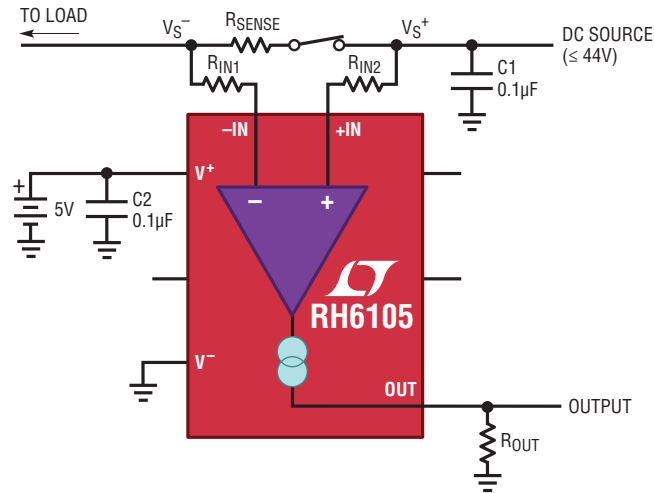


Accurate Current Measurement Simplified



The RH6105 is a precision current sense amplifier that is robust and easy to use. It has a differential input swing capability to $\pm 44V$, allowing direct sensing of fuse or MOSFET drops while the input common mode range extends 44V above and 0.3V below V^- . The ability to take common mode down to ground enables low side current sensing and monitoring of negative supply rails. In the absence of power the inputs remain high impedance and continue to present a benign load to the system, even when the circuit is intentionally powered down on a redundant or backup bus.

Features[†]

- **Processed in Compliance with Linear's Certified MIL-PRF-38535 Class V Flow***
- **Very Wide, Over-The-Top[®], Input Common Mode Range**
 - Extends 44V Above V^- (Independent of V^+)
 - Extends -0.3V Below V^-
- **Wide Power Supply Range: 2.85V to 36V**
- **Input Offset Voltage: 400µV Maximum**
- Gain Accuracy: 1% Maximum
- Resistors Selectable Gain
- Typical Operating Current: 195µA
- Slew Rate: 2V/µs

Radiation Performance*

- Total Ionizing Dose (TID) Tolerance, per TM1019.8, MIL-STD-883:
 - 200kRad (Si), per Condition A at 50Rads (Si)/sec
 - 50kRad (Si), per Condition D at 10mRads (Si)/sec
 - ELDRS Pass 50kRad (Si)
- Displacement Damage Defect (DDD) Up to 1E12 Neutrons/cm²

Availability

- MSK196RH: Precision Current Sense Amplifier, FP-10 (MIL-PRF-38535 Class V)
- MSK496RH: Quad Precision Current Sense Amplifier, FP-16 (MIL-PRF-38534 Class K^{**})
- MSK6000RH: Dual High Side Driver with Current Sense, FP-26 (MIL-PRF-38534 Class K)

[†] Parametric values for MSK196RH.

* Radiation testing and Qualification completed on the packaging vendor's assembled units.

** Contact MSK for qualification status.



LT, LT, LTC, LTM, Linear Technology, the Linear logo and Over-The-Top are registered trademarks and UltraFast is a trademark of Linear Technology Corporation. All other trademarks are the property of their respective owners.

Radiation Hardened Product Range

AMPLIFIERS				
Part Type	Description	Typical GBW (MHz)	Package	Partner Products
RH101A	Operational Amplifier	0.1	DICE, TO-5, DIP-8, FP-10	MSK0041, MSK106
RH1078	Dual Micropower Precision Op Amp, 120µV Offset	0.2	DICE, TO-5, DIP-8, FP-10	
RH07	Precision Operational Amplifier	0.4	DICE, TO-5, DIP-8, FP-10	
RH108A	General Purpose Operational Amplifier	0.5	DICE, TO-5, DIP-8, FP-10	
RH1013	Dual Precision Operational Amplifier, 300µV Offset	0.5	DICE, TO-5, DIP-8, FP-10	
RH1014	Quad Precision Operational Amplifier	0.5	DIP-14, FP-14	
RH6105	Rail-to-Rail Current Sense Amplifier	1.0	DICE	MSK196, MSK496 (Quad), MSK6000
RH27A	Precision Operational Amplifier, 35µV Offset	5.0	FP-10	
RH27	Precision Operational Amplifier, 55µV and 100µV Offset	5.0	DICE, TO-5, DIP-8, FP-10	
RH1056A	Precision High Speed JFET Input Operational Amplifier	6.5	TO-5, FP-10	
RH1056	Precision High Speed JFET Input Operational Amplifier	6.5	DICE	
RH1498	Dual 6V/µs Rail-to-Rail Input/Output Precision C-Load	10	DICE, FP-10	MSK198RHL
RH1499	Quad 6V/µs Rail-to-Rail Input/Output Precision C-Load	10	FP-14	
RH118	Precision/High Speed Operational Amplifier	15	TO-5, DIP-8, FP-10	
RH1128	Ultralow Noise Precision Op Amp, $A_V \geq 1$	20	DICE, FP-10	
RH37	Precision 45MHz Operational Amplifier	45	DICE, TO-5, DIP-8, FP-10	
RH1028	Ultralow Noise Precision Op Amp, $A_V \geq 2$ or $A_V \leq -1$	75	DICE, FP-10	
RH1814	Dual 3mA, 100MHz, 750V/µs Operational Amplifier	100	DICE	
RH1814	Quad 3mA, 100MHz, 750V/µs Operational Amplifier	100	FP-14	
RH6200	165MHz, Rail-to-Rail I/O, 0.95nV/√Hz Low Noise, Op Amp	165	DICE, FP-10	
COMPARATORS				
Part Type	Description	Typical t_{PD} (ns)	Package	Partner Products
RH1016	UltraFast™ 10ns Precision Comparator	10	DICE, FP-10	
RH119	Dual High Performance Comparator	80	DICE, TO-5, DIP-8, FP-10	
RH1011	Precision Voltage Comparator	150	DICE, TO-5, DIP-8, FP-10	
RH111	Voltage Comparator, (Please Use RH1011 for New Designs)	200	TO-5, DIP-8, FP-10	
VOLTAGE REFERENCES				
Part Type	Description	T.C. Max ppm/°C	Package	Partner Products
RH1034-1.2	1.2V Micropower Dual Reference with 7V Aux	60	TO-46, FP-10	
5962R8961002	2.5V Precision Reference - SMD Version of RH1009	35	TO-46, FP-10	
RH1009	2.5V Precision Reference - SCD Version	35	DICE, TO-46, FP-10	MSK109, MSK110 (Dual)
RH1021-5	5V Precision Reference	5-20	DICE, TO-5, FP-10	
RH129A	6.9V Precision Reference	10	TO-46	
RH1021-7	7V Precision Reference	5-20	TO-5	
RH1021-10	10V Precision Reference	5-20	DICE, TO-5, FP-10	
DATA CONVERTORS				
Part Type	Description	F_S (ksps)	Package	Partner Products
LTC1604	16-Bit, 333ksps Sampling ADC with Shutdown	333	SSOP-36	
RH1419	14-Bit, 800ksps Sampling ADC with Shutdown	800	DICE	RAD1419
VOLTAGE REGULATOR DRIVER				
Part Type	Description	Accuracy (%)	Package	Partner Products
RH1573	10V, LDO Regulator Driver, Up to 5A with External PNP	1.0	DICE	MSK5800, MSK5805, MSK5810, MSK5820, MSK5821, MSK5822, MSK5823, MSK5824, MSK5825, MSK5826, MSK5950
POSITIVE LINEAR REGULATORS				
Part Type	Description	I_{OUT} (A)	Package	Partner Products
RH1086H	25V, 0.5A Positive Adjustable Voltage LDO Regulator	0.5	DICE, TO-39	
RH117H	40V, 0.5A Positive Adjustable Regulator	0.5	DICE, TO-39	
RH3080	40V, 0.9A Adjustable, Single Resistor LDO Regulator	0.9	DICE	MSK5976, MSK5977, MSK5978, VRG8666, Dual Regulators: MSK5953, VRG8667, VRG8668
RH1965	20V, 1A Rugged, Low Noise, Adjustable LDO Regulator with Shutdown	1.0	DICE	MSK5965
RH1086K	25V, 1.5A Positive Adjustable Voltage LDO Regulator	1.5	DICE, TO3	MSK5970, VRG8662, Dual Regulators: VRG8657, VRG8658, Positive + Negative Regulators: VRG8651, VRG8652
RH117K	40V, 1.5A Positive Adjustable Regulator	1.5	DICE, TO3	MSK5972, VRG8660, Dual Regulators: VRG8607, VRG8608, Positive + Negative Regulators: MSK5911, MSK5912, MSK5913, MSK5914, MSK5915, MSK5916, MSK5917, MSK5918, MSK5919, VRG8601, VRG8602
RH3083	18V, 2.8A Adjustable, Single Resistor LDO Regulator	2.8	DICE	MSK5983, MSK5984, MSK5985, MSK5986, VRG8669, VRG8697, VRG8698
RH1085	30V, 3A Positive Adjustable Voltage LDO Regulator	3.0	DICE, TO3	MSK5971, Positive + Negative Regulators: MSK5930, MSK5931, MSK5932, MSK5933, MSK5934, MSK5935, MSK5936, MSK5937, MSK5938, MSK5939
RH1084	25V, 5A Positive Adjustable Voltage LDO Regulator	5.0	DICE	VRG8684, Dual Regulators: VRG8687, VRG8688, Positive + Negative Regulators: VRG8653, VRG8654
NEGATIVE LINEAR REGULATORS				
Part Type	Description	I_{OUT} (A)	Package	Partner Products
RH137H	30V, 0.5A Negative Adjustable Voltage Regulator	0.5	DICE, TO-39	
RH137K	30V, 1.5A Negative Adjustable Voltage Regulator	1.5	DICE, TO3	MSK5973, VRG8661, Dual Regulators: VRG8609, VRG8610, Positive + Negative Regulators: MSK5911, MSK5912, MSK5913, MSK5914, MSK5915, MSK5916, MSK5917, MSK5918, MSK5919, VRG8601, VRG8602
RH1185A	35V, 3A Negative LDO with Adjustable Current Limit	3.0	DICE, TO3	MSK5940, VRG8663, Positive + Negative Regulators: MSK5930, MSK5931, MSK5932, MSK5933, MSK5934, MSK5935, MSK5936, MSK5937, MSK5938, MSK5939, VRG8651, VRG8652, VRG8653, VRG8654
SWITCHING REGULATORS AND CONTROLLERS				
Part Type	Description	I_{OUT} (A)	Package	Partner Products
RH1959	16V, 4.5A, 500kHz Step-Down Switching Regulator	4.5	DICE	MSK5044, MSK5048, MSK5052, MSK5059
RH3845	60V Synchronous Step-Down Controller, 100kHz to 500kHz	10	DICE	MSK5055 Switching Controller (Monolithic)
RHK3845	RH3845 Controller + Two RH411 Power NMOS FETs	10	3 x DICE	MSK5063 Switching Regulator Module

Partner Products:

MSK Prefix - ANAREN INC. (MS KENNEDY CORP.), www.mskennedy.com
 VRG Prefix - COBHAM plc (AEROFLEX MICROELECTRONIC SOLUTIONS), www.aeroflex.com/ams