

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.

■ FEATURES

- Operating Voltage $\pm 4V \sim \pm 18V$
- High Voltage Gain 100dB typ.
- High Input Resistance $5M\Omega$ typ.
- Bipolar Technology
- Package Outline SOP8, SSOP8
- Internal ESD protection
Human body model (HBM) $\pm 2000V$ typ.

■ PACKAGE OUTLINE

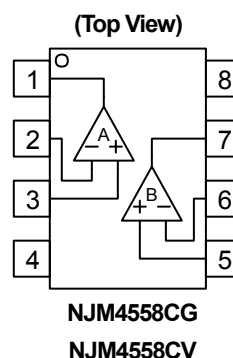


NJM4558CG
(SOP8)



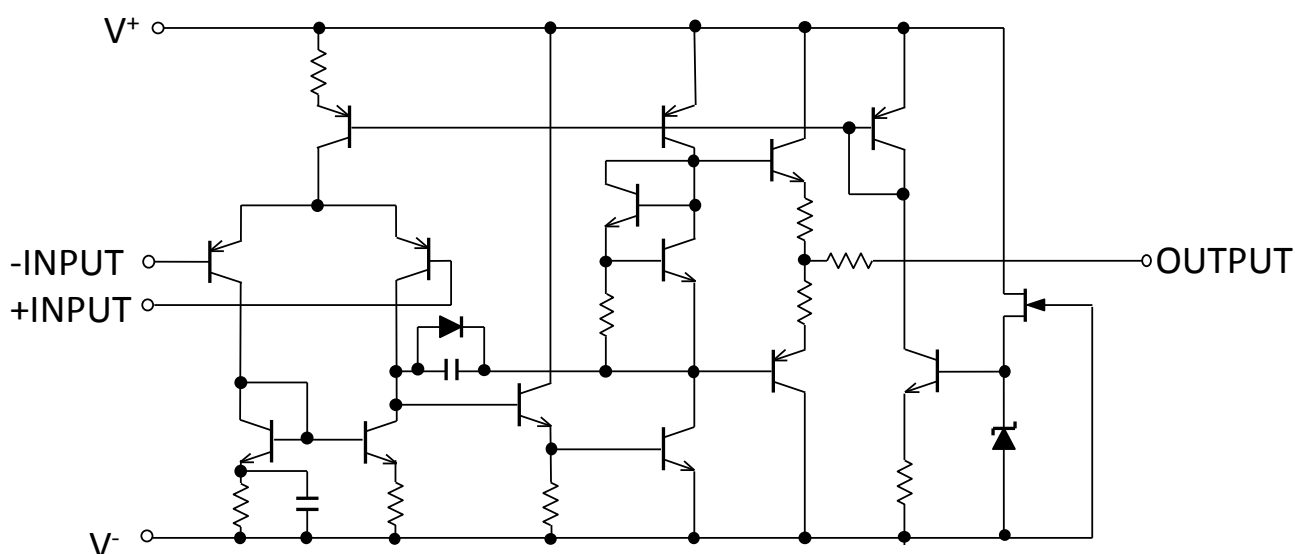
NJM4558CV
(SSOP8)

■ PIN CONFIGURATION



- 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)



NJM4558C

■ 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	T_{opr}	-40~+85	°C
Storage Temperature Range	T_{stg}	-65~+125	°C

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

(Note2) For supply voltage less than $\pm 15V$, 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=25°C)

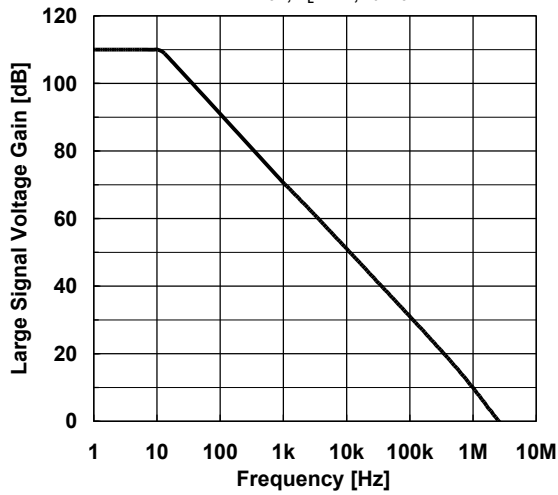
PARAMETER	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V^+ / V^-		± 4	-	± 18	V

■ ELECTRICAL CHARACTERISTICS ($V^+ / V^- = \pm 15V$, Ta=25°C, unless otherwise noted.)

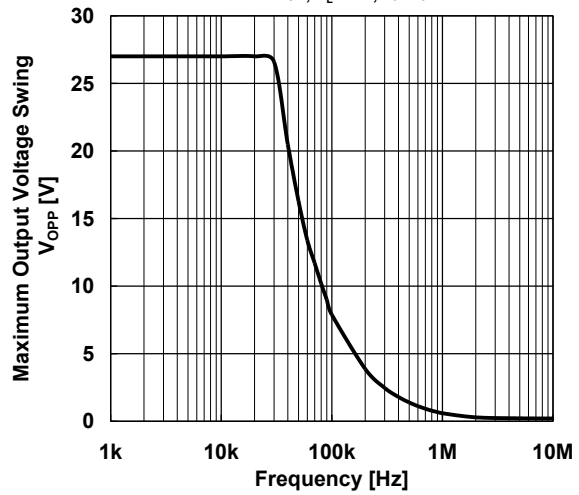
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{IO}	$R_S \leq 10k\Omega$	-	0.5	6	mV
Input Offset Current	I_{IO}		-	5	200	nA
Input Bias Current	I_B		-	25	500	nA
Input Resistance	R_{IN}		-	3	-	MΩ
Large Signal Voltage Gain	A_V	$R_L \geq 2k\Omega$, $V_O = \pm 10V$	86	100	-	dB
Maximum Output Voltage Swing 1	V_{OM1}	$R_L \geq 10k\Omega$	± 12	± 14	-	V
Maximum Output Voltage Swing 2	V_{OM2}	$R_L \geq 2k\Omega$	± 10	± 13	-	V
Input Common Mode Voltage Range	V_{ICM}		± 12	± 14	-	V
Common Mode Rejection Ratio	CMR	$R_S \leq 10k\Omega$	70	95	-	dB
Supply Voltage Rejection Ratio	SVR	$R_S \leq 10k\Omega$	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, $R_S = 2.2k\Omega$, 30kHz LPF	-	1.4	-	μVrms
Equivalent Input Noise Voltage2	e_n	$f = 1kHz$	-	12	-	nV/√Hz

TYPICAL CHARACTERISTICS

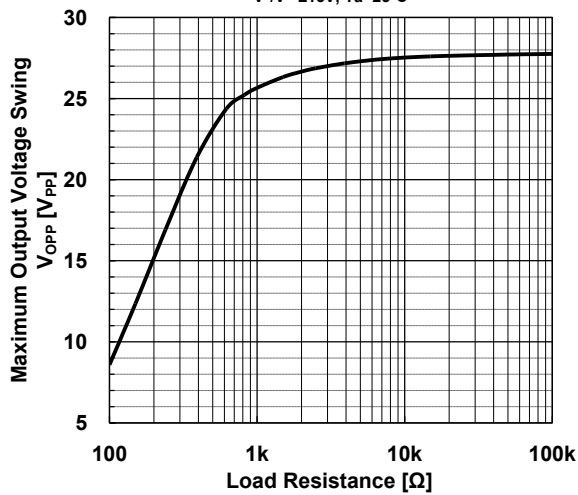
Large Signal Voltage Gain vs. Frequency
 $V^+/V^- = \pm 15V$, $R_L = 2k\Omega$, $T_a = 25^\circ C$



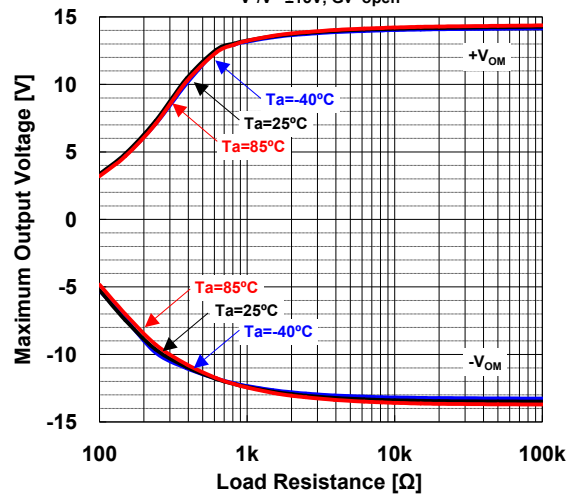
Maximum Output Voltage Swing vs. Frequency
 $V^+/V^- = \pm 15V$, $R_L = 2k\Omega$, $T_a = 25^\circ C$



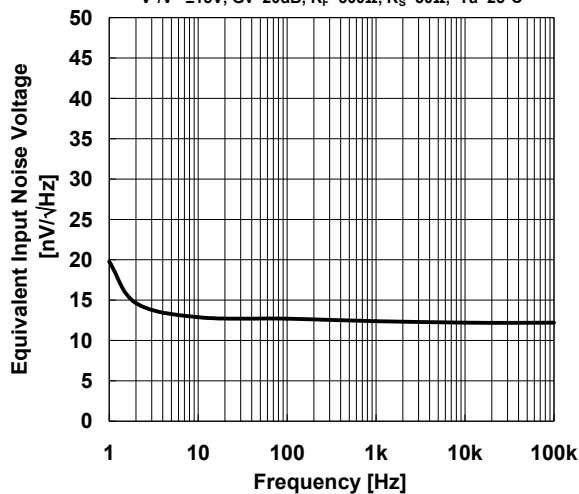
Maximum Output Voltage Swing vs. Load Resistance
 $V^+/V^- = \pm 15V$, $T_a = 25^\circ C$



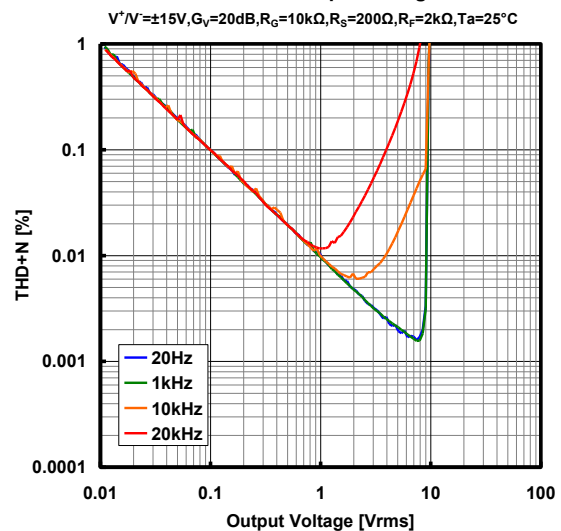
Maximum Output Voltage vs. Load Resistance
 $V^+/V^- = \pm 15V$, $G_v = \text{open}$



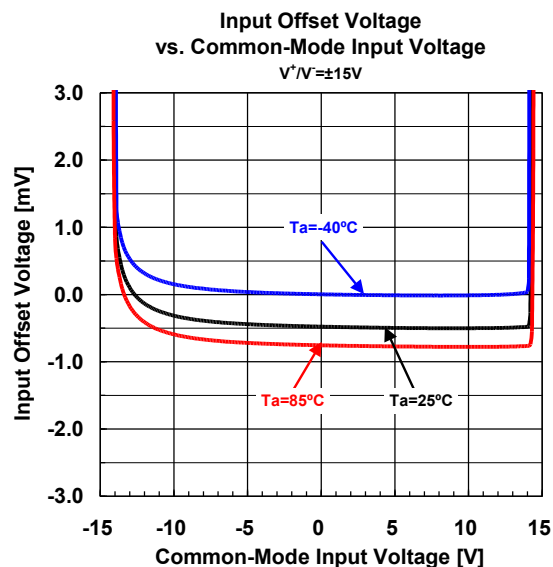
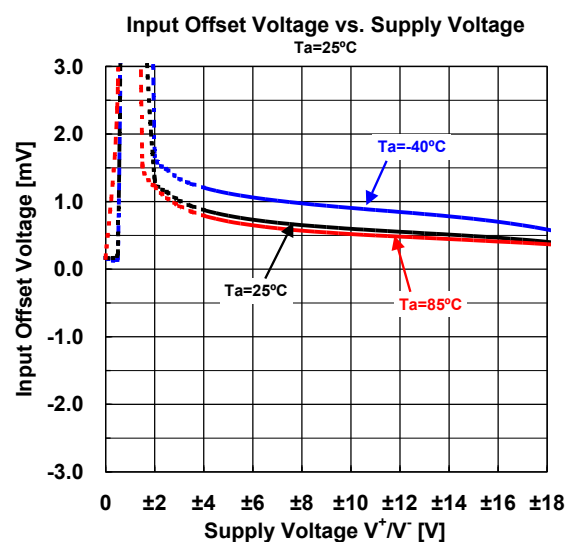
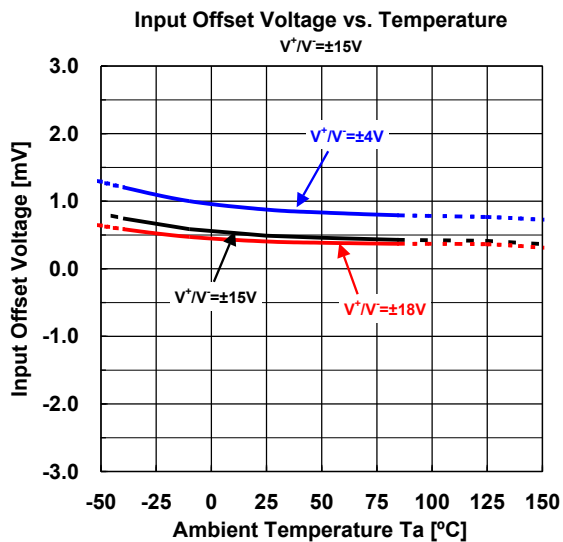
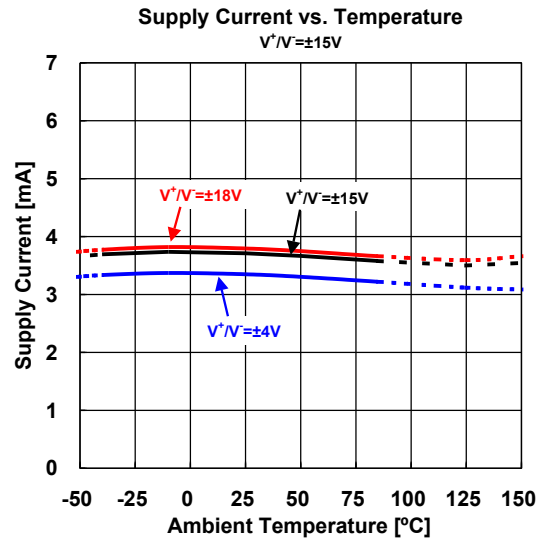
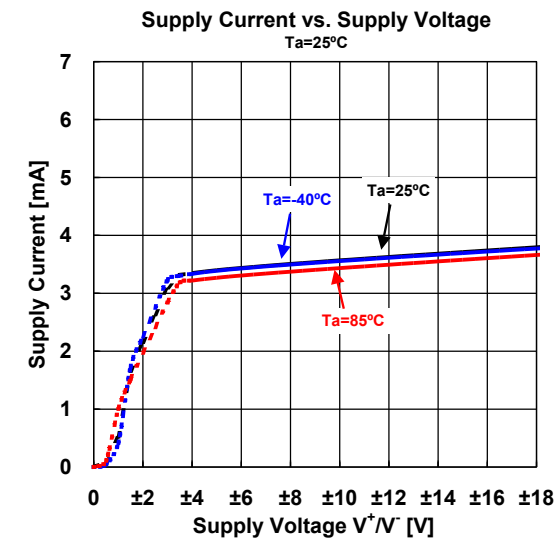
Voltage Noise vs. Frequency
 $V^+/V^- = \pm 15V$, $G_v = 20dB$, $R_F = 500\Omega$, $R_S = 50\Omega$, $T_a = 25^\circ C$



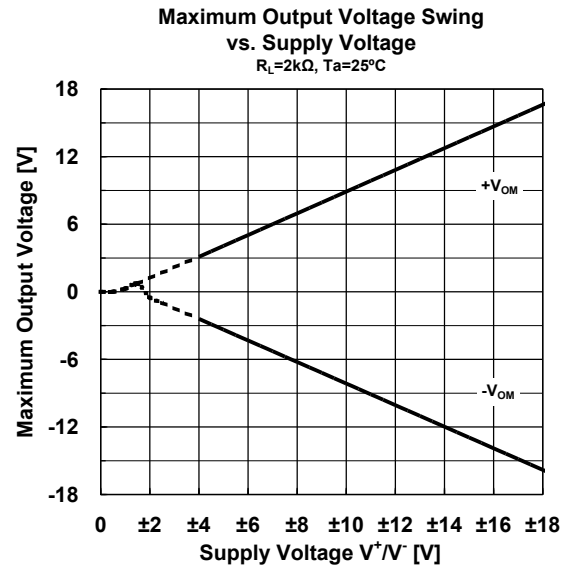
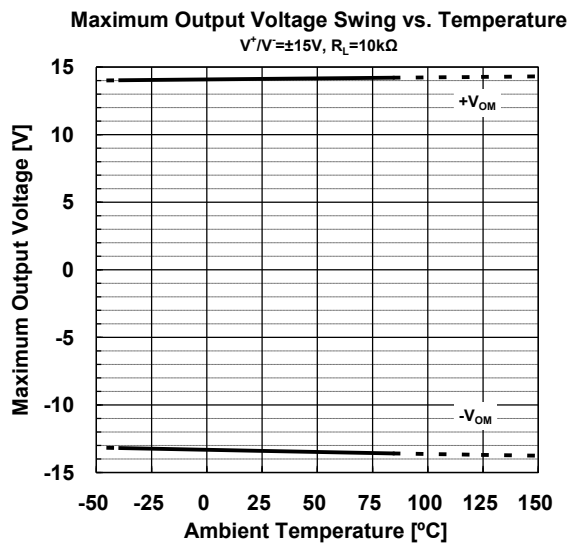
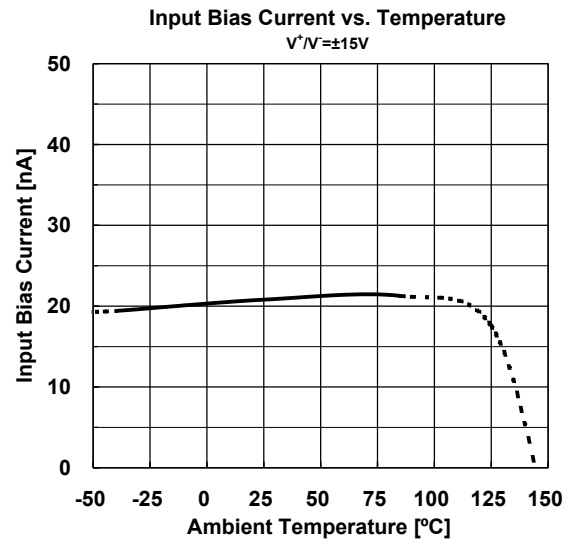
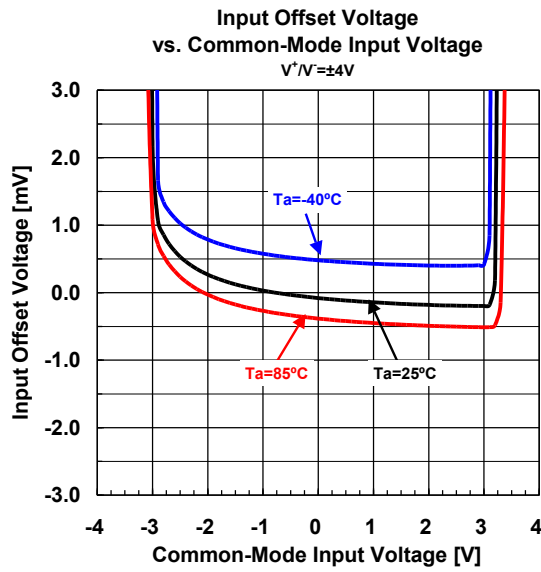
THD+N vs. Output Voltage



■ TYPICAL CHARACTERISTICS

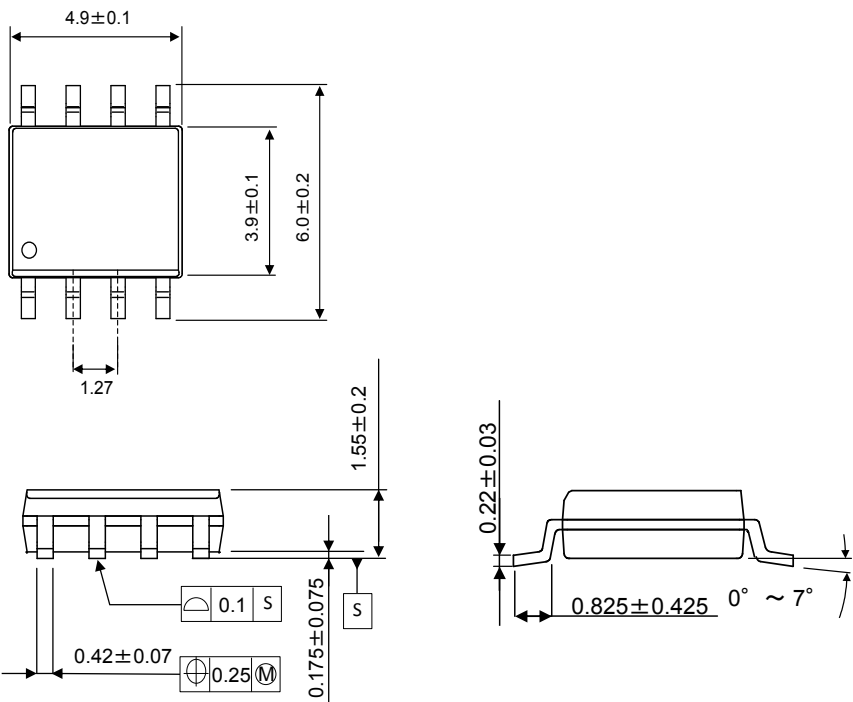


■ TYPICAL CHARACTERISTICS

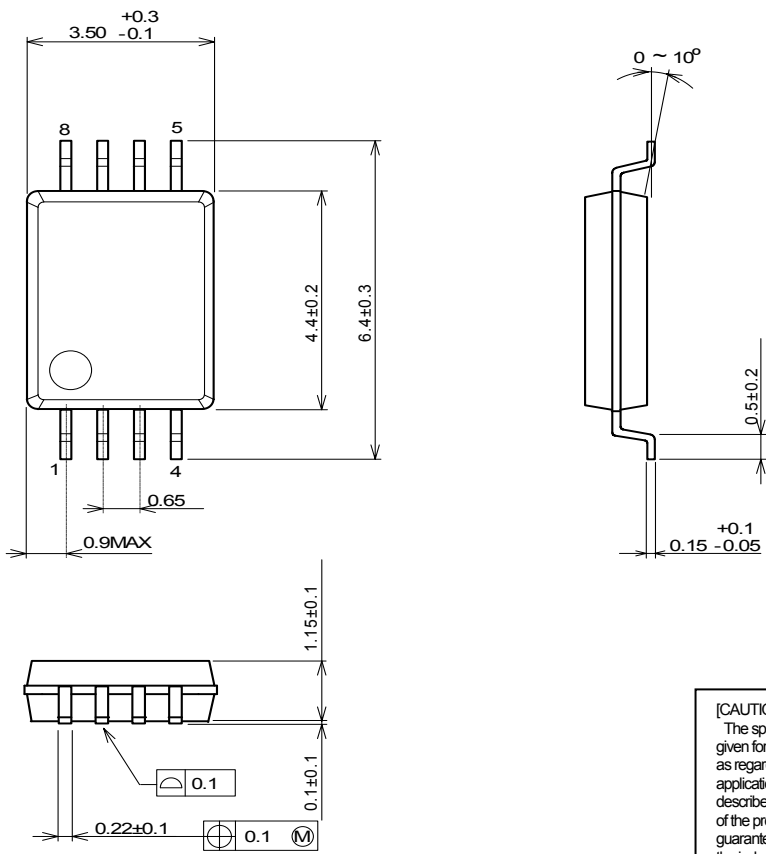


NJM4558C

■PACKAGE OUTLINE UNIT : mm
SOP8



SSOP8



[CAUTION]
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