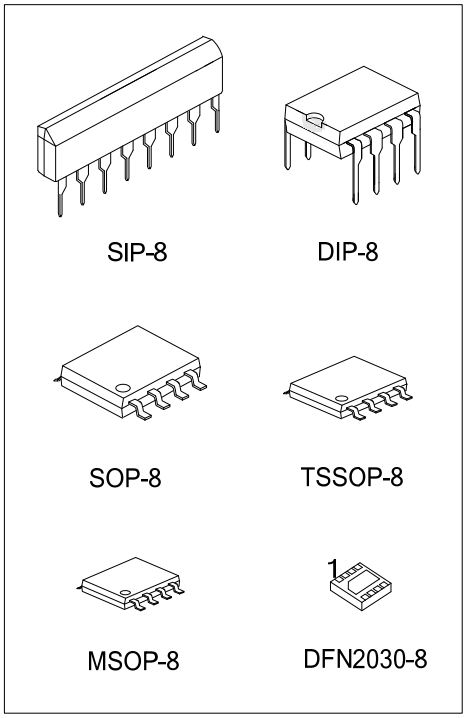
MC4580

LINEAR INTEGRATED CIRCUIT

DUAL OPERATIONAL AMPLIFIER



■ DESCRIPTION

The UTC **MC4580** is the dual operational amplifier, specially designed for improving the tone control, which is most suitable for the audio application.

Featuring noiseless, higher gain bandwidth, high output current and low distortion ratio, and it is most suitable not only for acoustic electronic parts of audio pre-amp and active filter, but also for the industrial measurement tools. It is also suitable for the head phone amp at higher output current, and further more, it can be applied for the handy type set operational amplifier of general purpose in application of low voltage single supply type which is properly biased of the input low voltage source.

■ FEATURES

* Operating voltage (±2V ~ ±18V)
* Low input noise voltage (0.8μVrms typ.)
* Low distortion (0.0005% typ.)
* Slew rate (5V/μs typ.)
* Bipolar technology

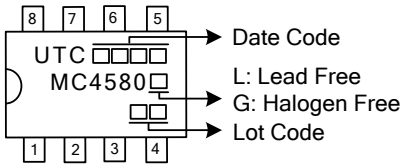
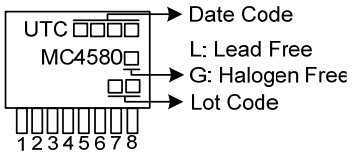
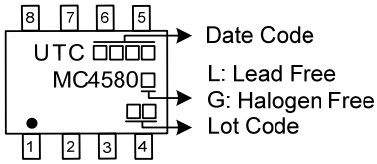
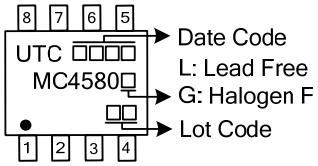
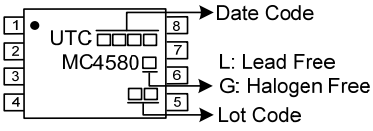
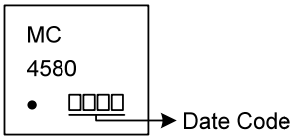
■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
MC4580L-D08-T	MC4580G-D08-T	DIP-8	Tube
MC4580L-G08-T	MC4580G-G08-T	SIP-8	Tube
MC4580L-S08-R	MC4580G-S08-R	SOP-8	Tape Reel
MC4580L-P08-R	MC4580G-P08-R	TSSOP-8	Tape Reel
MC4580L-SM1-R	MC4580G-SM1-R	MSOP-8	Tape Reel
MC4580L-K08-2030-R	MC4580G-K08-2030-R	DFN2030-8	Tape Reel

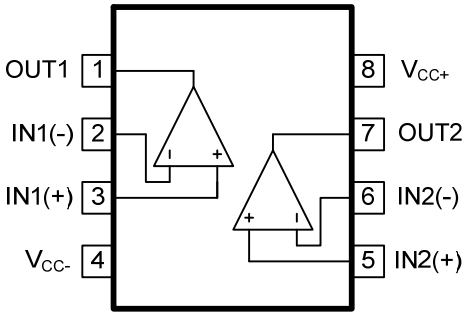
MC4580G-D08-T
(1)Packing Type
(2)Package Type
(3)Green Package

(1) T: Tube, R: Tape Reel
(2) D08: DIP-8, G08: SIP-8, P08: TSSOP-8, S08: SOP-8, SM1: MSOP-8, K08-2030: DFN2030-8
(3) G: Halogen Free and Lead Free, L: Lead Free

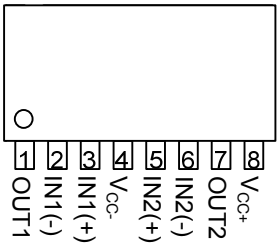
■ MARKING

PACKAGE	MARKING
DIP-8	
SIP-8	
SOP-8	
MSOP-8	
TSSOP-8	
DFN2030-8	

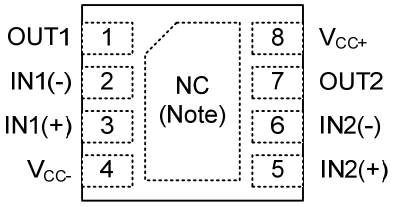
■ PIN CONFIGURATION



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



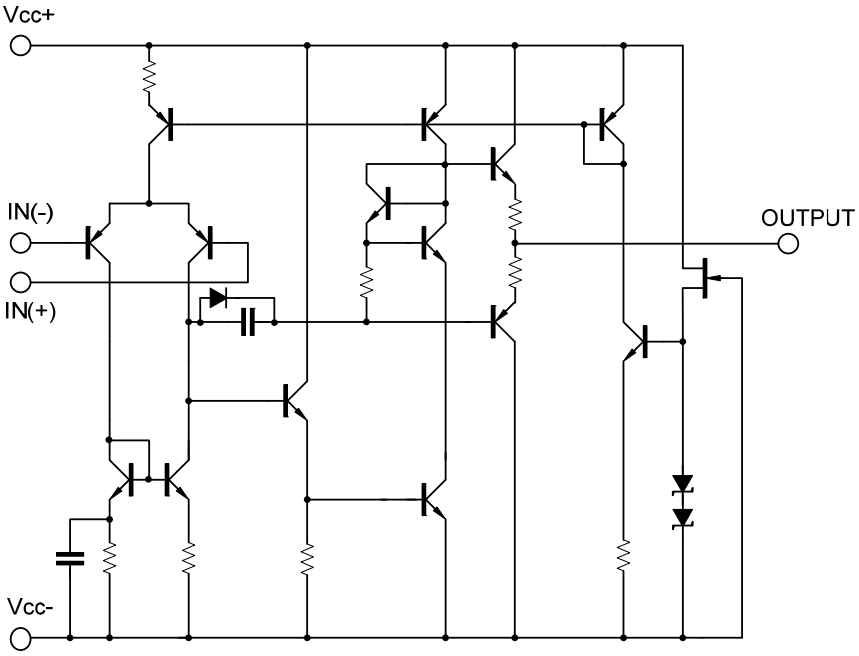
SIP-8



DFN2030-8
(Top View)

Note: No connect.

■ TEST CIRCUIT



■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage		V^+/V^-	±18	V
Input Voltage		V_{IN}	±15	V
Differential Input Voltage		$V_{I(DIFF)}$	±30	V
Output Current		I_{OUT}	±50	mA
Power Dissipation	DIP-8 SIP-8	P_D	750	mW
	SOP-8		440	
	TSSOP-8		360	
	MSOP-8		300	
	DFN2030-8		1300	
Junction Temperature		T_J	+125	°C
Operating Temperature		T_{OPR}	-40 ~ +85	°C
Storage Temperature		T_{STG}	-40 ~ +125	°C

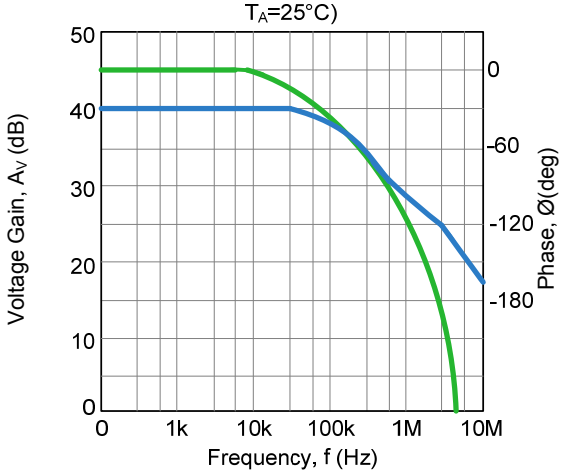
Note Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ ELECTRICAL CHARACTERISTICS (V+ /V-=±15V, T_A=25°C, unless otherwise specified)

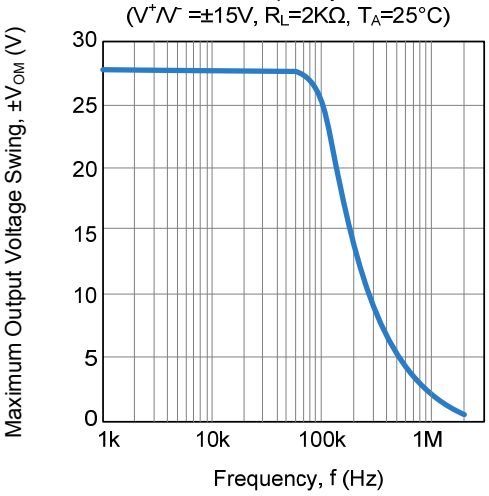
PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Input Offset Voltage	$V_{I(OFF)}$	R_S≦10kΩ		0.5	3	mV
Input Offset Current	$I_{I(OFF)}$			5	200	nA
Input Bias Current	$I_{I(BIAS)}$			100	500	nA
Large Signal Voltage Gain	Gv	V_{OUT}=±10V, R_L≧2kΩ	90	110		dB
Output Voltage Swing	V_{OM}	R_L≧2kΩ	±12	±13.5		V
Input Common Mode Voltage	$V_{I(CM)}$		±12	±13.5		V
Common Mode Rejection Ratio	CMRR	R_S≦10kΩ	80	110		dB
Supply Voltage Rejection Ratio	SVR	Rs≦10kΩ	80	110		dB
Operating Current	I_{CC}			6	9	mA
Slew Rate	SR	R_L≧2kΩ		5		V/μs
Gain bandwidth Product	GB	f=10KHz		5		MHz
Total Harmonic Distortion	THD	Gv=20dB,V_{OUT}=5V,R_L=2kΩ, f=1KHz		0.0005		%
Input Noise Voltage	eN	RIAA Rs=2.2 kΩ, 30kHzLPF		0.8		μVrms

■ TYPICAL CHARACTERISTICS

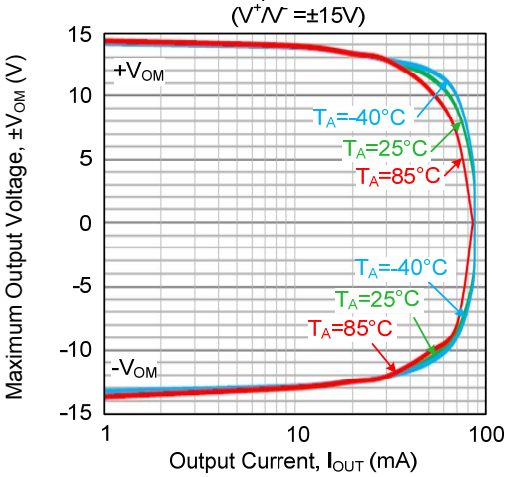
Voltage Gain, Phase vs. Frequency
(V^+/V^- =±15V, R_L=2kΩ, 40dBAmp, T_A=25°C)



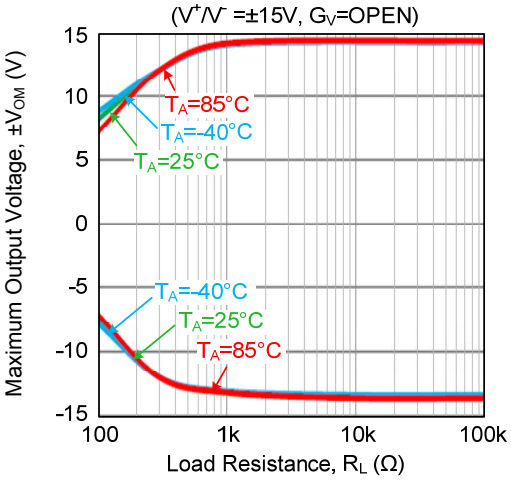
Maximum Output Voltage Swing vs. Frequency
(V^+/V^- =±15V, R_L=2KΩ, T_A=25°C)



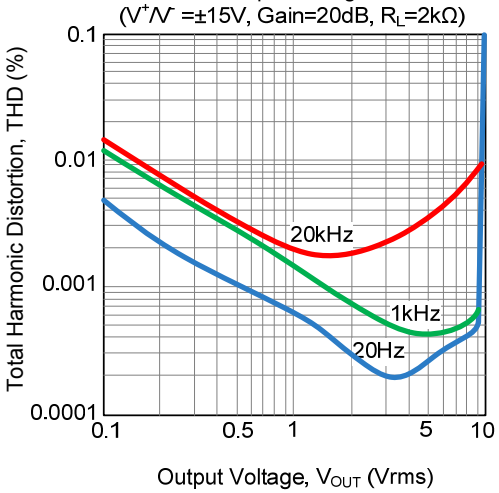
Maximum Output Voltage vs. Output Current
(V^+/V^- =±15V)



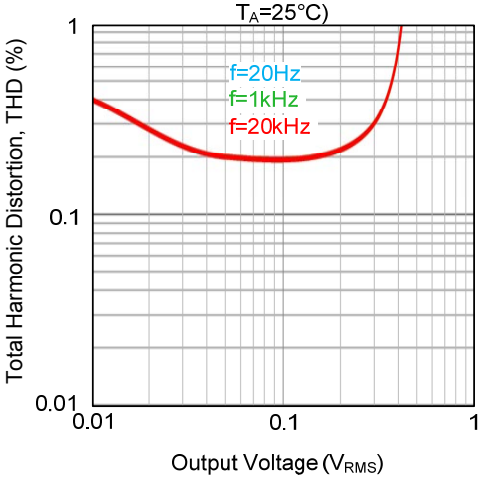
Maximum Output Voltage vs. Load Resistance
(V^+/V^- =±15V, G_V=OPEN)



Total Harmonic Distortion vs. Output Voltage
(V^+/V^- =±15V, Gain=20dB, R_L=2kΩ)

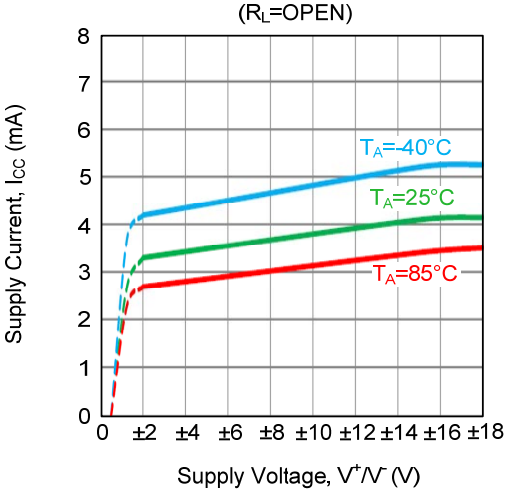


Total Harmonic Distortion vs. Output Voltage
(V^+/V^- =±2V, G_V=20dB, R_L=2k, T_A=25°C)

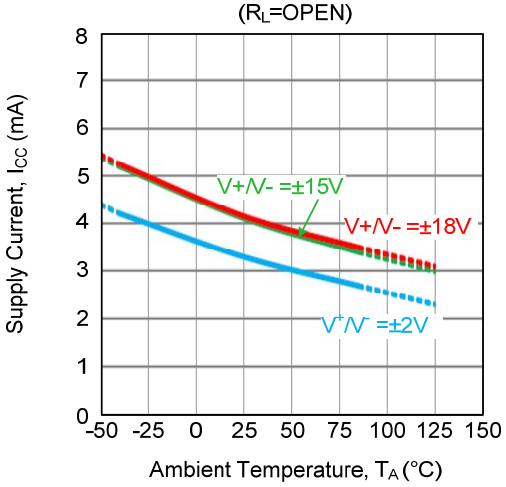


■ TYPICAL CHARACTERISTICS (Cont.)

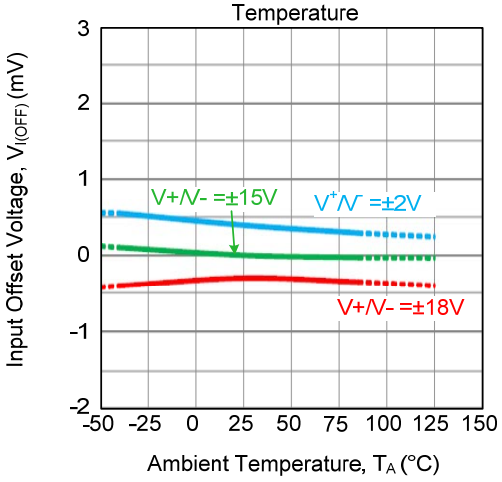
Supply Current vs. Supply Voltage (R_L=OPEN)



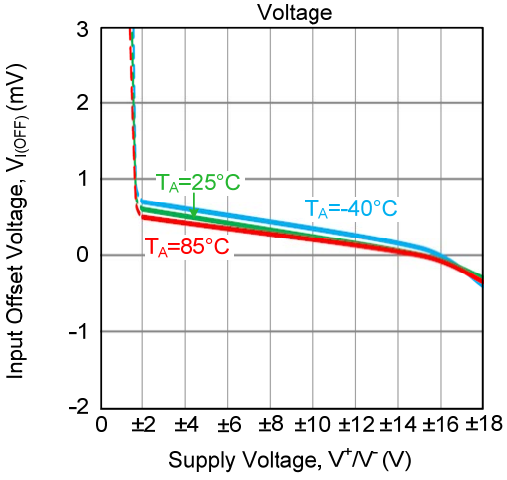
Supply Current vs. Temperature (R_L=OPEN)



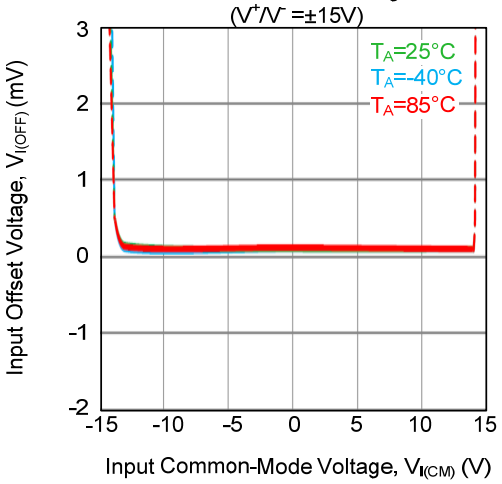
Input Offset Voltage vs. Ambient Temperature



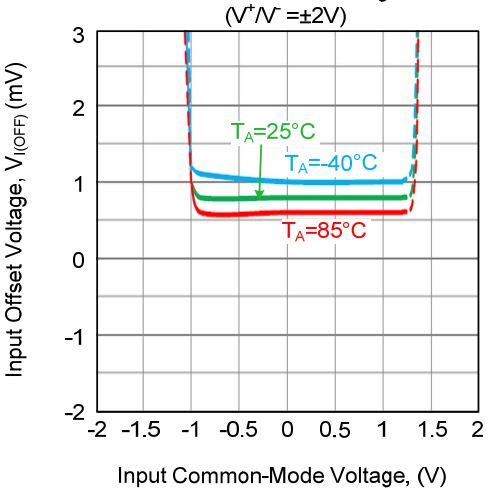
Input Offset Voltage vs. Supply Voltage



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

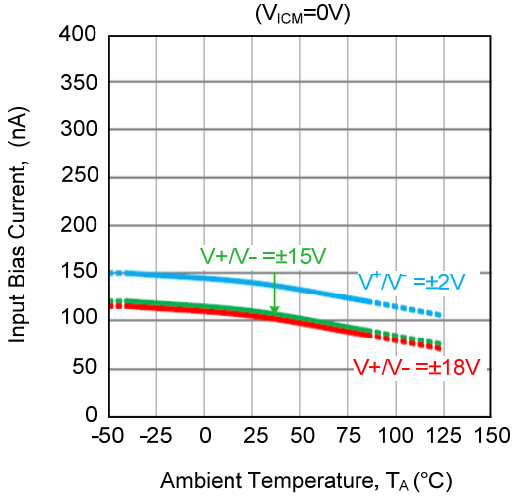


Input Offset Voltage vs. Input Common-Mode Voltage (V^+/V^- =±2V)

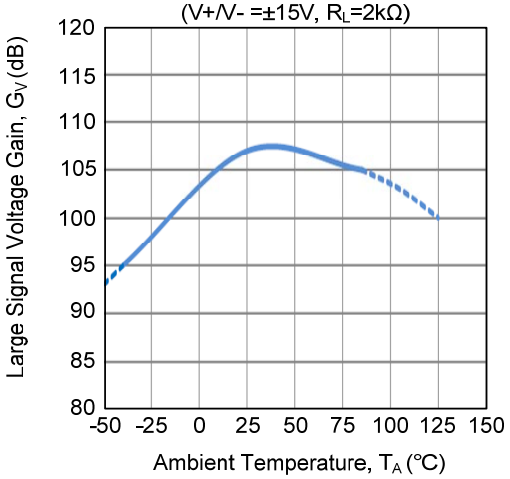


■ TYPICAL CHARACTERISTICS (Cont.)

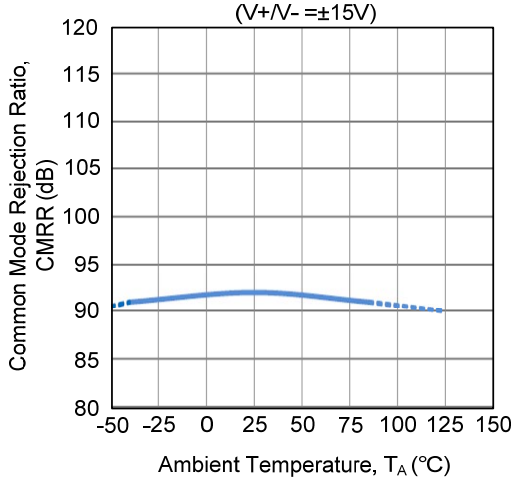
Input Bias Current vs. Temperature
(V_{ICM}=0V)



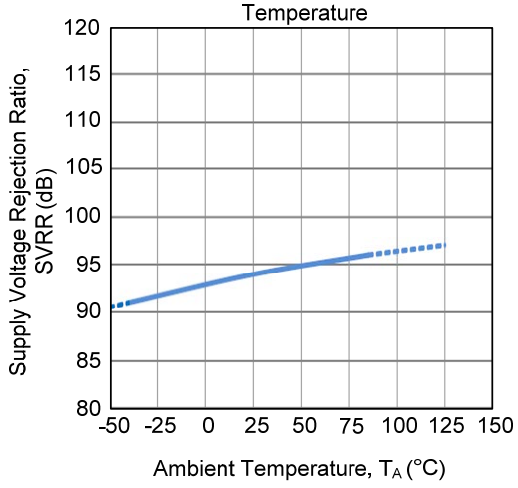
Large Signal Voltage Gain vs. Temperature
(V+/V- =±15V, R_L=2kΩ)



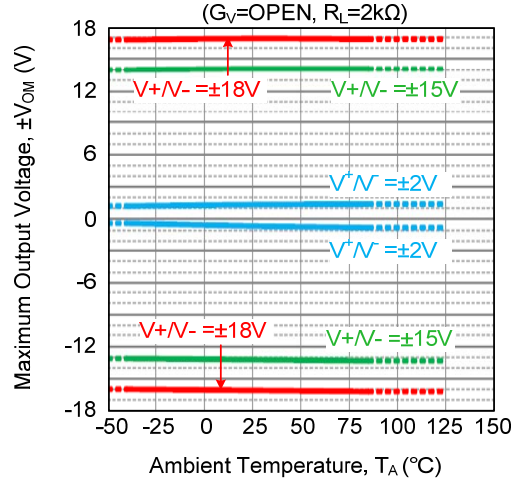
Common Mode Rejection Ratio vs. Temperature
(V+/V- =±15V)



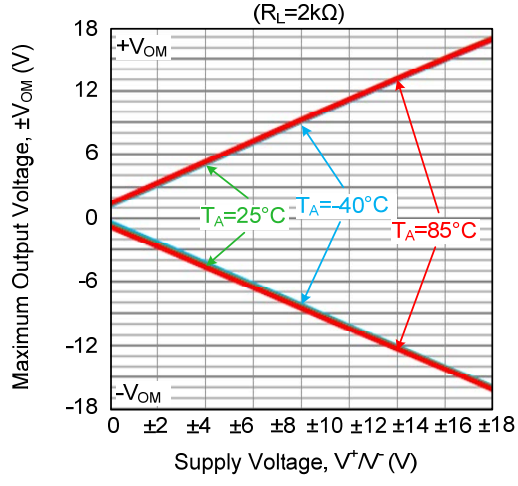
Supply Voltage Rejection Ratio vs. Temperature



Maximum Output Voltage vs. Temperature
(G_V=OPEN, R_L=2kΩ)

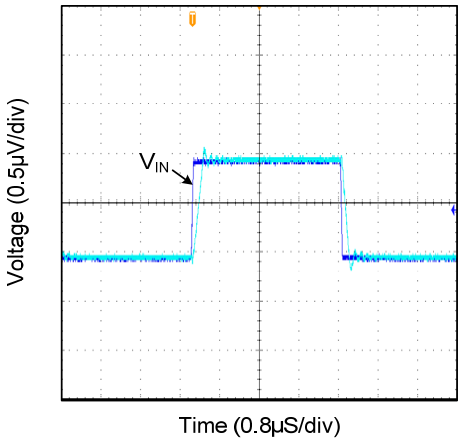


Maximum Output Voltage vs. Supply Voltage
(R_L=2kΩ)

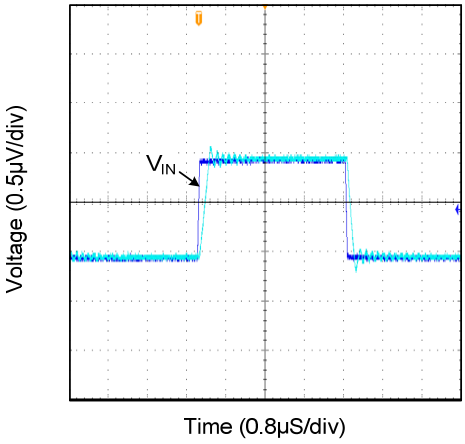


■ TYPICAL CHARACTERISTICS (Cont.)

Pulse Response
(V^+/V^- =±15V, R_L=2kΩ, C_L=10pF)



Pulse Response
(V^+/V^- =±15V, R_L=2kΩ, C_L=50pF)



Equivalent Input Noise Voltage vs. Frequency
(V^+/V^- =±15V, R_S=50Ω, G_V=60dB, T_A=25°C)