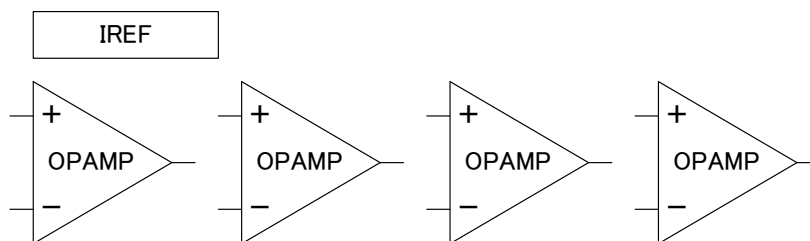


## OPAMP Datasheet

# Rail to rail OPAMP

### Overview

This OPAMP has rail-to-rail input and wide power supply voltage range on T40ULP ESF3. The IP contains 2 cells of AMP and IREF. IREF cell can be connected upto 4 AMPs. The OPAMP has 3 current mode of High speed, middle speed and low power mode. To achieve high precision input offset, OPAMP has trimming capability of input offset. Then the offset is less than 2.5mV at low power mode, 1.5mV at middle and high speed mode.



### Key Features

#### General

- OPAMP 1ch
- Available High Speed / Middle Speed / Low Power mode
- Capable of adjusting input offset by trimming
- An IREF can be connected to 4 OPAMPs.
- OPAMP output is connected to A/D Converter or Window Comparator and so on
- Output load cap =< 30 [pF]
- Output load current =<100[uA]

### Electrical characteristics

Item	Unit	Spec			Remark	
		MIN	TYP	MAX		
Power Supply AVCC	V	1.62	-	3.63		
Temperature	°C	-40	25	125		
EM lifetime	-	10 years of continuous at 110°C				
Input voltage range	V	0	-	AVCC		
Power consumption	LP	uA	-	13	17	IREF+AMPx1ch
	MS	uA	-	380	500	IREF+AMPx1ch
	HS	mA	-	0.85	1.2	IREF+AMPx1ch
Input offset	LP	mV	-2.5	-	2.5	after trimming
	MS/HS	mV	-1.5	-	1.5	after trimming
offset drift	LP	uV/degC	-20	-	20	after trimming
	MS/HS	uV/degC	-10	-	10	after trimming

*\*This IP is contract design IP. Please contact for detail.*

Item		Unit	Spec			Remark
			MIN	TYP	MAX	
Open Loop gain		dB	60	100	-	
Gain bandwidth product	LP	kHz	-	90	-	
	MS	MHz	-	2	-	
	HS	MHz	-	4	-	
Phase Margin		deg	35	-	-	
Gain Margin		dB	10	-	-	
PSRR		dB	-	70	-	
CMRR		dB	-	90	-	
Srew Rate	LP	V/us	0.02	-	-	
	MS	V/us	0.4	-	-	
	HS	V/us	1.3	-	-	
Settling Time	LP	us	-	-	200	
	MS	us	-	-	10	
	HS	us	-	-	4	
Area	AMP	mm <sup>2</sup>	-	-	0.053	OPAMPx1ch
	IREF	mm <sup>2</sup>	-	-	0.021	