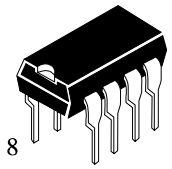
IL358N

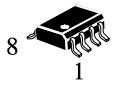
Low Power Dual Operational Amplifier

The IL358 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 IL358 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

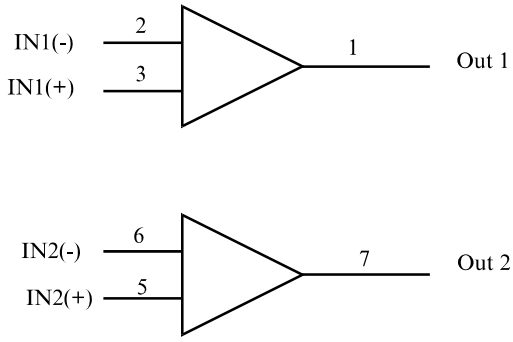


D SUFFIX
SOIC

ORDERING INFORMATION

IL358N Plastic
IL358D SOIC
IZ358 Chip
T_A = 0° to 70° C for all packages

BLOCK DIAGRAM



PIN 4 = GND
PIN 8=V_{CC}

INTEGRAL

MAXIMUM RATINGS*

Symbol	Parameter	Value	Unit
V_{CC}	Power Supply Voltages Single Supply Split Supplies	 32 ±16	 V
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
Tstg	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)		 7.0* 9.0	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_0=15V R_L=∞,V_{CC}=5V, V_0=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	V_{CC}=5-30V, R_S=10KΩ	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_0=15V, V_{ID}=-1.0V V_{CC}=15V, V_0=0.2V, V_{ID}=-1.0V	10* 12*		mA μA
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= +25ºC)

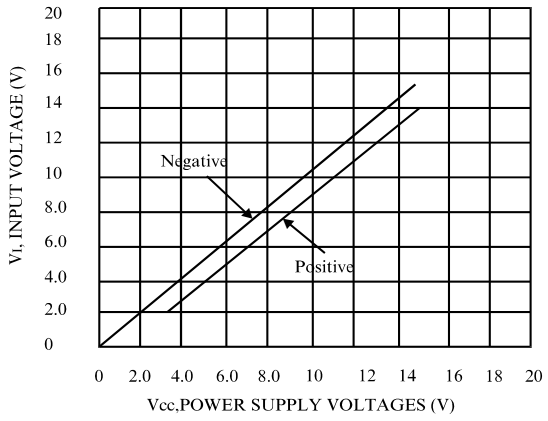


Figure 1.Input Voltage Range

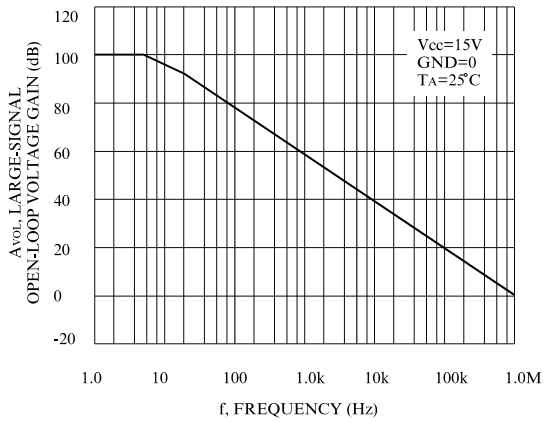


Figure 2. Open-Loop Frequency

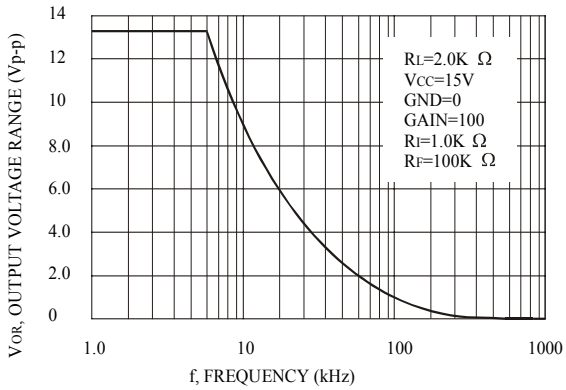


Figure 3. Large-Signal Frequency Response

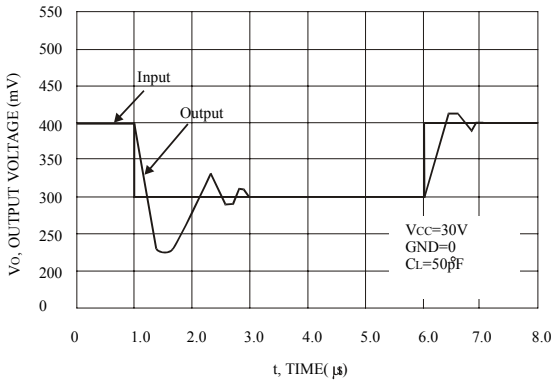


Figure 4. Small-Signal Voltage Follower Pulse Response (Noninverting)

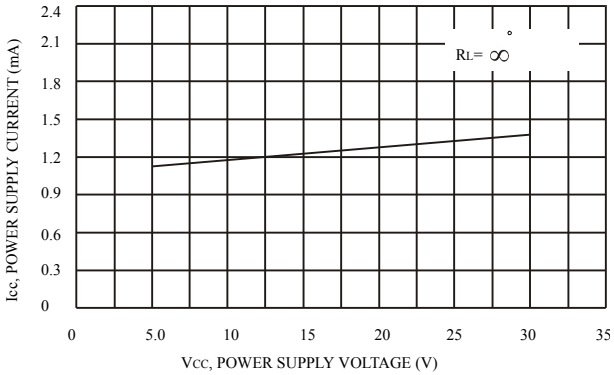


Figure 5. Power Supply Current versus Power Supply Voltage

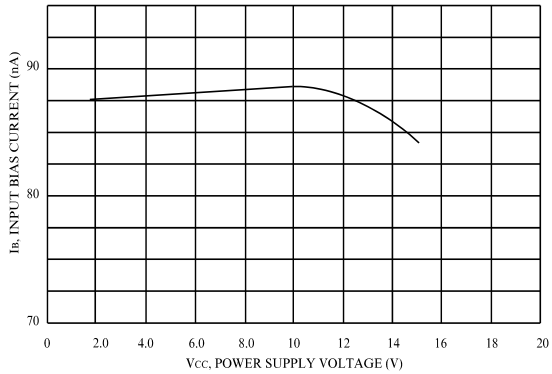


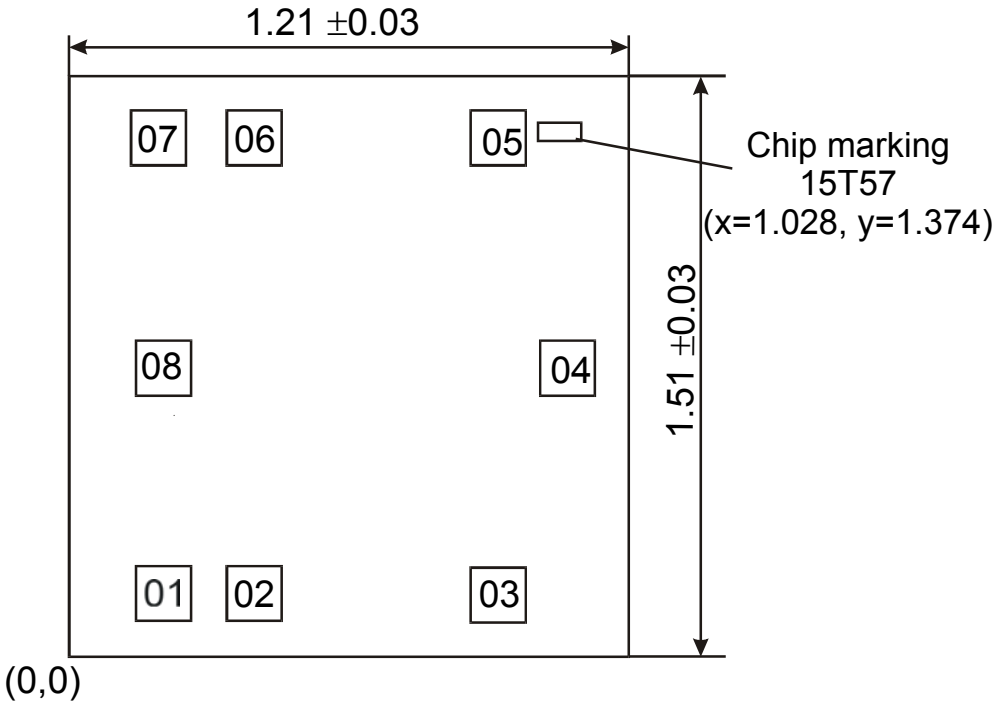
Figure 6. Input Bias Current versus Power Supply Voltage

INTEGRAL

TYPICAL DC ELECTRICAL CHARACTERISTICS (T_A= +25°C)

Symbol	Parameter	Test Conditions	Value	Unit
$\Delta V_{IO}/\Delta T$	Input Offset Voltage Drift	R_S=0Ω, V_{CC}=30V	7.0*	μV/°C
$\Delta I_{IO}/\Delta T$	Input Offset Current Drift	R_S=0Ω, V_{CC}=30V	10*	nA/°C
CS	Channel Separation	f=1KHz ÷ 20KHz,V_{CC}=30V	-120	dB

* T_A= 0 ÷ +70°C



CHIP PAD DIAGRAM IZ358

Pad size 0.110 x 0.110 mm (Pad size is given as per passivation layer)
Thickness of chip 0.35 ± 0.02 mm

PAD LOCATION

PAD NO	Symbol	X	Y
01	OUT1	0.087	0.085
02	IN1(-)	0.267	0.085
03	IN1(+0	0.852	0.085
04	GND	1.003	0.695
05	IN2(+)	0.852	1.305
06	IN2(-)	0.267	1.305
07	OUT2	0.087	1.305
08	V_{CC}	0.087	0.695