Precision, single supply, Rail-to-Rail Output Dual Operational Amplifier

■ FEATURES

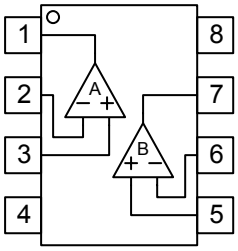
- ●Enhanced RF noise immunity
- ●Operating Temperature Ta= -40ºC to +125ºC
- ●Operation Voltage +4V to +35V
- ●Input Voltage Protection $V_{IN}=V^{+}+20V$ @$V^{+}\leqq 16V$
- ●Input Offset Voltage Drift 2µV/ºC (typ.)
- ●Rail-to-Rail Output
- ●Input Offset Voltage 200µV typ (Ta=25ºC)
  1mV max (Ta= -40ºC to +125ºC)
- ●Slew Rate 0.15V/µs typ.
- ●GBW 300kHz
- ●Supply Current 3mA max (Ta= -40ºC to +125ºC)
- ●Package DMP8

■ PACKAGE OUTLINE

NJM8207MZ

■ Pin CONFIGURATION

(Top View)



PIN FUNCTION
1: A OUTPUT
2: A -INPUT
3: A +INPUT
4: V^{-}
5: B +INPUT
6: B -INPUT
7: B OUTPUT
8: V^{+}

■ABSOLUTE MAXIMUM RATINGS (Ta=25ºC, unless otherwise noted.)

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage	V^+ (V^+/V^-)	+36 (±18)	V
Input Voltage Range	VICM	-0.3 to +36 (Note1)	V
Differential Input Voltage Range	VID	±36	V
Power Dissipation	PD	530 (Note2)	mW
Operating Temperature Range	Topr	-40 to +125	ºC
Storage Temperature Range	Tstg	-50 to +150	ºC

(Note1) The input voltage range should be allowed to input without damage or destruction independent of the magnitude of V^+.
The normal operation will establish when the both inputs are within the Common Mode Input Voltage Range of electrical characteristics.
(Note2) On the PCB "EIA/JEDEC (76.2×114.3×1.6mm, 2 layers, FR-4)"
Do not exceed "Power dissipation: PD" in which power dissipation in IC is shown by the absolute maximum rating.
Refer to following Figure 1 for a permissible loss when ambient temperature (Ta) is Ta≥25ºC.

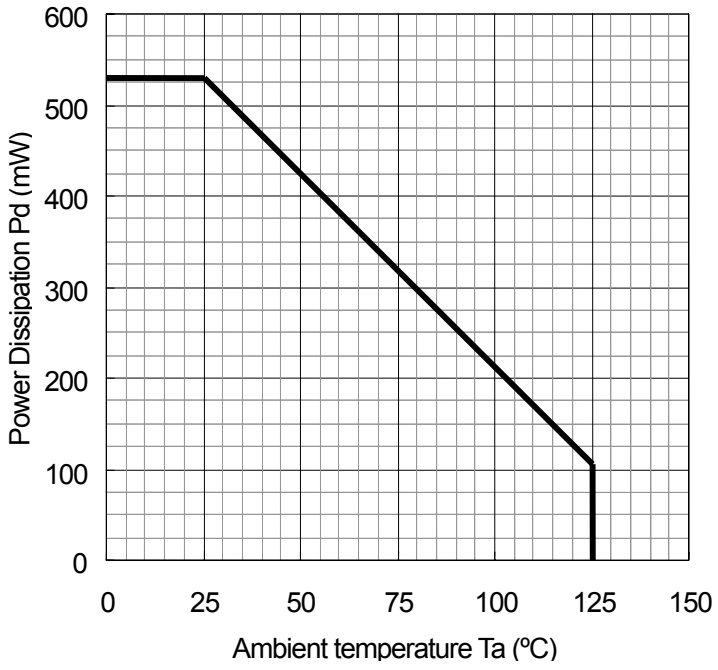


Figure1: P_D – Temperature

■RECOMMENDED OPERATING CONDITIONS (Ta = -40ºC to +125ºC)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V^+		4	-	35	V

■ELECTRICAL CHARACTERISTICS

●DC CHARACTERISTICS (V^+=5V,Ta=25°C, unless otherwise noted.)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{IO}	R_S=50Ω, R_F=50kΩ	-	200	450	μV
		R_S=10kΩ, R_F=50kΩ, Ta = -40ºC to +125ºC	-	-	1000	
Input Offset Voltage Drift	ΔVIO/ΔT	Ta= -40ºC to +125ºC	-	2	-	μV/ºC
Input Bias Current	I_B		-	120	500	nA
		Ta = -40ºC to +125ºC	-	-	500	
Input Offset Current	I_{IO}		-	5	20	nA
		Ta = -40ºC to +125ºC	-	-	20	
Supply Current	I_{CC}	No Signal	-	1.4	2	mA
		No Signal, Ta = -40ºC to +125ºC	-	-	3	
Output Voltage1	V_{OH1}	R_L≧2kΩ to 2.5V	4.85	4.95	-	V
		R_L≧2kΩ to 2.5V, Ta = -40ºC to +125ºC	4.8	-	-	
	V_{OL1}	R_L≧2kΩ to 2.5V	-	0.05	0.15	V
		R_L≧2kΩ to 2.5V, Ta = -40ºC to +125ºC	-	-	0.2	
Output Voltage2	V_{OH2}	R_L≧2kΩ to GND	4.85	4.95	-	V
		R_L≧2kΩ to GND, Ta = -40ºC to +125ºC	4.8	-	-	
	V_{OL2}	R_L≧2kΩ to GND	-	0.05	0.15	V
		R_L≧2kΩ to GND, Ta = -40ºC to +125ºC	-	-	0.2	
Output Current	I_{OUT}	V_OH≧4.75V, V_OL≦0.25V	2	10	-	mA
		V_OH≧4.75V, V_OL≦0.25V, Ta = -40ºC to +125ºC	2	-	-	
Common Mode Input Voltage Range	V_{ICM}	CMR≧80dB	0	-	3.5	V
		CMR≧70dB, Ta = -40ºC to +125ºC	0	-	3.5	
Common Mode Rejection Ratio1	CMR	V_{CM}= -0.2 V to 3.5V	80	110	-	dB
		V_{CM}= -0.2V to 3.5V, Ta = -40ºC to +125ºC	70	-	-	
Supply Voltage Rejection Ratio	SVR	V^+/V^- = ±2V to ±10V	80	110	-	dB
		V^+/V^- = ±2V to ±10V, Ta = -40ºC to +125ºC	70	-	-	
Voltage Gain	A_V	R_L=10kΩ to 2.5V, Vo=2.5V±2V	70	90	-	dB
		R_L=10kΩ to 2.5V, Vo=2.5V±2V, Ta = -40ºC to +125ºC	60	-	-	

●AC CHARACTERISTICS (V^+=5V,Ta=25°C, unless otherwise noted.)

PARAMETER	記号	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Unity Gain Frequency	fT	Gv=40dB, RL=10kΩ, CL=15pF	-	300	-	kHz
Phase Margin	φm	Gv=40dB, RL=10kΩ, CL=15pF	-	50	-	deg
Gain Margin	Gm	Gv=40dB, RL=10kΩ, CL=15pF	-	12	-	dB
Channel Separation	CS	f=1kHz, Gv=40dB, RL=10kΩ to 2.5V	-	120	-	dB

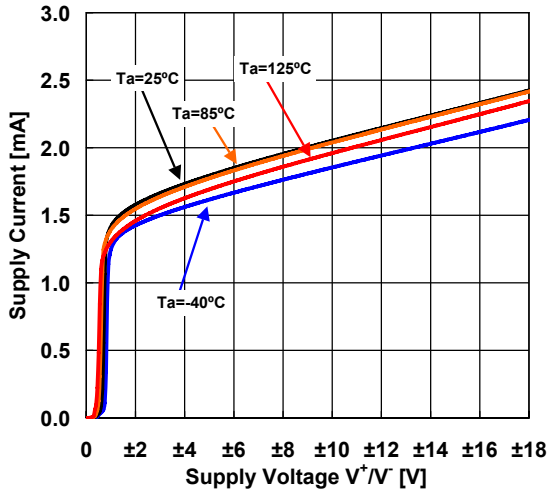
●TRANSIENT CHARACTERISTICS (V^+=5V,Ta=25°C, unless otherwise noted.)

PARAMETER	記号	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Slew Rate	SR	(Note3), AV=1, VIN=2Vpp, RL=10kΩ to 2.5V, CL=10pF	-	0.15	-	V/μs

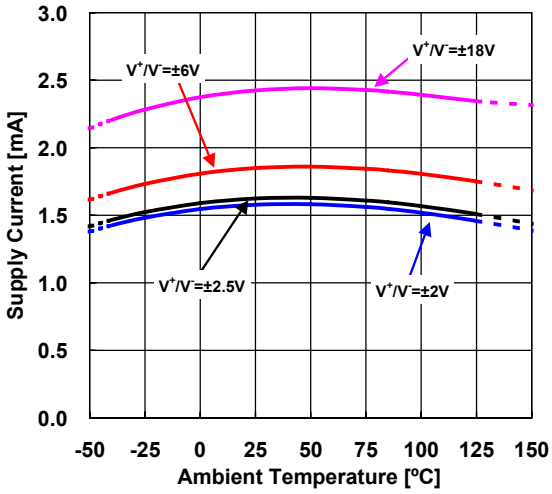
(Note3) Specified number is the slower of positive and negative slew rates.

■ TYPICAL CHARACTERISTICS

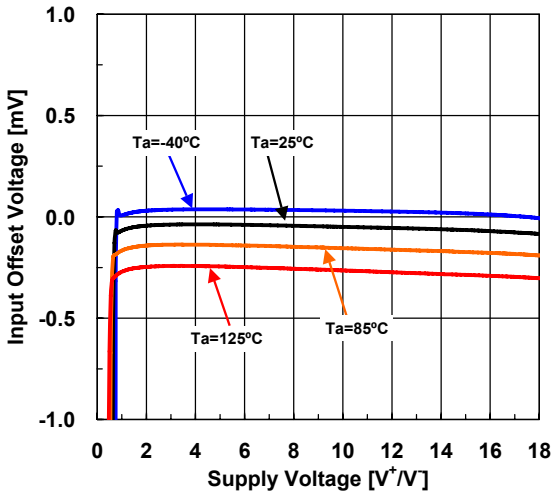
Supply Current vs. Supply Voltage (Temperature)
A_V=0dB



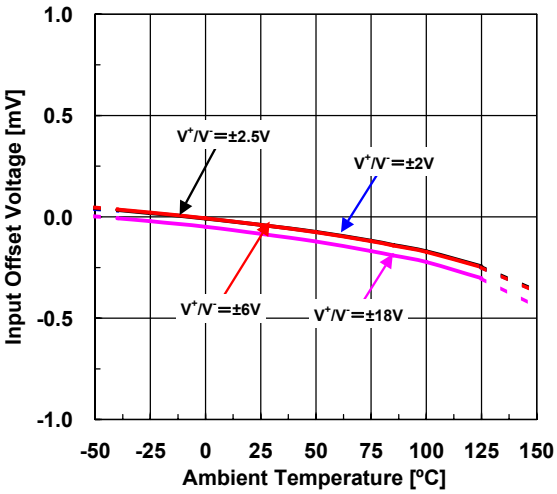
Supply Current vs. Temperature (Supply Voltage)
A_V=0dB



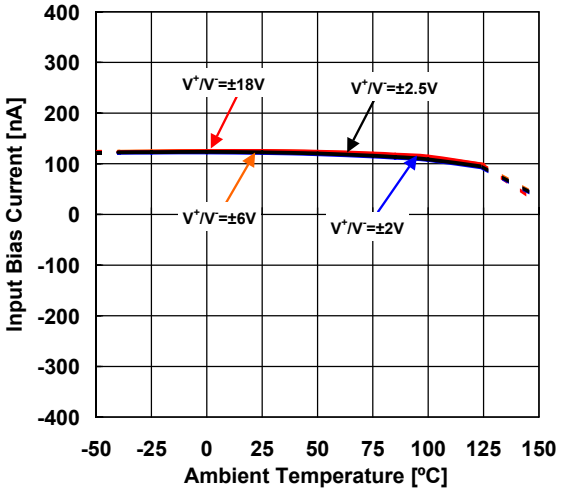
Input Offset Voltage vs. Supply Voltage (Temperature)
V_{ICM}=0V, V_{IN}=0V



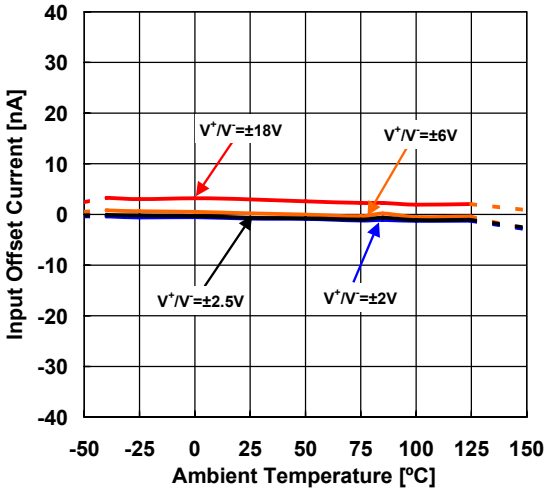
Input Offset Voltage vs. Temperature (Supply Voltage)
V_{ICM}=0V, V_{IN}=0V



Input Bias Current vs. Temperature (Supply Voltage)
V_{ICM}=0V

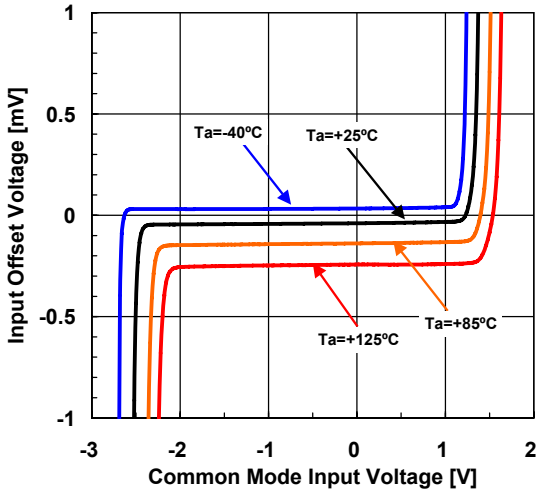


Input Offset Current vs. Temperature (Supply Voltage)
V_{ICM}=0V

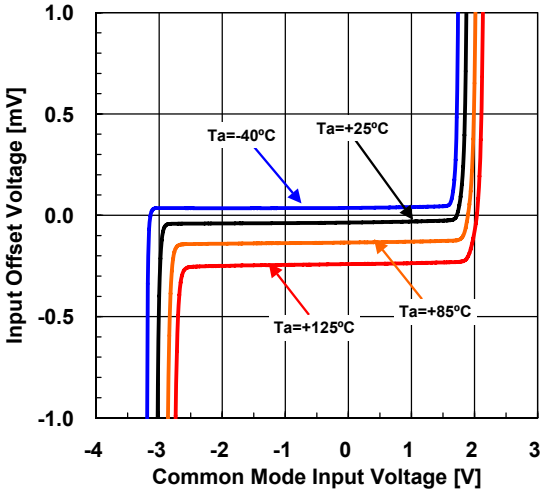


■ TYPICAL CHARACTERISTICS

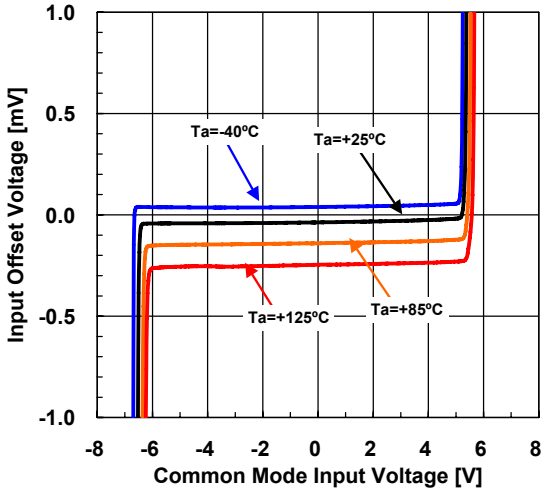
Input Offset Voltage
vs. Common Mode Input Voltage
(Temperature)
V^+/V^-=±2V



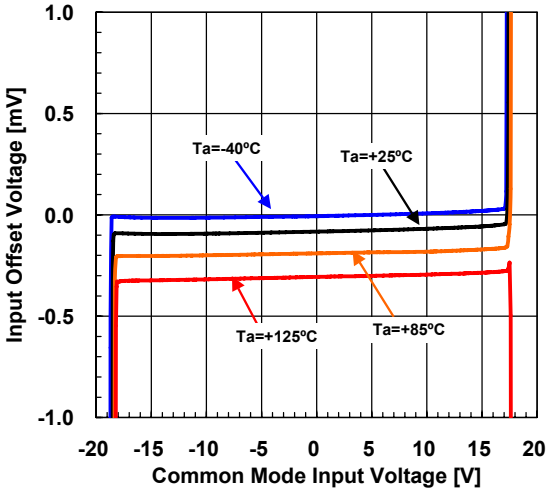
Input Offset Voltage
vs. Common Mode Input Voltage
(Temperature)
V^+/V^-=±2.5V



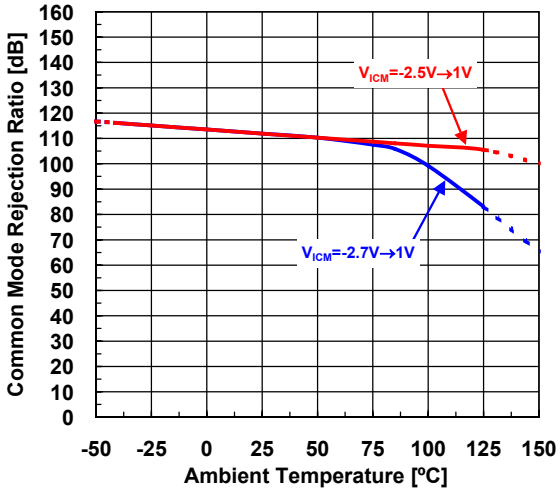
Input Offset Voltage
vs. Common Mode Input Voltage
(Temperature)
V^+/V^-=±6V



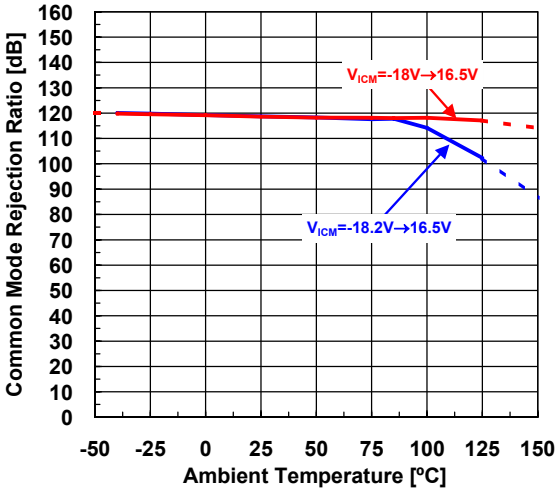
Input Offset Voltage
vs. Common Mode Input Voltage
(Temperature)
V^+/V^-=±18V



CMR vs. Temperature
V^+/V^-=±2.5V, R_L=10kΩ to 0V



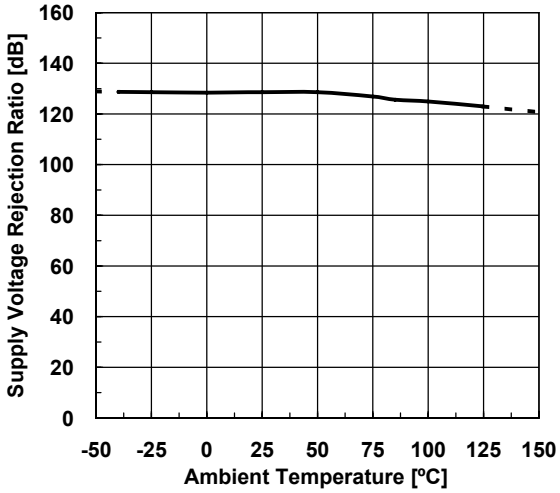
CMR vs. Temperature
V^+/V^-=±18V, R_L=10kΩ to 0V



■TYPICAL CHARACTERISTICS

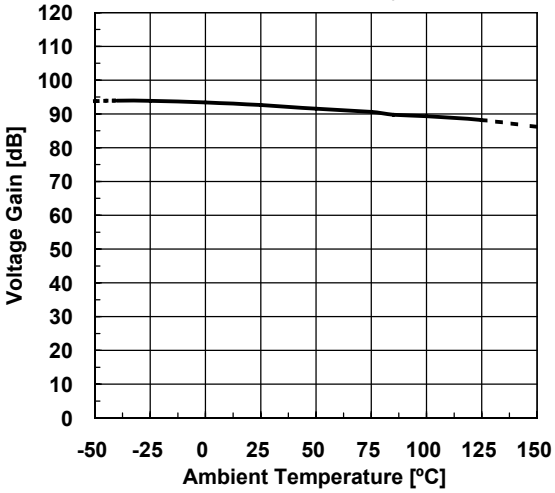
SVR vs. Temperature

V_{ICM}=0V , V^+/V^-=±2V→±8V



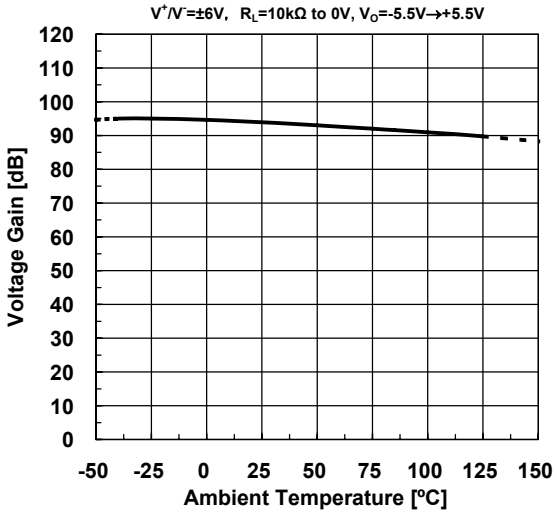
Gain vs. Temperature

V^+/V^-=±2.5V, R_L=10kΩ to 0V, V_O=-2V→+2V



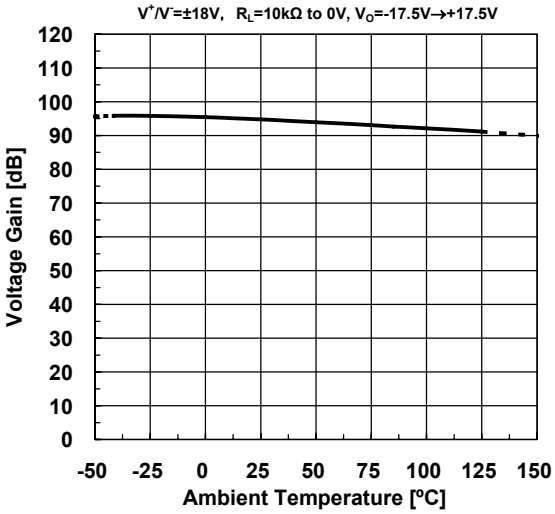
Gain vs. Temperature

V^+/V^-=±6V, R_L=10kΩ to 0V, V_O=-5.5V→+5.5V



Gain vs. Temperature

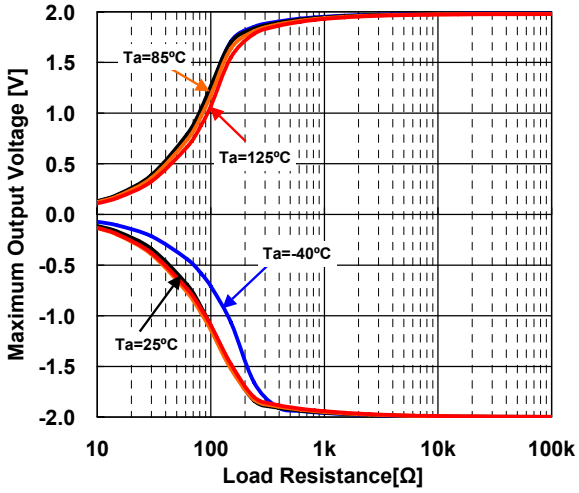
V^+/V^-=±18V, R_L=10kΩ to 0V, V_O=-17.5V→+17.5V



Maximum Output Voltage vs. Load Resistance

(Temperature)

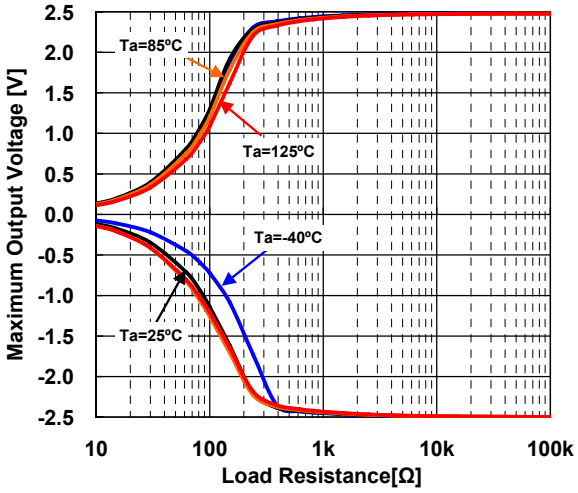
V^+/V^-=±2V, Gv=open, R_L to 0V



Maximum Output Voltage vs. Load Resistance

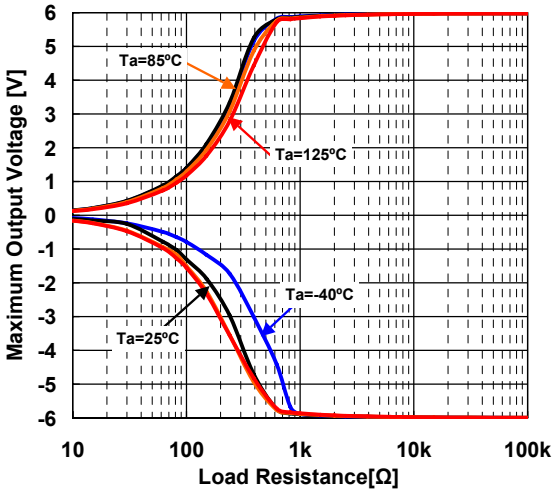
(Temperature)

V^+/V^-=±2.5V, Gv=open, R_L to 0V

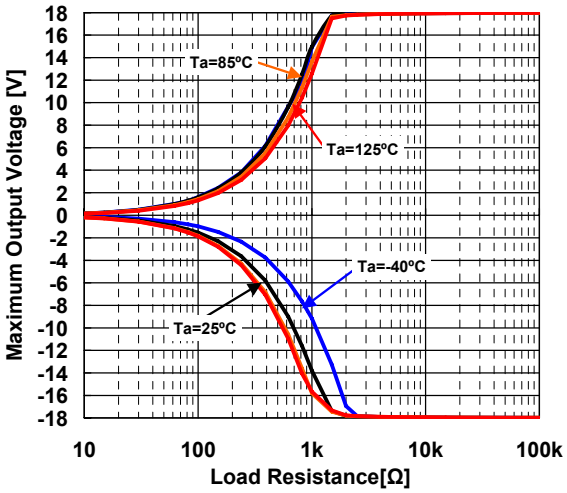


■TYPICAL CHARACTERISTICS

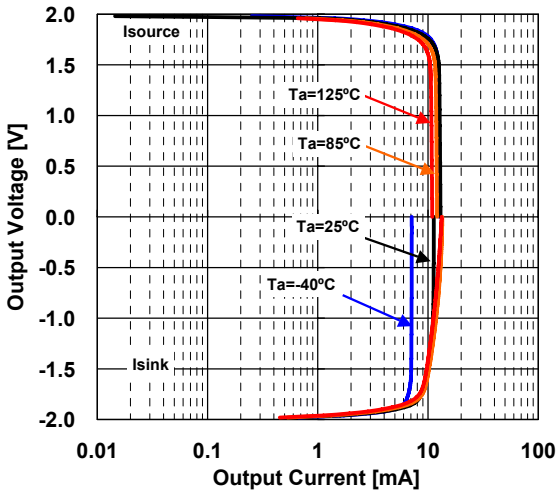
Maximum Output Voltage vs. Load Resistance
(Temperature)
V^+/V^-=±6V, Gv=open, R_L to 0V



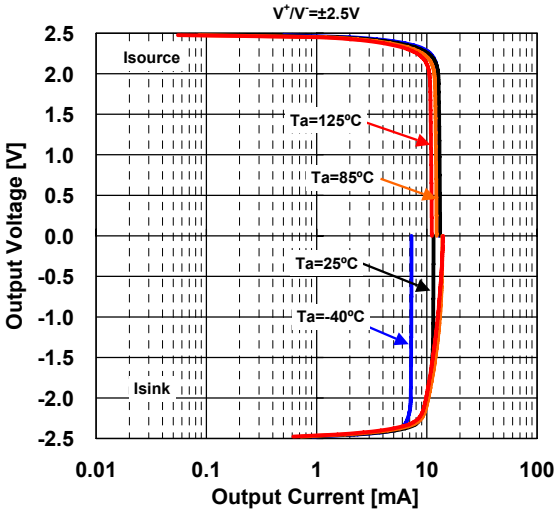
Maximum Output Voltage vs. Load Resistance
(Temperature)
V^+/V^-=±18V, Gv=open, R_L to 0V



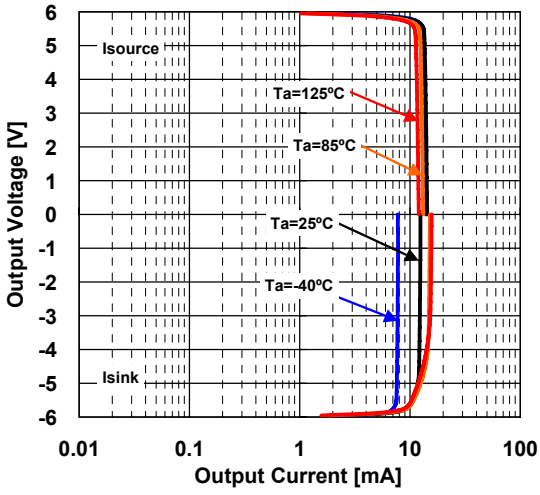
Output Voltage vs. Output Current (Temperature)
V^+/V^-=±2V



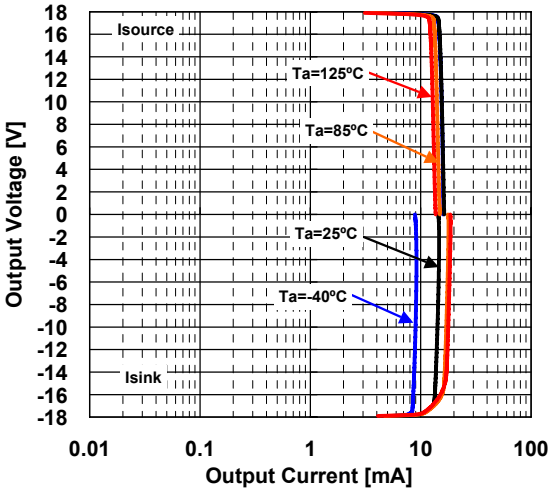
Output Voltage vs. Output Current (Temperature)
V^+/V^-=±2.5V



Output Voltage vs. Output Current (Temperature)
V^+/V^-=±6V



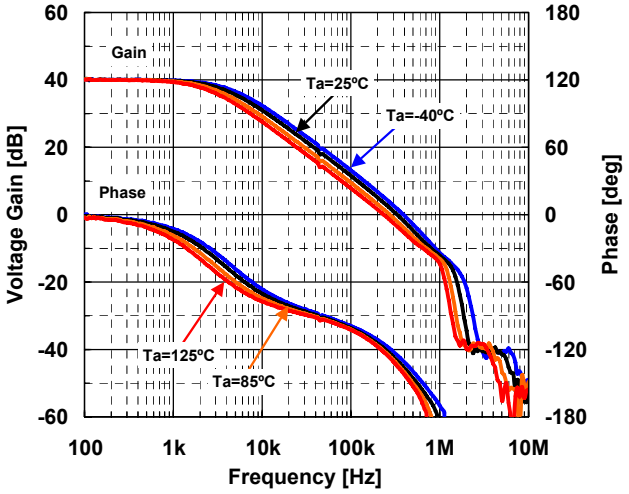
Output Voltage vs. Output Current (Temperature)
V^+/V^-=±18V



■TYPICAL CHARACTERISTICS

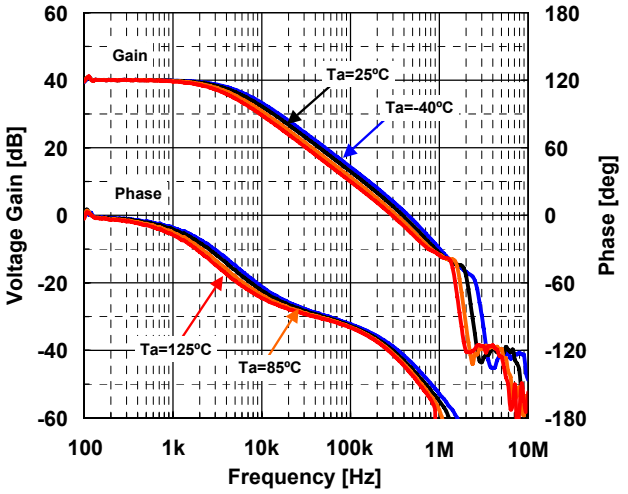
Gain vs. Frequency (Temperature)

V^+/V^-=±2.5V, A_V=+100, R_S=100Ω, R_T=50Ω,
R_L=2kΩ, C_L=15pF, V_{IN}=-30dBm



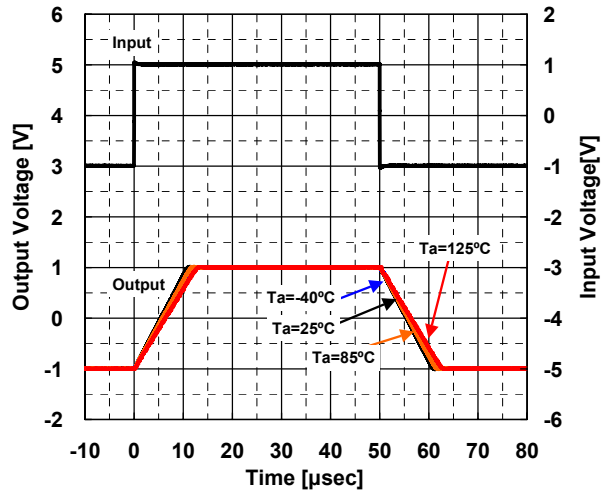
Gain vs. Frequency (Temperature)

V^+/V^-=±18V, A_V=+100, R_S=100Ω, R_T=50Ω,
R_L=2kΩ, C_L=15pF, V_{IN}=-30dBm



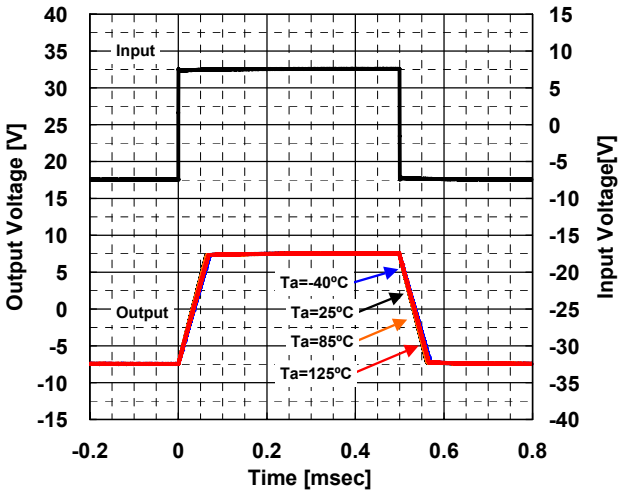
Pulse Response (Temperature)

V^+/V^-=±2.5V, V_{IN}=$2V_{P-P}$, f=10kHz,
PulseEdge=10nsec, Gv=0dB, R_L=2kΩ, C_L=15pF



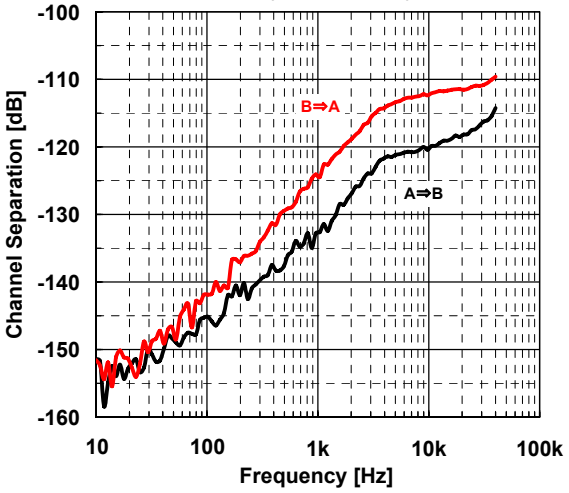
Pulse Response (Temperature)

V^+/V^-=±18V, V_{IN}=$15V_{P-P}$, f=1kHz,
PulseEdge=10nsec, Gv=0dB, R_L=2kΩ, C_L=15pF



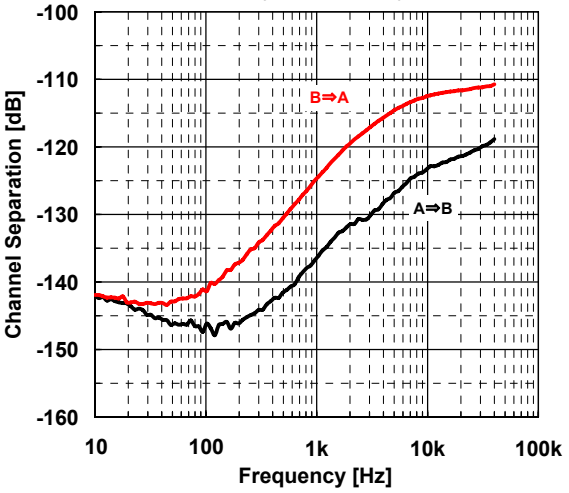
Channel Separation vs. Frequency

V^+/V^-=±2.5V, A_V=-100, R_S=1kΩ, R_L=2kΩ, V_O=1Vrms, Ta=25ºC

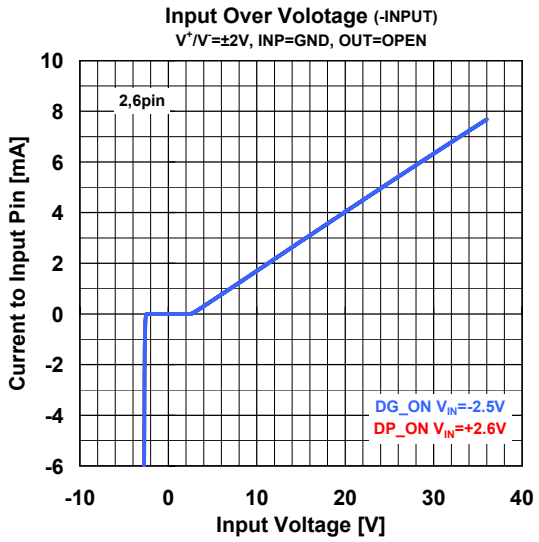


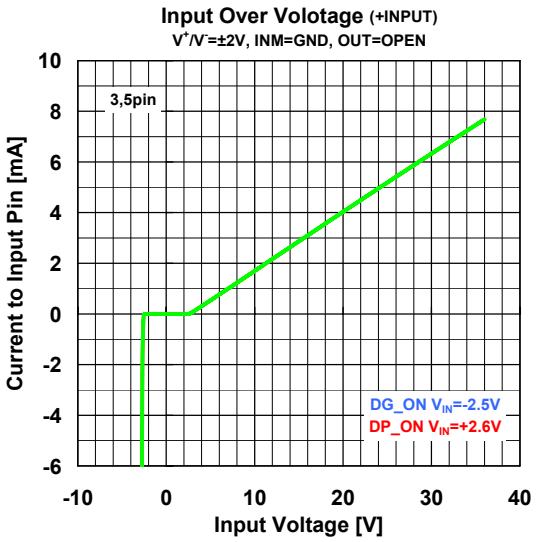
Channel Separation vs. Frequency

V^+/V^-=±18V, A_V=-100, R_S=1kΩ, R_L=2kΩ, V_O=15Vrms, Ta=25ºC



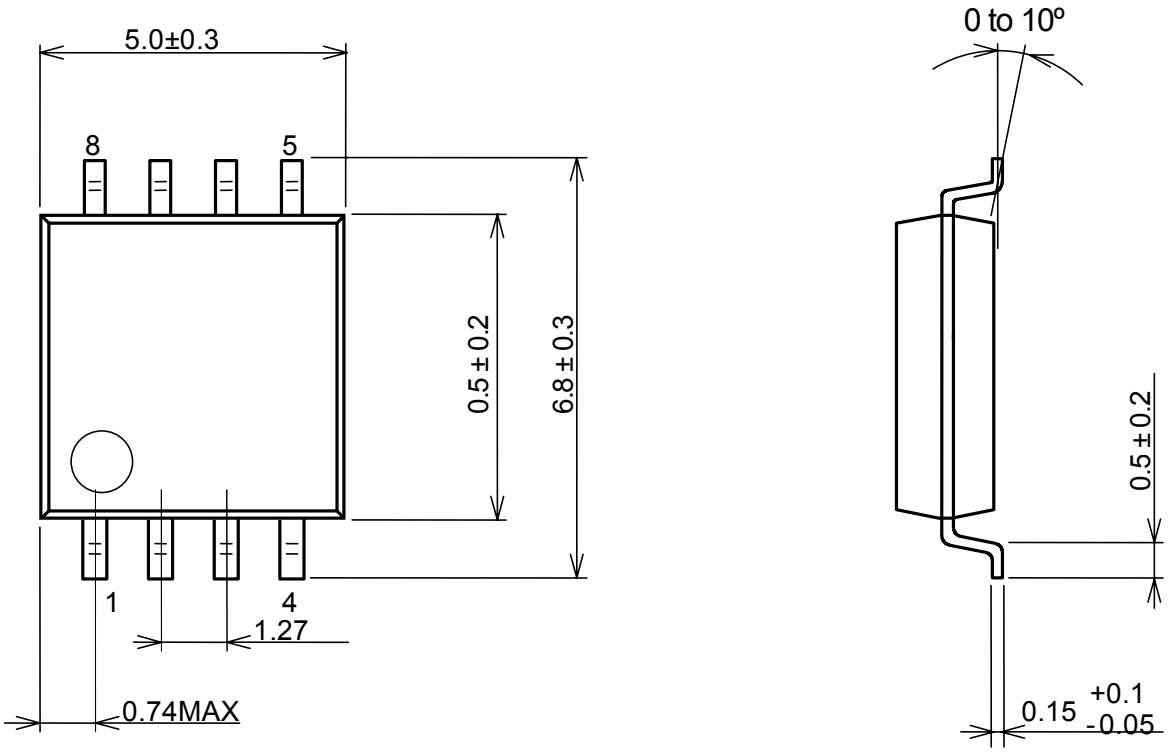
■ TYPICAL CHARACTERISTICS





■ **PACKAGE DIMENSIONS**

DMP8



Unit :mm

[CAUTION]
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