HG741 Operational Amplifier

General Description

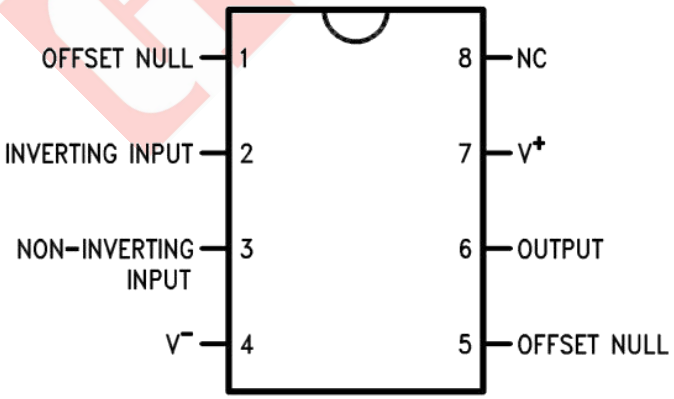
The HG741 series are general purpose operational amplifies which feature improved performance over industry standards like the HG709.They are e direct, plug-in replacements for the 709C, HG201, MC1439 and 748 in most applications. The amplifiers offer many features which make their applica tion nearly 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

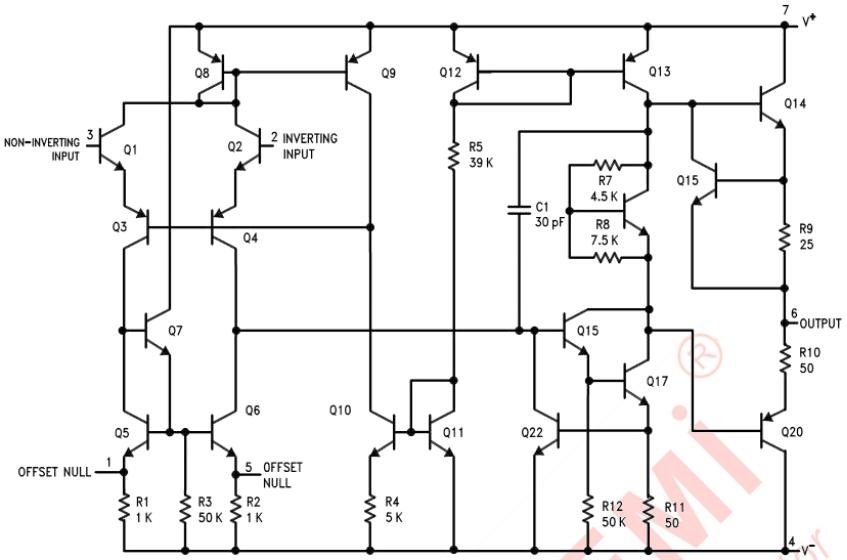
DEVICE	Package Type	MARKING	Packing	Packing Qty
HG741N	DIP8	HG741	TUBE	2000pcs/Box
HG741AN	DIP8	HG741A	TUBE	2000pcs/Box
HG741M/TR	SOP8	HG741	REEL	2500pcs/Reel
HG741AM/TR	SOP8	HG741A	REEL	2500pcs/Reel
HG741MM/TR	MSOP8	HG741	REEL	3000pcs/Reel
HG741AMM/TR	MSOP8	HG741A	REEL	3000pcs/Reel

Connection Diagram

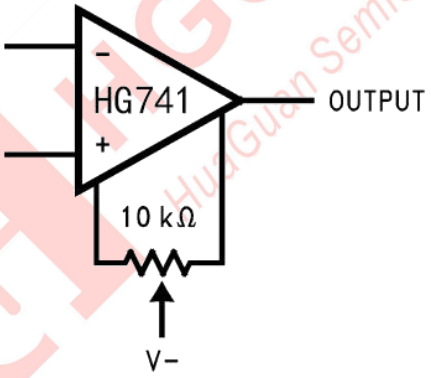
DIP8/SOP8/MSOP8



Schematic Diagram



Offset Nulling Circuit



Absolute Maximum Ratings

CONDITION		LIMITS	Units
Supply Voltage		±22	V
Power Dissipation(Note2）		500	mW
Differential Input Voltage		±30	V
Input Voltage(Note3)		±15	V
Output Sort Circuit Duration		Continuous	
Operating Temperature Range	HG741A	-40 ~ +85	˚C
	HG741	0 ~ +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 ~ +150	˚C
ESD Tolerance(Note7)		400	V

Electrical Characteristics

Parameter	Conditions	HG741A			HG741			Units
		Min	Typ	Max	Min	Typ	Max	
Input Offset Voltage	T_A=25°C							
	R_S≤10KΩ					2.0	6.0	mW
	R_S≤50Ω		0.8	3.0				mW
	T_{AMIN}≤TA≤T_{AMAX}							
	R_S≤50Ω			4.0				mW
	R_S≤10KΩ						7.5	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		3.0	30		20	200	nA
	T_{AMIN}≤TA≤T_{AMAX}			70			300	nA
Average Input Offset Current Drift				0.5				nA/°C
Input Bias Current	T_A=25°C		30	80		80	500	nA
	T_{AMIN}≤TA≤T_{AMAX}			0.210			0.8	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 Rise Time Overshoot	T_A=25˚C,Unity Gain		0.25 6.0	0.8 20		0.3 5		μs
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 V_S=±15V		80	150		 50	 85	 mw 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.

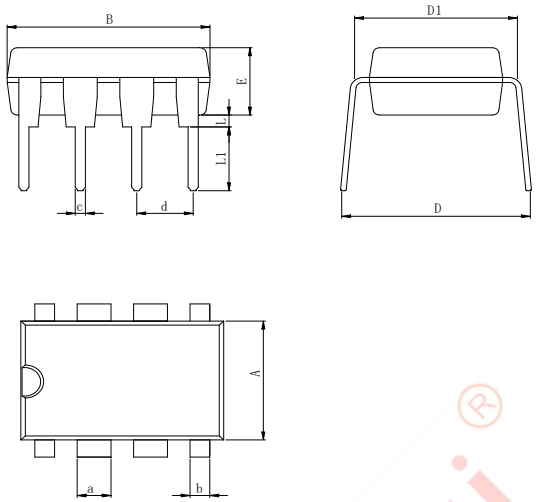
Note 4: Unless otherwise specified, these specifications apply for VS = ±15V, −40˚C ≤ TA ≤ +85˚C (HG741A). For the HG741, these specifica tions are limited to 0˚C ≤ TA ≤ +70˚C.

Note 5: Calculated value from: BW (MHz) = 0.35/Rise Time(μs).

Note 6: Human body model, 1.5 kΩ in series with 100 pF.

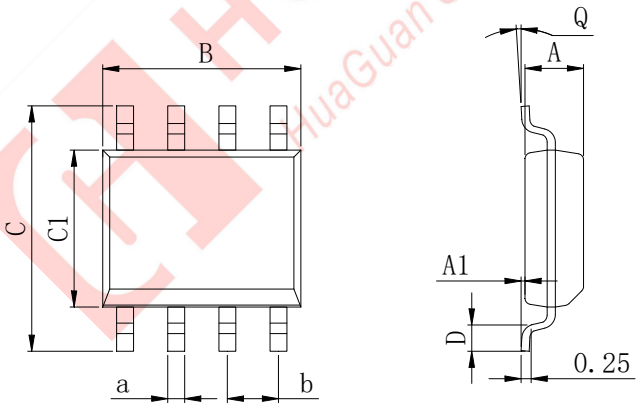
Physical Dimensions

DIP-8L



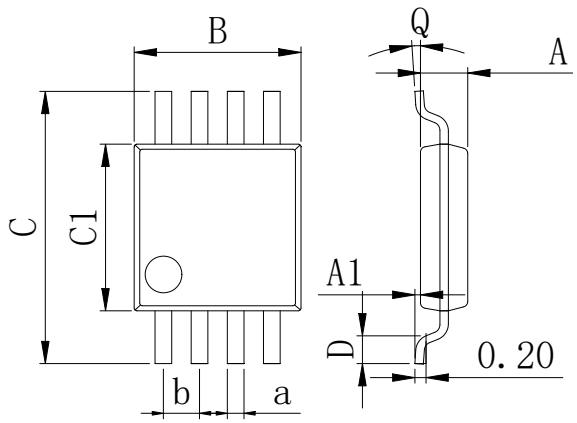
Dimensions In Millimeters(DIP8L)											
Symbol:	A	B	D	D1	E	L	L1	a	b	c	d
Min:	6.10	9.00	8.40	7.42	3.10	0.50	3.00	1.50	0.85	0.40	2.54 BSC
Max:	6.68	9.50	9.00	7.82	3.55	0.70	3.60	1.55	0.90	0.50	

SOP-8L 150mil



Dimensions In Millimeters(SOP8)									
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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