	AV	25°C	70	95	—	dB	RL=10[kΩ]
Input Common-mode Voltage Range	Vicm	25°C	0	—	3	V	VDD-VSS=3[V]
Common-mode Rejection Ratio	CMRR	25°C	45	60	—	dB	—
Power Supply Rejection Ratio	PSRR	25°C	60	80	—	dB	—
Output Source Current <sup>(*22)</sup>	IOH	25°C	4	10	—	mA	VDD-0.4[V]
Output Sink Current <sup>(*22)</sup>	IOL	25°C	5	12	—	mA	VSS+0.4[V]
Slew Rate	SR	25°C	—	0.4	—	V/µs	CL=25[pF]
Gain Band width	FT	25°C	—	0.9	—	MHz	CL=25[pF], AV=40[dB]
Phase Margin	θ	25°C	—	50	—	°	CL=25[pF], AV=40[dB]
Total Harmonic Distortion	THD	25°C	—	0.05	—	%	VOUT=0.8[Vp-p], f=1[kHz]
Channel Separation	CS	25°C	—	100	—	dB	AV=40[dB]

(\*20) Absolute value

(\*21) Full range: BU7244: Ta=-40[°C] ~ +85[°C] BU7244S: Ta=-40[°C] ~ +105[°C]

(\*22) Under the high temperature environment, consider the power dissipation of IC when selecting the output current.

When the terminal short circuits are continuously output, the output current is reduced to climb to the temperature inside IC.

OBU7275 family (Unless otherwise specified VDD=+3[V], VSS=0[V], Ta=25[°C])

Parameter	Symbol	Temperature Range	Limits			Unit	Condition
			BU7275HFV BU7275SHFV				
			Min.	Typ.	Max.		
Input Offset Voltage <sup>(*23)</sup>	Vio	25°C	—	1	6	mV	—
Input Offset Current <sup>(*23)</sup>	Iio	25°C	—	1	—	pA	—
Input Bias Current <sup>(*23)</sup>	Ib	25°C	—	1	—	pA	—
Supply Current <sup>(*24)</sup>	IDD	25°C	—	40	80	µA	RL=∞ All Op-Amps AV=0[dB], VIN=1.5[V]
		Full range	—	—	130		
High Level Output Voltage	VOH	25°C	VDD-0.1	—	—	V	RL=10[kΩ]
Low Level Output Voltage	VOL	25°C	—	—	VSS+0.1	V	RL=10[kΩ]
Large Signal Voltage Gain	AV	25°C	60	95	—	dB	RL=10[kΩ]
Input Common-mode Voltage Range	Vicm	25°C	0	—	3	V	VDD-VSS=3[V]
Common-mode Rejection Ratio	CMRR	25°C	45	60	—	dB	—
Power Supply Rejection Ratio	PSRR	25°C	60	80	—	dB	—
Output Source Current <sup>(*25)</sup>	IOH	25°C	4	8	—	mA	VDD-0.4[V]
Output Sink Current <sup>(*25)</sup>	IOL	25°C	9	18	—	mA	VSS+0.4[V]
Slew Rate	SR	25°C	—	0.3	—	V/µs	CL=25[pF]
Gain Band width	FT	25°C	—	0.6	—	MHz	CL=25[pF], AV=40[dB]
Phase Margin	θ	25°C	—	60	—	°	CL=25[pF], AV=40[dB]

(\*23) Absolute value

(\*24) Full range: BU7275: Ta=-40[°C] ~ +85[°C] BU7275S: Ta=-40[°C] ~ +105[°C]

(\*25) Under the high temperature environment, consider the power dissipation of IC when selecting the output current.

When the terminal short circuits are continuously output, the output current is reduced to climb to the temperature inside IC.

●Reference Data (BU7261 family)

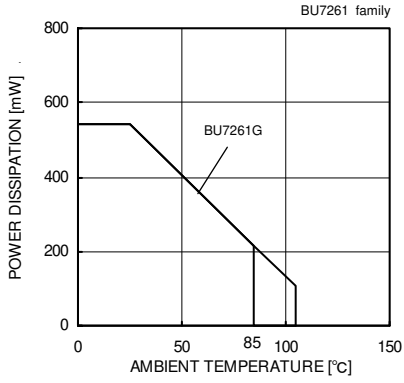


Fig. 1

Derating curve

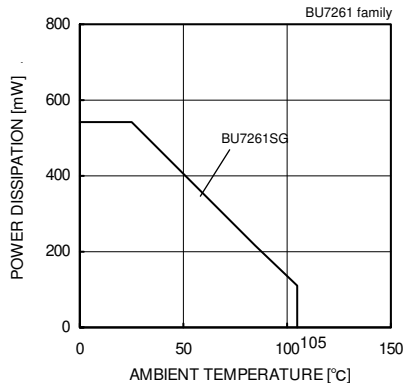


Fig. 2

Derating curve

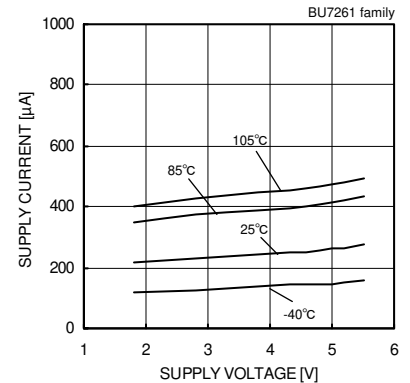


Fig. 3

Supply Current - Supply Voltage

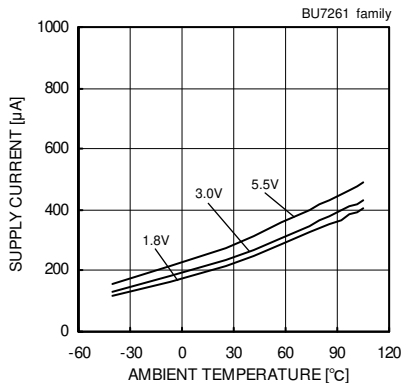


Fig. 4

Supply Current - Ambient Temperature

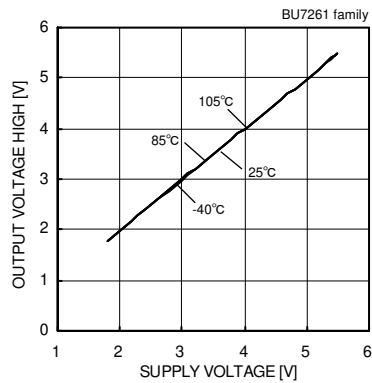


Fig. 5

Output Voltage High - Supply Voltage (RL=10[kΩ])

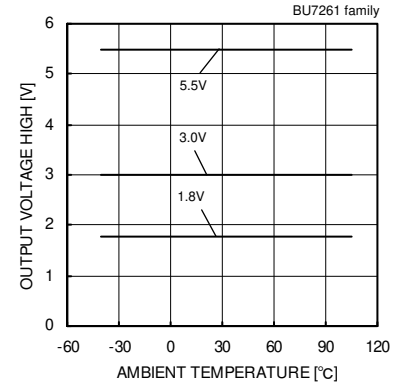


Fig. 6

Output Voltage High - Ambient Temperature (RL=10[kΩ])

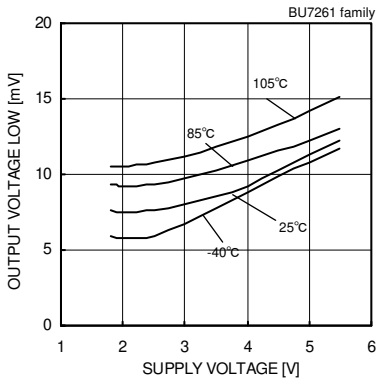


Fig. 7

Output Voltage Low - Supply Voltage (RL=10[kΩ])

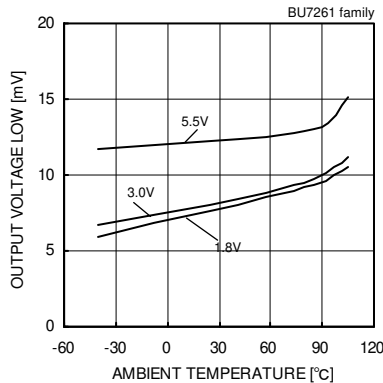


Fig. 8

Output Voltage Low - Ambient Temperature (RL=10[kΩ])

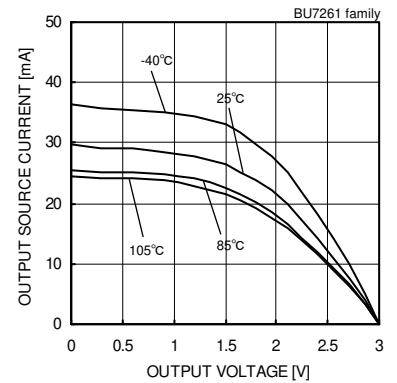


Fig. 9

Output Source Current - Output Voltage (VDD=3[V])

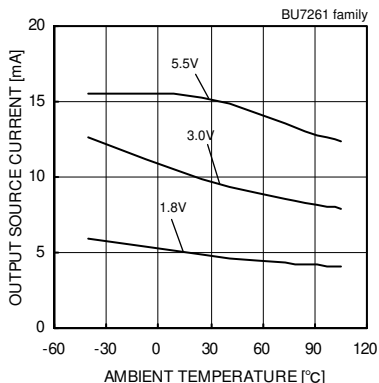


Fig. 10

Output Source Current - Ambient Temperature (VOUT=VDD-0.4[V])

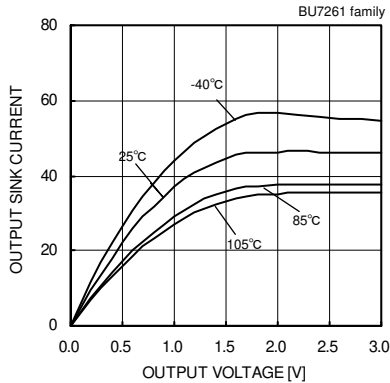


Fig. 11

Output Sink Current - Output Voltage (VDD=3[V])

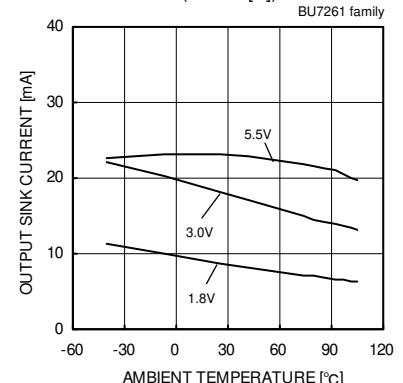


Fig. 12

Output Sink Current - Ambient Temperature (VOUT=VSS+0.4[V])

(\*) The above data is ability value of sample, it is not guaranteed. BU7261G: -40[°C] ~ +85[°C] BU7261SG: -40[°C] ~ +105[°C]

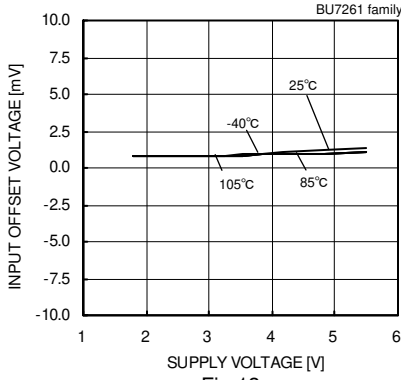


Fig. 13

Input Offset Voltage – Supply Voltage  
 (Vicm=VDD, VOUT=1.5[V])

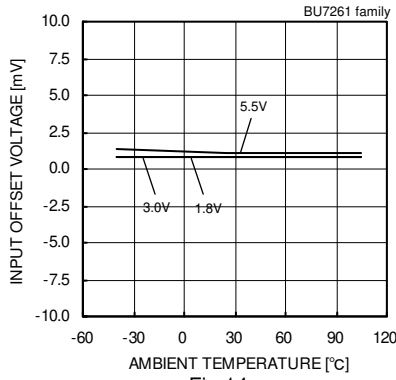


Fig. 14

Input Offset Voltage – Ambient Temperature  
 (Vicm=VDD, VOUT=1.5[V])

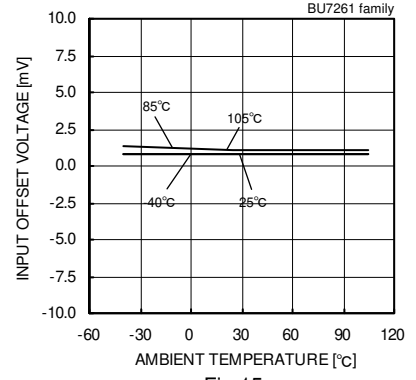


Fig. 15

Input Offset Voltage – Ambient Temperature  
 (VDD=3[V])

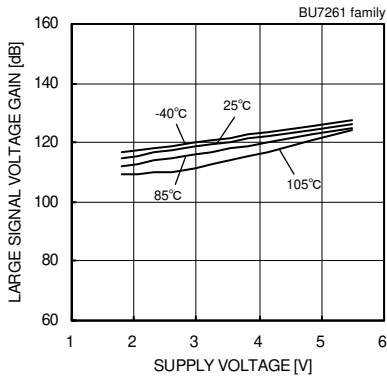


Fig. 16

Large Signal Voltage Gain  
 – Supply Voltage

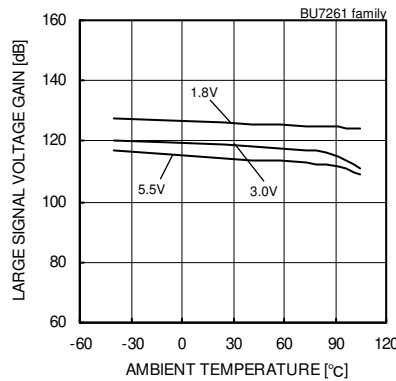


Fig. 17

Large Signal Voltage Gain  
 – Ambient Temperature

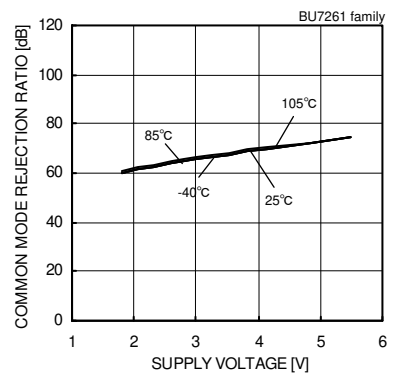


Fig. 18

Common Mode Rejection Ratio  
 – Supply Voltage

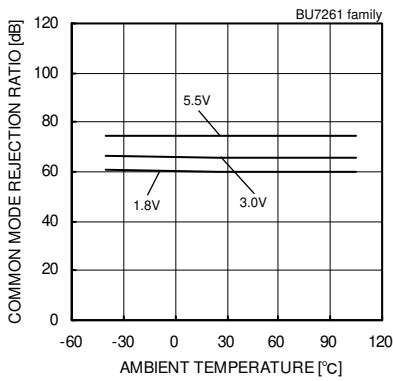


Fig. 19

Common Mode Rejection Ratio  
 – Ambient Temperature

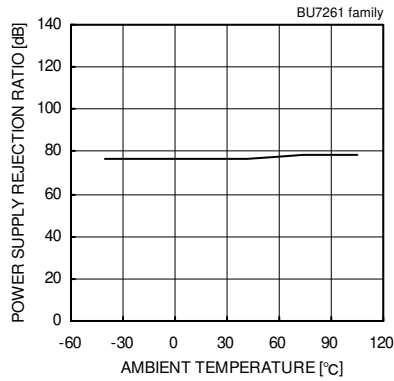


Fig. 20

Power Supply Rejection Ratio  
 – Ambient Temperature

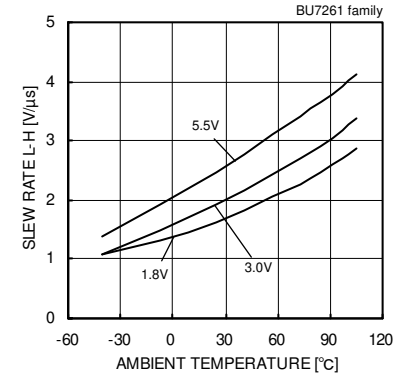


Fig. 21

Slew Rate L-H – Ambient Temperature

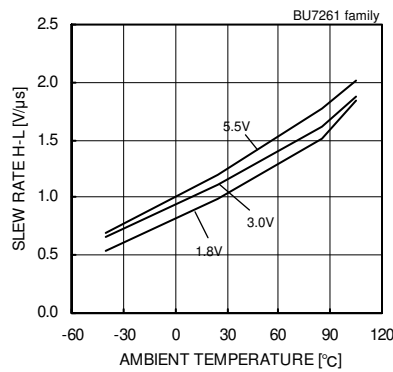


Fig. 22

Slew Rate H-L – Ambient Temperature

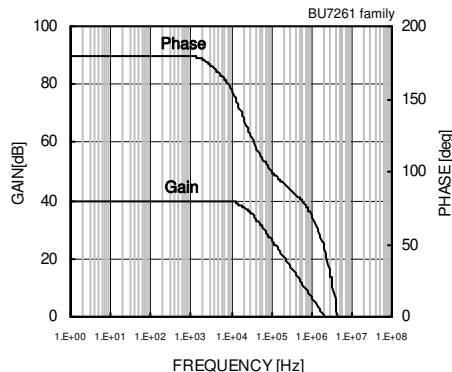


Fig. 23

Voltage Gain – Frequency

(\*) The above data is ability value of sample, it is not guaranteed. BU7261G: -40[°C] ~ +85[°C] BU7261SG: -40[°C] ~ +105[°C]

●Reference Data (BU7262 family)

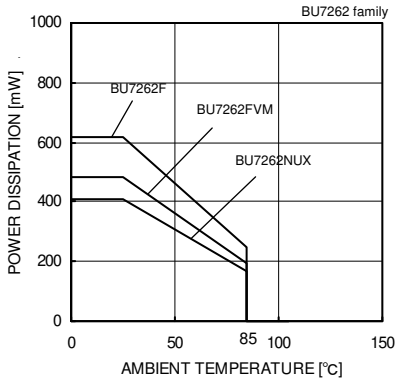


Fig.24

Derating curve

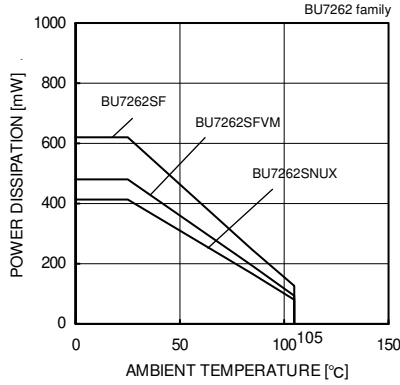


Fig.25

Derating curve

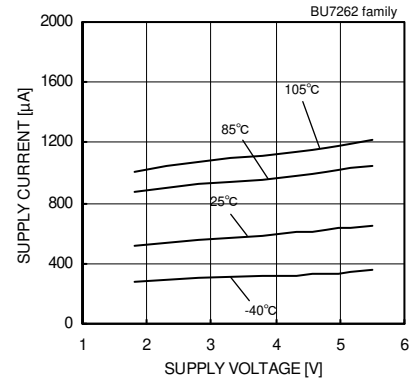


Fig.26

Supply Current – Supply Voltage

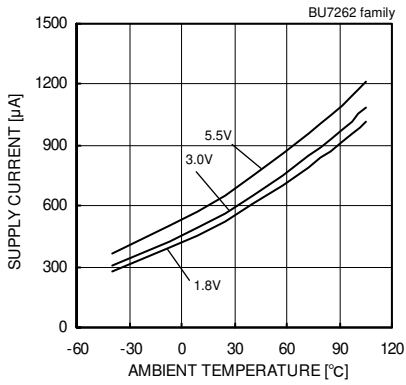


Fig.27

Supply Current – Ambient Temperature

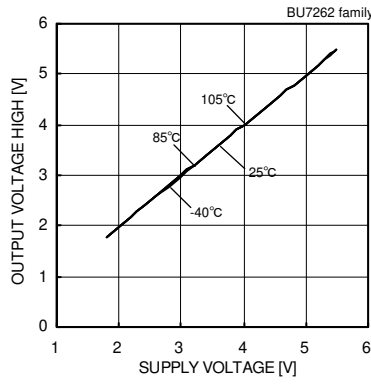


Fig.28

Output Voltage High – Supply Voltage  
 (RL=10[kΩ])

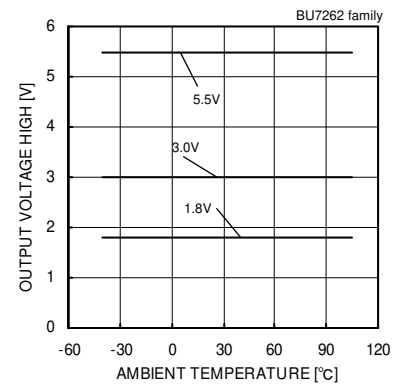


Fig.29

Output Voltage High – Ambient Temperature  
 (RL=10[kΩ])

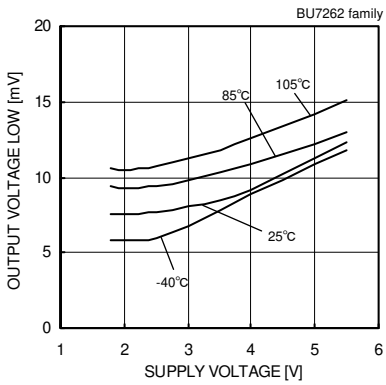


Fig.30

Output Voltage Low – Supply Voltage  
 (RL=10[kΩ])

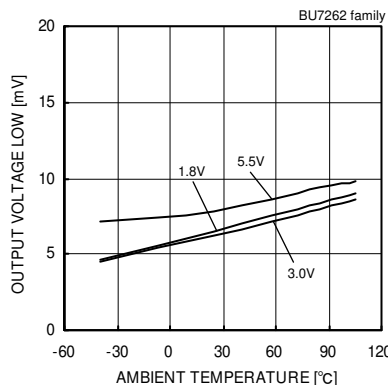


Fig.31

Output Voltage Low – Ambient Temperature  
 (RL=10[kΩ])

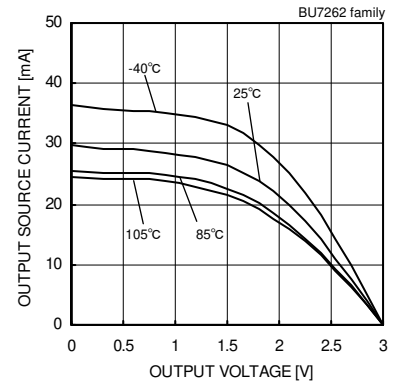


Fig.32

Output Source Current – Output Voltage  
 (VDD=3.0[V])

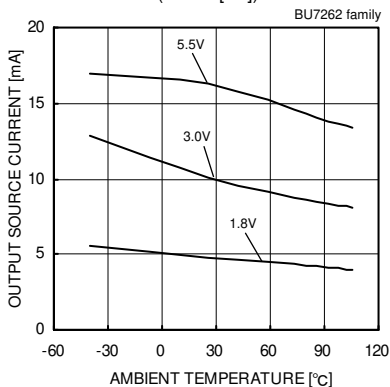


Fig.33

Output Source Current – Ambient Temperature  
 (VOUT=VDD-0.4[V])

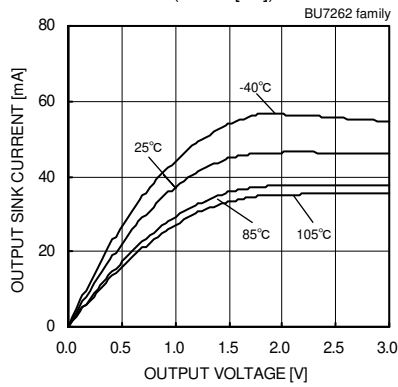


Fig.34

Output Sink Current – Output Voltage  
 (VDD=3[V])

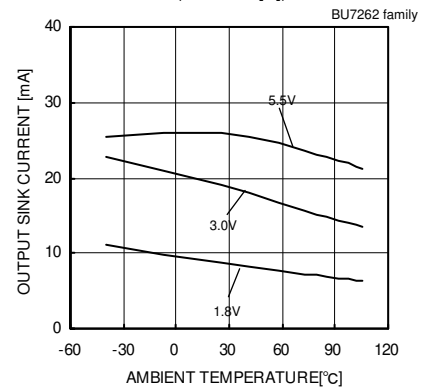


Fig.35

Output Sink Current – Ambient Temperature  
 (VOUT=VSS+0.4[V])

(\*)The above data is ability value of sample, it is not guaranteed. BU7262F/FVM/NUX: -40[°C] ~ +85[°C] BU7262S F/FVM/NUX: -40[°C] ~ +105[°C]

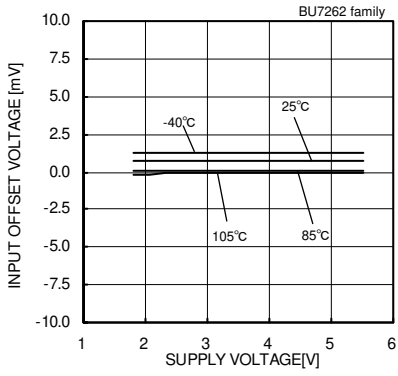


Fig.36  
 Input Offset Voltage – Supply Voltage  
 (Vicm=VDD, VOUT=1.5[V])

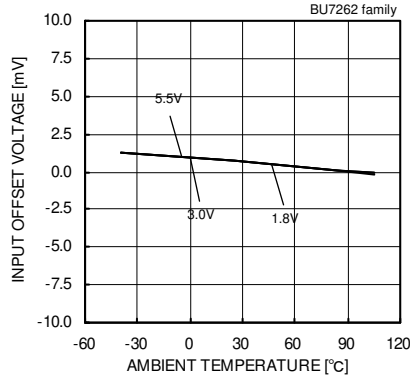


Fig.37  
 Input Offset Voltage – Ambient Temperature  
 (Vicm=VDD, VOUT=1.5[V])

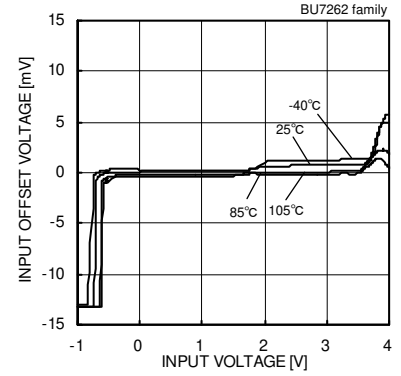


Fig.38  
 Input Offset Voltage – Input Voltage  
 (VDD=3[V])

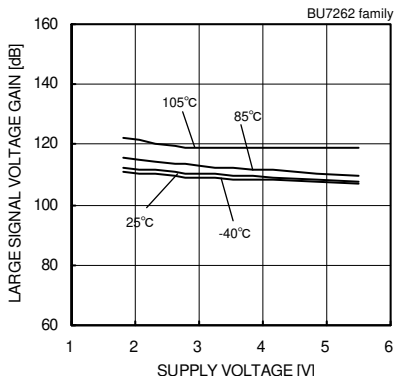


Fig.39  
 Large Signal Voltage Gain  
 – Supply Voltage

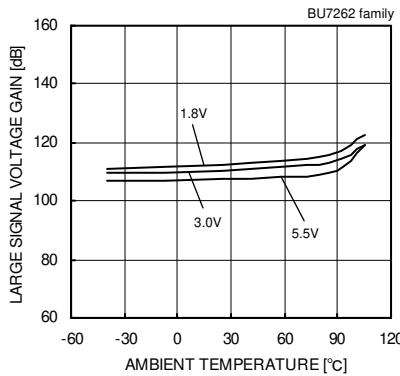


Fig.40  
 Large Signal Voltage Gain  
 – Ambient Temperature

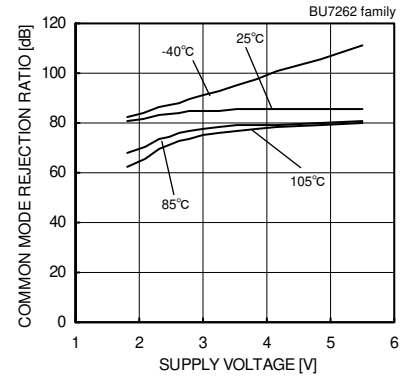


Fig.41  
 Common Mode Rejection Ratio  
 – Supply Voltage

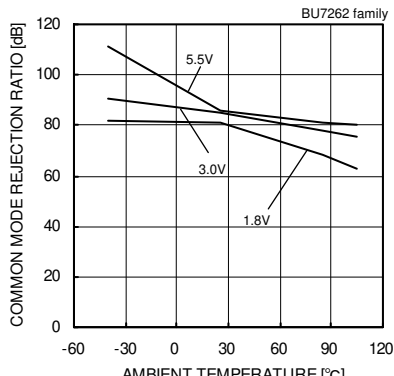


Fig.42  
 Common Mode Rejection Ratio  
 – Ambient Temperature

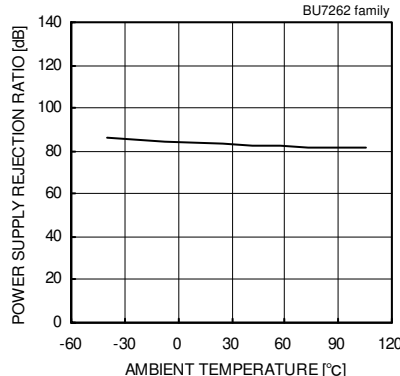


Fig.43  
 Power Supply Rejection Ratio  
 – Ambient Temperature

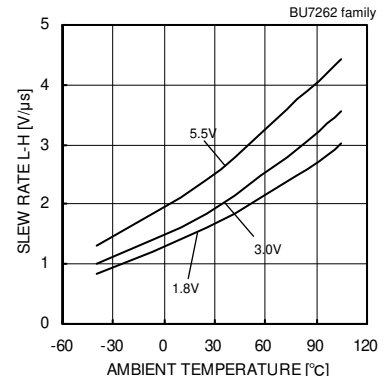


Fig.44  
 Slew Rate L-H – Ambient Temperature

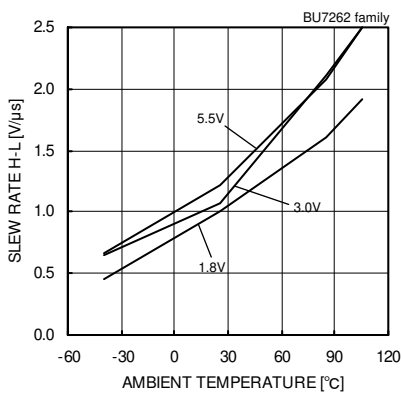


Fig.45  
 Slew Rate H-L – Ambient Temperature

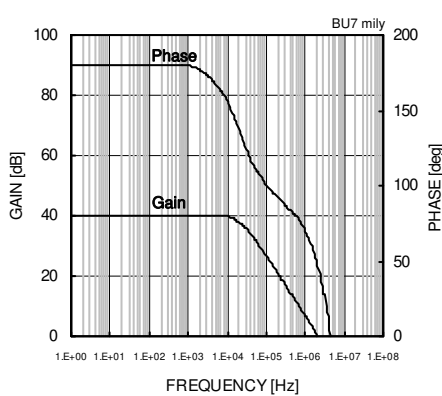


Fig.46  
 Voltage Gain – Frequency

(\*The above data is ability value of sample, it is not guaranteed. BU7262F/FVM/NUX: -40[°C] ~ +85[°C] BU7262S F/FVM/NUX: -40[°C] ~ +105[°C])

●Reference Data (BU7264 family)

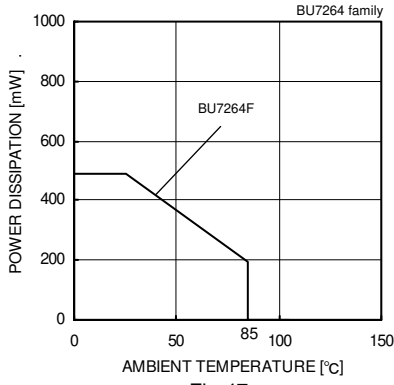


Fig.47  
Derating curve

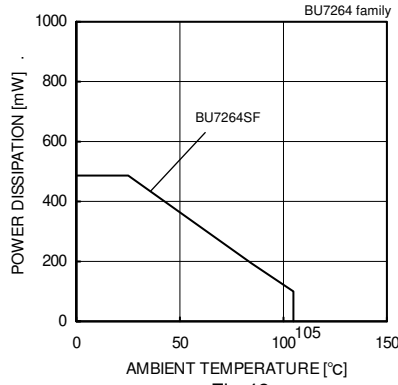


Fig.48  
Derating curve

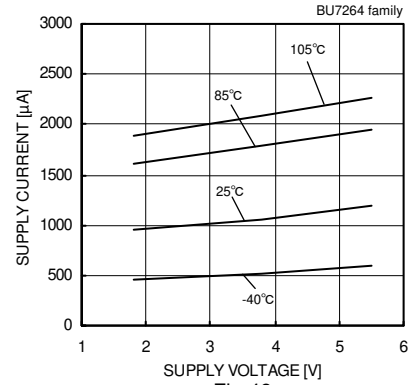


Fig.49  
Supply Current – Supply Voltage

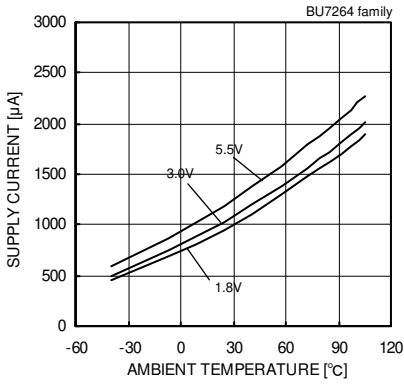


Fig.50  
Supply Current – Ambient Temperature

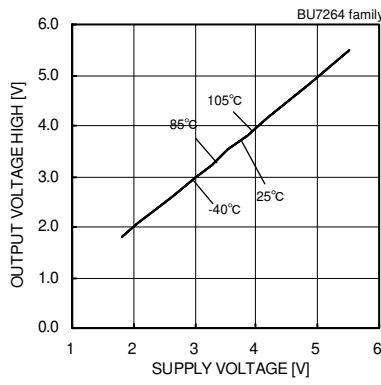


Fig.51  
Output Voltage High – Supply Voltage  
(RL=10[kΩ])

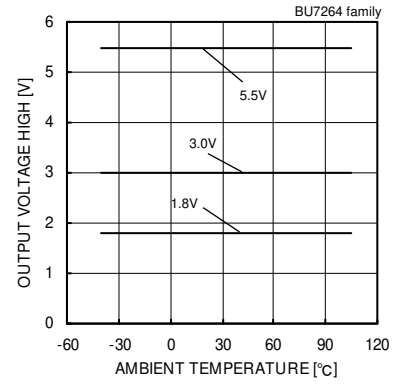


Fig.52  
Output Voltage High – Ambient Temperature  
(RL=10[kΩ])

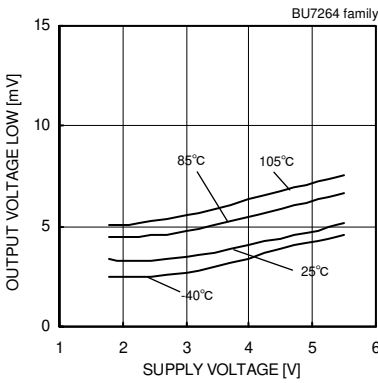


Fig.53  
Output Voltage Low – Supply Voltage  
(RL=10[kΩ])

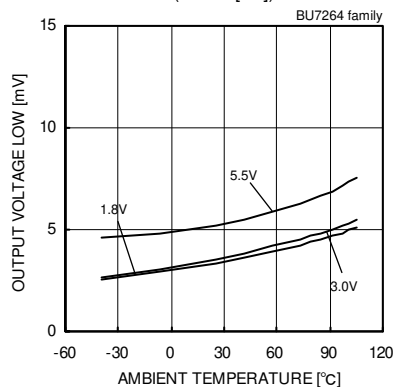


Fig.54  
Output Voltage Low – Ambient Temperature  
(RL=10[kΩ])

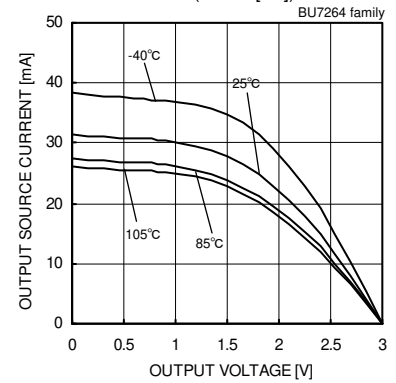


Fig.55  
Output Source Current – Output Voltage  
(VDD=3[V])

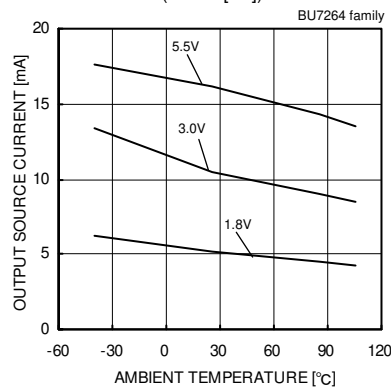


Fig.56  
Output Source Current – Ambient Temperature  
(VOUT=VDD-0.4[V])

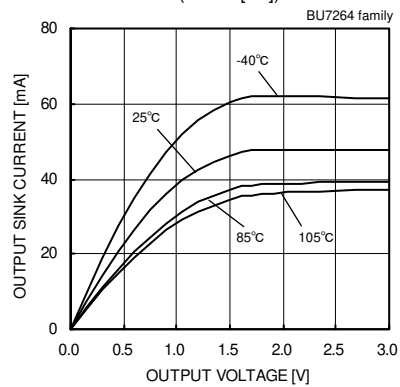


Fig.57  
Output Sink Current – Output Voltage  
(VDD=3[V])

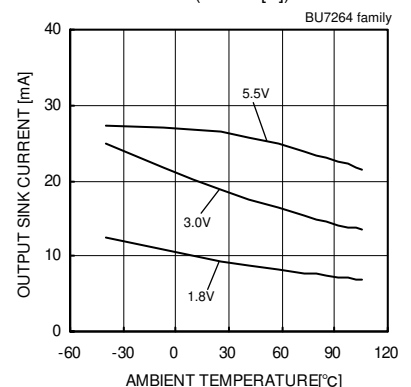


Fig.58  
Output Sink Current – Ambient Temperature  
(VOUT=VSS+0.4[V])

(\*)The above data is ability value of sample, it is not guaranteed. BU7264F: -40[°C] ~ +85[°C] BU7264SF: -40[°C] ~ +105[°C]



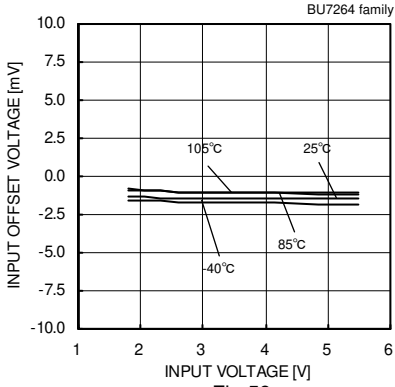


Fig. 59 Input Offset Voltage – Supply Voltage (Vicm=VDD, VOUT=1.5[V])

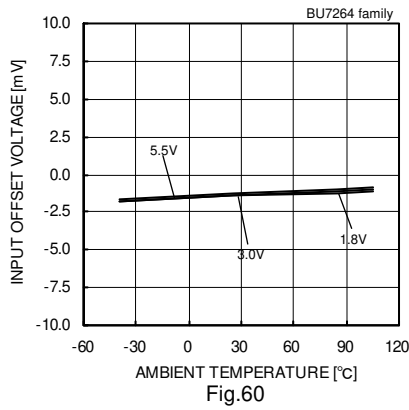


Fig. 60 Input Offset Voltage – Ambient Temperature (Vicm=VDD, VOUT=1.5[V])

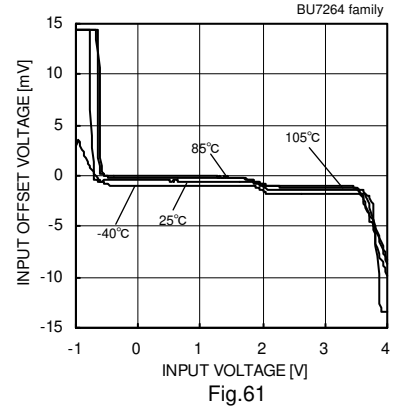


Fig. 61 Input Offset Voltage – Input Voltage (VDD=3[V])

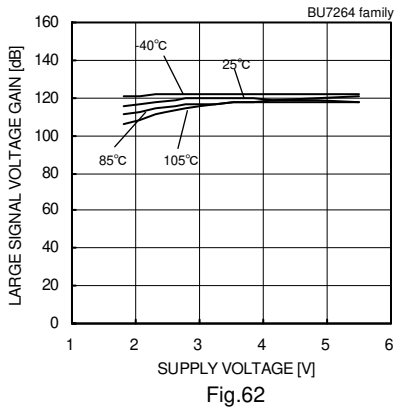


Fig. 62 Large Signal Voltage Gain – Supply Voltage

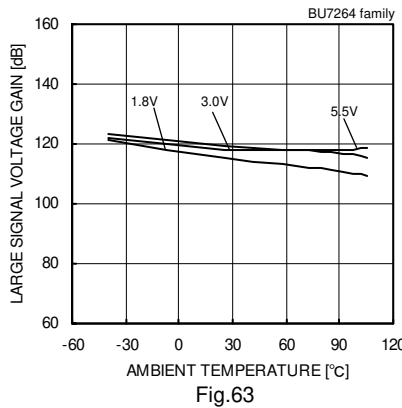


Fig. 63 Large Signal Voltage Gain – Ambient Temperature

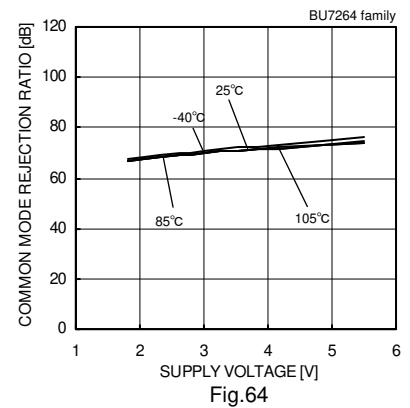


Fig. 64 Common Mode Rejection Ratio – Supply Voltage

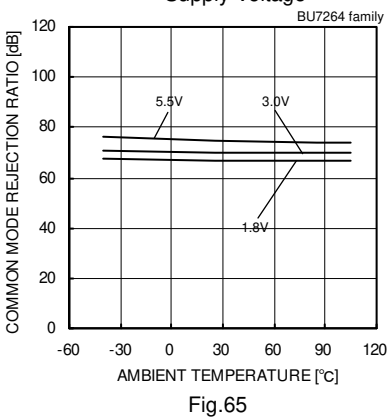


Fig. 65 Common Mode Rejection Ratio – Ambient Temperature

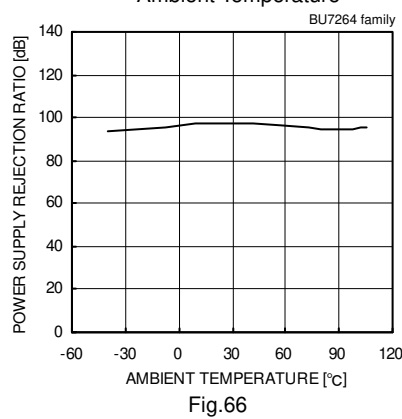


Fig. 66 Power Supply Rejection Ratio – Ambient Temperature

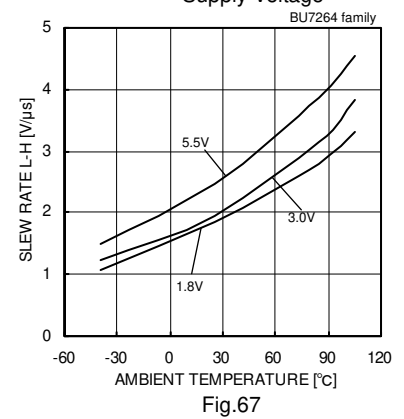


Fig. 67 Slew Rate L-H – Ambient Temperature

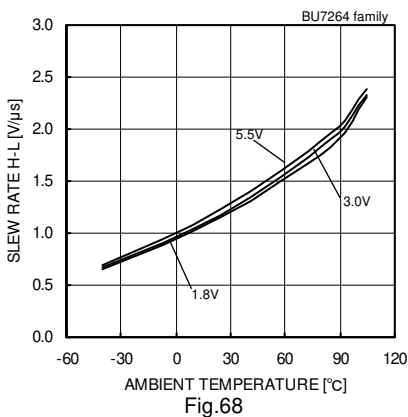


Fig. 68 Slew Rate H-L – Ambient Temperature

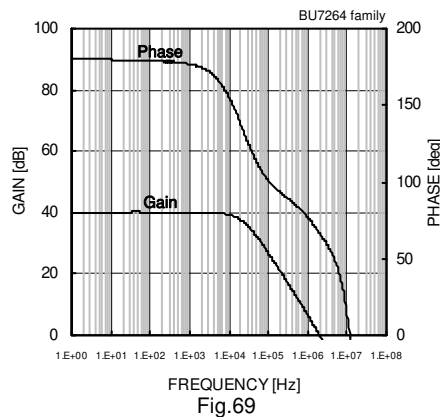


Fig. 69 Voltage Gain – Frequency

(\*)The above data is ability value of sample, it is not guaranteed. BU7264F: -40[°C] ~ +85[°C] BU7264SF: -40[°C] ~ +105[°C]

●Reference Data (BU7295 family)

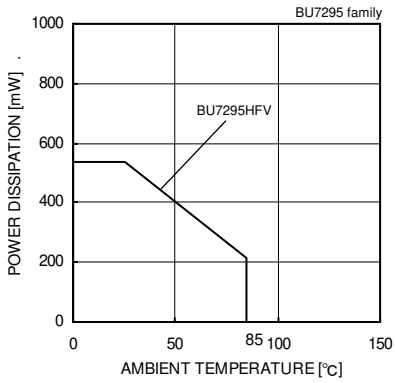


Fig.70

Derating curve

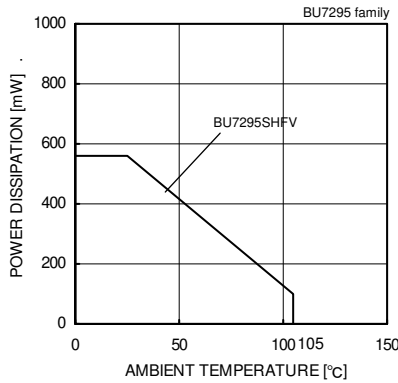


Fig.71

Derating curve

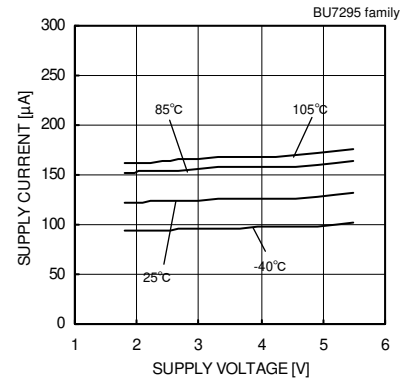


Fig.72

Supply Current – Supply Voltage

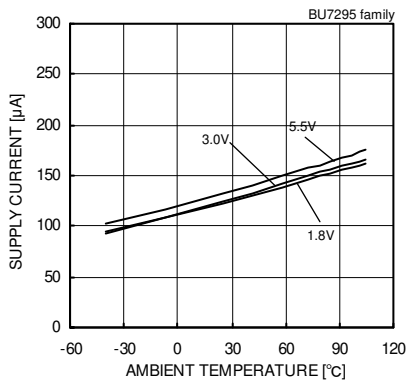


Fig.73

Supply Current – Ambient Temperature

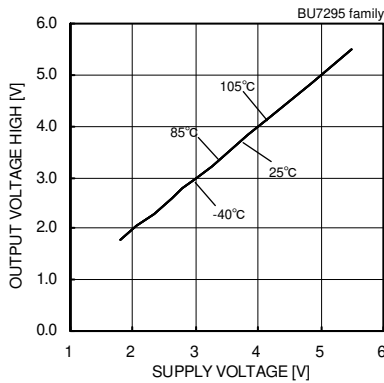


Fig.74

Output Voltage High – Supply Voltage  
 (RL=10[kΩ])

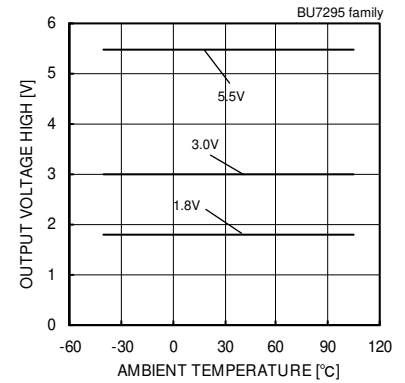


Fig.75

Output Voltage High – Ambient Temperature  
 (RL=10[kΩ])

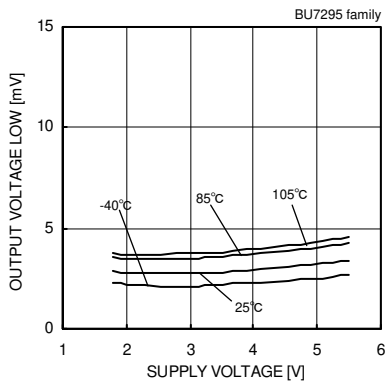


Fig.76

Output Voltage Low – Supply Voltage  
 (RL=10[kΩ])

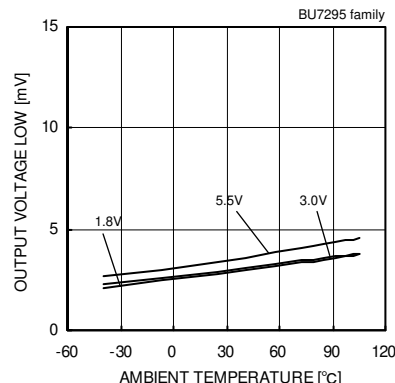


Fig.77

Output Voltage Low – Ambient Temperature  
 (RL=10[kΩ])

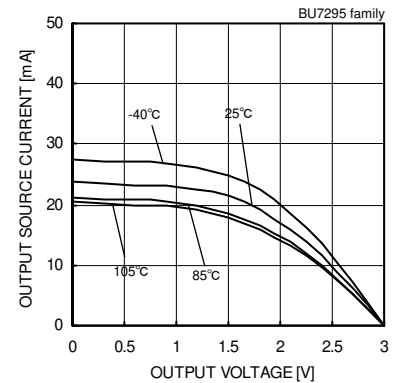


Fig.78

Output Source Current – Output Voltage  
 (VDD=3[V])

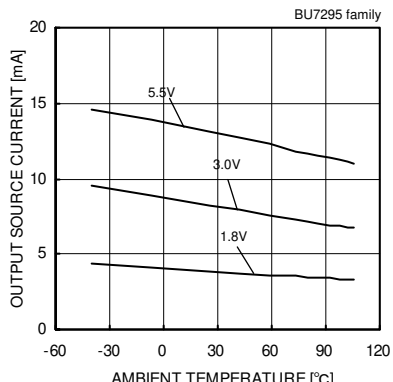


Fig.79

Output Source Current – Ambient Temperature  
 (VOUT=VDD-0.4[V])

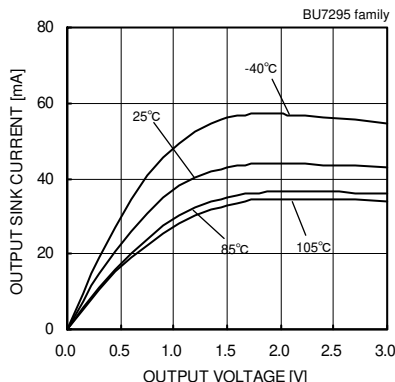


Fig.80

Output Sink Current – Output Voltage  
 (VDD=3[V])

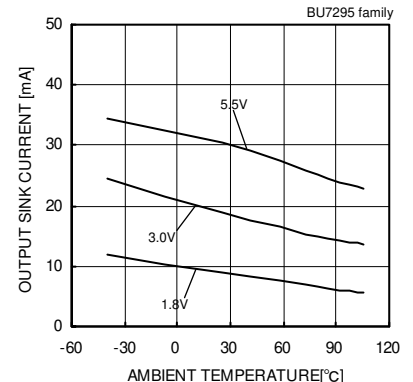


Fig.81

Output Sink Current – Ambient Temperature  
 (VOUT=VSS+0.4[V])

(\*)The above data is ability value of sample, it is not guaranteed. BU7295HFV: -40[°C] ~ +85[°C] BU7295SHFV: -40[°C] ~ +105[°C]

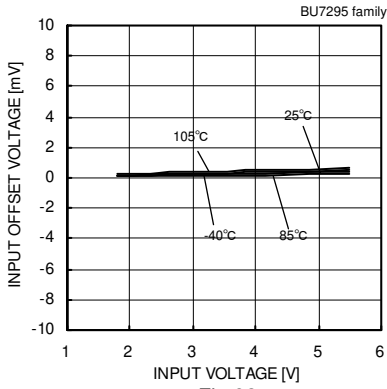


Fig.82

Input Offset Voltage – Supply Voltage  
 (Vicm=VDD, VOUT=1.5[V])

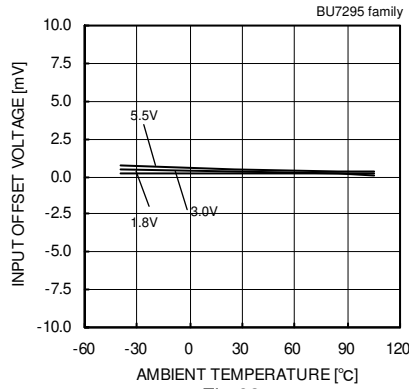


Fig.83

Input Offset Voltage – Ambient Temperature  
 (Vicm=VDD, VOUT=1.5[V])

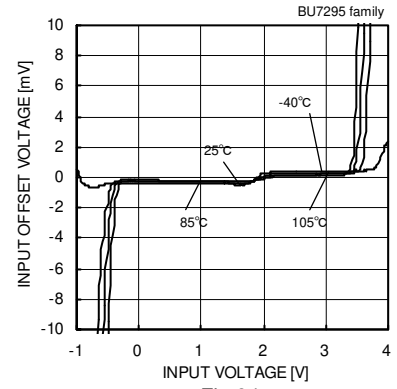


Fig.84

Input Offset Voltage – Input Voltage  
 (VDD=3[V])

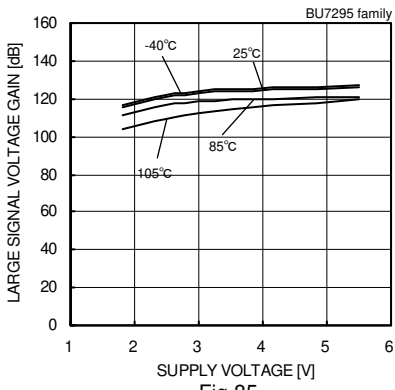


Fig.85

Large Signal Voltage Gain  
 – Supply Voltage

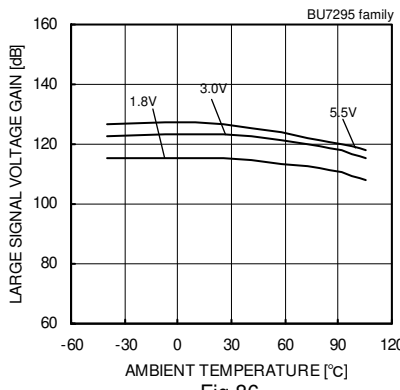


Fig.86

Large Signal Voltage Gain  
 – Ambient Temperature

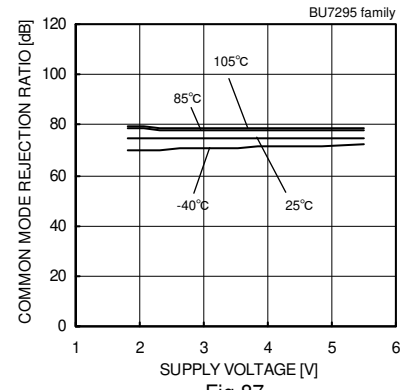


Fig.87

Common Mode Rejection Ratio  
 – Supply Voltage

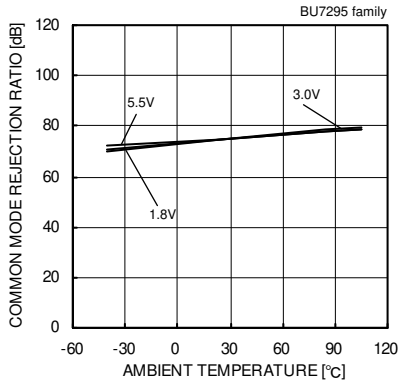


Fig.88

Common Mode Rejection Ratio  
 – Ambient Temperature

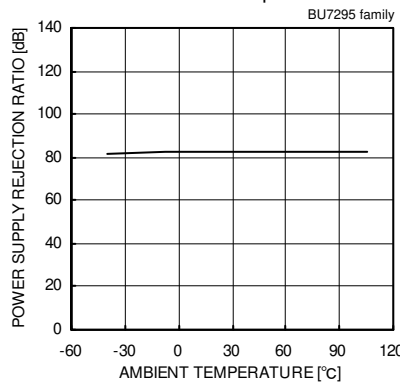


Fig.89

Power Supply Rejection Ratio  
 – Ambient Temperature

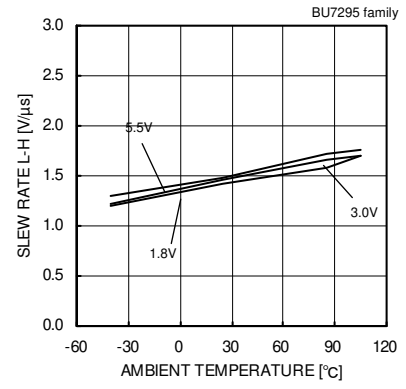


Fig.90

Slew Rate L-H – Ambient Temperature

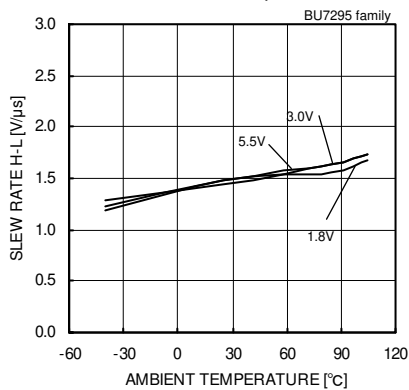


Fig.91

Slew Rate H-L – Ambient Temperature

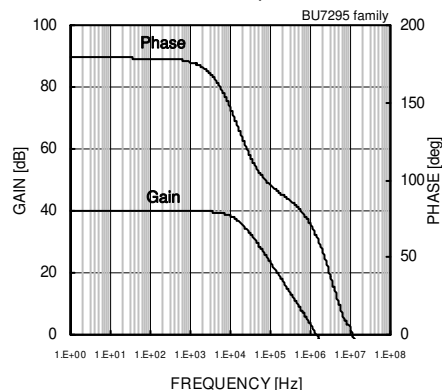


Fig.92

Voltage Gain – Frequency

(\*)The above data is ability value of sample, it is not guaranteed. BU7295HFV: -40[°C] ~ +85[°C] BU7295SHFV: -40[°C] ~ +105[°C]

●Reference Data (BU7241 family)

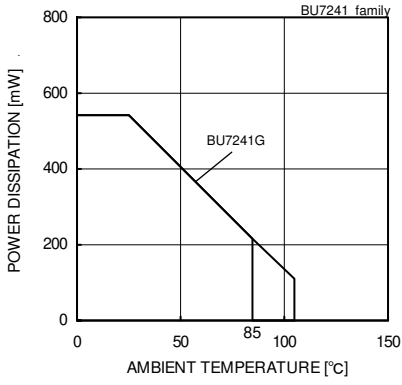


Fig.93  
Derating curve

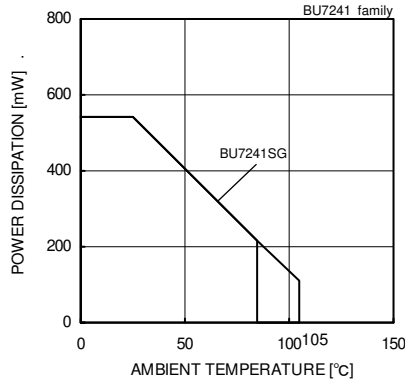


Fig.94  
Derating curve

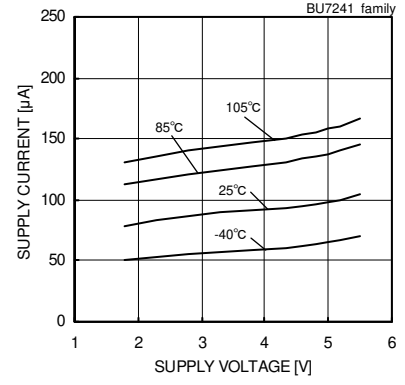


Fig.95  
Supply Current – Supply Voltage

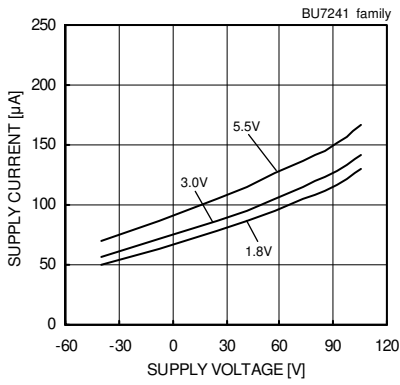


Fig.96  
Supply Current – Ambient Temperature

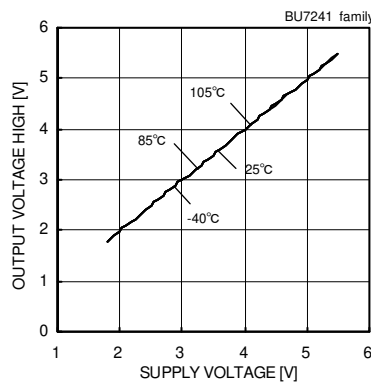


Fig.97  
Output Voltage High – Supply Voltage  
(RL=10[kΩ])

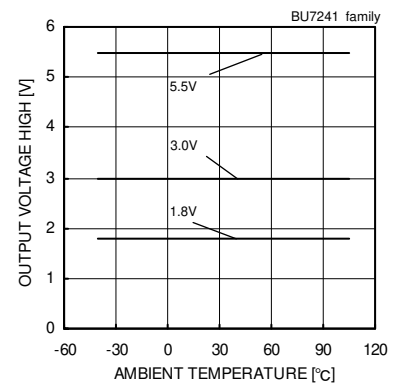


Fig.98  
Output Voltage High – Ambient Temperature  
(RL=10[kΩ])

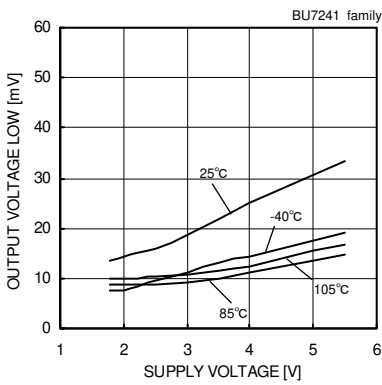


Fig.99  
Output Voltage Low – Supply Voltage  
(RL=10[kΩ])

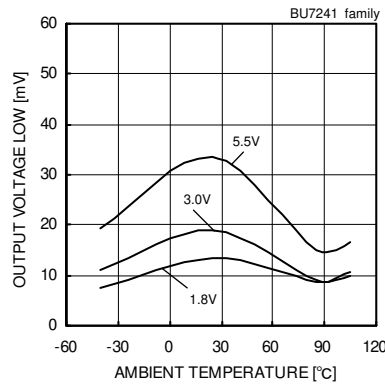


Fig.100  
Output Voltage Low – Ambient Temperature  
(RL=10[kΩ])

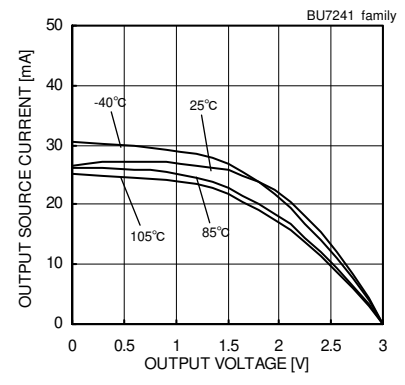


Fig.101  
Output Source Current – Output Voltage  
(VDD=3[V])

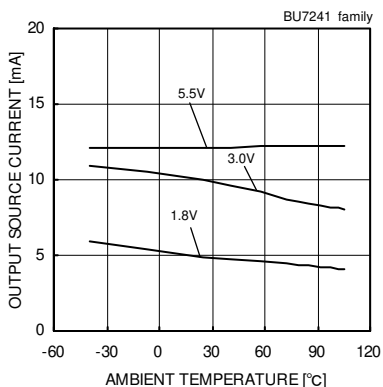


Fig.102  
Output Source Current – Ambient Temperature  
(VOUT=VDD-0.4[V])

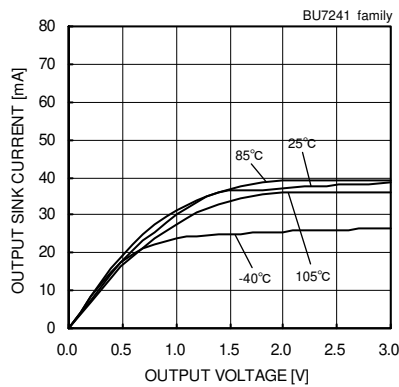


Fig.103  
Output Sink Current – Output Voltage  
(VDD=3[V])

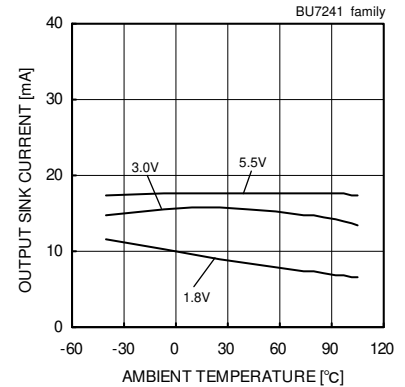


Fig.104  
Output Sink Current – Ambient Temperature  
(VOUT=VSS+0.4[V])

(\*)The above data is ability value of sample, it is not guaranteed. BU7241G: -40[°C] ~ +85[°C] BU7241SG: -40[°C] ~ +105[°C]

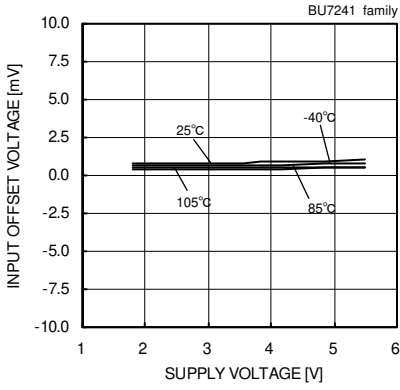


Fig. 105

Input Offset Voltage – Supply Voltage  
 (Vicm=VDD, VOUT=1.5[V])

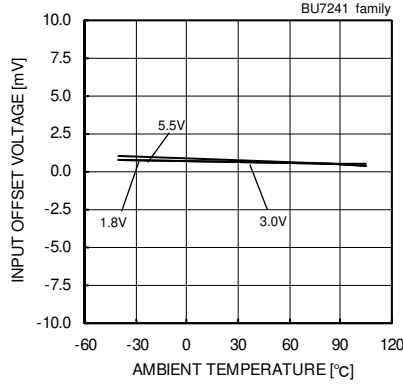


Fig. 106

Input Offset Voltage – Ambient Temperature  
 (Vicm=VDD, VOUT=1.5[V])

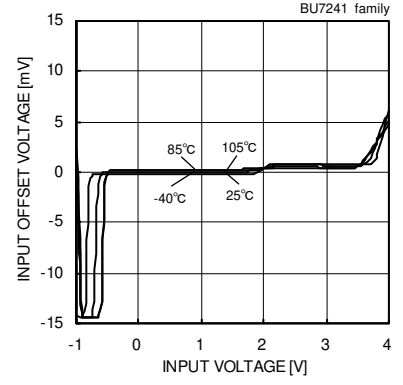


Fig. 107

Input Offset Voltage – Input Voltage  
 (VDD=3[V])

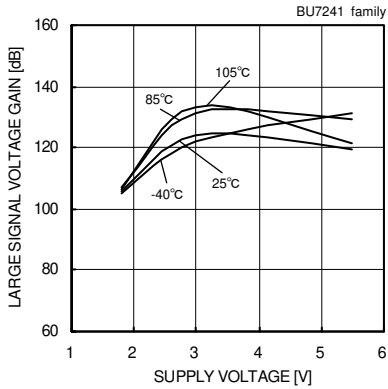


Fig. 108

Large Signal Voltage Gain  
 – Supply Voltage

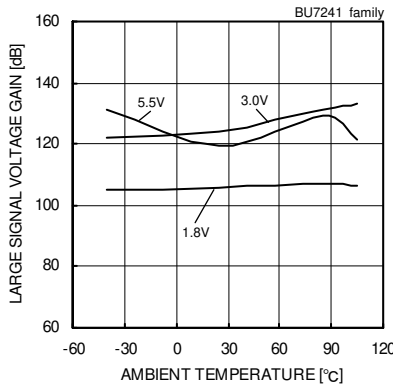


Fig. 109

Large Signal Voltage Gain  
 – Ambient Temperature

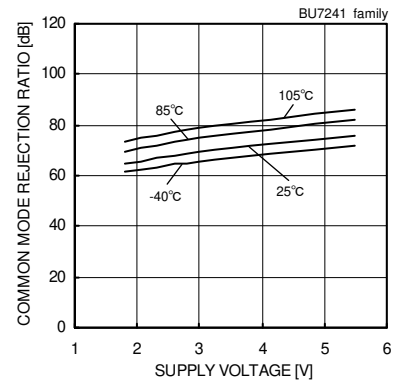


Fig. 110

Common Mode Rejection Ratio  
 – Supply Voltage

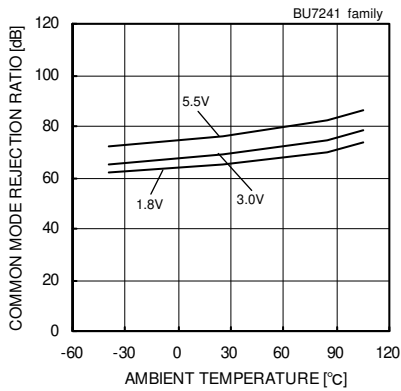


Fig. 111

Common Mode Rejection Ratio  
 – Ambient Temperature

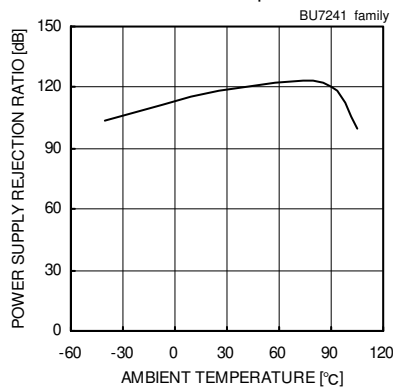


Fig. 112

Power Supply Rejection Ratio  
 – Ambient Temperature

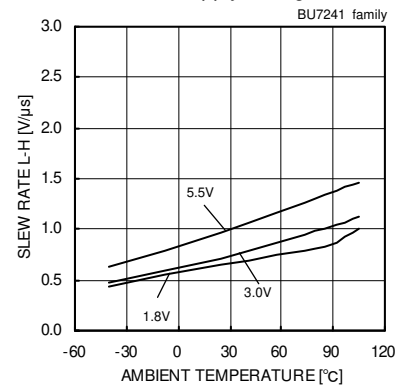


Fig. 113

Slew Rate L-H – Ambient Temperature

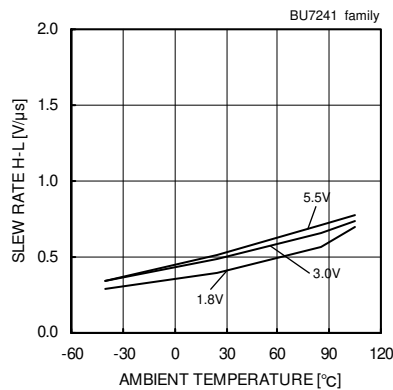


Fig. 114

Slew Rate H-L – Ambient Temperature

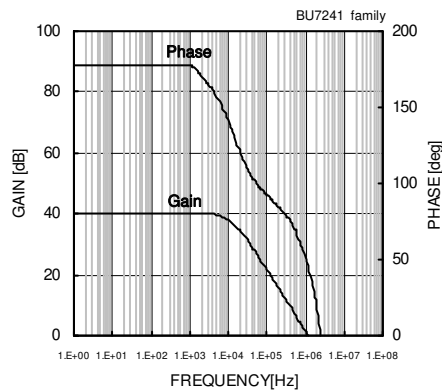


Fig. 115

Voltage Gain – Frequency

(\*The above data is ability value of sample, it is not guaranteed. BU7241G: -40[°C] ~ +85[°C] BU7241SG: -40[°C] ~ +105[°C])

●Reference Data (BU7242 family)

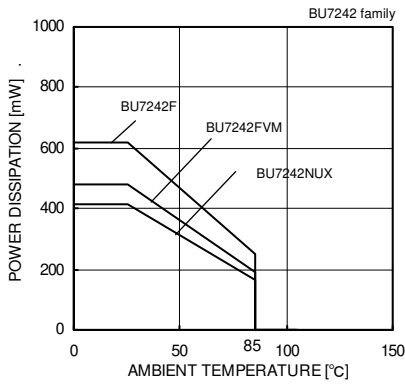


Fig.116

Derating curve

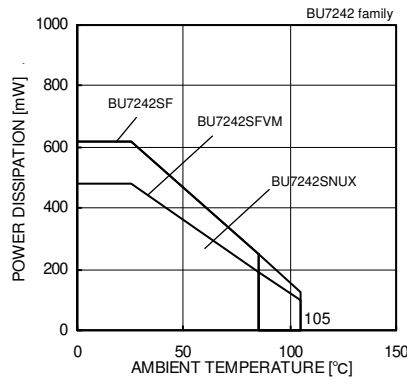


Fig.117

Derating curve

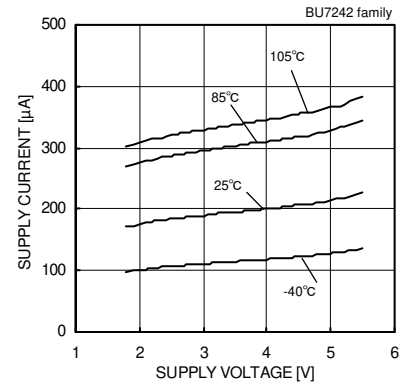


Fig.118

Supply Current - Supply Voltage

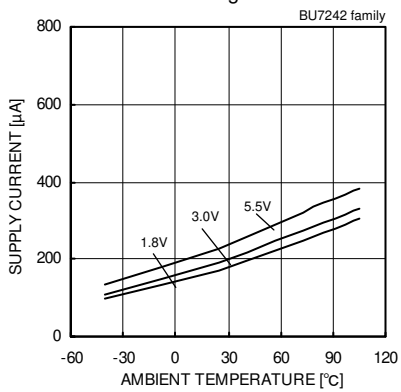


Fig.119

Supply Current - Ambient Temperature

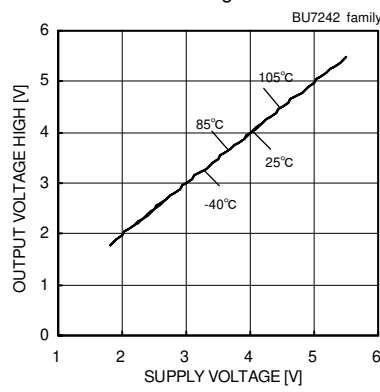


Fig.120

Output Voltage High - Supply Voltage (RL=10[kΩ])

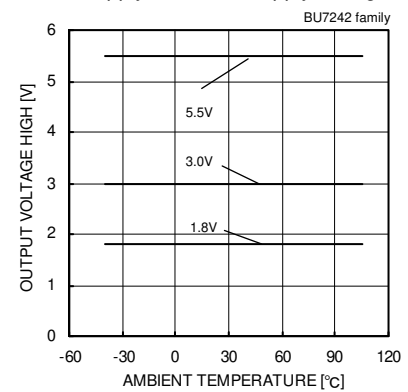


Fig.121

Output Voltage High - Ambient Temperature (RL=10[kΩ])

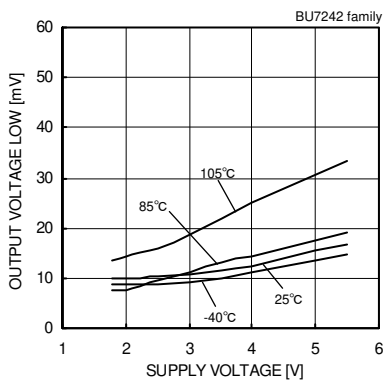


Fig.122

Output Voltage Low - Supply Voltage (RL=10[kΩ])

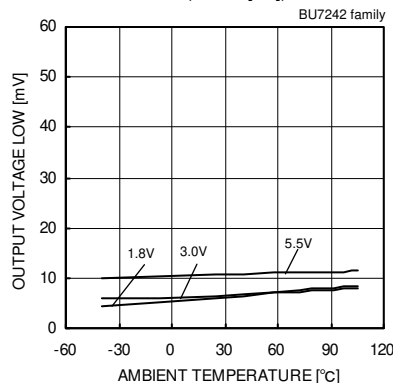


Fig.123

Output Voltage Low - Ambient Temperature (RL=10[kΩ])

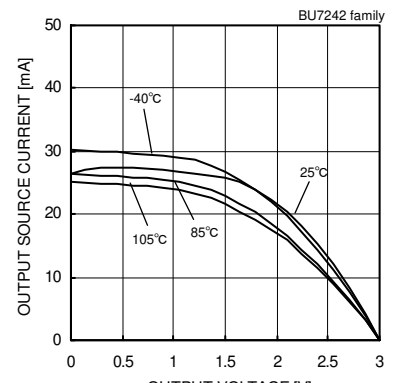


Fig.124

Output Source Current - Output Voltage (VDD=3[V])

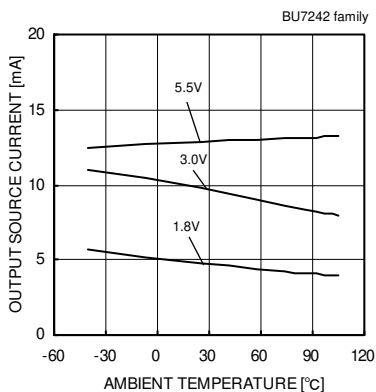


Fig.125

Output Source Current - Ambient Temperature (VOUT=VDD-0.4[V])

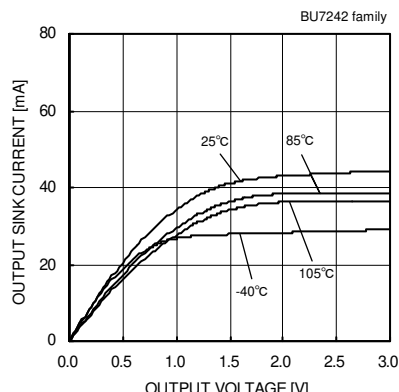


Fig.126

Output Sink Current - Output Voltage (VDD=3[V])

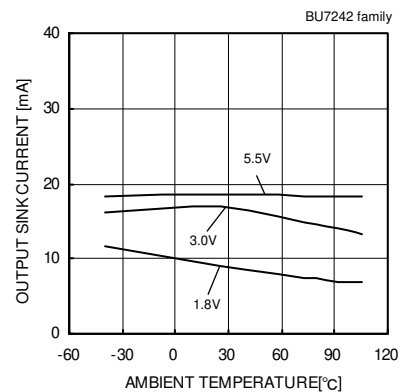


Fig.127

Output Sink Current - Ambient Temperature (VOUT=VSS+0.4[V])

(\*)The above data is ability value of sample, it is not guaranteed. BU7242F/FVM/NUX: -40[°C] ~ +85[°C] BU7242S F/FVM/NUX: -40[°C] ~ +105[°C]

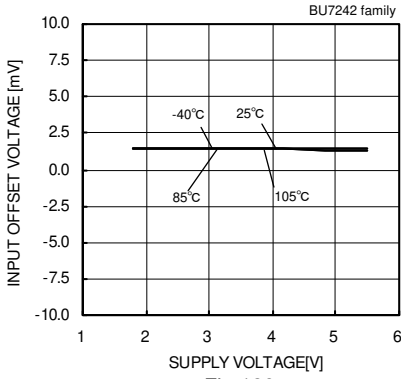


Fig.128  
 Input Offset Voltage – Supply Voltage  
 (Vicm=VDD, VOUT=1.5[V])

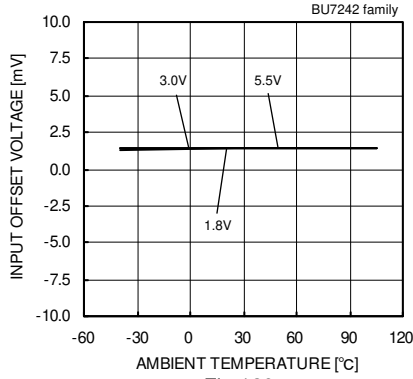


Fig.129  
 Input Offset Voltage – Ambient Temperature  
 (Vicm=VDD, VOUT=1.5[V])

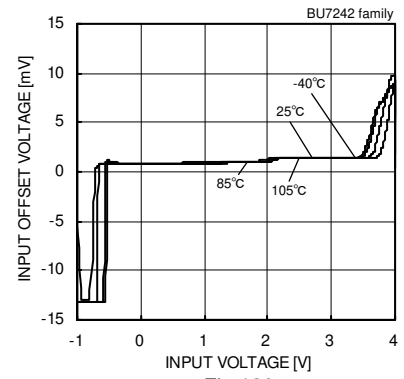


Fig.130  
 Input Offset Voltage – Input Voltage  
 (VDD=3[V])

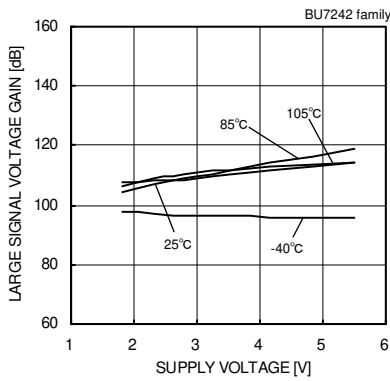


Fig.131  
 Large Signal Voltage Gain  
 – Supply Voltage

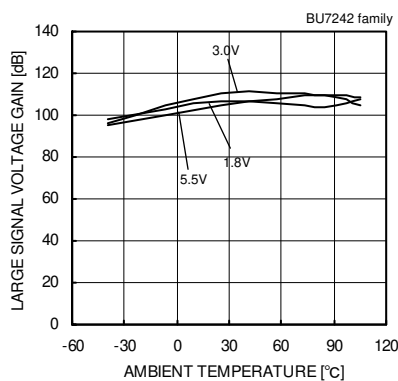


Fig.132  
 Large Signal Voltage Gain  
 – Ambient Temperature

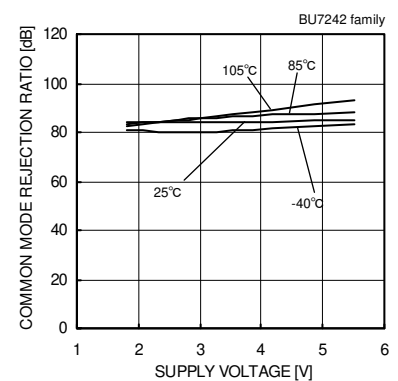


Fig.133  
 Common Mode Rejection Ratio  
 – Supply Voltage

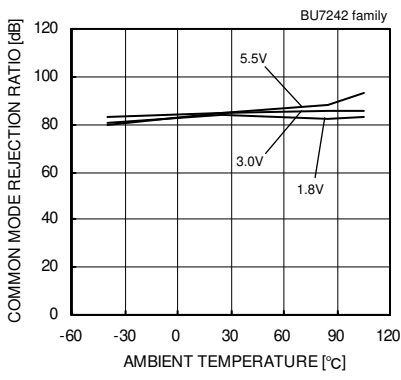


Fig.134  
 Common Mode Rejection Ratio  
 – Ambient Temperature

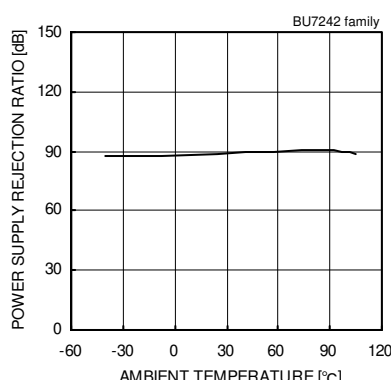


Fig.135  
 Power Supply Rejection Ratio  
 – Ambient Temperature

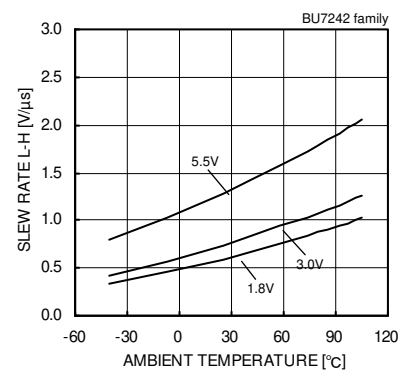


Fig.136  
 Slew Rate L-H – Ambient Temperature

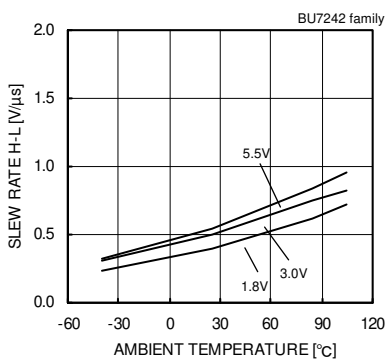


Fig.137  
 Slew Rate H-L – Ambient Temperature

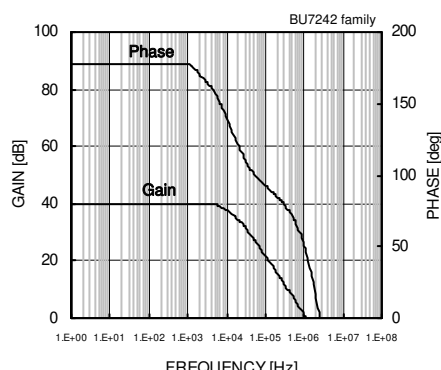


Fig.138  
 Voltage Gain – Frequency

(\*)The above data is ability value of sample, it is not guaranteed. BU7242F/FVM/NUX: -40[°C] ~ +85[°C] BU7242S F/FVM/NUX: -40[°C] ~ +105[°C]

●Reference Data (BU7244 family)

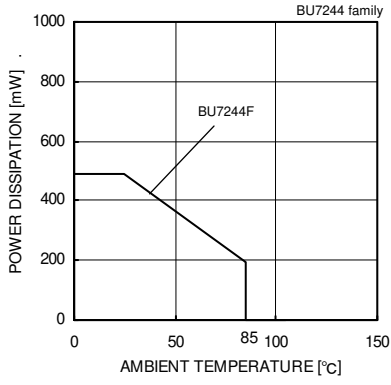


Fig.139

Derating curve

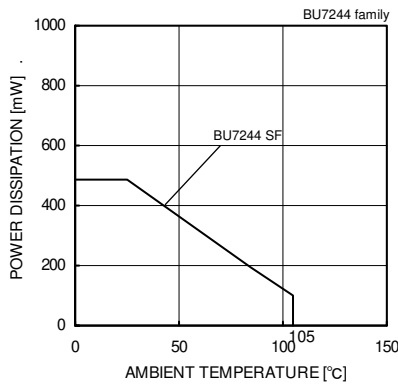


Fig.140

Derating curve

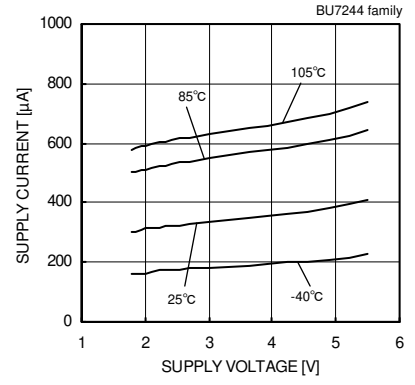


Fig.141

Supply Current – Supply Voltage

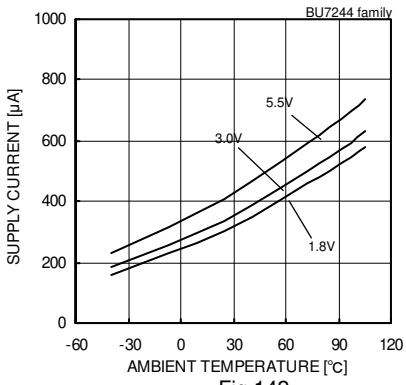


Fig.142

Supply Current – Supply Voltage

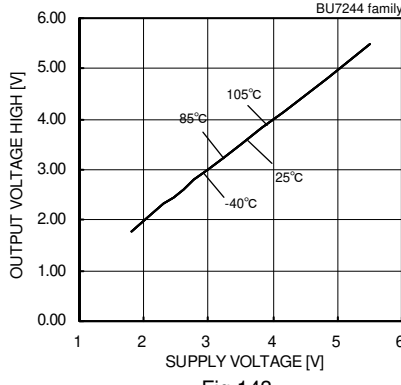


Fig.143

Output Voltage High – Supply Voltage  
( $R_L=10[k\Omega]$ )

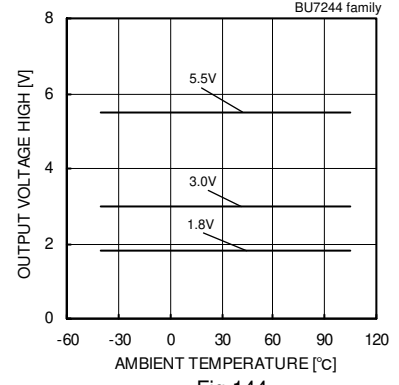


Fig.144

Output Voltage High – Ambient Temperature  
( $R_L=10[k\Omega]$ )

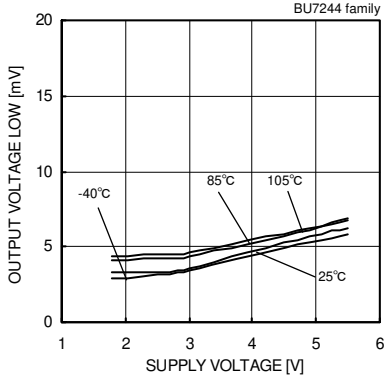


Fig.145

Output Voltage Low – Supply Voltage  
( $R_L=10[k\Omega]$ )

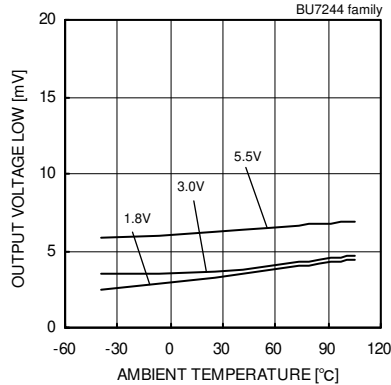


Fig.146

Output Voltage Low – Ambient Temperature  
( $R_L=10[k\Omega]$ )

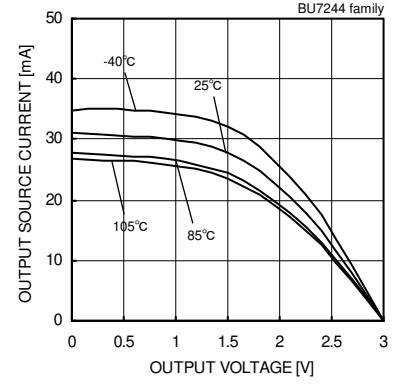


Fig.147

Output Source Current – Output Voltage  
( $V_{DD}=3[V]$ )

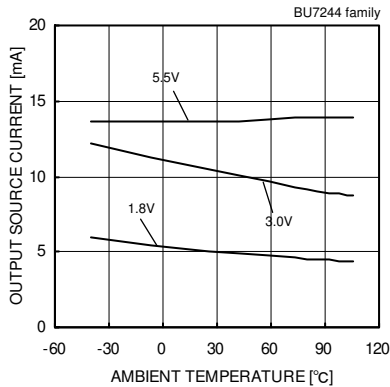


Fig.148

Output Source Current – Ambient Temperature  
( $V_{OUT}=V_{DD}-0.4[V]$ )

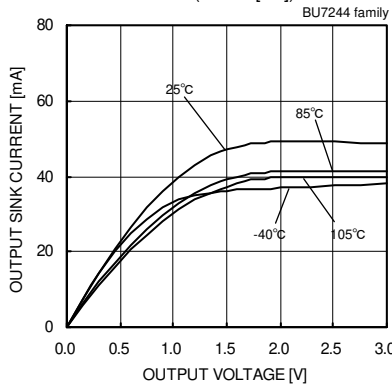


Fig.149

Output Sink Current – Output Voltage  
( $V_{DD}=3[V]$ )

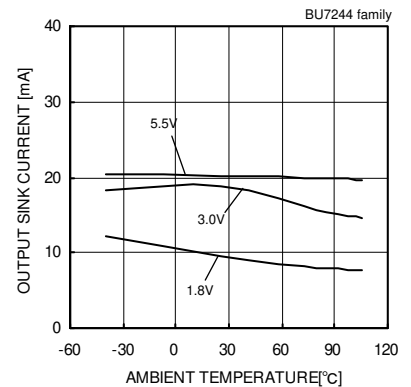


Fig.150

Output Sink Current – Ambient Temperature  
( $V_{OUT}=V_{SS}+0.4[V]$ )

(\*)The above data is ability value of sample, it is not guaranteed. BU7244F: -40[°C] ~ +85[°C] BU7244SF: -40[°C] ~ +105[°C]



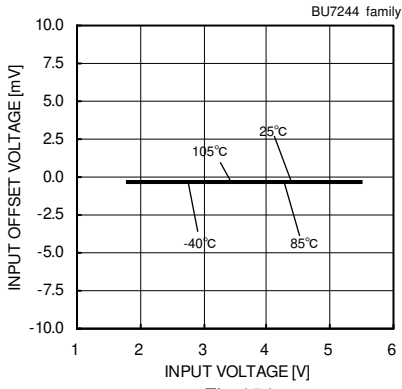


Fig.151

Input Offset Voltage – Supply Voltage  
 (Vicm=VDD, VOUT=1.5[V])

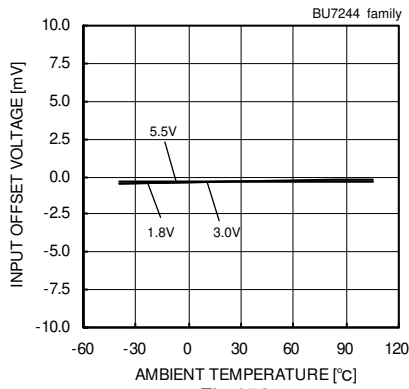


Fig.152

Input Offset Voltage – Ambient Temperature  
 (Vicm=VDD, VOUT=1.5[V])

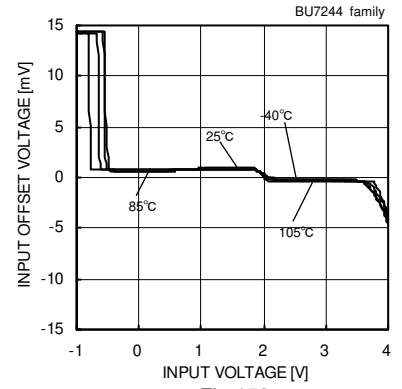


Fig.153

Input Offset Voltage – Input Voltage  
 (VDD=3[V])

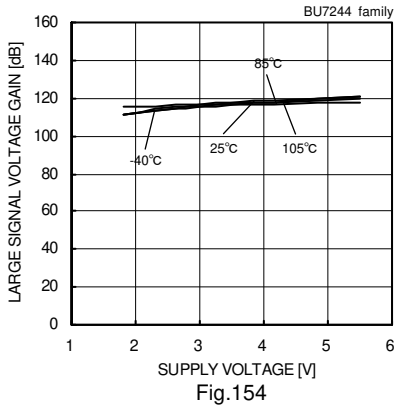


Fig.154

Large Signal Voltage Gain  
 – Supply Voltage

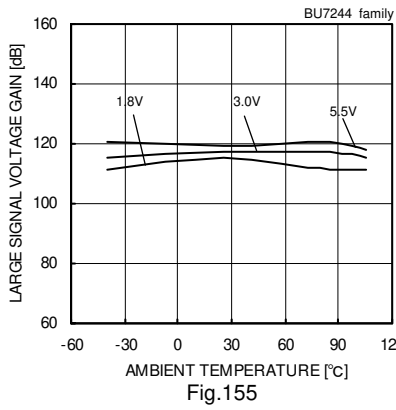


Fig.155

Large Signal Voltage Gain  
 – Ambient Temperature

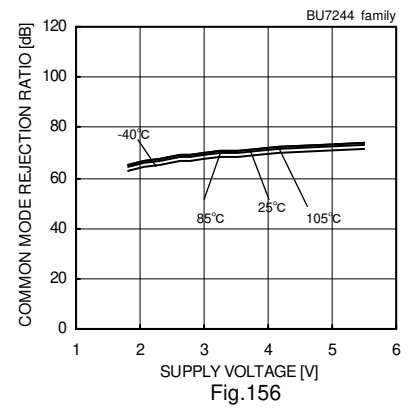


Fig.156

Common Mode Rejection Ratio  
 – Supply Voltage

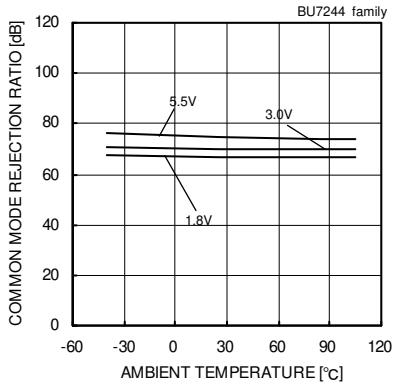


Fig.157

Common Mode Rejection Ratio  
 – Ambient Temperature

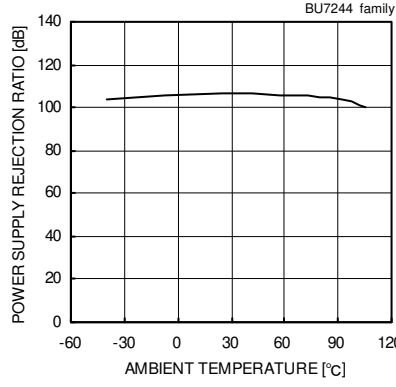


Fig.158

Power Supply Rejection Ratio  
 – Ambient Temperature

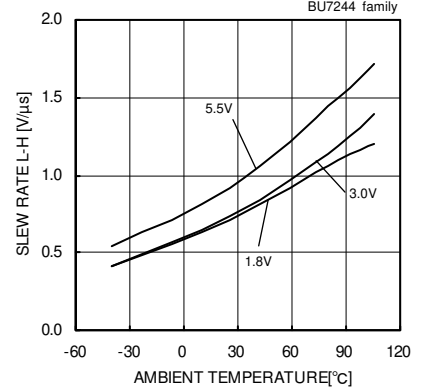


Fig.159

Slew Rate L-H – Ambient Temperature

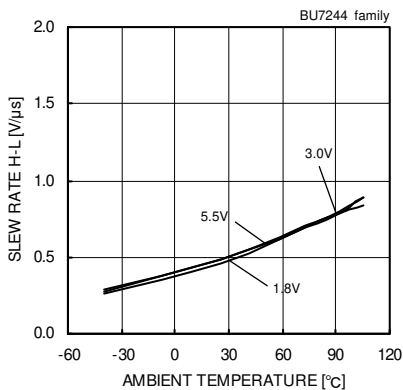


Fig.160

Slew Rate H-L – Ambient Temperature

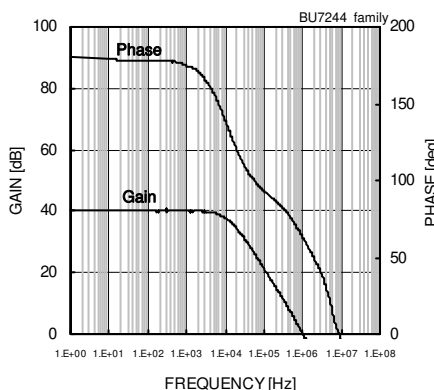


Fig.161

Voltage Gain – Frequency

(\*The above data is ability value of sample, it is not guaranteed. BU7244F: -40[°C] ~ +85[°C] BU7244SF: -40[°C] ~ +105[°C]

●Reference Data (BU7275 family)

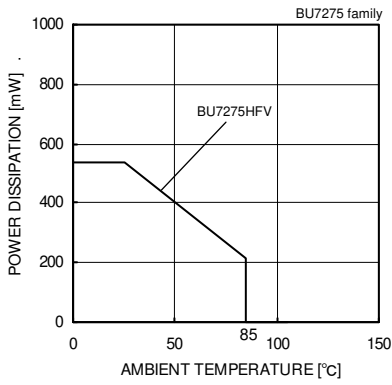


Fig.162

Derating curve

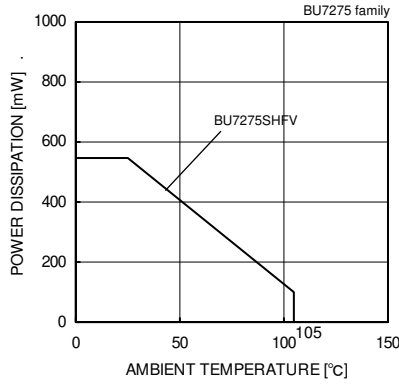


Fig.163

Derating curve

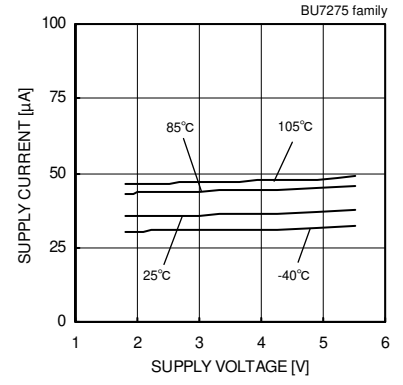


Fig.164

Supply Current - Supply Voltage

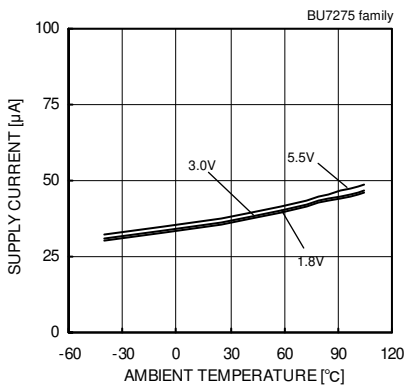


Fig.165

Supply Current - Supply Voltage

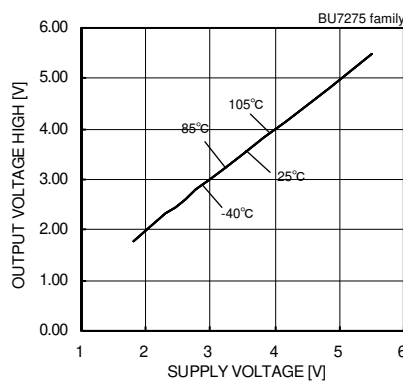


Fig.166

Output Voltage High - Supply Voltage  
 (RL=10[kΩ])

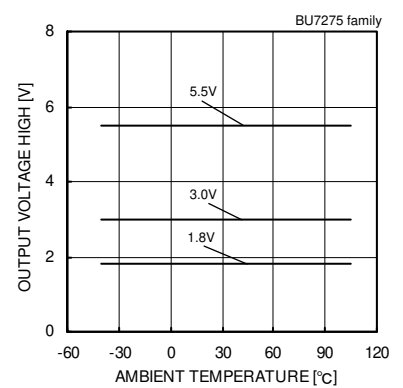


Fig.167

Output Voltage High - Ambient Temperature  
 (RL=10[kΩ])

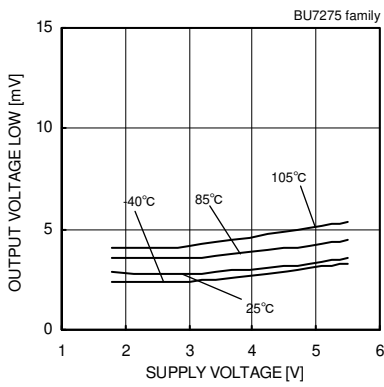


Fig.168

Output Voltage Low - Supply Voltage  
 (RL=10[kΩ])

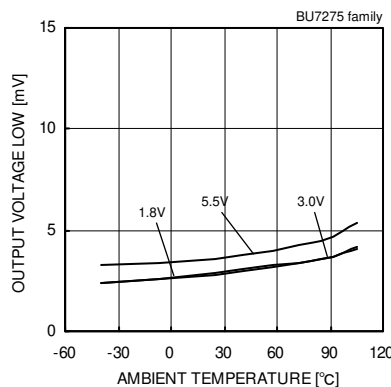


Fig.169

Output Voltage Low - Ambient Temperature  
 (RL=10[kΩ])

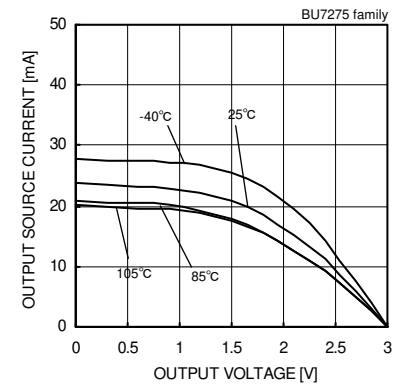


Fig.170

Output Source Current - Output Voltage  
 (VDD=3[V])

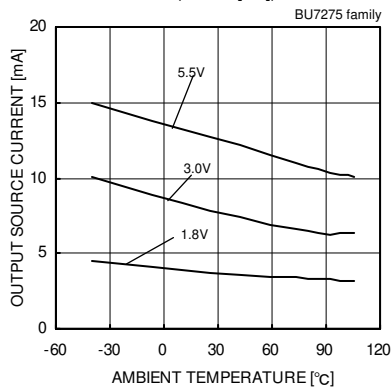


Fig.171

Output Source Current - Ambient Temperature  
 (VOUT=VDD-0.4[V])

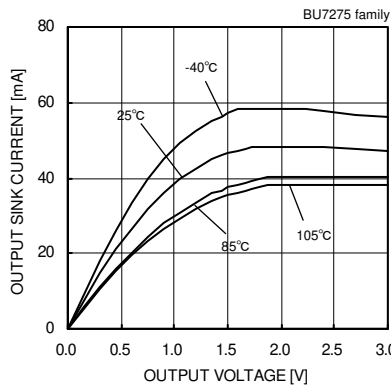


Fig.172

Output Sink Current - Output Voltage  
 (VDD=3[V])

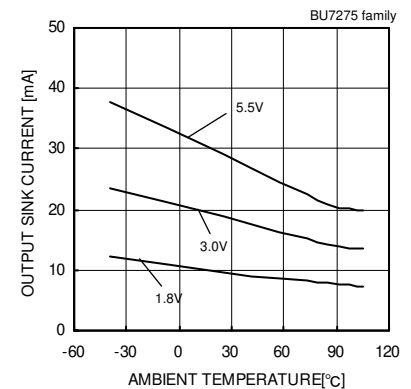


Fig.173

Output Sink Current - Ambient Temperature  
 (VOUT=VSS+0.4[V])

(\*The above data is ability value of sample, it is not guaranteed. BU7275 HFV: -40[°C] ~ +85[°C] BU7275S HFV: -40[°C] ~ +105[°C])