LTC8542Q

General Purpose 1.5MHz, RRIO, 1.8V CMOS Amplifiers

General Description

The LTC8542QS8/R8 is dual-channel operational amplifier is specifically designed for general purpose cost-sensitive systems and applications. Featuring rail-to-rail input and output (RRIO) swings, and low quiescent current (typical 100 µA) combined with a wide bandwidth (1 MHz) and low noise (20nV/ √ Hz at 1 kHz) makes this family very attractive for a variety of battery-powered applications that require a good balance between cost and performance, such as audio outputs, consumer electronics, smoke detectors, portable medical devices and white goods. The low input bias current supports these amplifiers to be used in applications with mega-ohm source impedances.

The robust design of the LTC8542QS8/R8 provide ease-of-use to the circuit designer: unity-gain stability with capacitive loads of up to 500 pF, integrated RF/EMI rejection filter, no phase reversal in overdrive conditions, and high electro-static discharge (ESD) protection. The LTC8542QS8/R8 amplifiers are optimized for operation at voltages as low as +2 V (±1 V) and up to +5.5 V (±2.75 V), and over the extended temperature range of −40 ℃ to +125 ℃.

The LTC8542QS8/R8 (dual) is offered in SOIC-8L packages.

Features and Benefits

- Wide Unity-Gain Bandwidth: 1 MHz
- Optimized for AEC-Q100 grade 1 applications
- General Purpose Amplifiers for Cost-Sensitive Systems
- 1 MHz GBW for Unity-Gain Stable
- Low Input Offset Voltage：±4.5 mV Maxium
- Single 2 V to 5.5 V Supply Voltage Range
- Rail-to-Rail Input and Output
- Internal RF/EMI Filter
- Extended Temperature Range: −40℃ to +125℃

Applications

- Precision Instrumentation
- Battery-Powered Instruments:
- Audio Outputs
- Wireless Sensors:
  - Home Security, Remote Sensing, Wireless Metering
- Sensor Signal Conditioning:
  - Sensor Interfaces, Loop-Powered, Active Filters

Table of Content

Ordering Information[1]

Part Number	Package Type	Package Quantity	ECO Class[2]	Mark Code[3]
LTC8542QS8/R8	SOIC-8L	Tape and Reel, 4 000	Green (RoHS & no Sb/Br)	Q42X

Preview Status (Not for MP stage, pls contact with us if you have request)

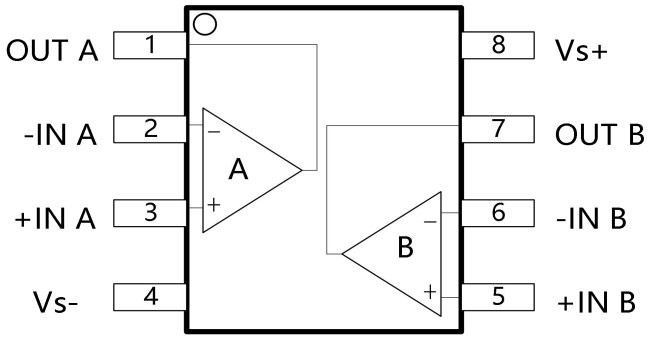
(1) Please contact to your Linearin representative for the latest availability information and product content details.

(2) Eco Class - The planned eco-friendly classification: Pb-Free (RoHS) or Green (RoHS & Halogen Free).

(3) There may be multiple device markings, or additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

Pin Configuration (Top View)

LTC8542QS8/R8
标准SOIC-8L



PIN Name	Description
–IN	Inverting input of the amplifier. The voltage range is from (V_{S-} – 0.1V) to (V_{S+} + 0.1V).
+IN	Non-inverting input of the amplifier. This pin has the same voltage range as –IN.
V_{S+}	Positive power supply.
V_{S-}	Negative power supply.
OUT	Amplifier output.

Limiting Value

In accordance with the Absolute Maximum Ratin System (IEC60134).

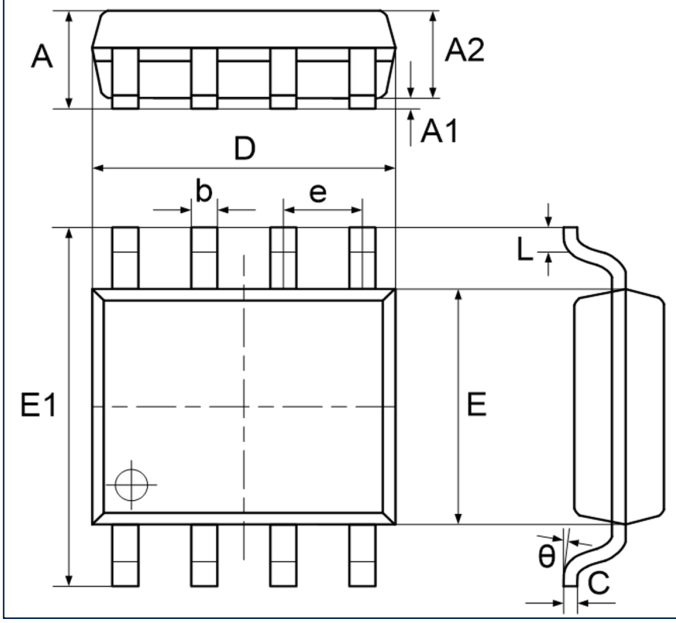
Parameter	Absolute Maximum Rating
Supply Voltage, V_{S+} to V_{S-}	10.0 V
Signal Input Terminals: Voltage, Current	V_{S-} - 0.5 V to V_{S+} + 0.5 V, ±10 mA
Output Short-Circuit	Continuous
Storage Temperature Range, Tstg	-65 ℃ to +150 ℃
Junction Temperature, T_J	150 ℃
Lead Temperature Range (Soldering 10 sec)	260 ℃

ESD Ratings

Parameter	Level	UNIT
Human body model (HBM), per ESDA/JEDEC JS-001-2023 (1)	TBD	V
Charged device model (CDM), per JESD22-A115C-2010	TBD	V

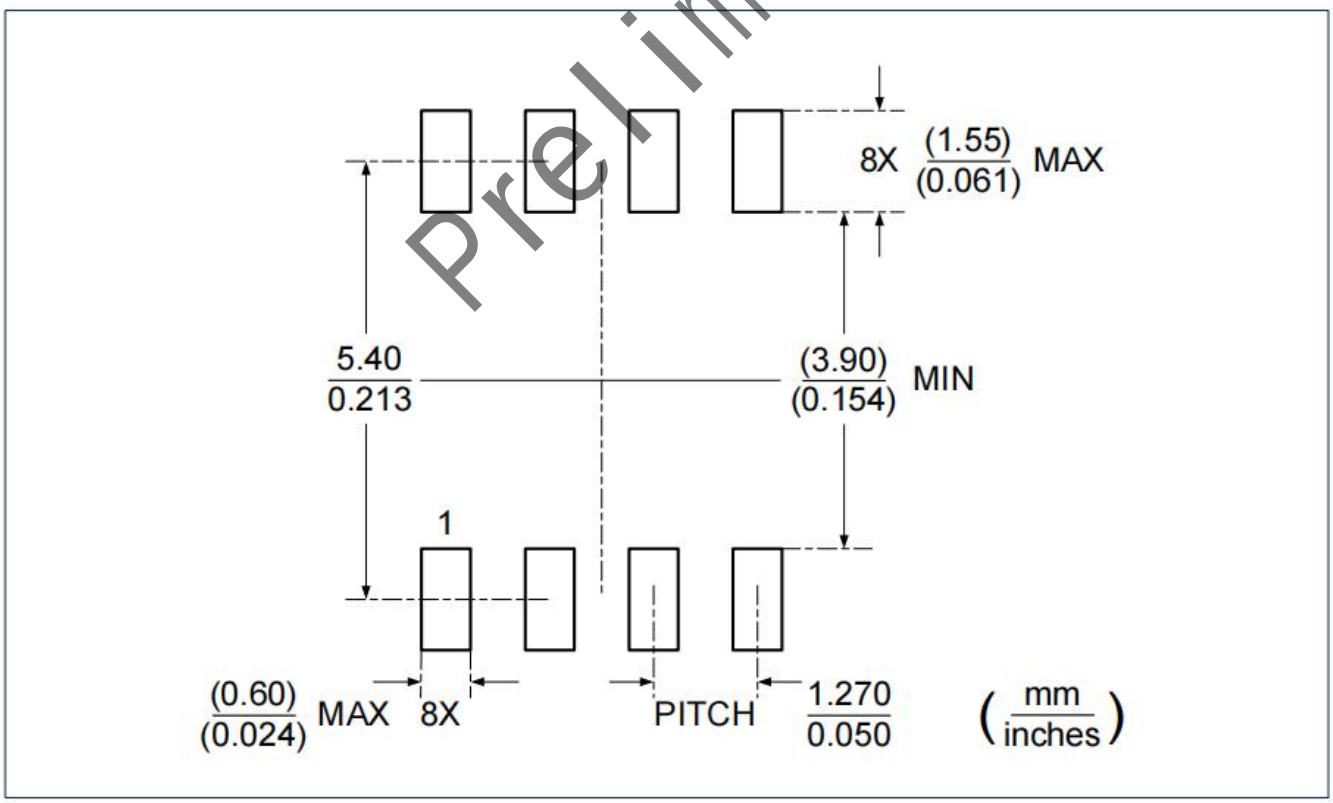
Package Outlines

DIMENSIONS, SOIC-8L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.370	1.670	0.054	0.066
A1	0.070	0.170	0.003	0.007
A2	1.300	1.500	0.051	0.059
b	0.306	0.506	0.012	0.020
C	0.203 TYP.		0.008 TYP.	
D	4.700	5.100	0.185	0.201
E	3.820	4.020	0.150	0.158
E1	5.800	6.200	0.228	0.244
e	1.270 TYP.		0.050 TYP.	
L	0.450	0.750	0.018	0.030
θ	0°	8°	0°	8°

RECOMMENDED SOLDERING FOOTPRINT, SOIC-8L



Important Notice

Linearin is a global fabless semiconductor company specializing in advanced high-performance high-quality analog/mixed-signal IC products and sensor solutions. The company is devoted to the innovation of high performance, analog-intensive sensor front-end products and modular sensor solutions, applied in multi-market of medical & wearable devices, smart home, sensing of IoT, intelligent industrial & smart factory (industry 4.0), and automotives. Linearin's product families include widely-used standard catalog products, solution-based application specific standard products (ASSPs) and sensor modules that help customers achieve faster time-to-market products. Go to http://www.linearin.com for a complete list of Linearin product families.

For additional product information, or full datasheet, please contact with the Linearin's Sales Department or Representatives.