

36V, 11MHz, 23V/μs Opamps

Features

- Supply Voltage: 3.3V to 36V
- Offset Voltage: $\pm 100\mu\text{V}$ Maximum
- Differential Input Voltage Range to Supply Rail, can Work as Comparator
- Input Rail to -VS, Rail to Rail Output
- Bandwidth: 11MHz
- Slew Rate: 23V/μs
- Excellent EMI Suppress Performance: 45dB at 1GHz
- Quiescent Current: 2.7mA per Amplifier (Typ)
- -40°C to 125°C Operation Temperature Range
- Small Package:

LM6142 Available in SOP-8 and MSOP-8 Packages

LM6144 Available in SOP-14 and TSSOP-14 Packages



Ordering Information

DEVICE	PACKAGE TYPE	MARKING	PACKING	PACKING QTY
LM6142M/TR	SOP-8	LM6142	REEL	2500pcs/reel
LM6142MM/TR	MSOP-8	LM6142	REEL	3000pcs/reel
LM6144M/TR	SOP-14	LM6144	REEL	2500pcs/reel
LM6144MT/TR	TSSOP-14	LM6144	REEL	2500pcs/reel

General Description

The LM614X series amplifiers are newest high supply voltage amplifiers with low offset, low power and stable high frequency response. Good AC performance with 11MHz bandwidth, 23V/ μ s slew rate and low distortion while drawing only 2.7mA of quiescent current per amplifier. The input common-mode voltage range extends to $-V_S$, and the outputs swing rail-to-rail. The LM614X family can be used as plug-in replacements for many commercially available Op-Amps to reduce power and improve input/output range and performance. The LM6142 Dual is available in Green SOP-8 and MSOP-8 packages. The LM6144 Quad is available in Green SOP-14 and TSSOP-14 packages.

Applications

- Instrumentation
- Active Filters, ASIC Input or Output Amplifier
- Sensor Interface
- Motor Control
- Industrial Control

Pin Configuration

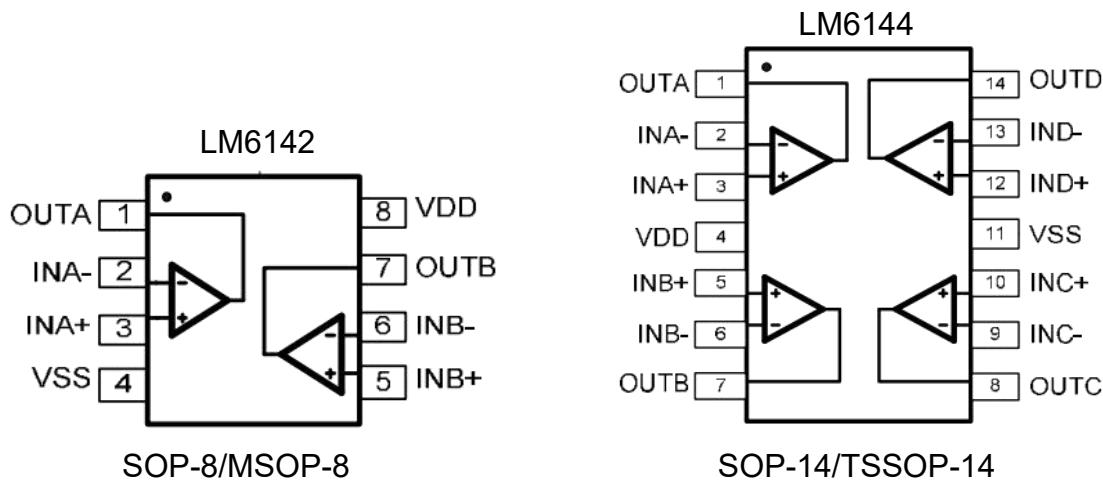


Figure 1. Pin Assignment Diagram

Absolute Maximum Ratings

Condition	Min	Max
Power Supply Voltage (V _{DD} to V _{SS})	-0.5V	+40V
Analog Input Voltage (IN+ or IN-)	V _{SS} -0.5V	V _{DD} +0.5V
PDB Input Voltage	V _{SS} -0.5V	+40V
Operating Temperature Range	-40°C	+125°C
Junction Temperature	+160°C	
Storage Temperature Range	-55°C	+150°C
Lead Temperature (soldering, 10sec)	+260°C	
Package Thermal Resistance (TA=+25°C)		
SOP-8, θ _{JA}	125°C/W	
MSOP-8, θ _{JA}	216°C/W	
SOP-14, θ _{JA}	120°C/W	
TSSOP-14, θ _{JA}	180°C/W	
ESD Susceptibility		
HBM	2KV	
MM	300V	

Note: Stress greater than those listed under Absolute Maximum Ratings may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions outside those indicated in the operational sections of this specification are not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability.

Electrical Characteristics

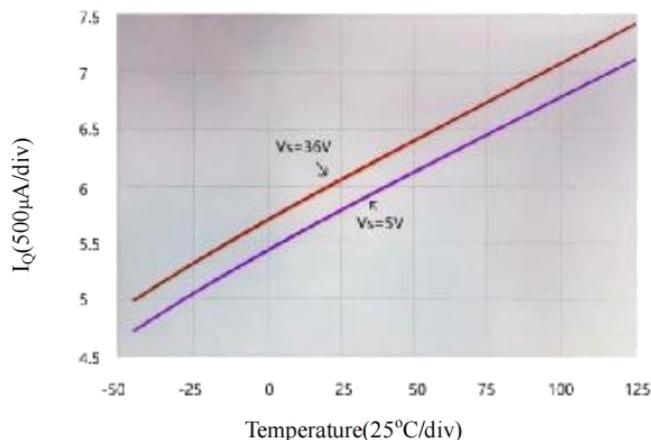
(All test condition is $V_s = 30V$, $T_A = 25^\circ C$, $R_L = \infty$, unless otherwise noted.)

PARAMETER	SYMBOL	CONDITIONS	LM6142/6144			
			TYP	MIN	MAX	UNITS
INPUT CHARACTERISTICS						
Input Offset Voltage	V_{OS}	$V_{CM} = V_s/2$	1.4	-100	100	μV
Input Bias Current	I_B		100			pA
Input Offset Current	I_{OS}		25			pA
Common-Mode Voltage Range	V_{CM}	$V_s = 30V$	0 to ($V_s - 1.5V$)			V
Common-Mode Rejection Ratio	CMRR	$V_s = 30V$, $V_{CM} = 0V$ to $28.5V$	120	100		dB
Open-Loop Voltage Gain	A_{OL}	$V_s = 30V$, $R_L = 10k\Omega$, $V_{CM} = 0V$ to $28.5V$	130	100		dB
Input Offset Voltage Drift	$\Delta V_{OS}/\Delta T$		2.0			$\mu V/^\circ C$
OUTPUT CHARACTERISTICS						
Output Voltage Swing from Rail	V_{OH}	$V_s = 30V$, $R_L = 10k\Omega$	29.85	29.65		V
	V_{OL}		100		300	mV
	V_{OH}	$V_s = 30V$, $R_L = 2k\Omega$	29.25	28.0		V
	V_{OL}		500		1500	mV
Output Current	I_{SOURCE}	$V_s = 30V$	39			mA
	I_{SINK}		35			
POWER SUPPLY						
Operating Voltage Range			3.3			V
			36			V
Power Supply Rejection Ratio	PSRR	$V_s = +3.3V$ to $+30V$, $V_{CM} = +0.5V$	120	100		dB
Quiescent Current / Amplifier	I_Q		2.7			mA
DYNAMIC PERFORMANCE						
Gain-Bandwidth Product	GBP		11			MHz
Slew Rate	S_R	$G = +1$, 5V Output Step	23			$V/\mu s$
NOISE PERFORMANCE						
Input Voltage Noise	$e_{n,p-p}$	$f = 0.1Hz$ to $10Hz$	3.0			μV_{RMS}
Input Voltage Noise	e_n	$f = 1kHz$	34			nV/\sqrt{Hz}
		$f = 10kHz$	13			

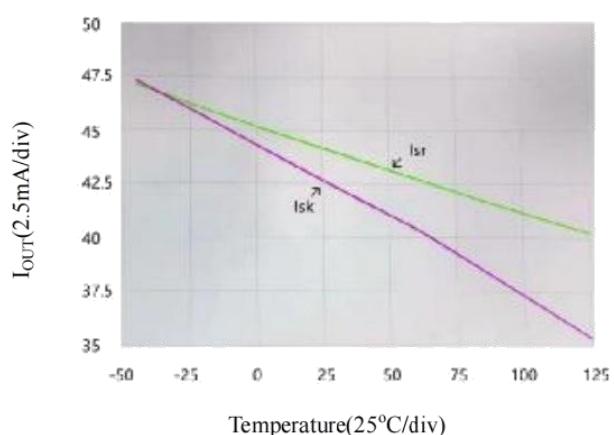
Typical Performance Characteristics

$T_A=+25^\circ\text{C}$, $V_s=+30\text{V}$, and $R_L=\infty$ connected to $V_s/2$, unless otherwise specified.

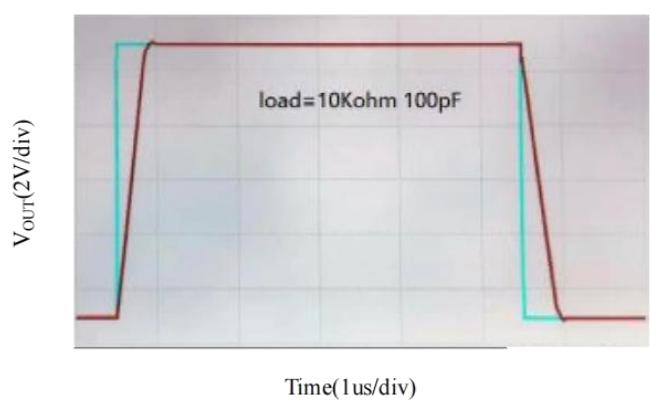
Supply Current(LM6142) vs. Temperature



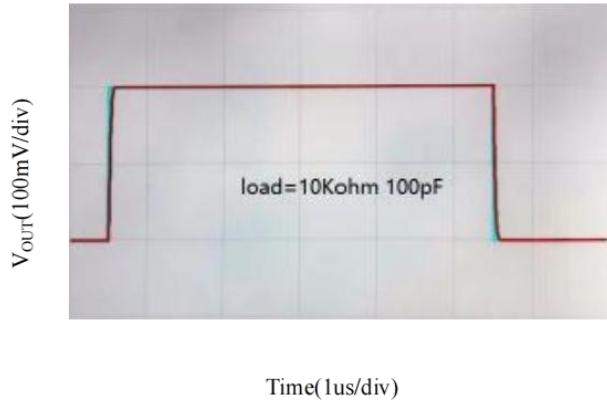
Output Short-Circuit Current vs. Temperature



Large Signal Pulse Response

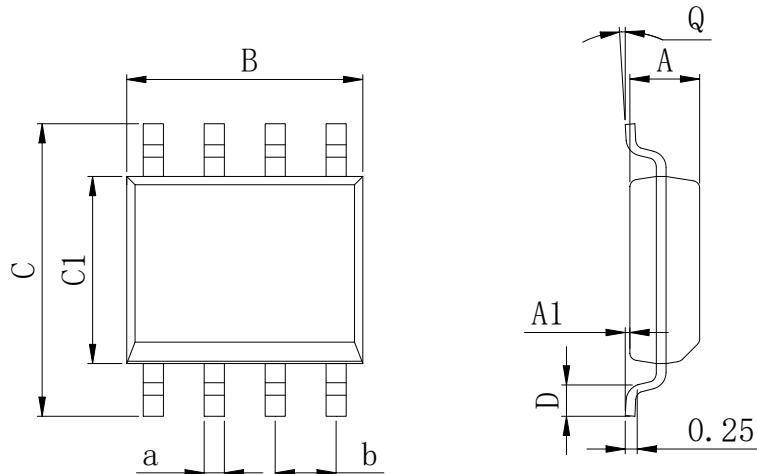


Small Signal Pulse Response



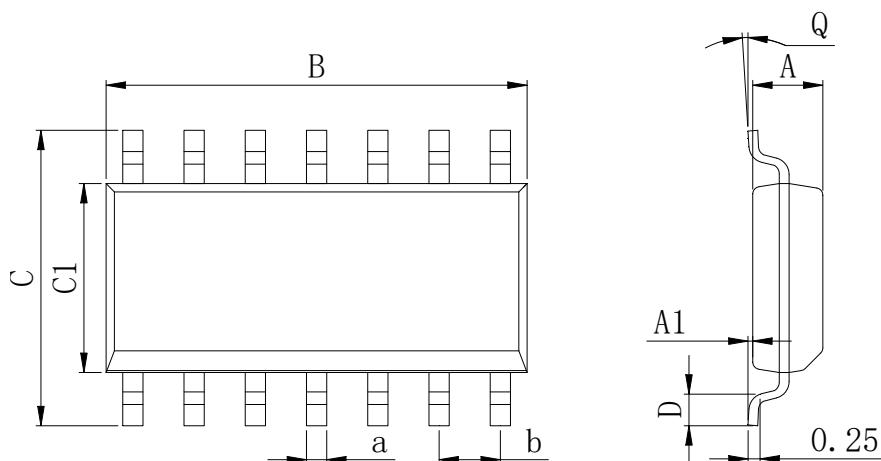
Physical Dimensions

SOP-8 (150mil)



Dimensions In Millimeters(SOP-8)									
Symbol:	A	A1	B	C	C1	D	Q	a	b
Min:	1.35	0.05	4.90	5.80	3.80	0.40	0°	0.35	1.27 BSC
Max:	1.55	0.20	5.10	6.20	4.00	0.80	8°	0.45	

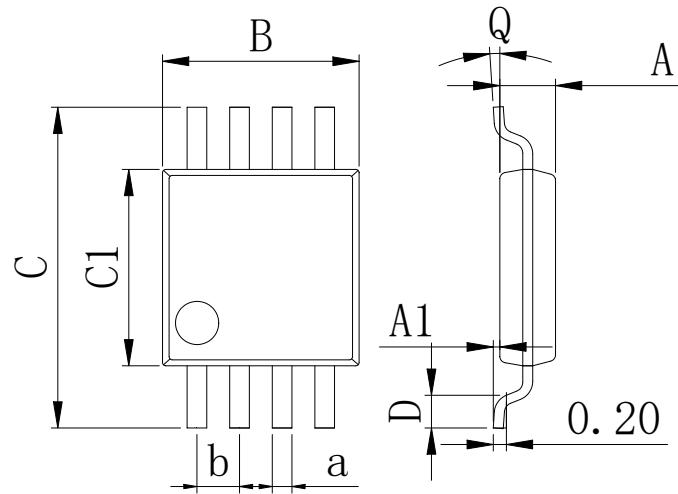
SOP-14



Dimensions In Millimeters(SOP-14)									
Symbol:	A	A1	B	C	C1	D	Q	a	b
Min:	1.35	0.05	8.55	5.80	3.80	0.40	0°	0.35	1.27 BSC
Max:	1.55	0.20	8.75	6.20	4.00	0.80	8°	0.45	

Physical Dimensions

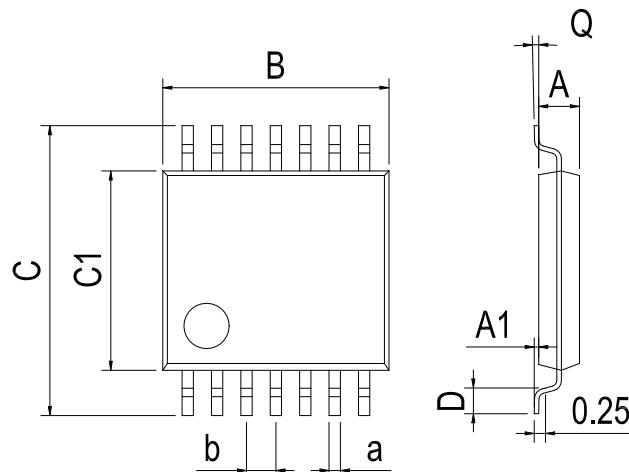
MSOP-8



Dimensions In Millimeters(MSOP-8)

Symbol:	A	A1	B	C	C1	D	Q	a	b
Min:	0.80	0.05	2.90	4.75	2.90	0.35	0°	0.25	0.65 BSC
Max:	0.90	0.20	3.10	5.05	3.10	0.75	8°	0.35	

TSSOP-14



Dimensions In Millimeters(TSSOP-14)

Symbol:	A	A1	B	C	C1	D	Q	a	b
Min:	0.85	0.05	4.90	6.20	4.30	0.40	0°	0.20	0.65 BSC
Max:	0.95	0.20	5.10	6.60	4.50	0.80	8°	0.25	

Revision History

DATE	REVISION	PAGE
2017-1-16	New	1-9

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