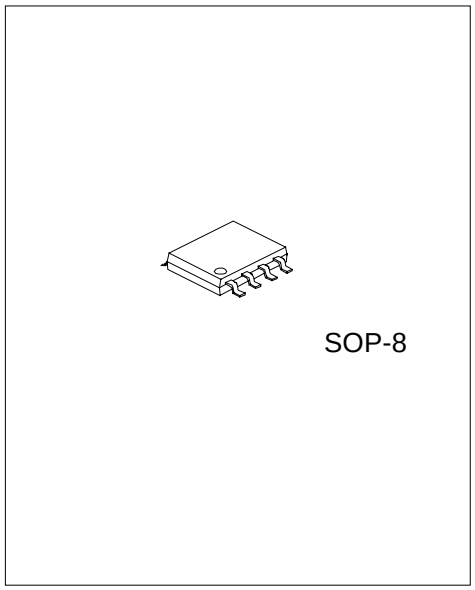
UTC UM603/A LINEAR INTEGRATED CIRCUIT

DUAL OPERATIONAL AMPLIFIER AND CURRENT CONTROLLER



*Pb-free plating product number: UM603L/UM603AL

DESCRIPTION

The UM603/A is a monolithic IC that includes one independent op-amp and another op-amp for witch the non inverting input is wired to a 2.5V fixed voltage reference . This device is offering space and cost saving in many applications like power supply management or data acquisition systems

FEATURES

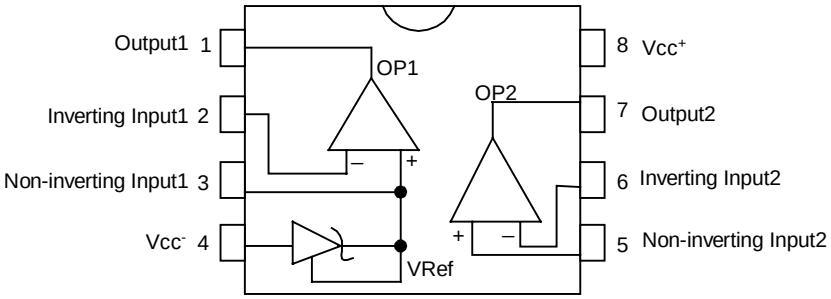
OPERATIONAL AMPLIFIER

*Low input offset voltage: 0.5mV typ. for UM603A
*Low supply current: 350uA/op.(@ Vcc= 5 V)
*Medium bandwidth(unity gain): 0.9MHz
*Large output voltage swing: 0 V to (Vcc-1.5 V)
*Input common mode voltage range includes ground
*Wide power supply range: 3V to 32V
±1.5 TO ±16V

VOLTAGE REFERENCE

*Fixed output voltage reference 2.5V
*±0.4% and ±1% voltage precision
*Sink current capability : 1 to 100mA
*Typical output impedance : 0.2Ω

PIN CONFIGURATION



ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage	Vcc	36	V
Differential Input Voltage	Vid	36	V
Input Voltage	Vin	-0.3 to +36	V
Operating Free-air Temperature Range	Vi	-55 to +125	°C
Maximum Junction Temperature	Tj	150	°C
Thermal Resistance Junction to Ambient(SO package)	Rthja	175	°C/W

ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP.	MAX	UNIT
Total Supply Current,excluding Current in the Voltage Reference	Icc	VCC^+=5V,no load, Tmin.<Tamb<Tmax.	0.7		1.2	mA
		VCC^+=30V,no load, Tmin,<Tamb<Tmax			2	

OPERATOR2(independent op-amp)

Vcc^+=+5V,Vcc=Ground,Vo=1.4V,Tamb=25°C(unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP.	MAX	UNIT
Input Offset Voltage	UM603A	Vio	Tamb=25°C Tmin.≤Tamb≤Tmax.		0.5	2 3	mV
	UM603	Vio	Tamb=25°C Tmin.≤Tamb≤Tmax.		1	4 5	mV
Input Offset Voltage Drift		DVio			7		μV/°C
Input Offset Current		Iio	Tmin.≤Tamb≤Tmax.		2	30 50	nA
Input Bias Current		Iib	Tmin.≤Tamb≤Tmax.		20	150 200	nA
Large Signal Voltage Gain		Avd	Vcc=15V,RL=2k,Vo=1.4V~11.4V Tmin,≤Tamb≤Tmax.	50 25	100		V/mV
Supply Voltage Rejection Ratio		SVR	Vcc=5V ~30V	65	100		dB
Input Common Mode Voltage Range		Vicm	Vcc=+30V-see note[1)]	0		(Vcc+)-1.5	V
			Tmin.≤Tamb≤Tmax.	0		(Vcc+)-2	
Common Mode Rejection Ratio		CMR	Tmin.≤Tamb≤Tmax.	70 60	85		dB
Output Current Source		Isource	Vcc=+15V,Vo=2V,Vjd=+1V	20	40		mA
Short Circuit to Ground		Io	Vcc=+15V		40	60	mA
Output Current Sink		Isink	Vid=-1V, Vcc=+15V,Vo=2V	10	20		mA
High Level Output Voltage		VOH	Vcc^+=30V Tamb=25℃,RL=10k Tmin.≤Tamb≤Tmax.	 27 27	28		V
Low Level Output Voltage		VOL	RL=10k Tmin.≤Tamb≤Tmax.		5	20 20	mV
Slew Rate at Unity Gain		SR	Vi=0.5 ~ 3V,Vcc=15V RL=2k,CL=100pF,unity gain	0.2	0.4		V/μs
Gain Bandwidth Product		GBP	Vcc=30V,RL=2K,CL=100pF F=100kHz,Vin=10mV	0.5	0.9		MHz
Total Harmonic Distortion		THD	f=1kHz Av=20dB,RL=2k,Vcc=30V CL=100pF,Vo=2Vpp		0.02		%

1.The input common-mode votage of either input signal voltage should not be allowed to go negative by more than 0.3V. The upper end of the common-mode voltage range is Vcc^+ -1.5V. But either of both inputs can go to +36V without damage.

OPERATOR1(op-amp with non-inverting input connected to the internal Vref)

Vcc^+=+5V,Vcc=Ground,Tamb=1.4V,Tamb=25°C(unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP.	MAX	UNIT
Input Offset Voltage	UM603A	Vio	V_{icm}=0V Tamb=25°C Tmin.≤Tamb≤Tmax.		0.5	2 3	mV
	UM603	Vio	V_{icm}=0V Tamb=25°C Tmin.≤Tamb≤Tmax.		1	4 5	mV
Input Offset Voltage Drift		DVio			7		μV/°C
Input Bias Current		Iib	negative input		20		nA
Large Signal Voltage Gain		Avd	Vicm=0V Vcc=15V,R_L=2k		100		V/mV
Supply Voltage Rejection Ratio		SVR	Vicm=0V Vcc=5V ~30V	65	100		dB
Output Current Source		Isource	Vo=2V Vcc=+15V, Vid=+1V	20	40		mA
Short Circuit to Ground		Io	Vcc=+15V		40	60	mA
Output Current Sink		Isink	Vid=-1V, Vcc=+15V,Vo=2V	10	20		mA
High Level Output Voltage		VOH	Vcc^+=30V Tamb=25℃,R_L=10k Tmin.≤Tamb≤Tmax.	27 27	 28		V
Low Level Output Voltage		VOL	R_L=10k Tmin.≤Tamb≤Tmax.		5	20 20	mV
Slew Rate at Unity Gain		SR	Vi=0.5 ~ 3V,Vcc=15V R_L=2k,C_L=100pF,unity gain	0.2	0.4		V/μs
Gain Bandwidth Product		GBP	Vcc=30V,R_L=2K,C_L=100pF F=100kHz,Vin=10mV	0.5	0.9		MHz
Total Harmonic Distortion		THD	f=1kHz Av=20dB,R_L=2k,Vcc=30V C_L=100pF,Vo=2Vpp		0.02		%

VOLTAGE REFERENCE:

PARAMETER	SYMBOL	Value	UNIT
Cathode Current	Ik	1 ~ 100	mA

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP.	MAX	UNIT
Reference Input Voltage	UM603A	Vref	±0.4%, Tamb=25°C Tmin.≤Tamb≤Tmax.	2.49 2.48	2.5	2.51 2.52	V
	UM603		±1%, Tamb=25°C Tmin.≤Tamb≤Tmax.	2.475 2.45	2.5	2.525 2.55	
Reference Input Voltage Deviation Over Temperature Range		△Vref	V_{KA}=Vref;Ik=10mA Tmin.≤Tamb≤Tmax.		7	30	mV
Minimum Cathode Current for Regualtion		Imin	V_{KA}=Vref		0.5	1	mA
Dynamic Impedance-note[1)]		|Z_{KA}|	VKA=Vref, △Ik=1~100mA,f<1kHz		0.2	0.5	Ω

1.The dynamic impedance is defined as 「ZKA」 =△kA/△Ik

OPERATIONAL AMPLIFIERS