DUAL OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

The NJM8065 integrated circuit is a high-gain, wide bandwidth, dual operational amplifier.

The NJM8065 combines many of the features of the NJM4558 as well as providing the capability of wider bandwidth (10MHz typ.), and higher slew rate (4V/μs typ.) make the NJM8065 ideal for active filters, data and telecommunications, and many instrumentation applications.

■ PACKAGE OUTLINE

NJM8065G (SOP8)

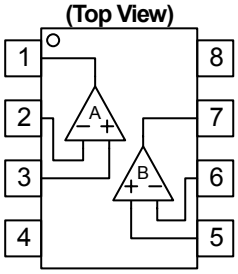
NJM8065M (DMP8)

NJM8065CRB1 (U.D) (MSOP8 (TVSP8))

■ FEATURES

- Operating Voltage ±4V to ±18V
- Wide Gain Bandwidth Product 10MHz typ.
- Slew Rate 4V/μs typ.
- Package Outline SOP8, DMP8
  MSOP8 (TVSP8)* (U.D.)
  *MEET JEDEC MO-187-DA / THIN TYPE
- Bipolar Technology
- Internal ESD protection
  Human body model (HBM) ±2000V typ.
- Wide temperature range -40°C to +125°C

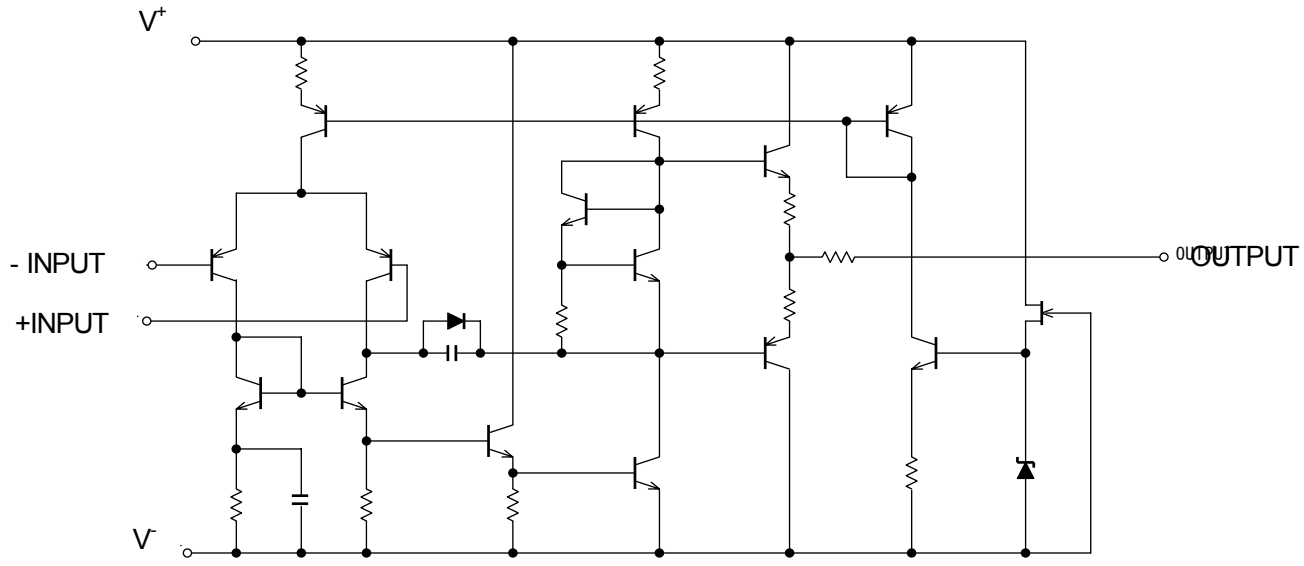
■ PIN CONFIGURATION



NJM8065G
NJM8065M
NJM8065CRB1

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

■ EQUIVALENT CIRCUIT (1/2 Shown)



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

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+/V^-	±18	V
Differential Input Voltage (Note1)	V_{ID}	±36	V
Input Voltage (Note2)	V_{IN}	V^--0.3 to V^-+36	V
Output Terminal Input Voltage	Vo	V^--0.3 to V^++0.3	V
Power Dissipation	P_D	SOP : 690(Note3) 1000(Note4) DMP : 470(Note3) 600(Note4) MSOP : TBD	mW
Operating Temperature Range	T_{opr}	-40~+125	°C
Storage Temperature Range	T_{stg}	-65~+150	°C

(Note1) Differential voltage is the voltage difference between +INPUT and -INPUT.
(Note2) Input voltage is the voltage should be allowed to apply to the input terminal independent of the magnitude of V+.
The normal operation will establish when any input is within the Common Mode Input Voltage Range of electrical characteristics.
(Note3) EIA/JEDEC STANDARD Test board (76.2 x 114.3 x 1.6mm, 2layers, FR-4) mounting
(Note4) EIA/JEDEC STANDARD Test board (76.2 x 114.3 x 1.6mm, 4layers, FR-4) mounting

■ RECOMMENDED OPERATING CONDITIONS (Ta=25ºC)

PARAMETER	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V^+/V^-		±4	-	±18	V

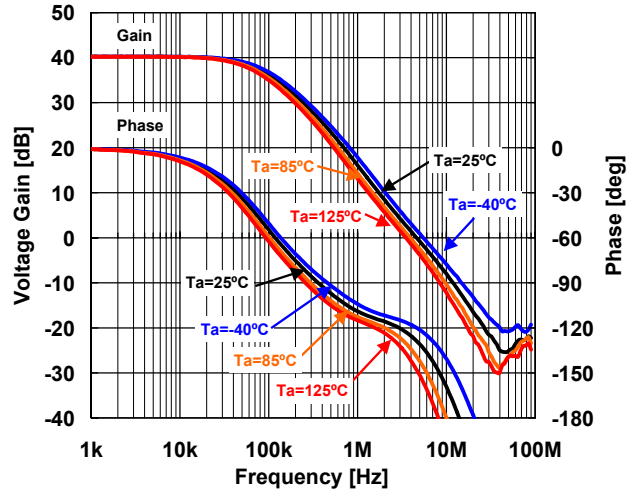
■ ELECTRICAL CHARACTERISTICS (V^+/V^-=±15V, Ta=25ºC, unless otherwise noted.)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{IO}	R_S≤10kΩ	-	0.5	3	mV
Input Offset Current	I_{IO}		-	2	50	nA
Input Bias Current	I_B		-	50	200	nA
Input Resistance	R_{IN}		-	1	-	MΩ
Large Signal Voltage Gain	A_V	R_L≥2kΩ, V_O=±10V	86	100	-	dB
Maximum Output Voltage Swing 1	V_{OM1}	R_L≥2kΩ	± 12	± 14	-	V
Maximum Output Voltage Swing 2	V_{OM2}	I_O=25mA	± 10	± 11.5	-	V
Input Common Mode Voltage Range	V_{ICM}		± 12	± 14	-	V
Common Mode Rejection Ratio	CMR	R_S≤10kΩ	70	95	-	dB
Supply Voltage Rejection Ratio	SVR	R_S≤10kΩ	76.5	100	-	dB
Operating Current	I_{CC}		-	4.5	7	mA
Slew Rate	SR		-	4	-	V/μs
Gain Bandwidth Product	GBP	f=10kHz	-	10	-	MHz
Equivalent Input Noise Voltage	e_n	f=1kHz	-	8	-	nV/√Hz

■ TYPICAL CHARACTERISTICS

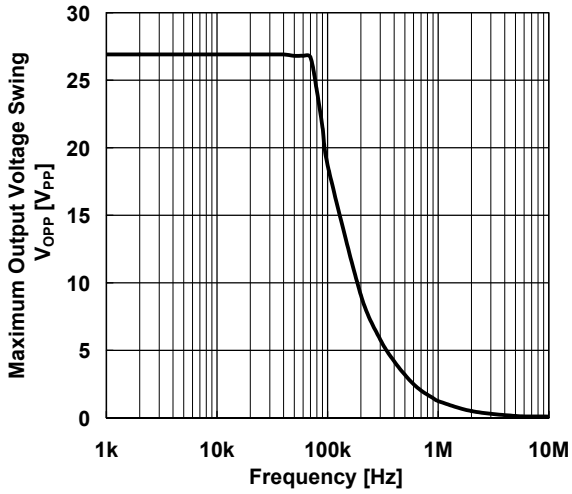
Gain/Phase vs. Frequency

V^+/V^-=±15V, R_L=2kΩ, G_V=40dB



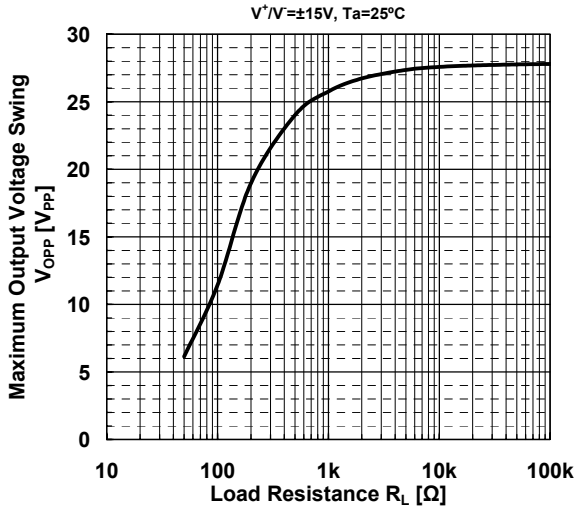
Maximum Output Voltage Swing vs. Frequency

V^+/V^-=±15V, R_L=2kΩ, Ta=25°C



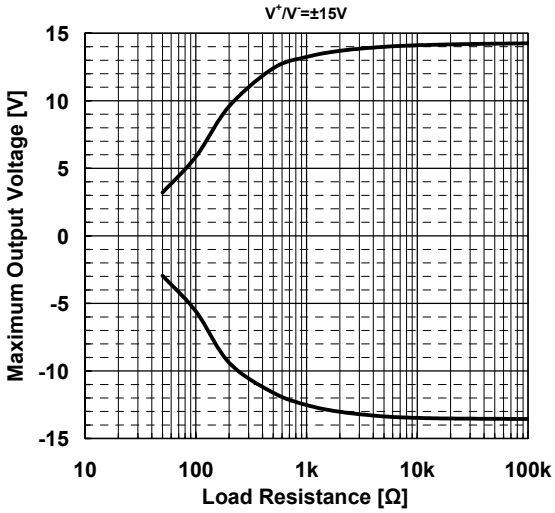
Maximum Output Voltage Swing vs. Load Resistance

V^+/V^-=±15V, Ta=25°C



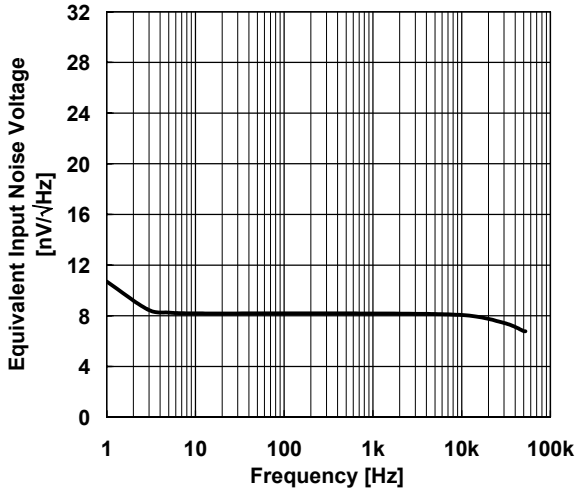
Maximum Output Voltage vs. Load Resistance

V^+/V^-=±15V



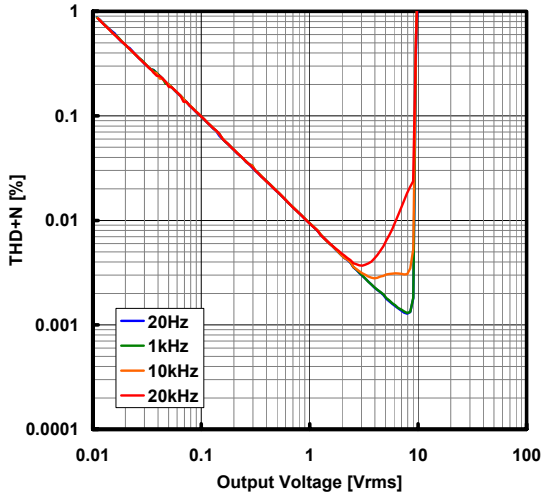
Voltage Noise vs. Frequency

V^+/V^-=±15V, G_V=40dB, R_F=2kΩ , Ta=25°C



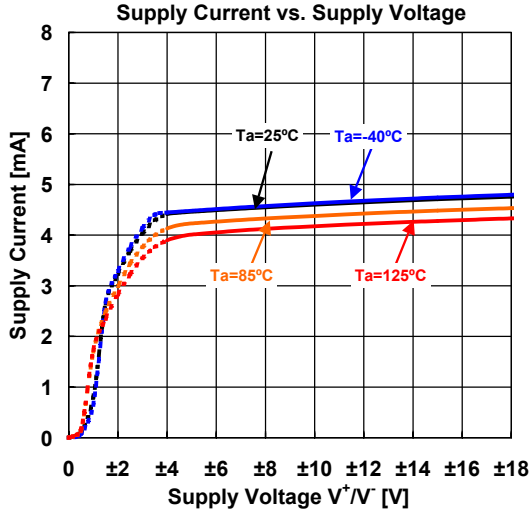
THD+N vs. Output Voltage

V^+/V^-=±15V,G_V=20dB,R_G=10kΩ,R_S=200Ω,R_F=2kΩ,Ta=25°C

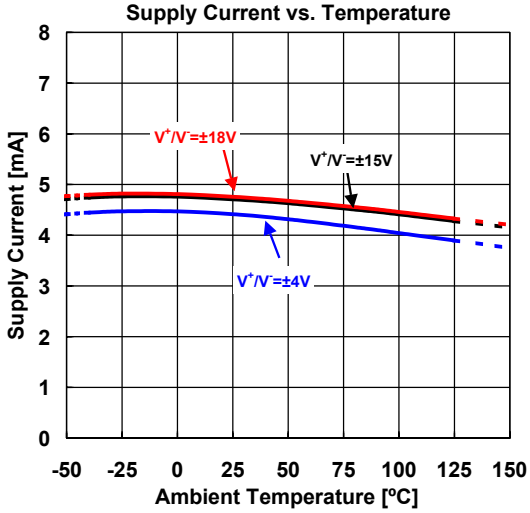


■ TYPICAL CHARACTERISTICS

Supply Current vs. Supply Voltage

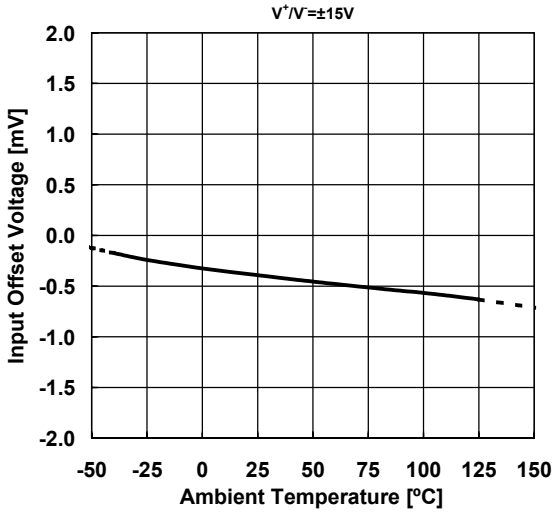


Supply Current vs. Temperature



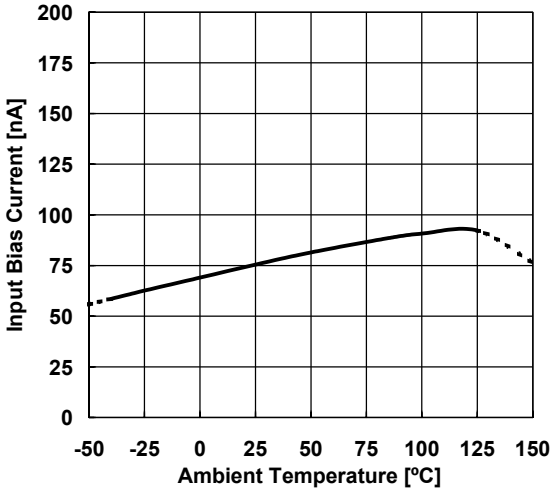
Input Offset Voltage vs. Temperature

V+/V-=±15V



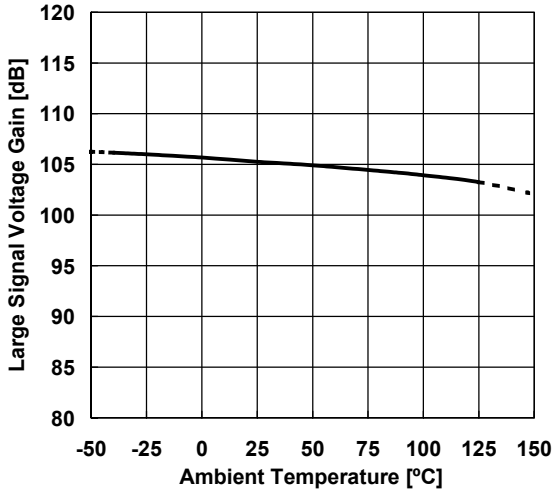
Input Bias Current vs. Temperature

V+/V-=±15V



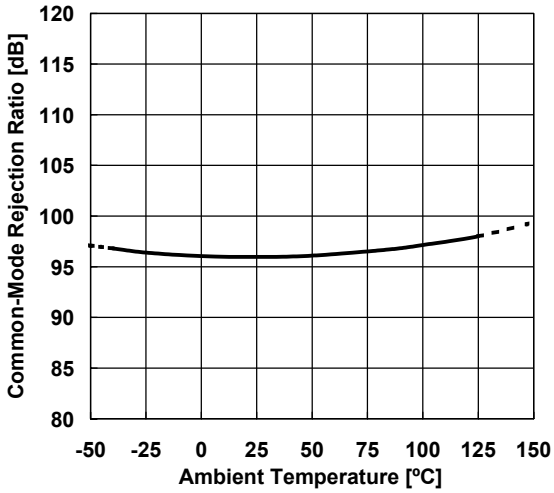
Large Signal Voltage Gain vs. Temperature

V+/V-=±15V

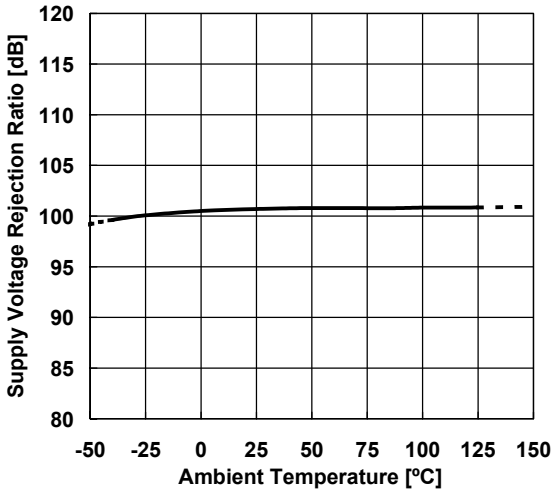


■ TYPICAL CHARACTERISTICS

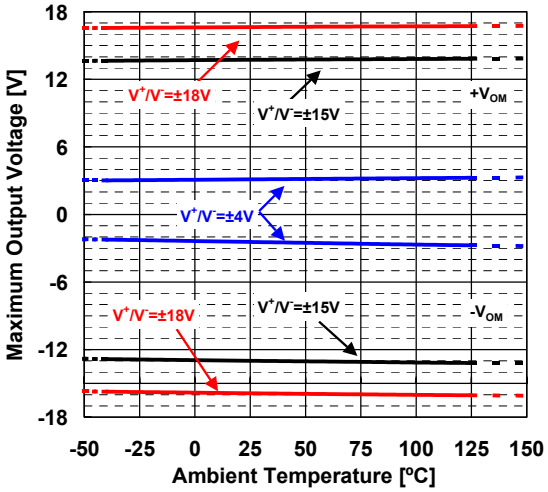
CMR vs. Temperature
V^+/V^-=±15V



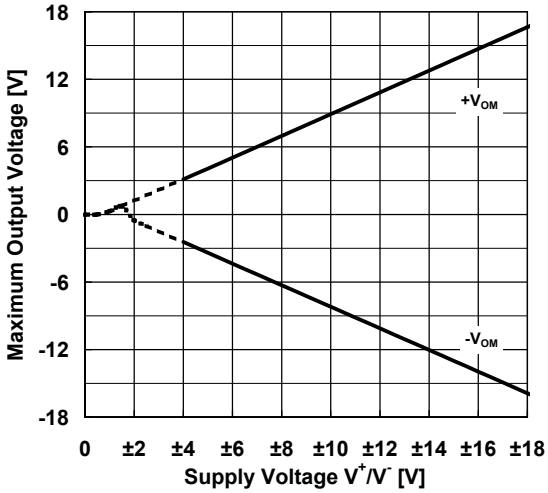
SVR vs. Temperature
V^+/V^-=±15V



Maximum Output Voltage vs. Temperature
R_L=2kΩ

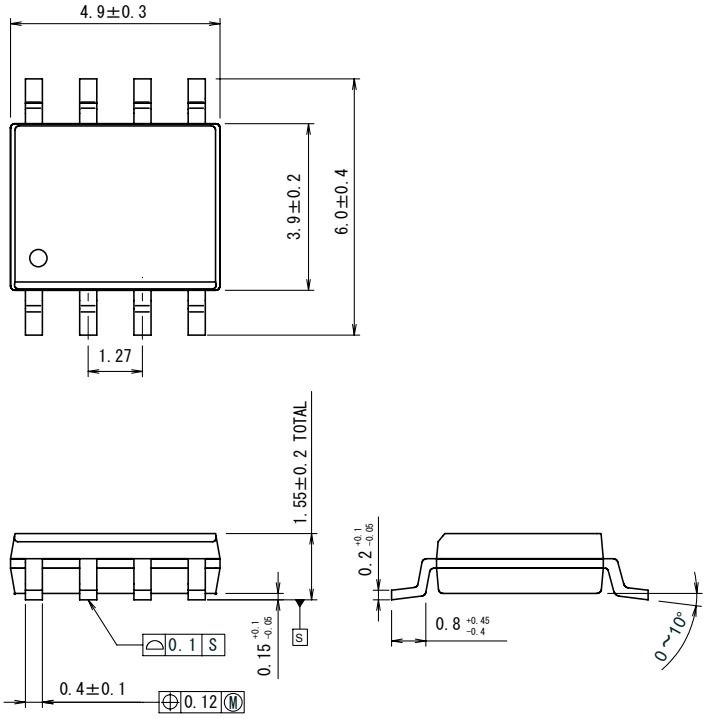


Maximum Output Voltage vs. Supply Voltage
R_L=2kΩ, Ta=25ºC

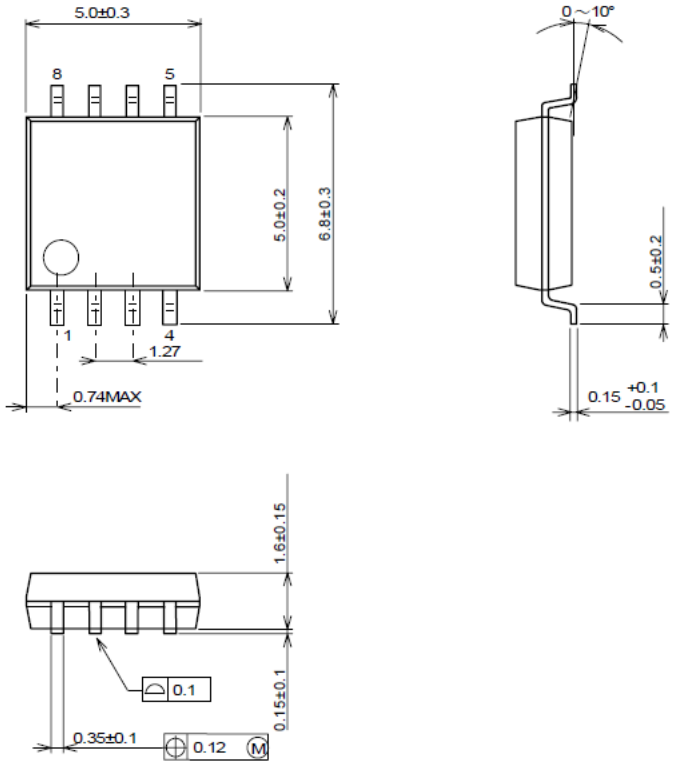


■PACKAGE OUTLINE UNIT : mm

SOP8



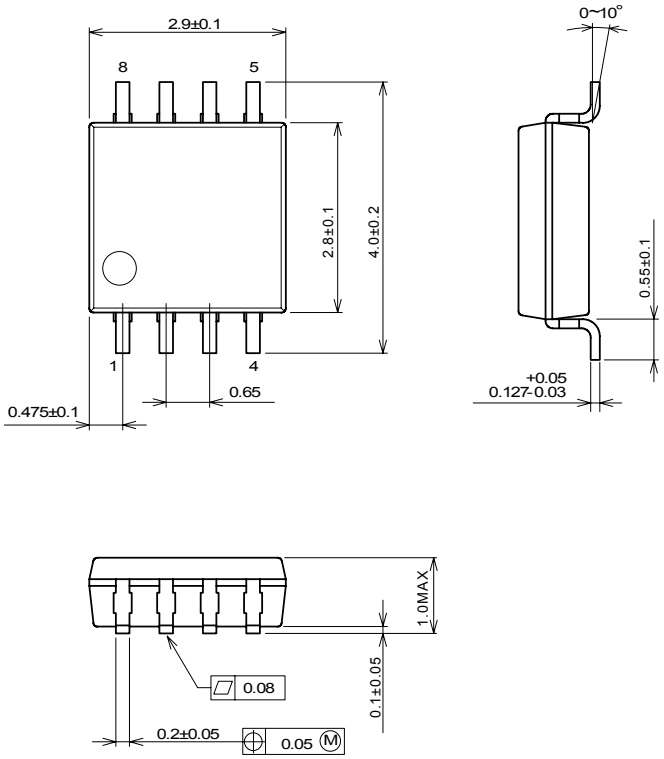
DMP8



■PACKAGE OUTLINE UNIT : mm

MSOP8 (TVSP8)* (U.D.)

*MEET JEDEC MO-187-DA / THIN TYPE



[CAUTION]
The specifications on this databook are only given for information , without any guarantee as regards either mistakes or omissions. The application circuits in this databook are described only to show representative usages of the product and not intended for the guarantee or permission of any right including the industrial rights.