IP103H

Voltage and Current Controller

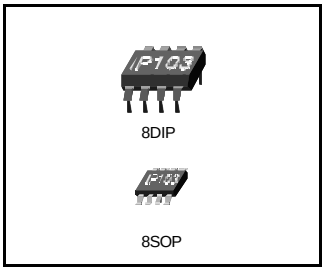
*** The Main Differences of IP103 and IP103H are Vicm (Input Common Mode Voltage Range) and Vop (Operating Voltage)**

DESCRIPTION

The IP103H is designed to be used in battery chargers with a constant voltage and a constant current control.

This device is a monolithic IC that includes one independent op-amp and other op-amp for which the non inverting input is wired to a 2.5V fixed Voltage reference.

Integrating the reference and op-amps creates a solution for low cost charging applications.



FEATURES

Operational Amplifiers

- Low Supply Current : 200uA/amp
- Medium Speed : 1.5MHz
- Low Level Output Voltage Close to VEE : 0.1V Typ.
- Wide Power Supply Range; 3.6~28V

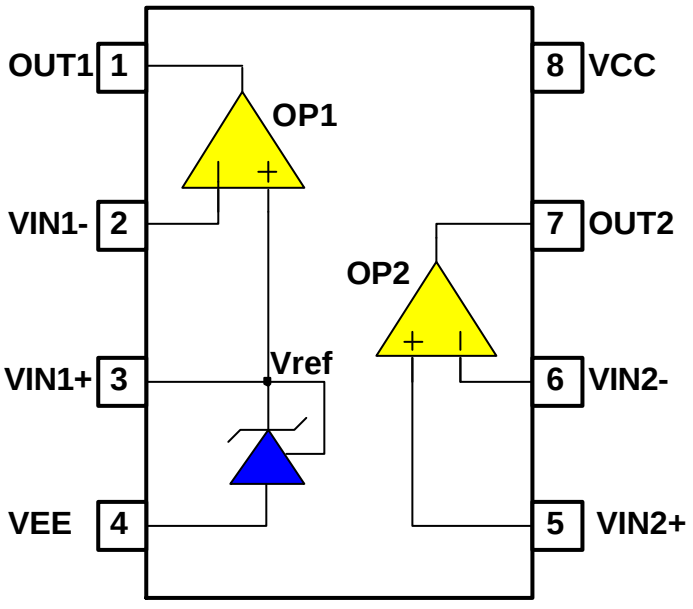
Adjustable Shunt Regulator

- Fixed Output Voltage Reference 2.5V
- Sink Current Capability : 0.5 to 150mA
- 1% Voltage Precision
- Latch-up Immunity

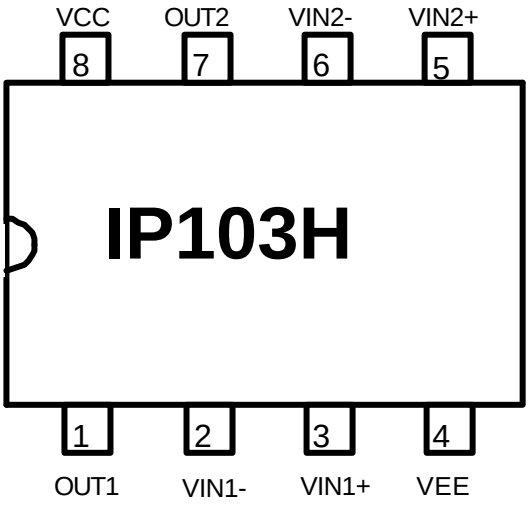
ORDERING INFORMATION

Device	Package	Operating Temp
IP103H	8DIP	-40°C ~ +105°C
I103H	8SOP	

BLOCK DIAGRAM



PIN CONNECTIONS



PIN DESCRIPTIONS

NO	SYMBOL	I/O	DESCRIPTION
1	OUT1	O	OP-Amp 1 Output
2	VIN1-	I	OP-Amp 1 Inverting Input
3	VIN1+	I	OP-Amp 1 Non-Inverting Input
4	VEE	-	Negative Supply Voltage
5	VIN2+	I	OP-Amp 2 Non-Inverting Input
6	VIN2-	I	OP-Amp 2 Inverting Input
7	OUT2	O	OP-Amp 2 Output
8	VCC	-	Positive Supply Voltage

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage	Vccmax	28	V
Operating Temperature	Topr	-40 ~ +105	°C
Storage temperature	Tstg	-65 ~ 150	°C

ELECTRICAL CHARACTERISTICS

Ta = 25°C, VCC = 5V, VEE = GND (unless otherwise specified.)

TOTAL SUPPLY VOLTAGE SECTION						
CHARACTERISTICS	**SYMBOL**	**CONDITIONS**	**MIN**	**TYP**	**MAX**	**UNIT**
Total Supply Current	Icc	Vee = 0V, No Load		0.8	1.5	mA
Operational Amplifiers						
Input Offset Voltage	Vio		-	1	4.5	mV
Input Bias Current	Iib		-	50	150	nA
Large Signal Voltage Gain	Avd	Vcc=15V, Vo=5~10V, Rload =10K	60	100	-	dB
Supply Voltage Rejection Ratio	SVRR	Vcc= 5V to 15V	65	100	-	dB
Input Common Mode Voltage Range	Vicm	-	0	-	Vcc-1.8V	V
Common Mode Rejection Ratio	CMRR	Vcc=15V	70	90	-	dB
Output Source Current	Isource	Vo=2.5V, Vid=+1V	3	6	-	mA
Output Sink Current	Isink	Vo=2.5V, Vid=-1V	3	6	-	mA
Phase Margin	PM	Rload=10K,Cload=100pF	-	55	-	Degree
Output Voltage High	Voh	Vcc=15V, Rload=10K	12	13	-	V
Output Voltage Low	Vol	Rload=10K	-	100	250	mV
Slew Rate	SR	Vi=10V, Vcc=12V, Rload=10K,Cload=100pF	-	0.75	-	V/us
Gain Bandwidth	GB	Rload=10K,Cload=100pF, f=100kHz	-	1.5	-	MHz
Total Harmonic Distortion	THD		-	0.05	-	%

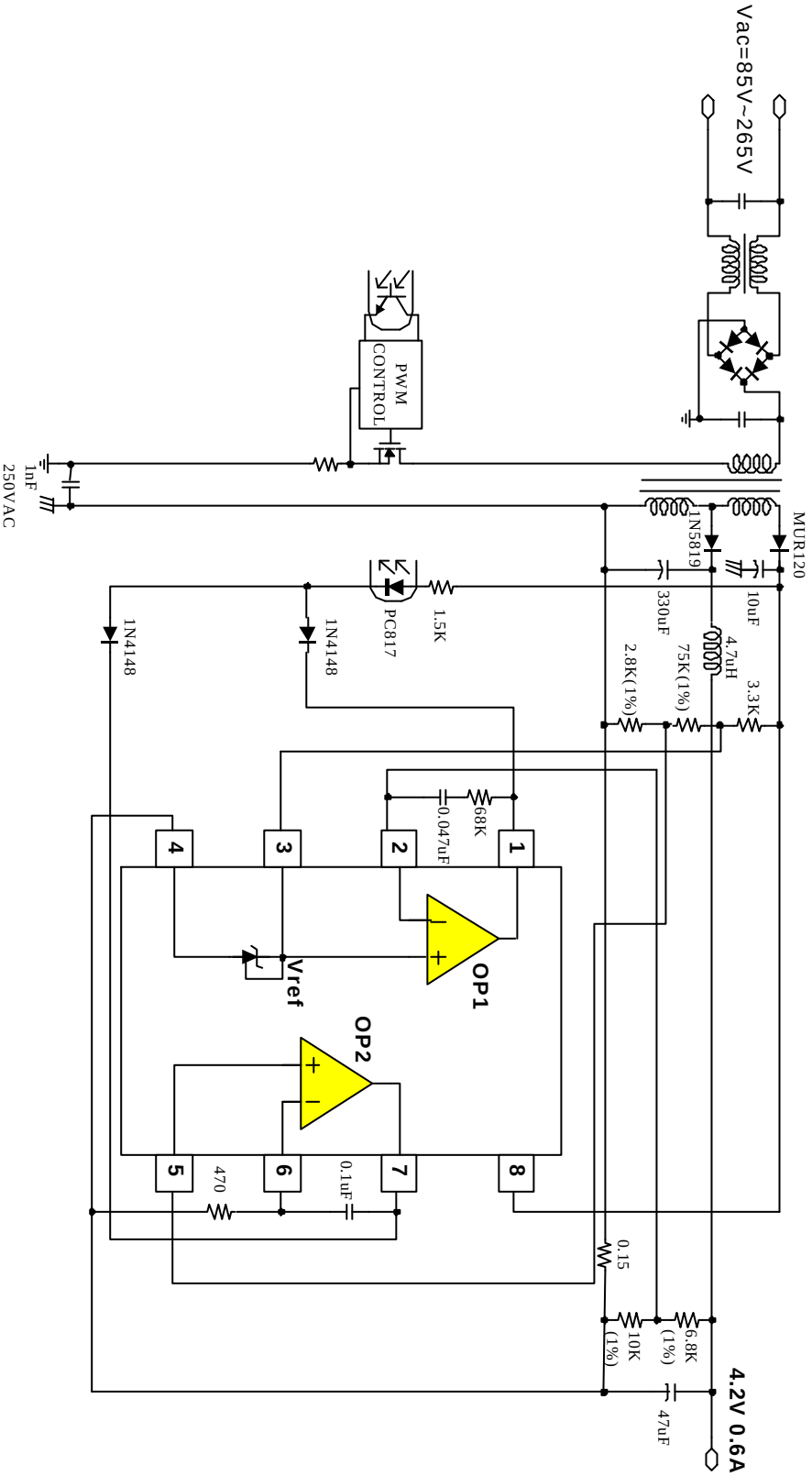
ELECTRICAL CHARACTERISTICS

Ta = 25°C, VCC = 5V, VEE=GND (unless otherwise specified.)

Adjustable Shunt Regulator

CHARACTERISTICS	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Recommended Cathode Current	Ik		0.5		100	mA
Reference Input Voltage	Vref		2.475	2.5	2.525	V
Reference Input Voltage Deviation	dVref	Vka=Vref, Ik=10mA -40°C < Ta <105°C		7	30	mV
Load Regulation	Rload	Ik=1mA~10mA		3	10	mV
Minimum Cathode Current for Regulation	Imin			0.2	0.5	mA

TYPICAL APPLICATION



ELECTRICAL DIAGRAMS

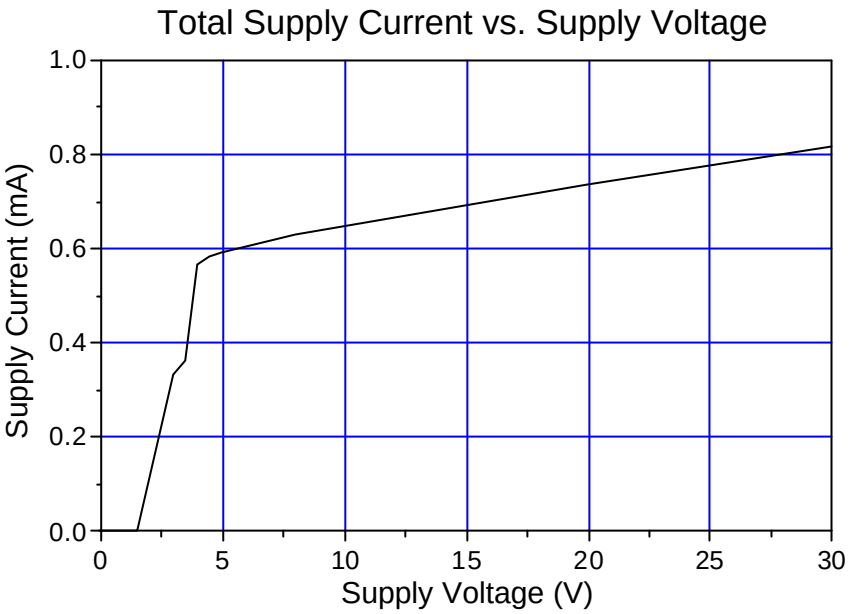


Fig.1 : Toatal Supply Current vs. Supply Voltage

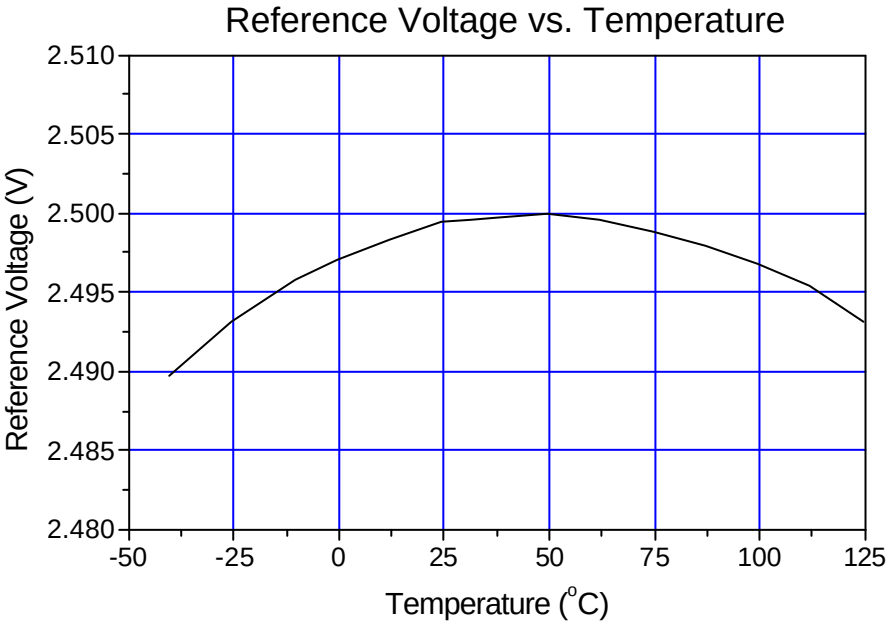


Fig.2 : Reference Voltage vs. Temperature

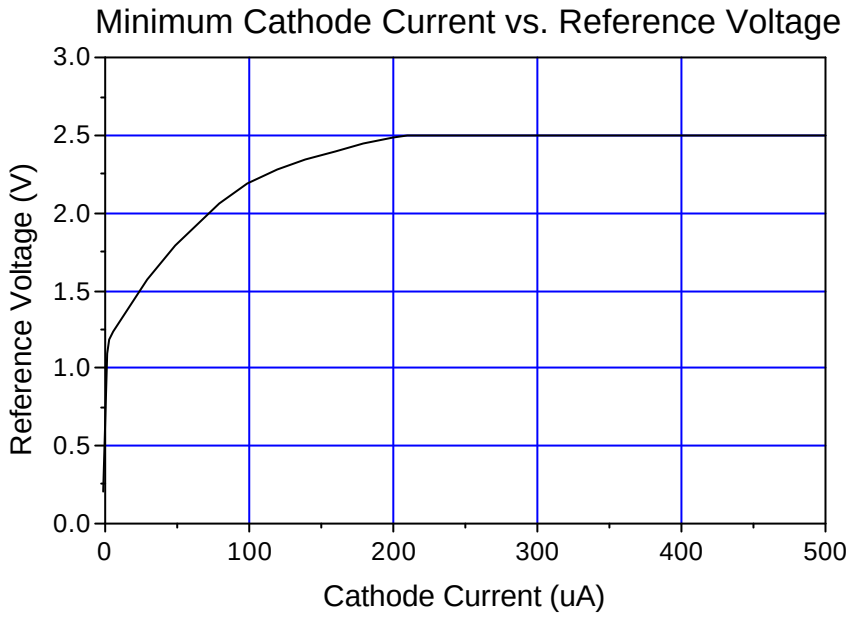


Fig.3 : Minimum Cathode Current vs. Reference Voltage

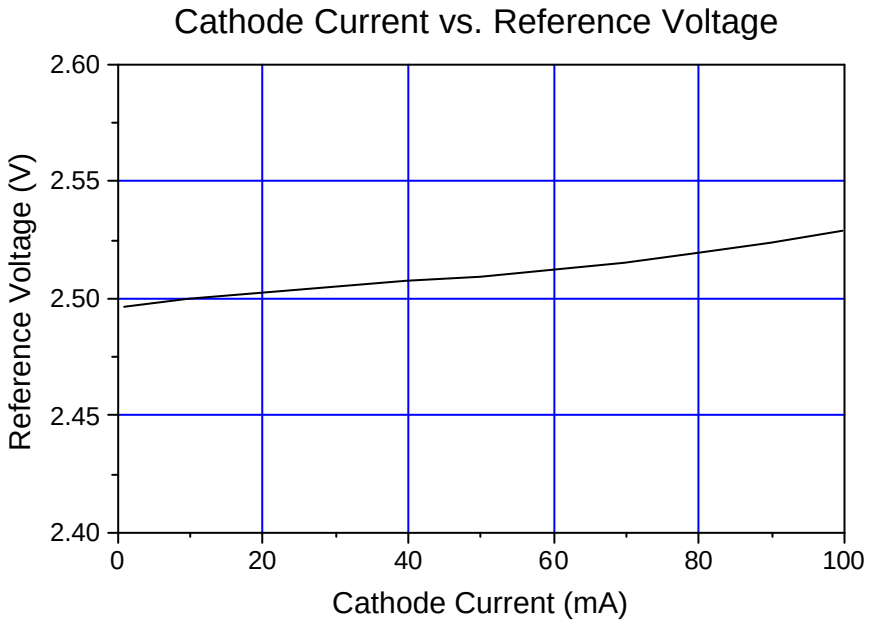


Fig.4 : Cathode Current VS. Reference Voltage

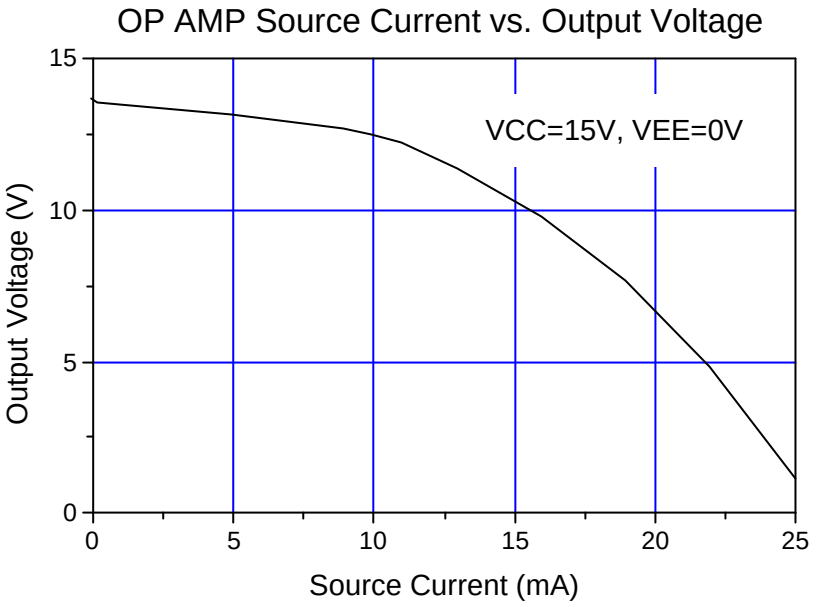


Fig.5 : OP AMP Source Current vs. Output Voltage

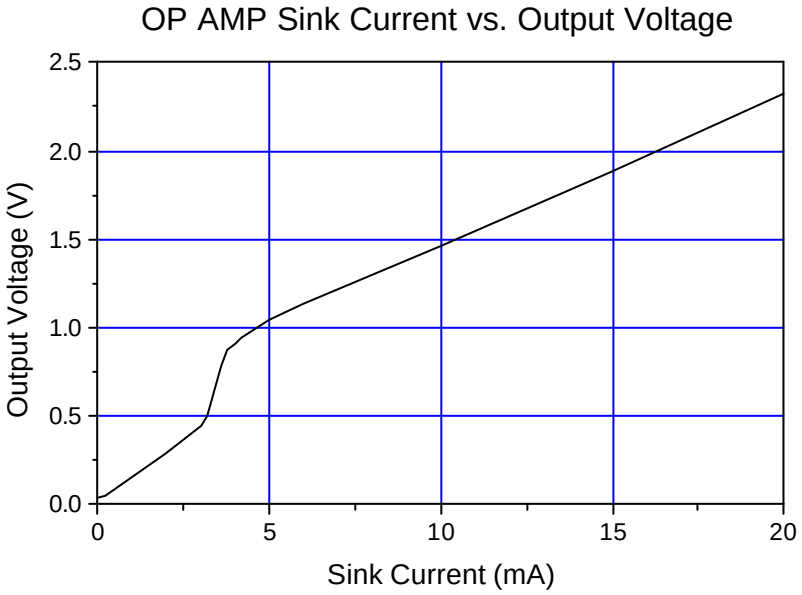


Fig.6 : OP AMP Sink Current vs. Output Voltage

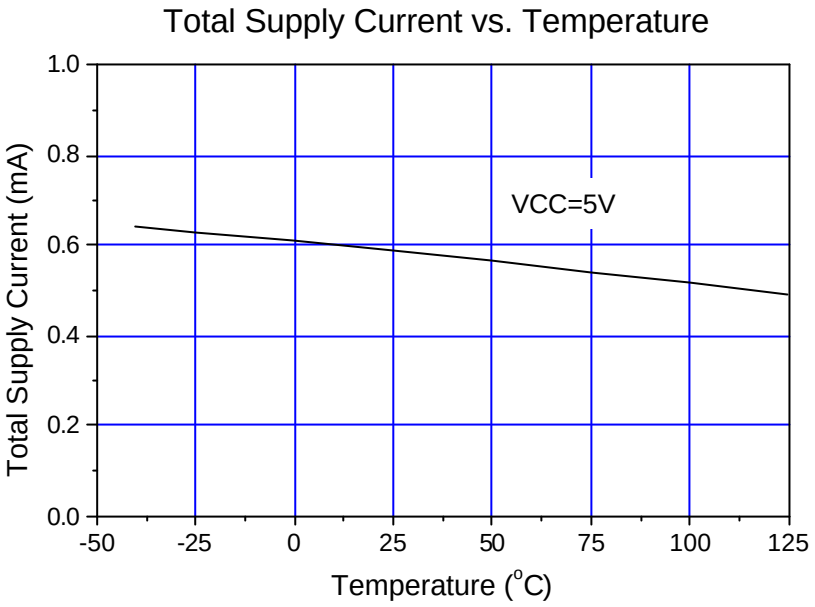


Fig.7 : Total Supply Current vs. Temperature

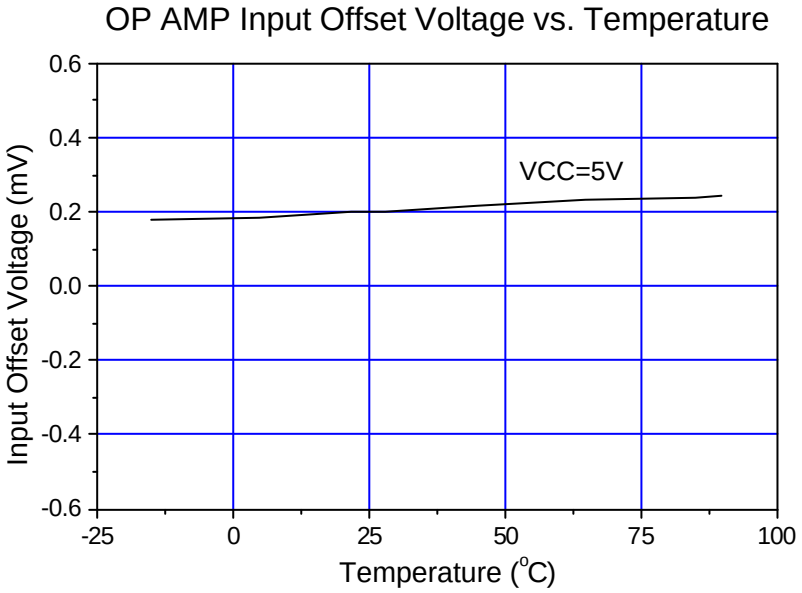
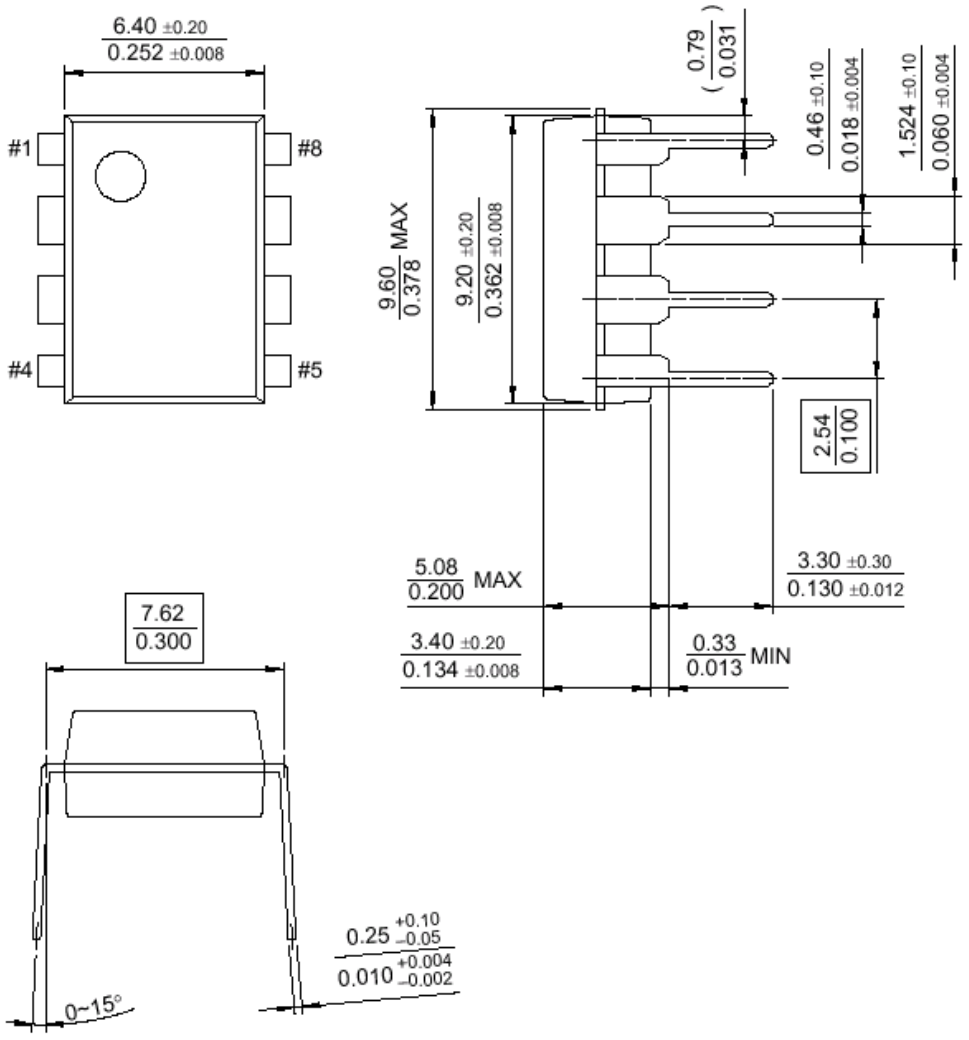


Fig.8 : OP AMP Input Offset Voltage vs. Temperature

PACKAGE DIMENSION

8-DIP



PACKAGE DIMENSION

8-SOP