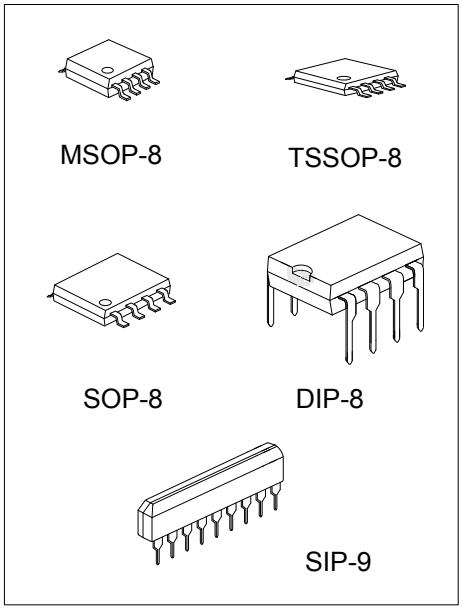
MC4558

LINEAR INTEGRATED CIRCUIT

DUAL OPERATIONAL AMPLIFIER



■ DESCRIPTION

The UTC **MC4558** is a monolithic integrated circuit designed for dual operational amplifier.

■ FEATURES

* No frequency compensation required
* No latch-up
* Large common mode and differential voltage range
* Parameter tracking over temperature range
* Gain and phase match between amplifiers
* Internally frequency compensated
* Low noise input transistors

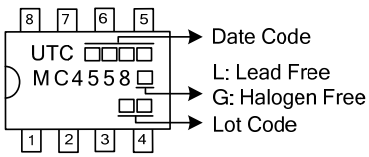
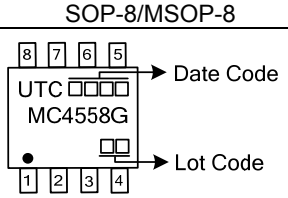
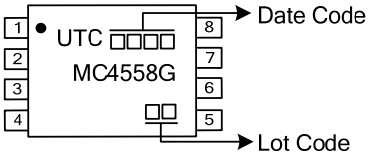
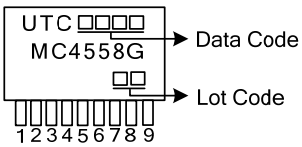
■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
MC4558L-D08-T	MC4558G-D08-T	DIP-8	Tube
-	MC4558G-G09-T	SIP-9	Tube
-	MC4558G-P08-R	TSSOP-8	Tape Reel
-	MC4558G-S08-R	SOP-8	Tape Reel
-	MC4558G-SM1-R	MSOP-8	Tape Reel

MC4558L-D08-T
(1)Packing Type
(2)Package Type
(3)Green Package

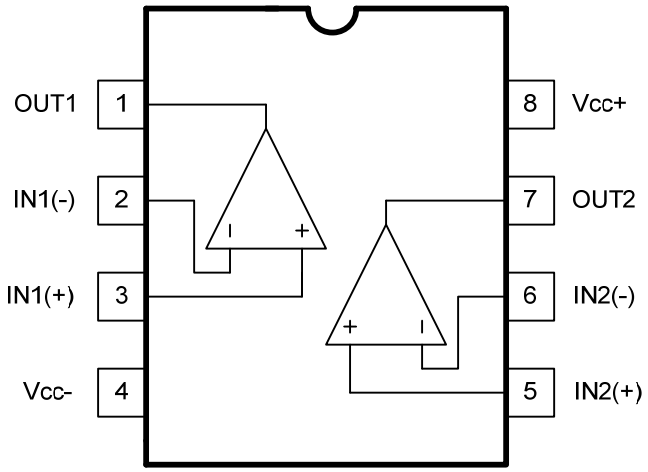
(1) T: Tube, R: Tape Reel
(2) D08: DIP-8, G09: SIP-9, P08: TSSOP-8
S08: SOP-8, SM1: MSOP-8
(3) L: Lead Free, G: Halogen Free and Lead Free

■ MARKING

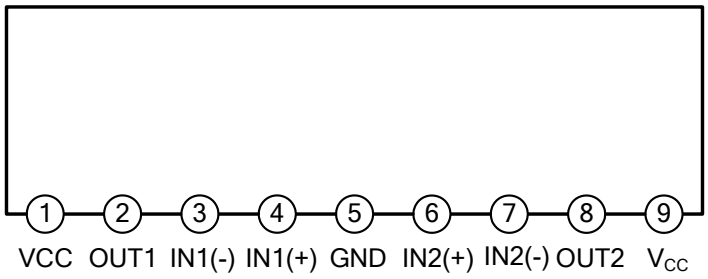
DIP-8	SOP-8/MSOP-8
	
TSSOP-8	**SIP-9**
	

■ PIN CONFIGURATIONS

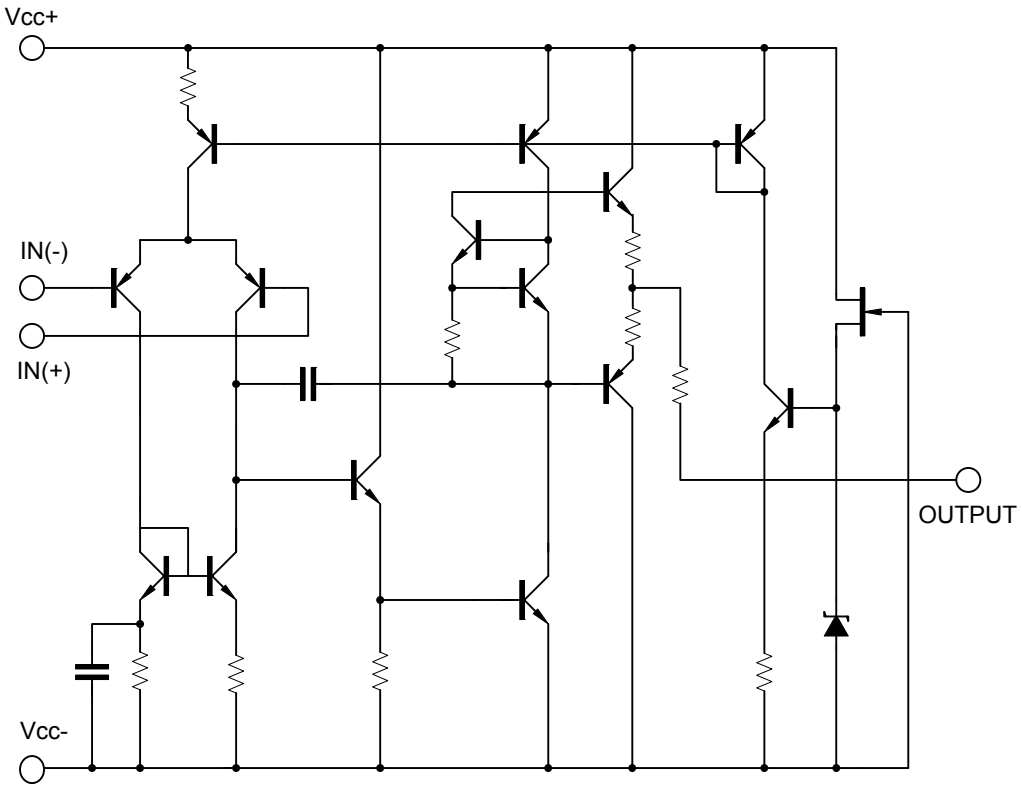
SOP-8/DIP-8/MSOP-8/TSSOP-8



SIP-9



■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATING	UNIT
Supply Voltage		V_{CC}	±22	V
Differential input voltage		$V_{I(DIFF)}$	±18	V
Power Dissipation	DIP-8	P_D	600	mW
	SOP-8		400	mW
	TSSOP-8		300	mW
	SIP-9		750	mW
	MSOP-8		250	mW
Input Voltage		V_{IN}	±15	V
Junction Temperature		T_J	+125	°C
Operating Temperature		T_{OPR}	-20 ~ +85	°C
Storage Temperature		T_{STG}	-40 ~ +150	°C

Note 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

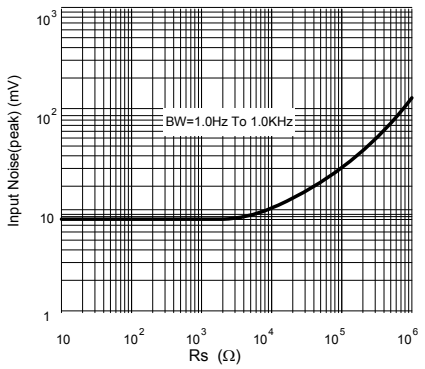
2. The device is guaranteed to meet performance specification within 0°C ~ +70°C operating temperature range and assured by design from -20°C ~ +85°C.

■ ELECTRICAL CHARACTERISTICS (T_A=25°C, V_{CC}=15V, V_{EE}=-15V)

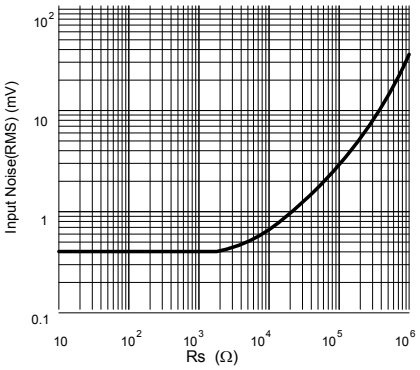
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Current, all Amp, no load	I_{CC}			2.3	4.5	mA
Input offset voltage	$V_{I(OFF)}$	R_S<10kΩ		2	6	mV
Input offset current	$I_{I(OFF)}$			5	200	nA
Input bias current	$I_{I(BIAS)}$			30	500	nA
Large signal voltage gain	Gv	Vo(p-p)=±10V, R_L≧ 2kΩ	20	200		V/mV
Common Mode Input Voltage Range	$V_{I(COM)}$		±12	±13		V
Common Mode Rejection Ratio	$RR_{(COM)}$	R_S≦ 10kΩ	70	90		dB
Supply Voltage Rejection Ratio	$RR_{(VCC)}$	R_S≦ 10kΩ	76	90		dB
Output Voltage swing	$V_{O(p-p)}$	R_L>=10kΩ	±12	±14		V
Power Consumption	P_C			70	170	mV
Slew Rate	SR	V_{IN}=±10V, R_L≧ 2kΩ, C_L≦ 100pF	1.2	2.2		V/μs
Rise Time	T_{RIS}	V_{IN}=±20mV, R_L≧ 2kΩ, C_L≦ 100pF		0.3		μs
Overshoot	OS	V_{IN}=±20mV, R_L≧ 2kΩ, C_L≦ 100pF		15		%
Input Resistance	R_{IN}		0.3	2		MΩ
Output Resistance	R_{OUT}			75		Ω
Total Harmonic Distortion	THD	f=1kHz, Av=20dB, R_L=2kΩ, V_{OUT}=2Vpp, C_L=100pF		0.008		%
Channel Separation	V_{O1}/V_{O2}			120		dB
FREQUENCY CHARACTERISTIC						
Unity Gain Bandwidth	BW		2.0	2.8		MHz

■ TYPICAL CHARACTERISTICS

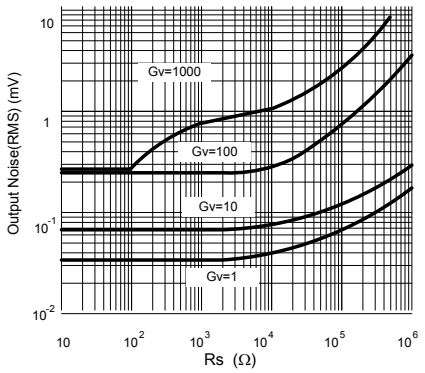
Burst Noise vs Rs



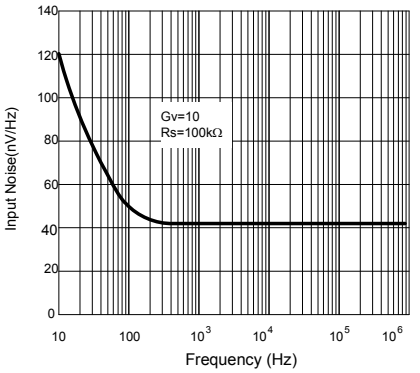
RMS Noise vs Rs



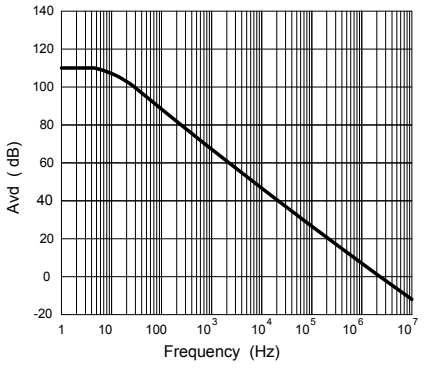
Output Noise vs Rs



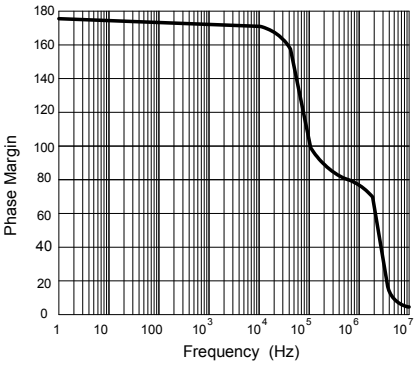
Spectral Noise Density



Open loop frequency response

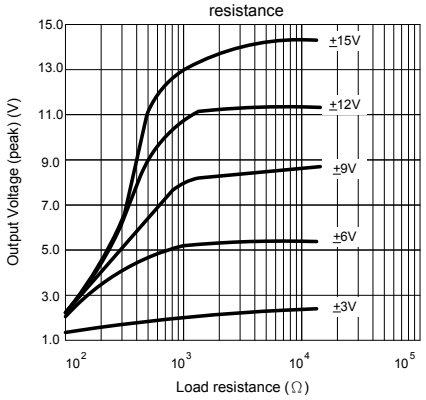


Phase Margin vs Frequency

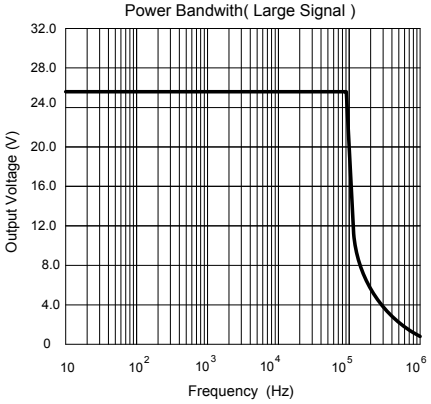


■ TYPICAL CHARACTERISTICS(Cont.)

Positive output voltage swing vs Load resistance



Power Bandwith(Large Signal)



Negative output voltage swing vs Load resistance