



M4565

LINEAR INTEGRATED CIRCUIT

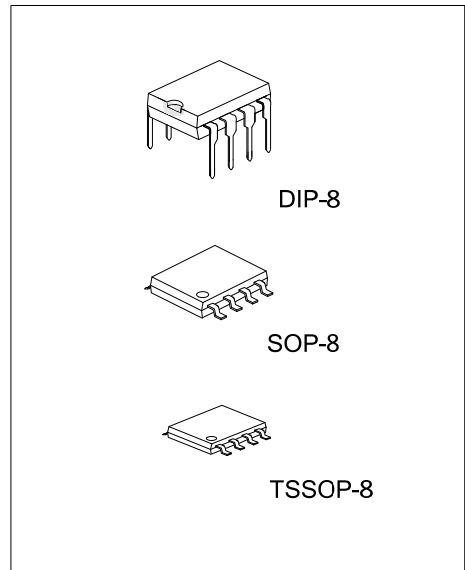
DUAL OPERATIONAL AMPLIFIER

■ DESCRIPTION

The UTC **M4565** integrated circuit is a high-gain, wide-bandwidth, dual low noise operational amplifier capable of driving 20V peak-to-peak into 400Ω load.

■ FEATURES

- * Operating Voltage: ±4V~±18V
- * Wide Gain Bandwidth Product: 4MHz (typ.)
- * Slew Rate: 4V/μs (typ.)



■ ORDERING INFORMATION

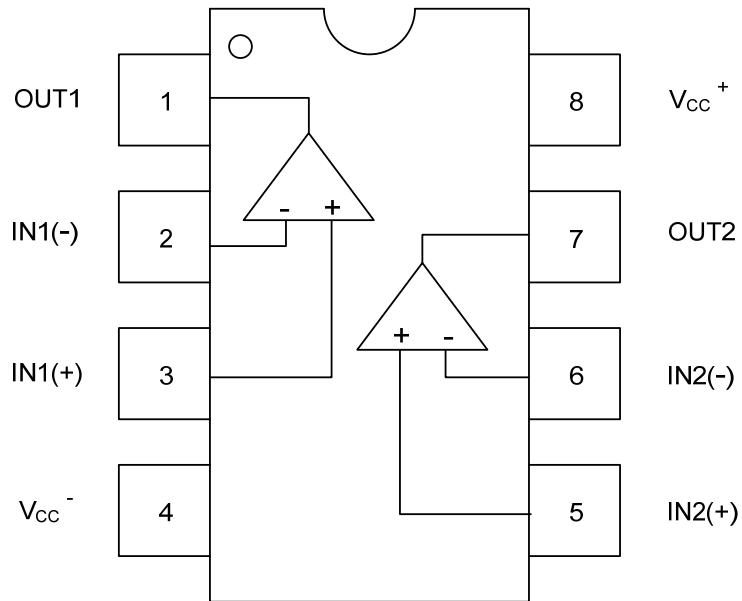
Ordering Number		Package	Packing
Lead Free	Halogen Free		
M4565L-D08-T	M4565G-D08-T	DIP-8	Tube
-	M4565G-S08-R	SOP-8	Tape Reel
-	M4565G-P08-R	TSSOP-8	Tape Reel

<p>M4565L-D08-T</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) T: Tube, R: Tape Reel</p> <p>(2) D08: DIP-8, S08: SOP-8, P08: TSSOP-8</p> <p>(3) L: Lead Free, G: Halogen Free and Lead Free</p>
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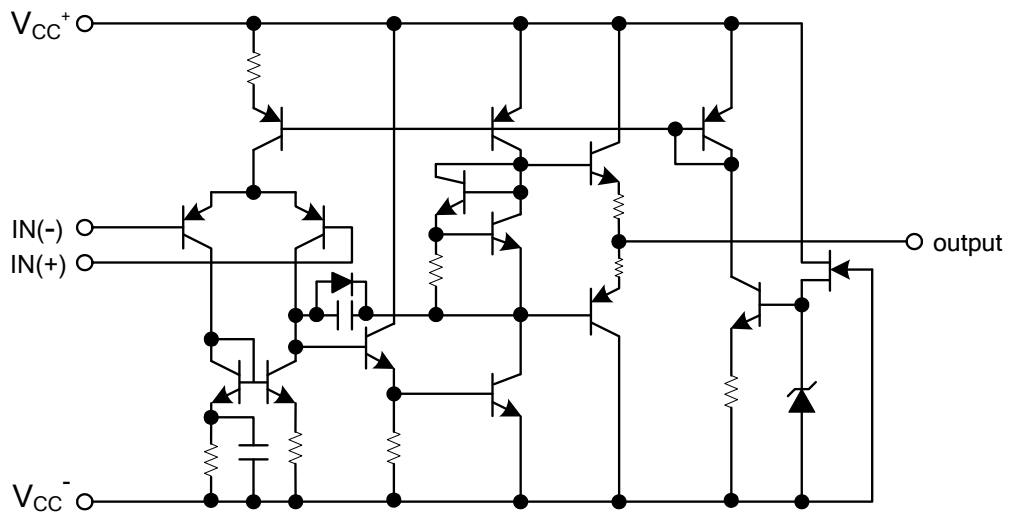
■ MARKING

DIP-8	SOP-8	TSSOP-8

■ PIN CONFIGURATION



■ EQUIVALENT CIRCUIT



■ ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$)

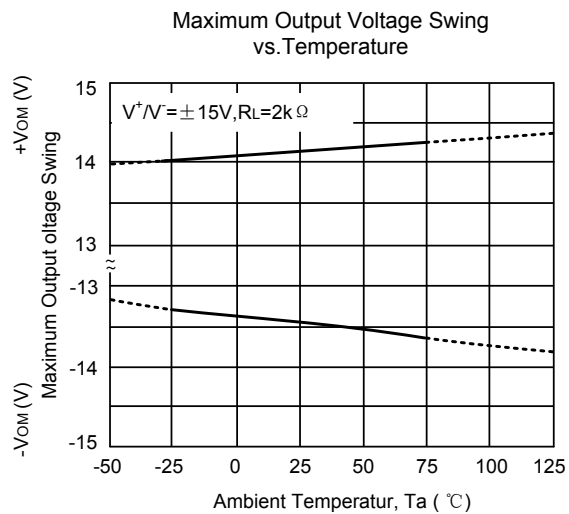
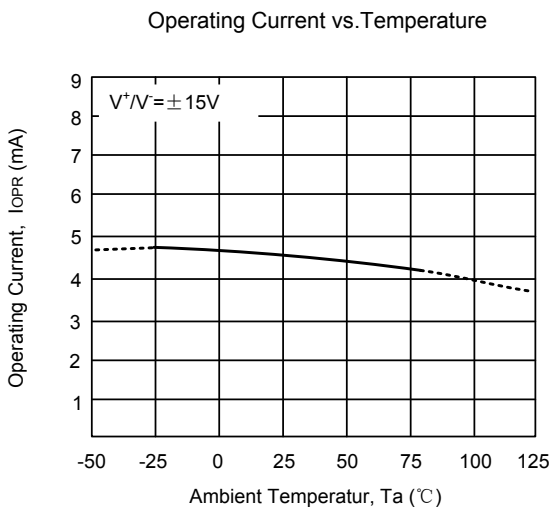
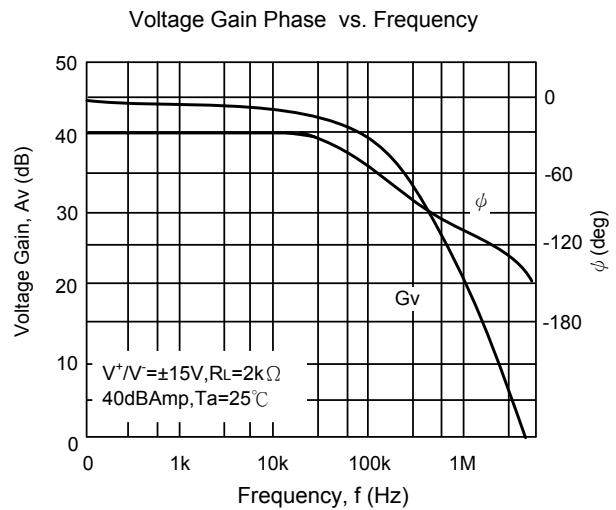
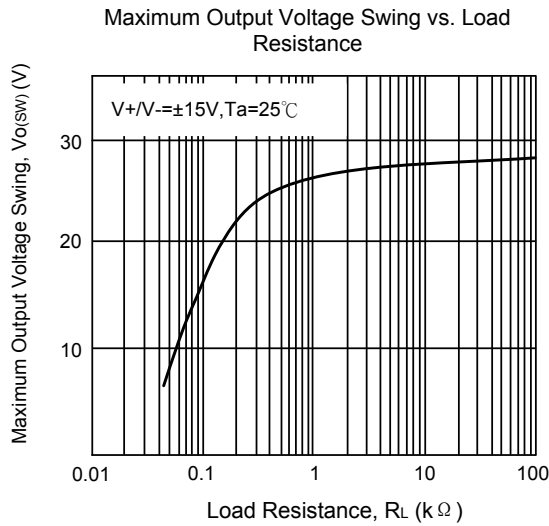
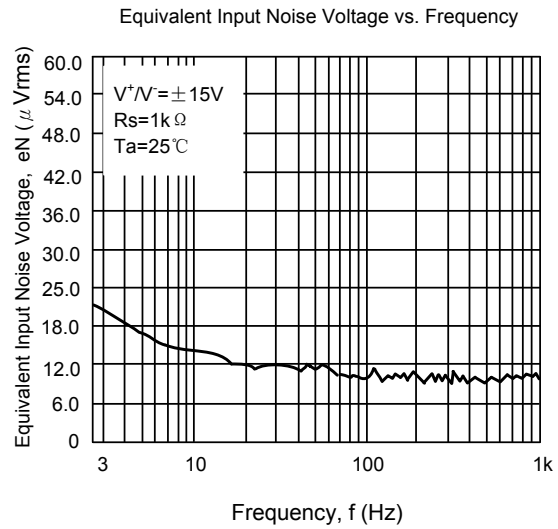
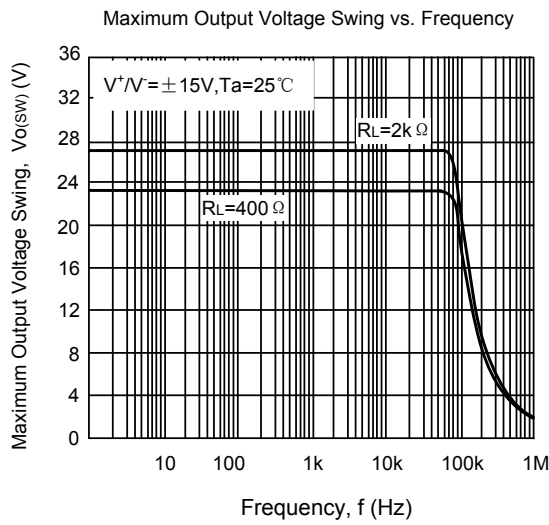
PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage		V^{+}/V^{-}	± 18	V
Differential Input Voltage		V_{ID}	± 30	V
Input Voltage		V_{IC}	± 15 (Note)	V
Power Dissipation	DIP-8	P_D	500	mW
	SOP-8		300	mW
	TSSOP-8		250	mW
Operating Temperature Range		T_{OPR}	-20 ~ +75	$^\circ\text{C}$
Storage Temperature Range		T_{STG}	-40 ~ +125	$^\circ\text{C}$

Note: For supply voltage less than $\pm 15\text{V}$, the absolute maximum input voltage is equal to the supply voltage.

■ ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$, $V^{+}/V^{-}=\pm 15\text{V}$)

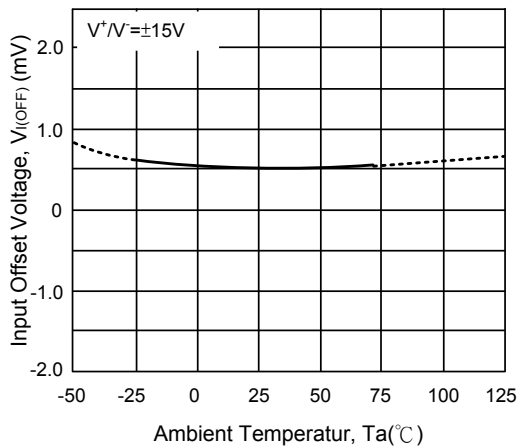
PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Input Offset Voltage	$V_{I(OFF)}$	$R_S \leq 10\text{k}\Omega$		0.5	3.0	mV
Input Offset Current	$I_{I(OFF)}$			2	50	nA
Input Bias Current	$I_{I(BIAS)}$			50	200	nA
Input Resistance	R_{IN}		0.3	5		$\text{M}\Omega$
Large Signal Voltage Gain	G_V	$R_L \geq 2\text{k}\Omega$, $V_{OUT} = \pm 10\text{V}$	86	100		dB
Maximum Output Voltage Swing 1	$V_{O(SW1)}$	$R_L \geq 2\text{k}\Omega$	± 12	± 14		V
Maximum Output Voltage Swing 2	$V_{O(SW2)}$	$I_{OUT} = 25\text{mA}$	± 10	± 11.5		V
Input Common Mode Voltage Range	$V_{(CM)}$		± 12	± 14		V
Common Mode Rejection Ratio	CMRR	$R_S \leq 10\text{k}\Omega$	70	90		dB
Supply Voltage Rejection Ratio	SVR	$R_S \leq 10\text{k}\Omega$	76.5	90		dB
Operating Current	I_{CC}			4.5	7	mA
Slew Rate	SR			4		$\text{V}/\mu\text{s}$
Gain Bandwidth Product	GB_W			10		MHz
Equivalent Input Noise Voltage	eN	RIAA, $R_S = 2.2\text{k}\Omega$, 30kHz LPF		1.2		μV_{rms}

TYPICAL CHARACTERISTICS

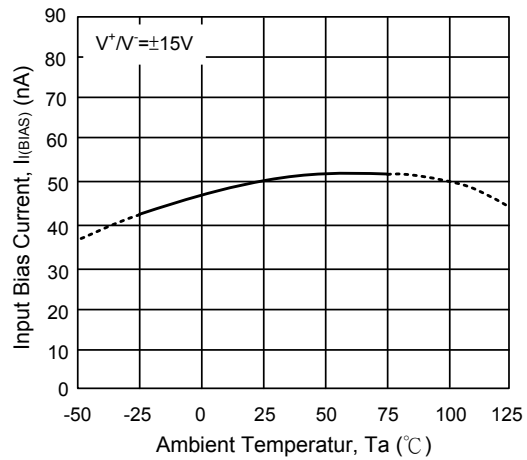


■ TYPICAL CHARACTERISTICS(Cont.)

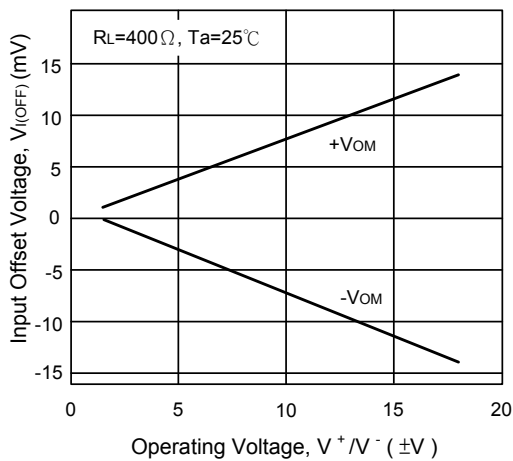
Input Offset Voltage vs. Temperature



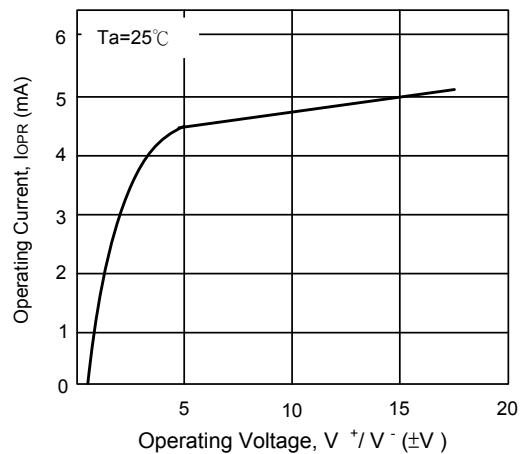
Input Bias Current vs. Temperature



Maximum Output Voltage Swing vs. Operating Voltage



Operating Current vs. Operating Voltage



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