

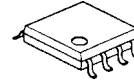
VOLTAGE AND CURRENT CONTROL IC

■GENERAL DESCRIPTION

The **NJM2346** is a low power operation battery charger IC. It includes a voltage reference and two operational amplifiers for voltage and current control needed for a design of secondary circuit for battery chargers and switching regulators.

Low current consumption design contributes low standby power required for 1A class battery chargers.

■PACKAGE OUTLINE



NJM2346M

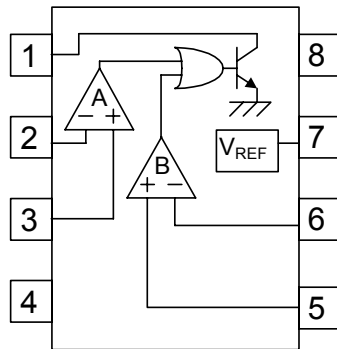


NJM2346RB1

■FEATURES

- Low Quiescent Current 250uA typ.
- Precision AMP. $V_{io}=0.5mV$ typ.
- Operating Voltage 2.2V to 13V
- Precision Voltage Reference $1.24V \pm 1\%$
- PC pin Sink Current 20mA max.
- Bipolar Technology
- Package Outline DMP8, TVSP8

■PIN CONFIGURATION



PIN FUNCTION

1. PC
2. A -INPUT
3. A +INPUT
4. GND
5. B +INPUT
6. B -INPUT
7. V_{REF}
8. V^+

■ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ C$)

PARAMETER	SYMBOL	MAXIMUM RATINGS	UNIT
Supply Voltage	V^+	14	V
Differential Input Voltage	V_{ID}	(Ach) 14 (Bch) 14	V
Common Mode Input Voltage	V_{IC}	(Ach) -0.3 ~ 14 (note) (Bch) -0.3 ~ 14 (note)	V
PC Terminal Current	I_{PC}	20	mA
Power Dissipation	P_D	(DMP 8) 300 (TVSP 8) 320	mW
Operating Temperature Range	T_{OPR}	-40 ~ +85	$^\circ C$
Storage Temperature Range	T_{STG}	-50 ~ +150	$^\circ C$

(note) When the supply voltage is less than 14V,
the absolute maximum input voltage is equal to the supply voltage.

NJM2346

■RECOMMENDED OPERATING CONDITIONS (Ta=25°C)

PARAMETER	SYMBOL	MAXIMUM RATINGS	UNIT
Operating Voltage	Vopr	2.2 ~ 13	V

■ELECTRICAL CHARACTERISTICS (V⁺=5V, Ta=25°C)

GENERAL CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current	I _{CC}	I _{PC} =off	–	250	350	μA
Leakage Current	I _{PCLEAK}	V ⁺ =V _{PC} =13V	–	–	1	μA
Saturation Voltage	V _{PC(SAT)}	I _{PC} =20mA	–	0.1	0.3	V
Reference Voltage	V _{REF}	I _{REF} =0mA	1227	1240	1253	mV
Reference Voltage Load Regulation	$\frac{\Delta V_{REF}}{\Delta I_{REF}}$	I _{REF} =0mA ~ 1mA	–	–	10	mV

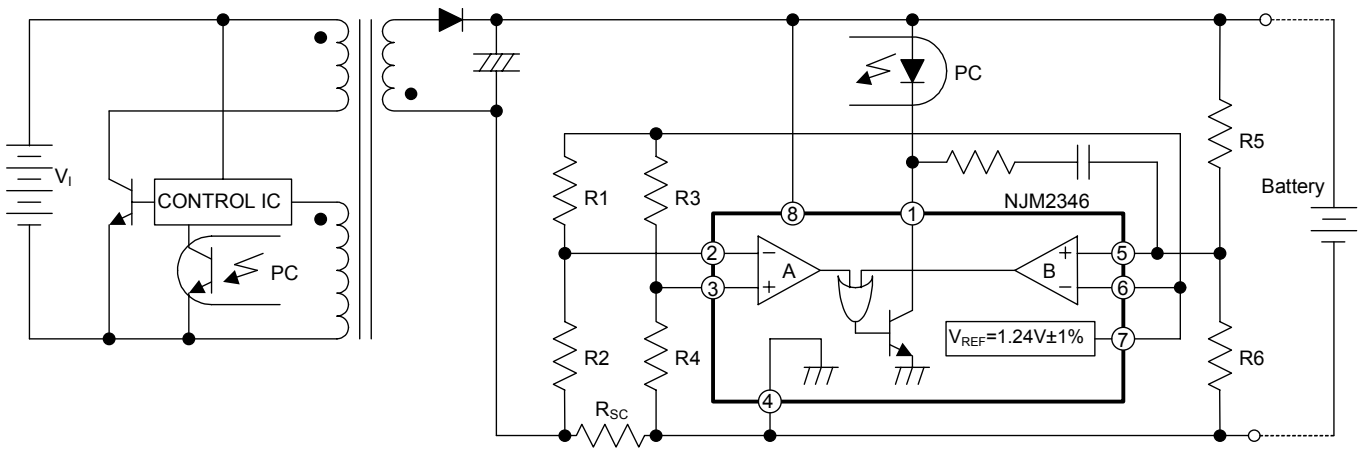
[Ach]

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V _{IO}		–	0.5	2	mV
Input Offset Current	I _{IO}		–	10	50	nA
Input Bias Current	I _B		–	40	160	nA
Large Signal Voltage Gain	A _V		–	80	–	dB
Input Common Mode Voltage Range	V _{ICM}		-0.2 ~ 3.0	–	–	V
Common Mode Rejection Ratio	CMR		–	80	–	dB
Supply Voltage Rejection Ratio	SVR		–	80	–	dB
Slew Rate	SR		–	0.5	–	V/μA
Gain Bandwidth Product	GB	f=10kHz	–	1	–	MHz

[Bch]

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V _{IO}		–	0.5	2	mV
Input Offset Current	I _{IO}		–	10	50	nA
Input Bias Current	I _B		–	20	80	nA
Large Signal Voltage Gain	A _V		–	80	–	dB
Input Common Mode Voltage Range	V _{ICM}		0.5 ~ 4.0	–	–	V
Common Mode Rejection Ratio	CMR		–	80	–	dB
Supply Voltage Rejection Ratio	SVR		–	80	–	dB
Slew Rate	SR		–	0.5	–	V/μA
Gain Bandwidth Product	GB	f=10kHz	–	1	–	MHz

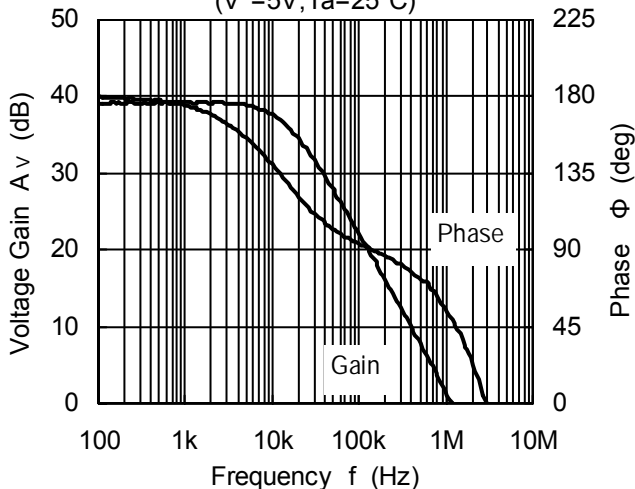
■ TYPICAL APPLICATIONS



■ TYPICAL CHARACTERISTICS

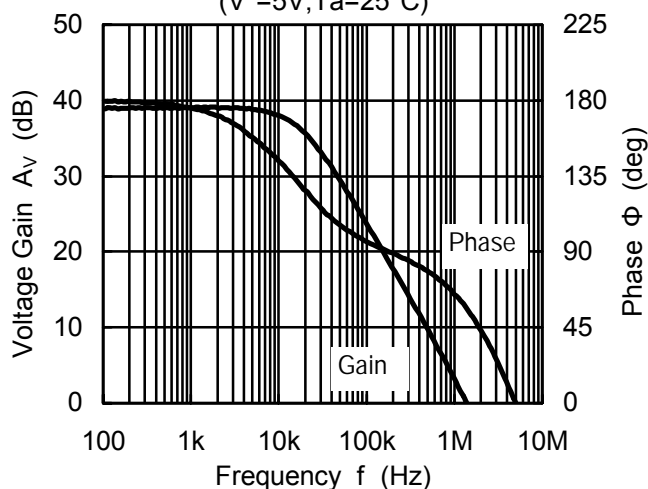
Ach Voltage Gain · Phase vs. Frequency

($V^+ = 5V, T_a = 25^\circ C$)



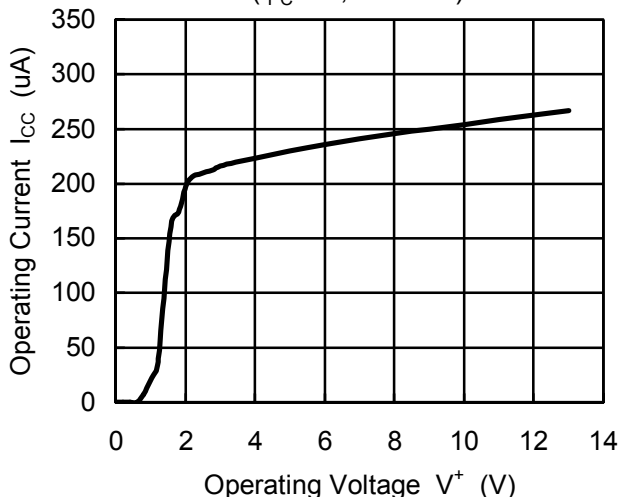
Bch Voltage Gain · Phase vs. Frequency

($V^+ = 5V, T_a = 25^\circ C$)



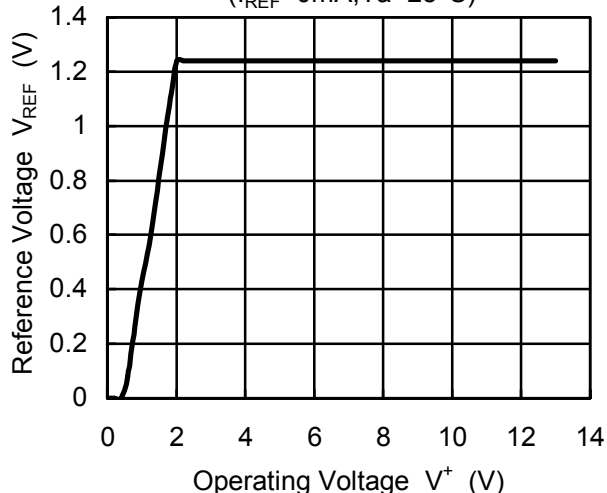
Operating Current vs. Operating Voltage

($I_{PC} = \text{off}, T_a = 25^\circ C$)



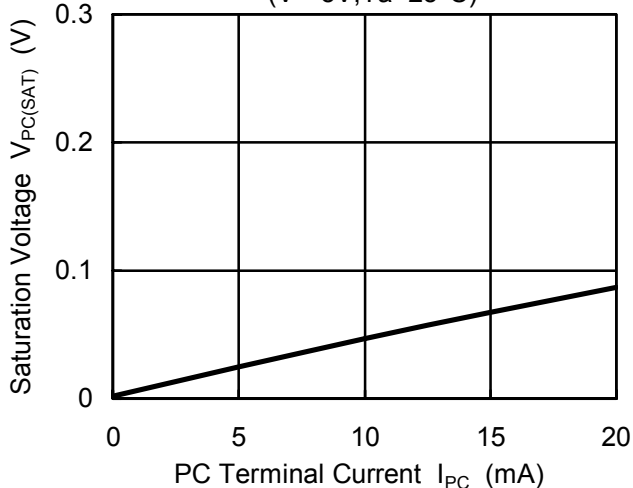
Reference Voltage vs. Operating Voltage

($I_{REF} = 0mA, T_a = 25^\circ C$)



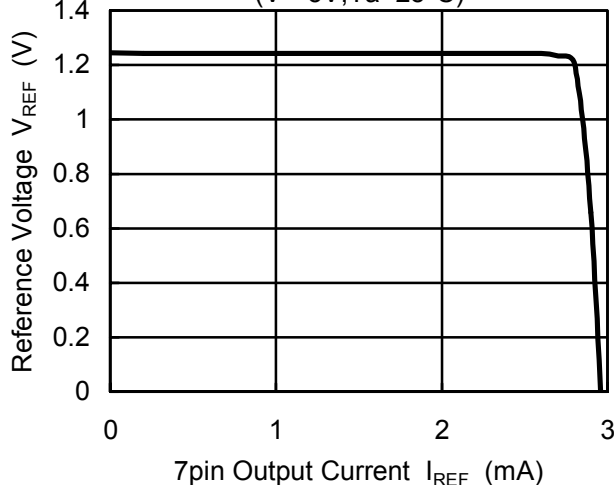
Saturation Voltage vs. PC Terminal Current

($V^+ = 5V, T_a = 25^\circ C$)

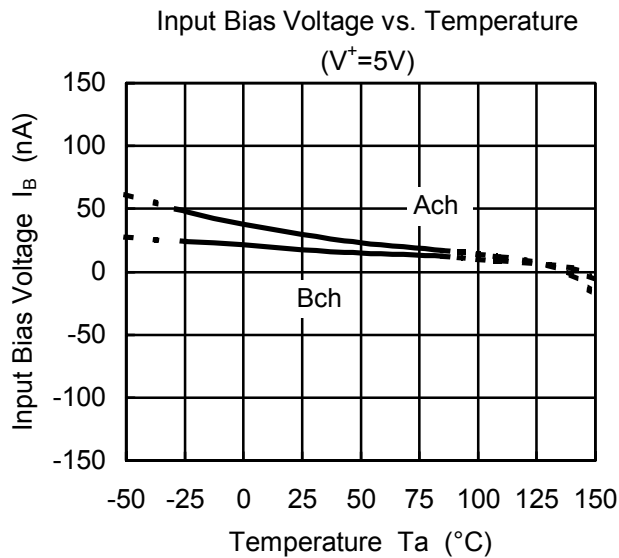
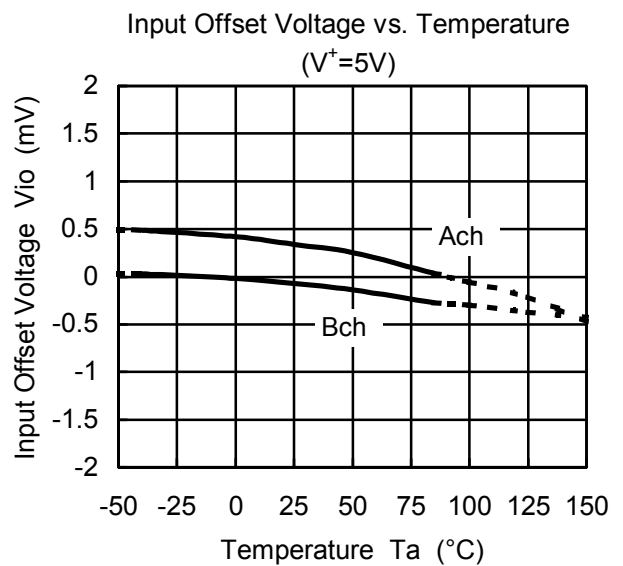
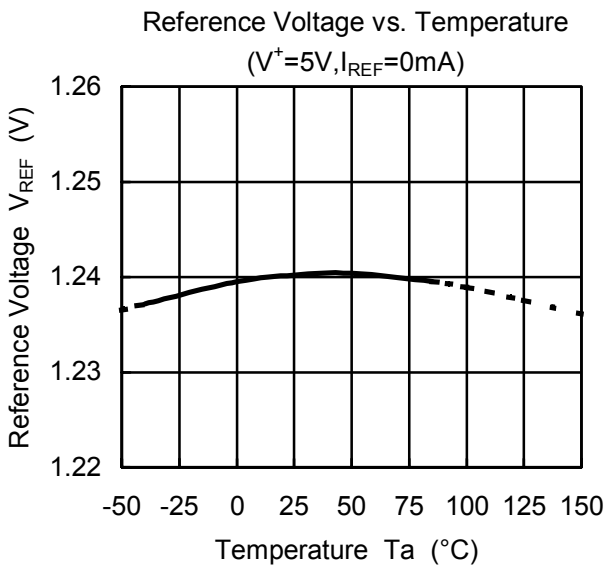
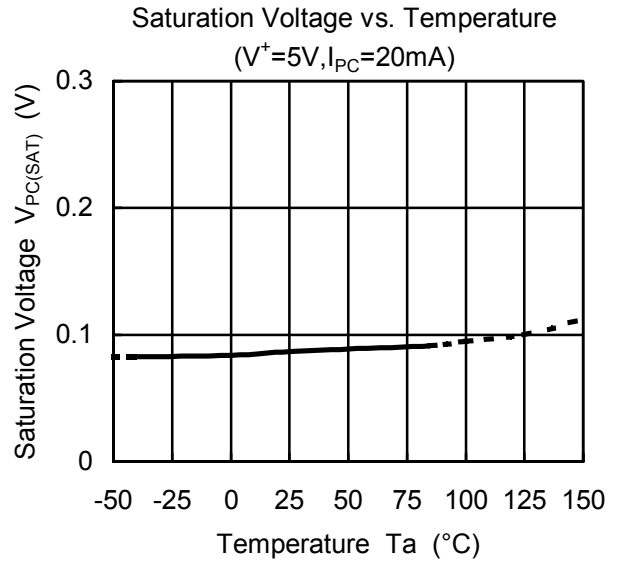
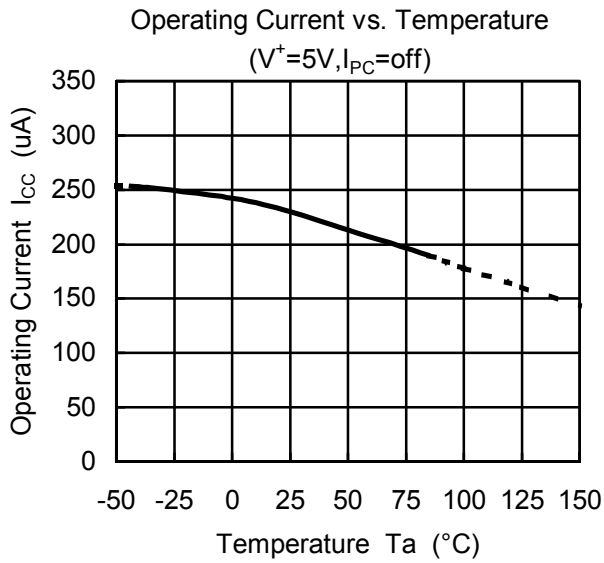


Reference Voltage vs. 7pin Output Current

($V^+ = 5V, T_a = 25^\circ C$)



■ TYPICAL CHARACTERISTICS



[CAUTION]
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