DUAL OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

The NJM4558C integrated circuit is a dual high-gain operational amplifier internally compensated and constructed on a single silicon chip.

Combining the features of the NJM741 with the close parameter matching and tracking of a dual device on a monolithic chip results in unique performance characteristics. Excellent channel separation allows the use of the dual device in single NJM741 operational amplifier applications providing density. It is especially well suited for applications in differential-in, differential-out as well as in potentiometric amplifiers and where gain and phase matched channels are mandatory.

■ PACKAGE OUTLINE



NJM4558CG
(SOP8)

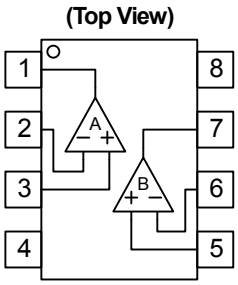


NJM4558CV
(SSOP8)

■ FEATURES

- Operating Voltage ±4V~±18V
- High Voltage Gain 100dB typ.
- High Input Resistance 5MΩ typ.
- Bipolar Technology
- Package Outline SOP8,SSOP8
- Internal ESD protection
  Human body model (HBM) ±2000V typ.

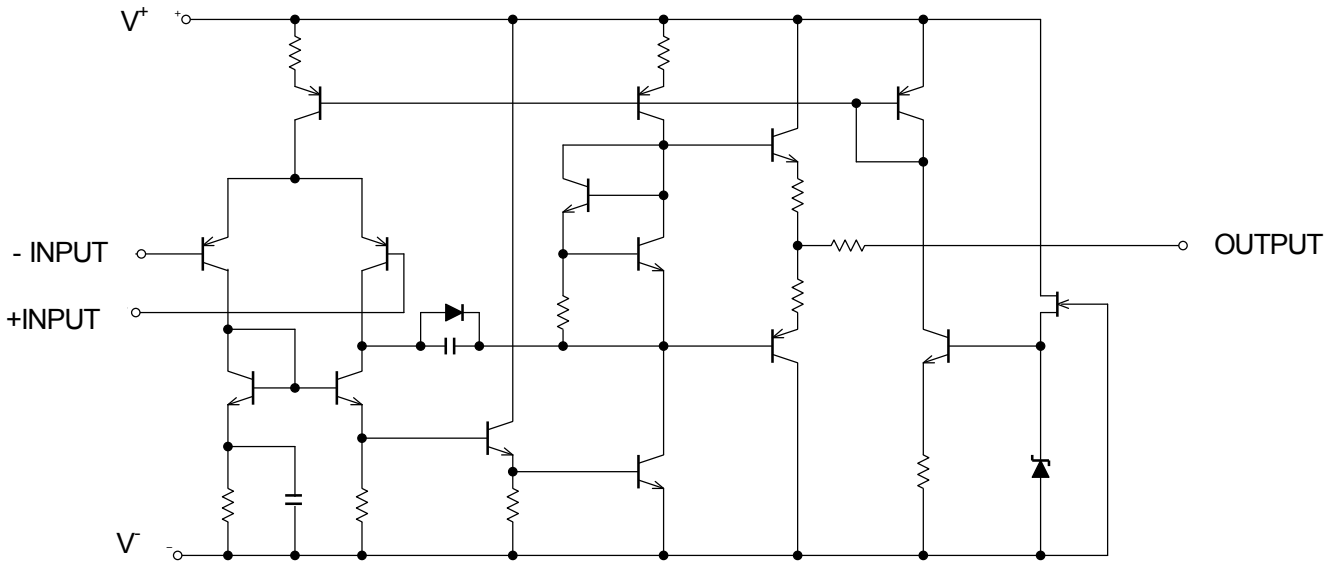
■ PIN CONFIGURATION



NJM4558CG
NJM4558CV

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	RATING	UNIT
Supply Voltage	V^+/V^-	±18	V
Differential Input Voltage (Note1) (Note2)	V_{ID}	±36	V
Input Voltage (Note2)	V_{IC}	±18	V
Power Dissipation	P_D	SOP : 550 (Note3) 820(Note4) SSOP : 350 (Note3) 440(Note4)	mW
Operating Temperature Range	Topr	- 40~+85	ºC
Storage Temperature Range	Tstg	- 65~+125	ºC

(Note1) Differential voltage is the voltage difference between +INPUT and -INPUT.

(Note2) For supply voltage less than ±15V, the absolute maximum rating is equal to the supply voltage.
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

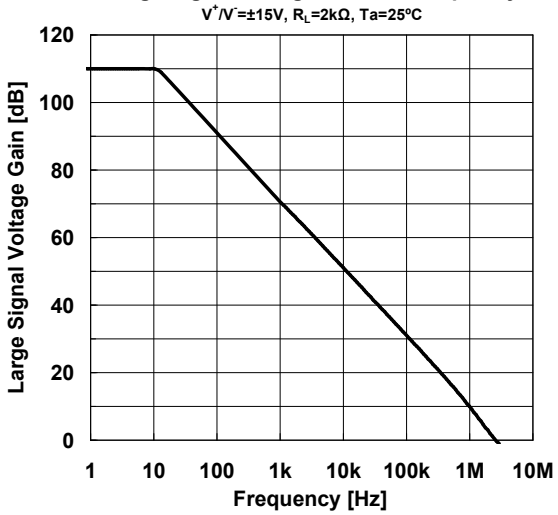
■ ELECTRICAL CHARACTERISTICS (V^+/V^-=±15V, Ta=25ºC, unless otherwise noted.)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{IO}	R_S≤10kΩ	-	0.5	6	mV
Input Offset Current	I_{IO}		-	5	200	nA
Input Bias Current	I_B		-	25	500	nA
Input Resistance	R_{IN}		-	3	-	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≥10kΩ	± 12	± 14	-	V
Maximum Output Voltage Swing 2	V_{OM2}	R_L≥2kΩ	± 10	± 13	-	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}		-	3.5	5.7	mA
Slew Rate	SR		-	1.5	-	V/μs
Gain Bandwidth Product	GBP	f=10kHz	-	3.5	-	MHz
Equivalent Input Noise Voltage1	V_{NI}	RIAA, R_S=2.2kΩ, 30kHz LPF	-	1.4	-	μVrms
Equivalent Input Noise Voltage2	e_n	f=1kHz	-	12	-	nV/√Hz

■ TYPICAL CHARACTERISTICS

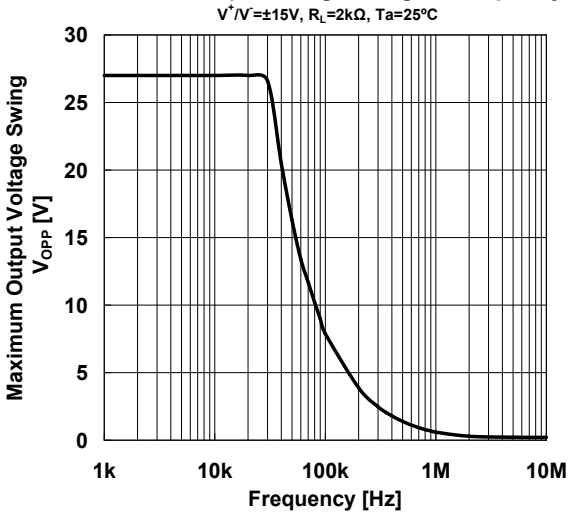
Large Signal Voltage Gain vs. Frequency

V^+/V^-=±15V, R_L=2kΩ, Ta=25ºC



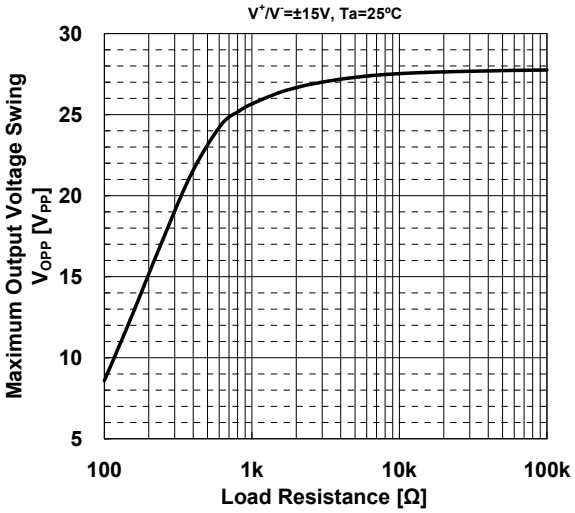
Maximum Output Voltage Swing vs. Frequency

V^+/V^-=±15V, R_L=2kΩ, Ta=25ºC



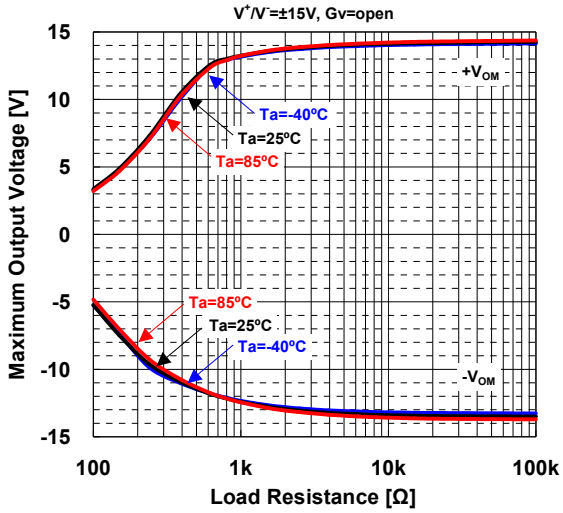
Maximum Output Voltage Swing vs. Load Resistance

V^+/V^-=±15V, Ta=25ºC



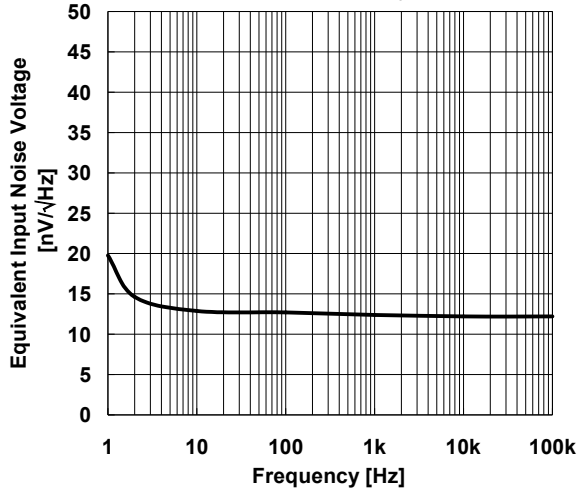
Maximum Output Voltage vs. Load Resistance

V^+/V^-=±15V, Gv=open



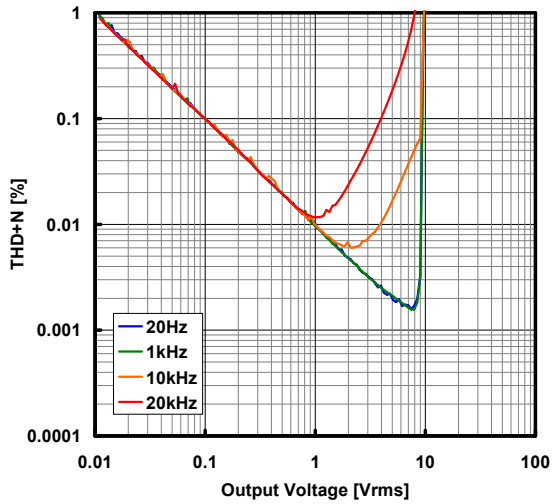
Voltage Noise vs. Frequency

V^+/V^-=±15V, Gv=20dB, R_F=500Ω, R_S=50Ω, Ta=25ºC



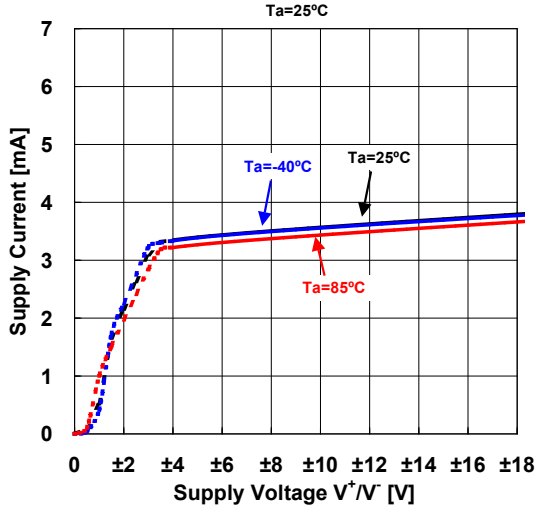
THD+N vs. Output Voltage

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

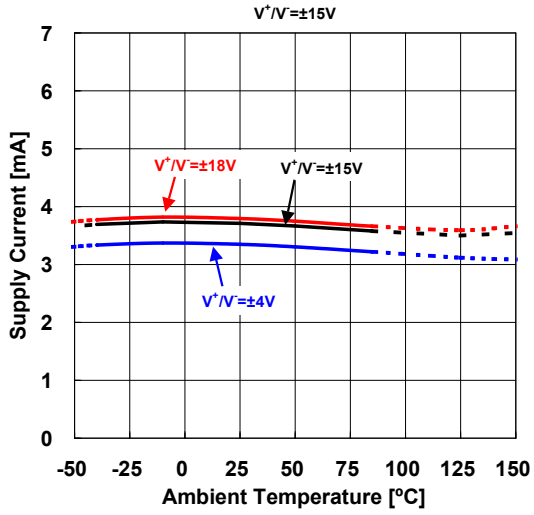


■ TYPICAL CHARACTERISTICS

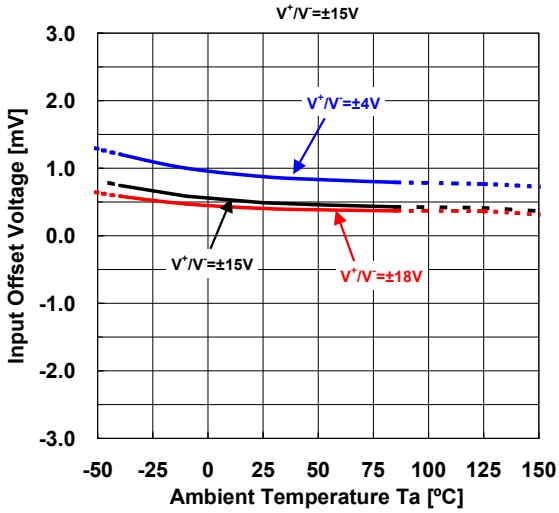
Supply Current vs. Supply Voltage
Ta=25ºC



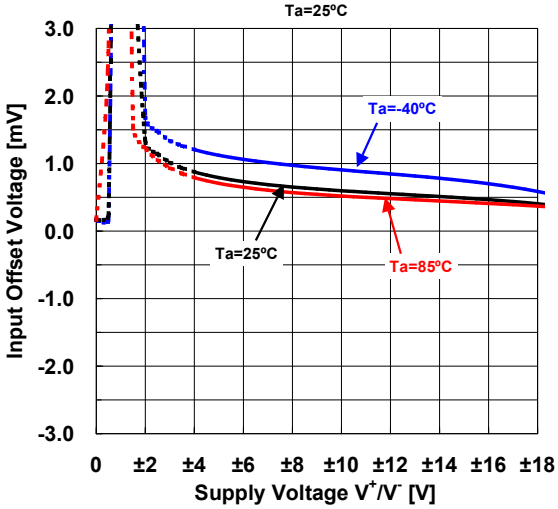
Supply Current vs. Temperature
V+/V-=±15V



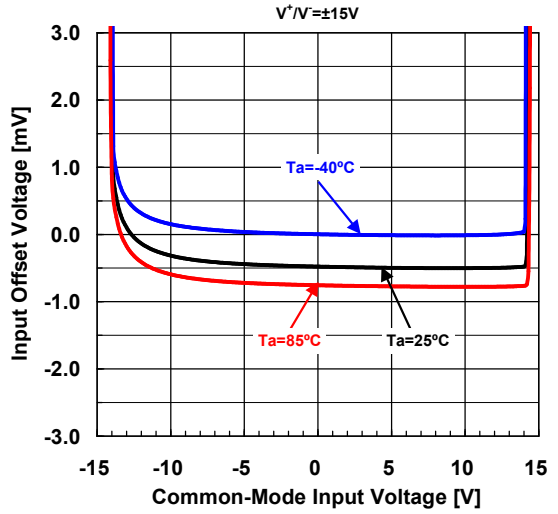
Input Offset Voltage vs. Temperature
V+/V-=±15V



Input Offset Voltage vs. Supply Voltage
Ta=25ºC

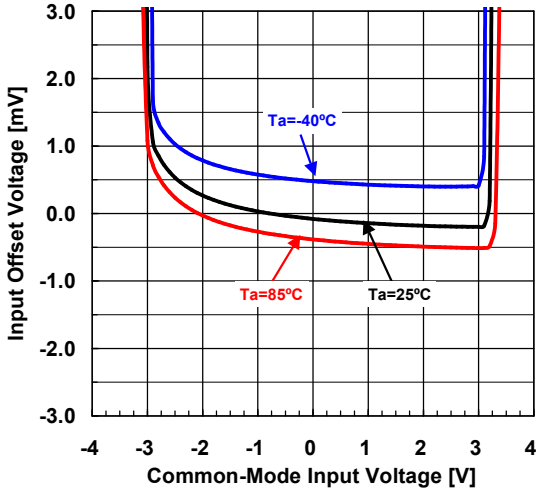


Input Offset Voltage
vs. Common-Mode Input Voltage
V+/V-=±15V

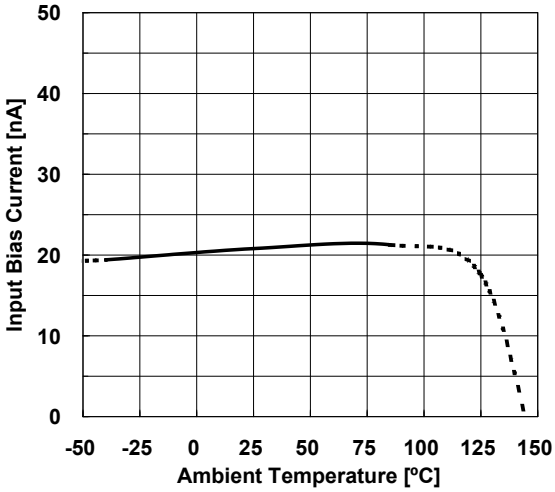


■ TYPICAL CHARACTERISTICS

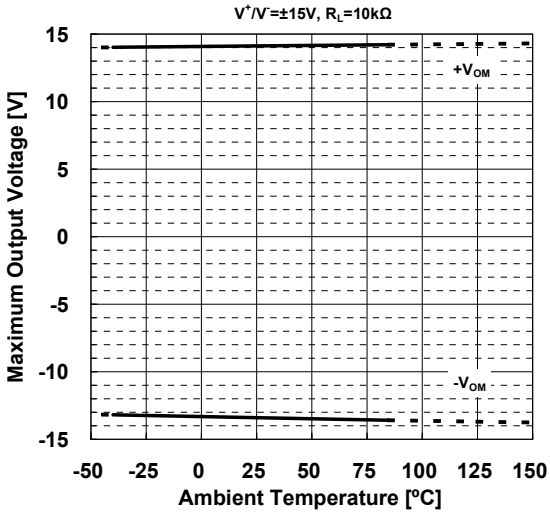
Input Offset Voltage
vs. Common-Mode Input Voltage
V^+/V^-=±4V



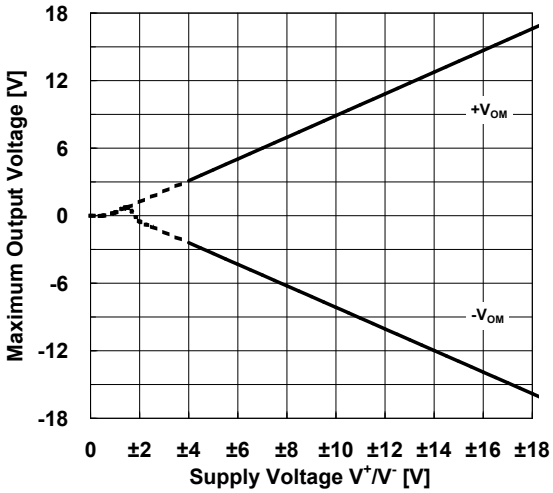
Input Bias Current vs. Temperature
V^+/V^-=±15V



Maximum Output Voltage Swing vs. Temperature
V^+/V^-=±15V, R_L=10kΩ

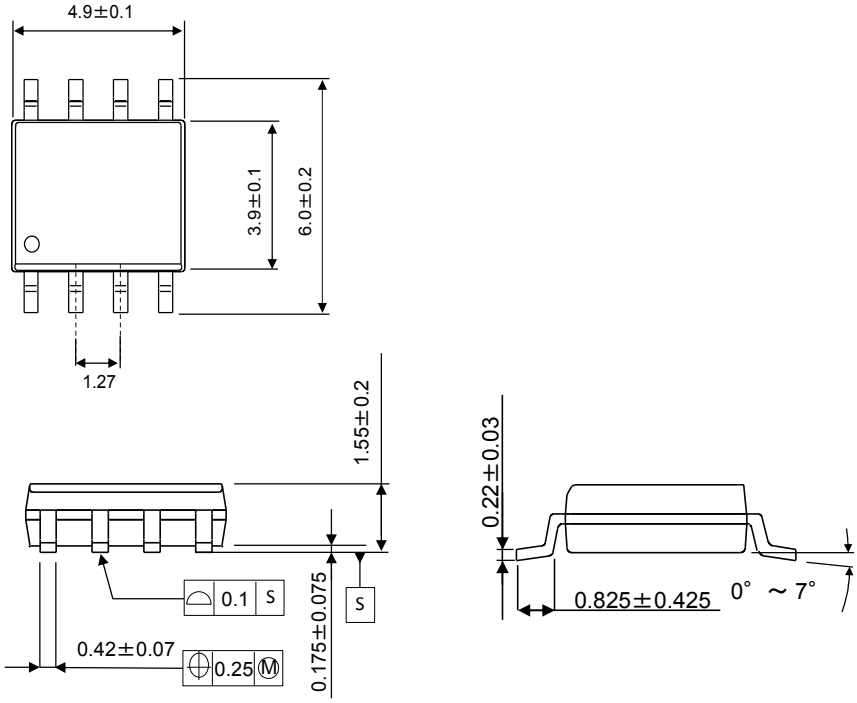


Maximum Output Voltage Swing
vs. Supply Voltage
R_L=2kΩ, Ta=25ºC



■**PACKAGE OUTLINE UNIT : mm**

SOP8



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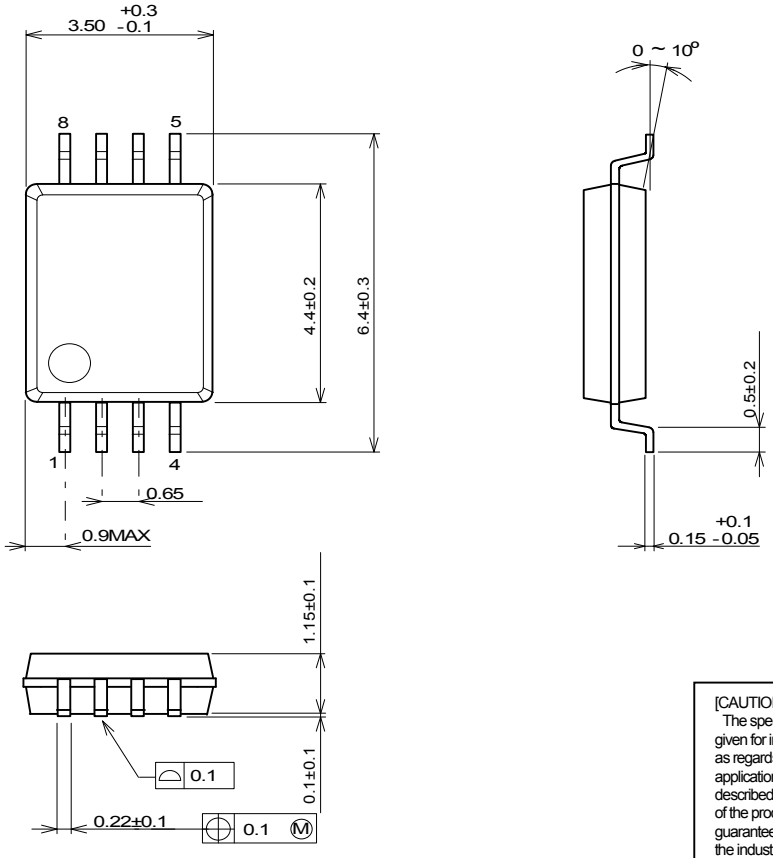

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