HG741 Operational Amplifier

General Description

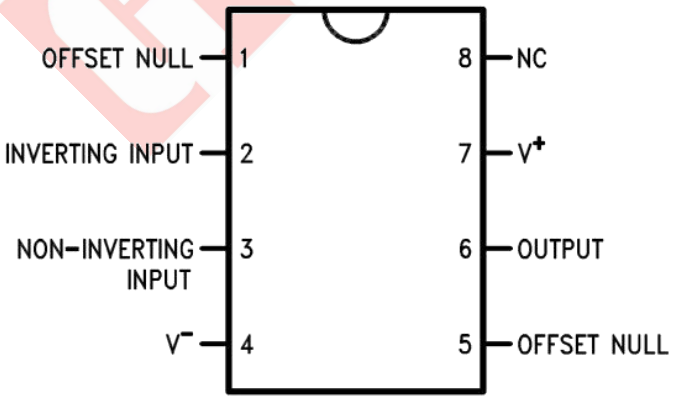
The HG741 series are general purpose operational amplifies which feature improved performance over industry standards like the HG709.They are e direct, plug-in replacements for the 709C, LM201, MC1439 and 748 in most applications. The amplifiers offer many features which make their applica tion nearly foolproof: overload protection on the input and output, no latch-up when the common mode range is ex ceeded, as well as freedom from oscillations.

Ordering Information

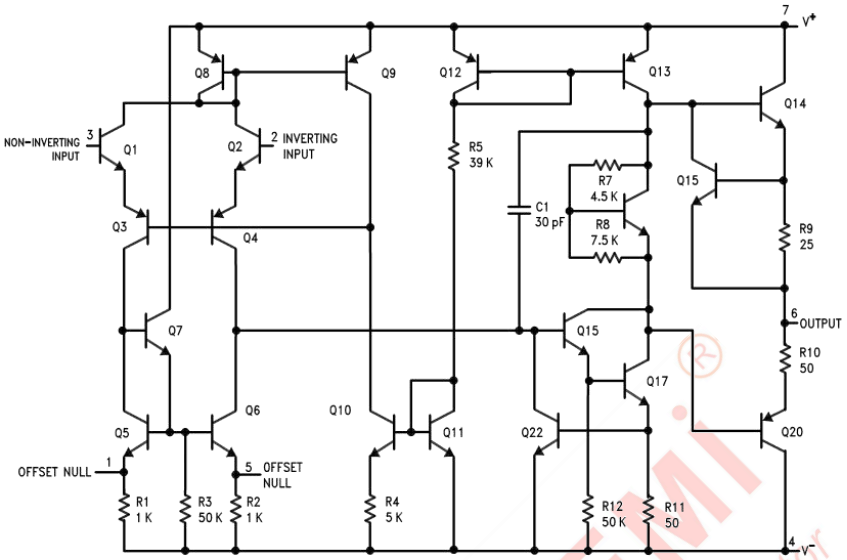
DEVICE	Package Type	MARKING	Packing	Packing Qty
HG741CN	DIP8	HG741	TUBE	2000pcs/Box
HG741ACN	DIP8	HG741A	TUBE	2000pcs/Box
HG741CM/TR	SOP8	HG741	REEL	2500pcs/Reel
HG741ACM/TR	SOP8	HG741A	REEL	2500pcs/Reel
HG741CMM/TR	MSOP8	HG741	REEL	3000pcs/Reel
HG741ACMM/TR	MSOP8	HG741A	REEL	3000pcs/Reel

Connection Diagram

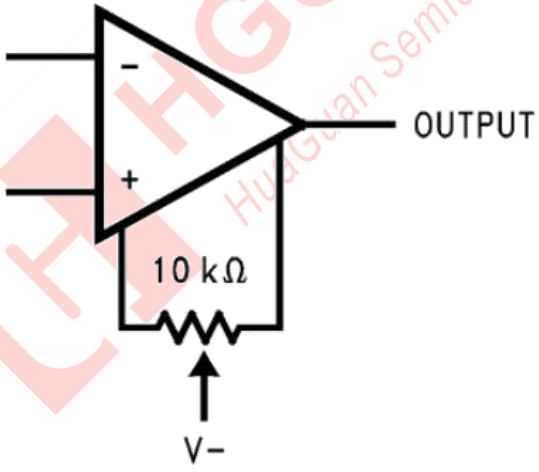
DIP8/SOP8/MSOP8



Schematic Diagram



Offset Nulling Circuit



Absolute Maximum Ratings

CONDITION		LIMITS
Supply Voltage		±22V
Power Dissipation(Note2）		500mW
Differential Input Voltage		±30V
Input Voltage(Note3)		±15V
Output Sort Circuit Duration		Continuous
Operating Temperature Range		0˚C to +70˚C
Junction Temperature	HG741A	150˚C
	HG741	100˚C
Soldering Information	N-Package(10 seconds)	260˚C
	J-or H-Package(10 seconds)	300˚C
M-Package	Vapor Phase(60 seconds）	215˚C
	Infrared(15 seconds)	215˚C
Storage Temperature Range		-65˚C to +150˚C
ESD Tolerance(Note7)		400V

Electrical Characteristics

Parameter	Conditions	HG741A			HG741			Units
		Min	Typ	Max	Min	Typ	Max	
Input Offset Voltage	T_A=25˚C R_S≤10KΩ R_S≤50Ω		 0.8	 3.0		 2.0	 6.0	 mW mW
	T_{AMIN}≤TA≤T_{AMAX} R_S≤50Ω R_S≤10KΩ			 4.0			 7.5	 mW mW
Average Input Offset Voltage Drift				15				μv/˚C
Input Offset Voltage Adjustment Range	T_A=25˚C,V_S=±20V	±10				±15		mW
Input Offset Current	T_A=25˚C T_{AMIN}≤TA≤T_{AMAX}		3.0	30 70		20	200 300	nA nA
Average Input Offset Current Drift				0.5				nA/˚C
Input Bias Current	T_A=25˚C T_{AMIN}≤TA≤T_{AMAX}		30	80 0.210		80	500 0.8	nA μA
Input Resistance	T_A=25˚C,V_S=±20V	1.0	6.0		0.3	2.0		MΩ
	T_{AMIN}≤TA≤T_{AMAX}, Vs=±20V	0.5						MΩ
Input Voltage Range	T_A=25˚C				±12	±13		V
	T_{AMIN}≤TA≤T_{AMAX}							V

Large Signal Voltage Gain	T_A=25°C,R_L≥2KΩ							
	V_S=±20V,V_O=±15V	50						V/mW
	V_S=±15V,V_O=±10V				20	200		V/mW
	T_{AMIN}≤TA≤T_{AMAX}							
	R_L≥2KΩ							
	V_S=±20V,V_O=±15V	32						V/mW
	V_S=±15V,V_O=±10V				15			V/mW
	V_S=±5V,V_O=±2V	10						V/mW
Output Voltage Swing	V_S=±20V							
	R_L≥10KΩ	±16						V
	R_L≥2KΩ	±15						V
	V_S=±15V							
	R_L≥10KΩ				±12	±14		V
	R_L≥2KΩ				±10	±13		V
Output Short Circuit Current	T_A=25°C	10	25	35		25		mA
	T_{AMIN}≤TA≤T_{AMAX}	10		40				mA
Common-Mode Rejection Ratio	T_{AMIN}≤TA≤T_{AMAX}			0.5				
	R_S≤10KΩ,V_{CM}=±12V				70	90		dB
	R_S≤50Ω,V_{CM}=±12V	80	95					dB
Supply Voltage Rejection Ratio	T_{AMIN}≤TA≤T_{AMAX}							
	Vs=±20VtoVS=±5V							
	R_S≤50Ω	86	96					dB
	R_S≤10KΩ				77	96		dB
Transient Response	T_A=25°C,Unity Gain							μs
Rise Time			0.25	0.8		0.3		
Overshoot			6.0	20		5		
Bandwidth(Note5)	T_A=25°C	0.43 7	1.5					MHz
Slew Rate	T_A=25°C,Unity Gain	0.3	0.7			0.5		V/μs
Supply Current	T_A=25°C					1.7	2.8	mA
Power Consumption	T_A=25°C							
	V_S=±20V		80	150				mw
	V_S=±15V					50	85	mw

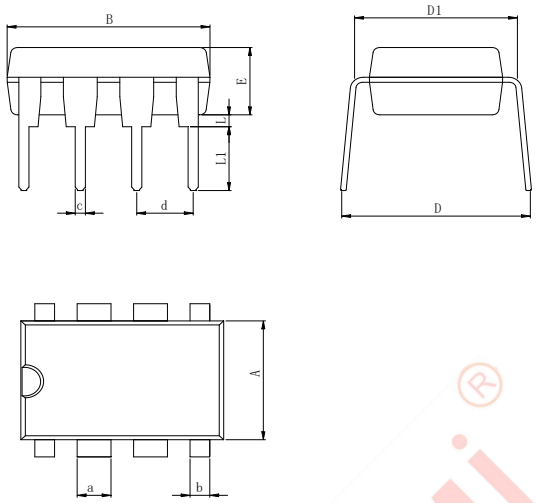
Note1:"Absolute Maximum Ratings"indicate limits beyond which damage to the device may occur.Operating Ratings indicate conditions for which the device is functional,but do not guarantee specific performance limits.
Note 2: For operation at elevated temperatures, these devices must be derated based on thermal resistance, and T_j max. (listed under "Absolute Maximum Ratings"). $T_j = T_A + (\theta_{jA} P_D)$.

Thermal Resistance	DIP(B)	SOP-8(M)
θ_{jA}(Junction to Ambient)	100°C/W	195°C/W
θ_{jC}(Junction to Case)	N/A	N/A

Note 3: For supply voltages less than ±15V, the absolute maximum input voltage is equal to the supply voltage.
Note 4: Calculated value from: BW (MHz) = 0.35/Rise Time(μs).
Note 5: Human body model, 1.5 kΩ in series with 100 pF.

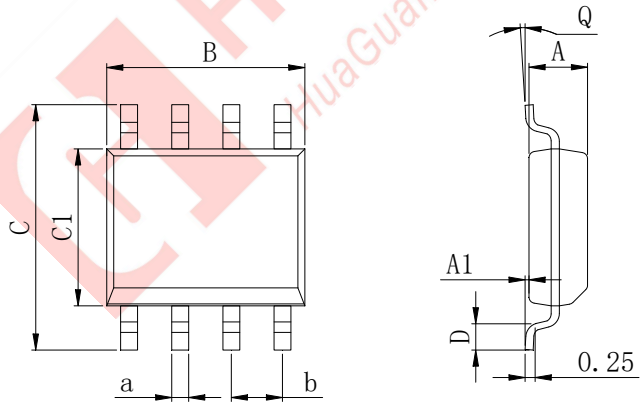
Physical Dimensions

DIP-8L



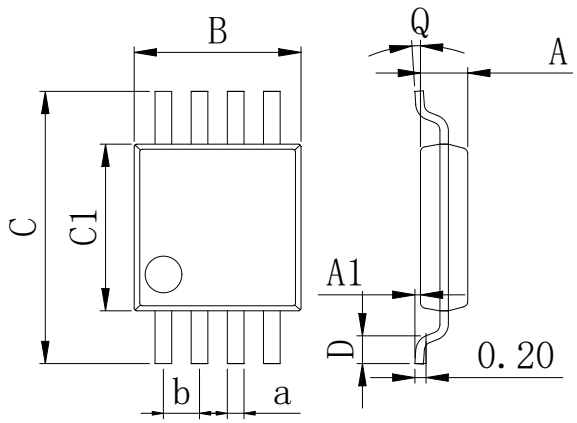
Dimensions In Millimeters(DIP8L)											
Symbol:	A	B	D	D1	E	L	L1	a	b	c	d
Min:	6.10	9.00	8.40	7.42	3.10	0.50	3.00	1.50	0.85	0.40	2.54 BSC
Max:	6.68	9.50	9.00	7.82	3.55	0.70	3.60	1.55	0.90	0.50	

SOP-8L 150mil



Dimensions In Millimeters(SOP8L)									
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	

MSOP8



Dimensions In Millimeters(MSOP8L)									
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	

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