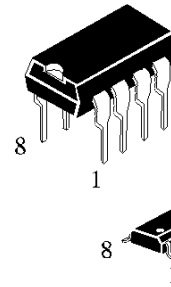


Low Power Dual Operational Amplifier

The HT358A contains two independent high gain operational amplifiers with internal frequency compensation. The op-amps operate over a wide voltage range. The low power drain makes the HT358A a good choice for battery operation.

- Internally frequency compensated for unity gain
- Large DC voltage gain
- Single or Split Supply Operation
- Input common-mode voltage range to ground
- Large output voltage swing: 0V DC to $V_{CC}-1.5V$ DC
- Power drain suitable for battery operation
- Low input offset voltage and offset current
- Differential input voltage range equal to the power supply voltage



N SUFFIX
PLASTIC

D SUFFIX
SOIC

ORDERING INFORMATION

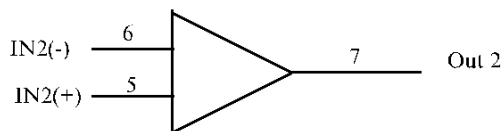
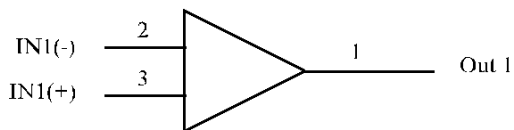
HT358AN Plastic

HT358AR SOIC

HT358AG Chip

$T_A = 0^\circ$ to 70° C for all packages

BLOCK DIAGRAM



PIN 4 = GND

PIN 8 = V_{CC}

MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V _{CC}	Power Supply Voltages		
	Single Supply	32	V
	Split Supplies	±16	
V _{IDR}	Input Differential Voltage Range (1)	±32	V
V _{ICR}	Input Common Mode Voltage Range	-0.3 to 32	V
t _S	Short-Circuit duration of Output	100	ms
I _{IN}	Input Current, per pin (2)	50	mA
T _J	Junction Temperature		
	Plastic Packages	150	°C
T _{stg}	Storage Temperature		
	Plastic Packages	-55 to +125	°C
T _L	Lead Temperature, 1mm from Case for 10 Seconds	260	°C

* Maximum Ratings are those values beyond which damage to the device may occur. Functional operation should be restricted to the Recommended Operating Conditions.

Notes:

1. Split Power Supplies.
2. V_{IN}<-0.3V

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Min	Max	Unit
V _{CC}	DC Supply Voltage	±2.5 or 5.0	±15 or 30	V
T _A	Operating Temperature, All Package Types	0	+70	°C

DC ELECTRICAL CHARACTERISTICS (T_A=0 ÷ +70°C)

Symbol	Parameter	Test Conditions	Guaranteed Limit		Unit
			Min	Max	
V _{IO}	Maximum Input Offset Voltage	V _{CC} =5.0-30V, R _S =0Ω, V _O =1.4V V _{ICR} =0V -(V _{CC} -1.5V)* V _{ICR} =0V -(V _{CC} -2.0V)	1	5.0* 7.0	mV
I _{IO}	Maximum Input Offset Current	V _{CC} =5.0-30V, V _O =1.4V		±50* ±150	nA
I _{IB}	Maximum Input Bias Current	V _{CC} =5.0-30V, V _O =1.4V		-250* -500	nA
V _{ICR}	Input Common Mode Voltage Range	V _{CC} =30V	0 0	V _{CC} -1.5V* V _{CC} -2.0V	V
I _{CC}	Maximum Power Supply Current	R _L =∞, V _{CC} =30V, V _O =15V R _L =∞, V _{CC} =5V, V _O =2.5V		2 1.2	mA
A _{VOL}	Minimum Large Signal Open-Loop Voltage Gain	V _{CC} =15V, R _L =2KΩ	25* 15		V/mV
V _{OH}	Minimum Output High-Level Voltage Swing	V _{CC} =5V, R _L =2KΩ* V _{CC} =30V, R _L =2KΩ V _{CC} =30V, R _L =10KΩ	3.3* 26 27		V
V _{OL}	Maximum Output Low-Level Voltage Swing	V _{CC} =5V, R _L =10KΩ		20	mV
CMR	Common Mode Rejection	Ω V _{CC} =5-30V, R _S =10K	65*		dB
PSR	Power Supply Rejection	V _{CC} =5-30V	65*		dB
I _{SC}	Maximum Output Short Circuit to GND	V _{CC} =5.0V, V _O =0V		60*	mA
I _{O+}	Minimum Source Output Current	V _{CC} =15V, V _{ID} =1.0V	20*		mA
I _{O-}	Minimum Output Sink Current	V _{CC} =15V, V _O =15V, V _{ID} =-1.0V V _{CC} =15V, V _O =0.2V, V _{ID} =-1.0V	10* 12*		mA ∞A
V _{IDR}	Differential Input Voltage Range	All V _{IN} ≥GND or V-Supply (if used)		V _{CC} *	V

* T_A= +25°C

NOTE: Guaranteed Limits of DC Electrical Characteristics are given for T_A=0, +70°C as the information for chips

TYPICAL PERFORMANCE CHARACTERISTICS (T_A= +25°C)

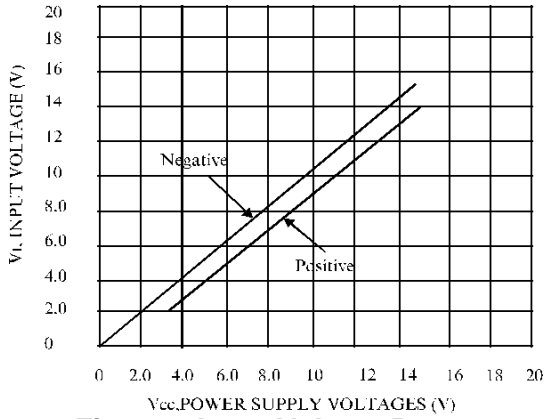


Figure 1. Input Voltage Range

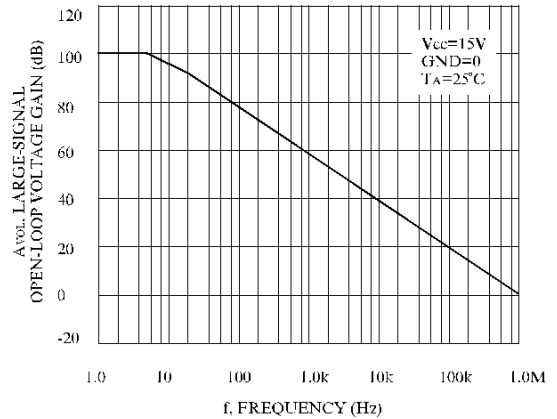


Figure 2. Open-Loop Frequency

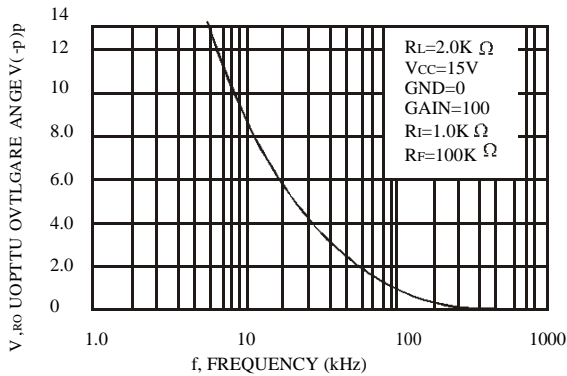


Figure 3. Large-Signal Frequency Response

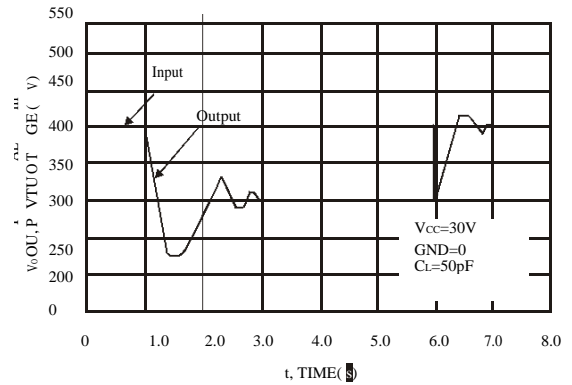


Figure 4. Small-Signal Voltage Follower Pulse Response (Noninverting)

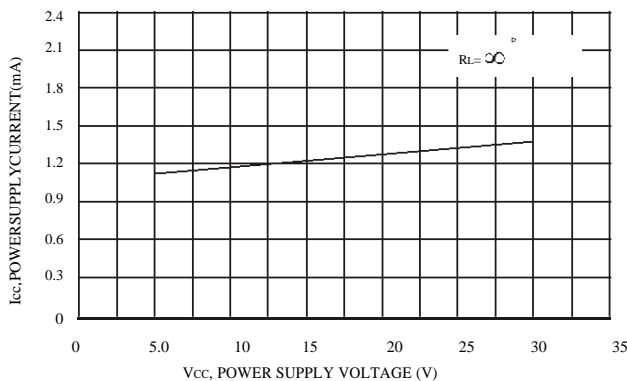


Figure 5. Power Supply Current versus Power Supply Voltage

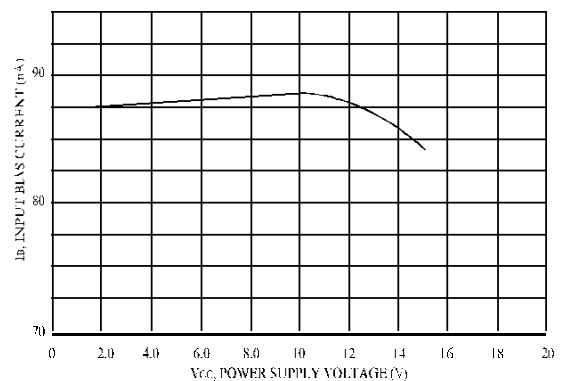
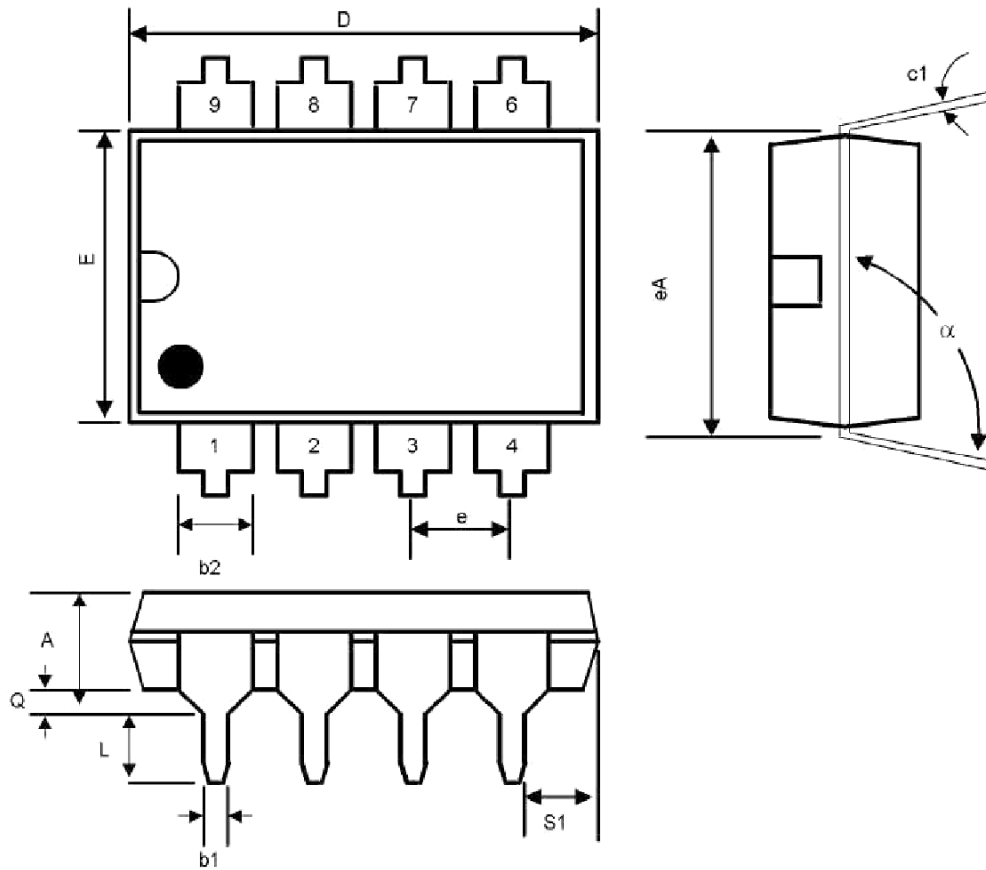
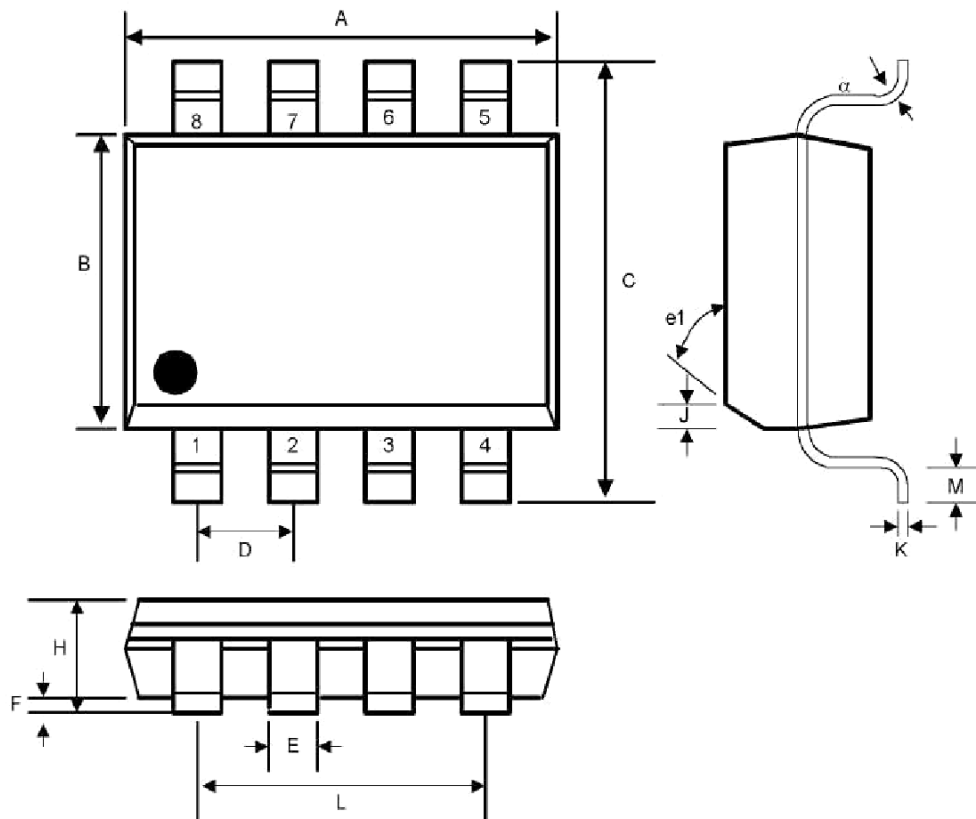


Figure 6. Input Bias Current versus Power Supply Voltage

Package Outlines: DIP-8


SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN	MAX	MIN	MAX	
A	-	0.200	-	5.08	-
b1	0.014	0.023	0.36	0.58	-
b2	0.045	0.065	1.14	1.65	-
c1	0.008	0.015	0.20	0.38	-
D	0.355	0.400	9.02	10.16	-
E	0.220	0.310	5.59	7.87	-
e	0.100 BSC		2.54 BSC		-
eA	0.300 BSC		7.62 BSC		-
L	0.125	0.200	3.18	5.08	-
Q	0.015	0.060	0.38	1.52	-
s1	0.005	-	0.13	-	-
α	90^0	105^0	90^0	105^0	-

Small Outline SOP-8


SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN	MAX	MIN	MAX	
A	0.188	0.197	4.80	5.00	-
B	0.149	0.158	3.80	4.00	-
C	0.228	0.244	5.80	6.20	-
D	0.050 BSC		1.27 BSC		-
E	0.013	0.020	0.33	0.51	-
F	0.004	0.010	0.10	0.25	-
H	0.053	0.069	1.35	1.75	-
J	0.011	0.019	0.28	0.48	-
K	0.007	0.010	0.19	0.25	-
M	0.016	0.050	0.40	1.27	-
L	0.150 REF		3.81 REF		-
e1	45°		45°		-
α	0°	8°	0°	8°	-

*All specs and applications shown above subject to change without prior notice.