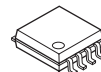


VOLTAGE AND CURRENT CONTROL IC

■GENERAL DESCRIPTION

The **NJM2346** is a battery charger IC featuring a low operating current of 250 μ A (typ.). It includes a high precision voltage reference and two operational amplifiers, which makes it well-suited for control of secondary side circuit in battery chargers and switching regulators. Further the NJM2346 has a low quiescent current of 250 μ A (typ.) which can achieve minimization of power consumption in secondary side and reduction of whole power consumption on stand-by mode. It is available in a small surface mount package of DMP8 and small, thin type of MSOP8 (TVSP8).

■PACKAGE OUTLINE



NJM2346M
(DMP8)



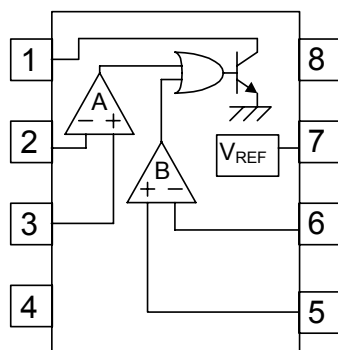
NJM2346RB1
(MSOP8 (TVSP8))

■FEATURES

- Low Quiescent Current 250 μ A 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, MSOP8 (TVSP8)*

*MEET JEDEC MO-187-DA/ THIN TYPE

■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 to 14 (note) (Bch) -0.3 to 14 (note)	V
PC Terminal Current	I_{PC}	20	mA
Power Dissipation	P_D	(DMP 8) 300 (MSOP8 (TVSP8)) 320	mW
Operating Temperature Range	T_{OPR}	-40 to +85	$^{\circ}C$
Storage Temperature Range	T_{STG}	-50 to +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 to 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

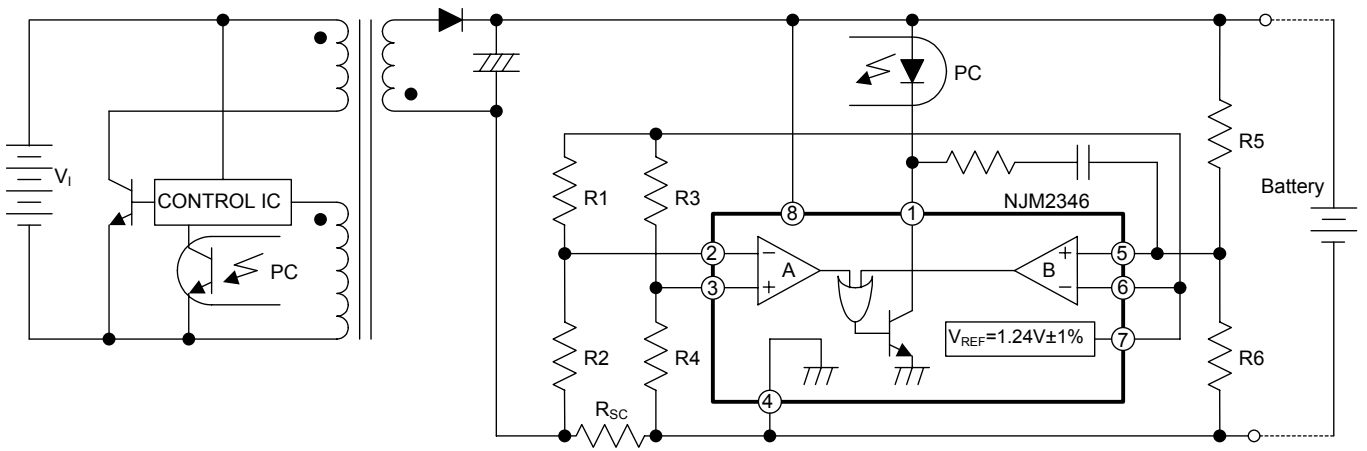
[Ach]

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 to 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

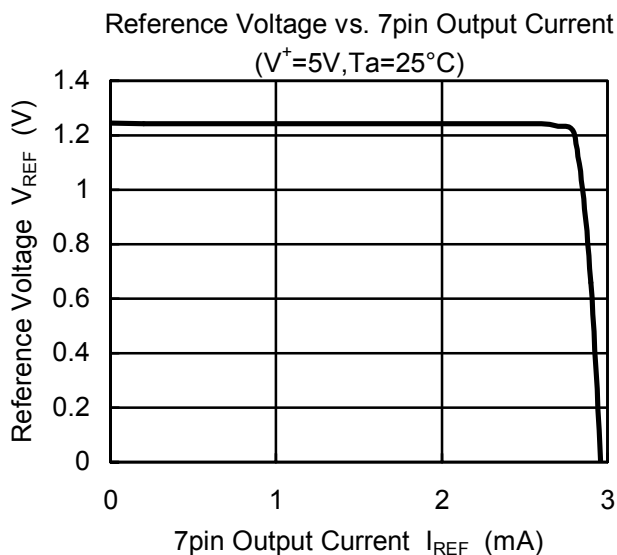
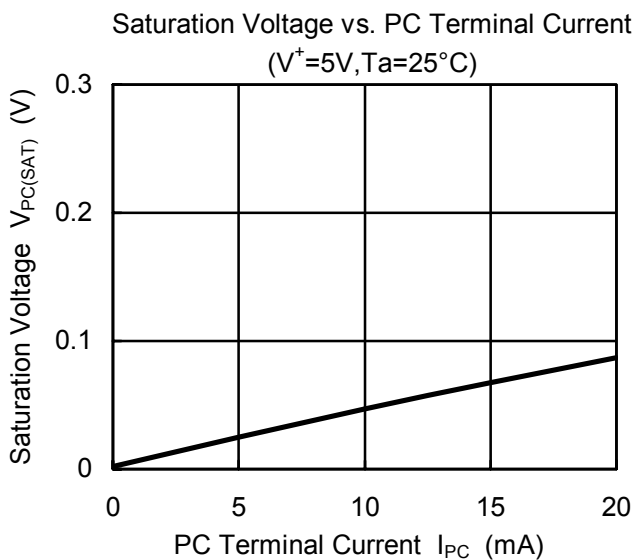
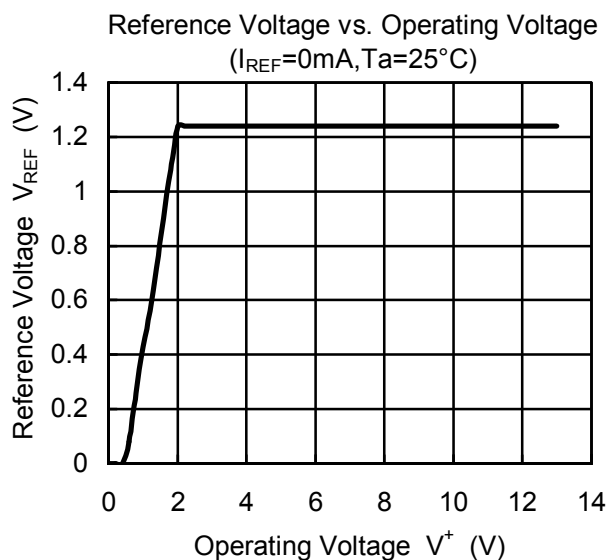
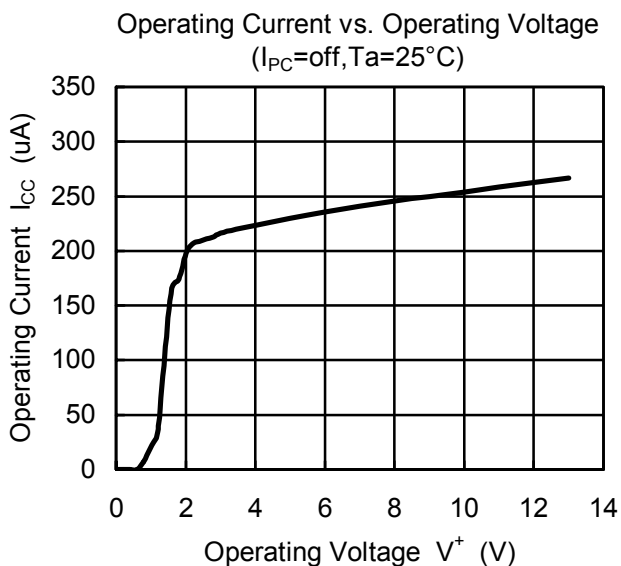
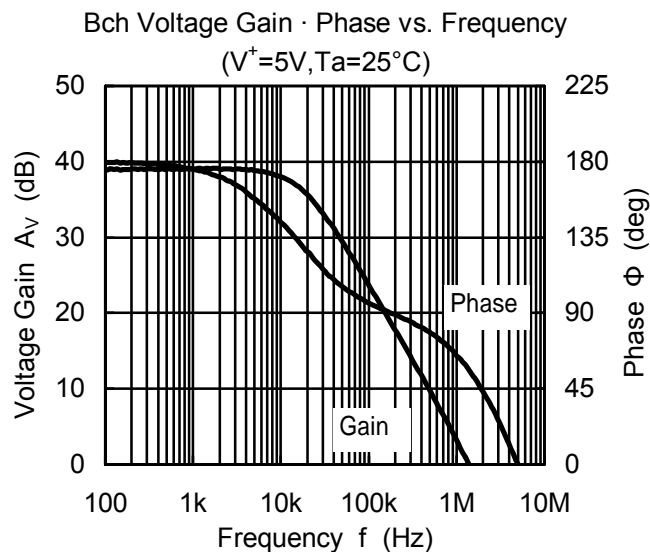
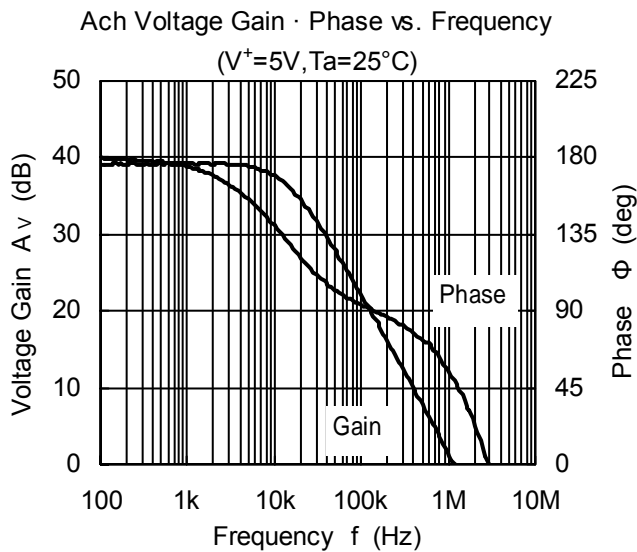
[Bch]

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 to 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

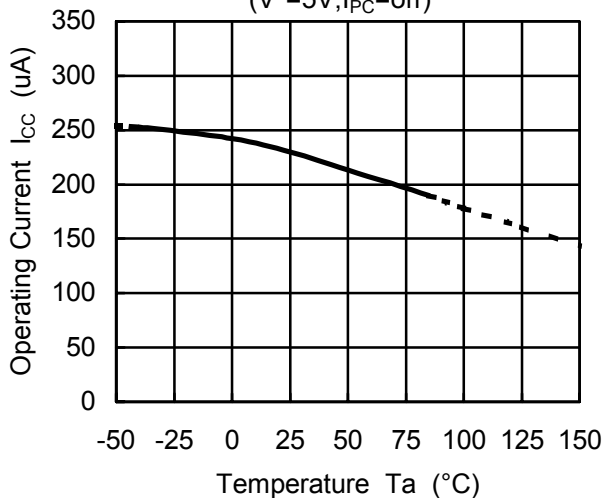


■ TYPICAL CHARACTERISTICS

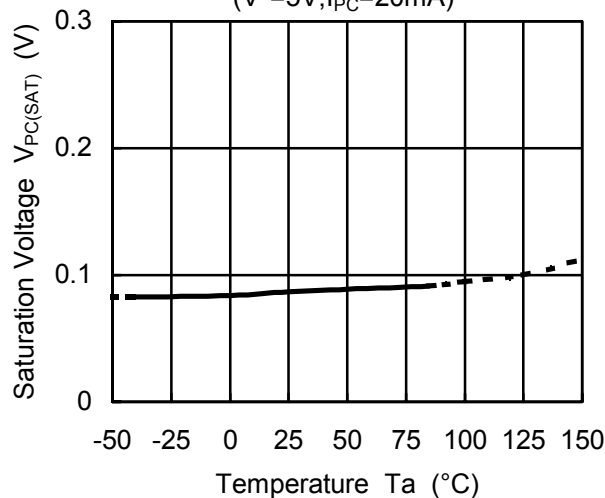


■ TYPICAL CHARACTERISTICS

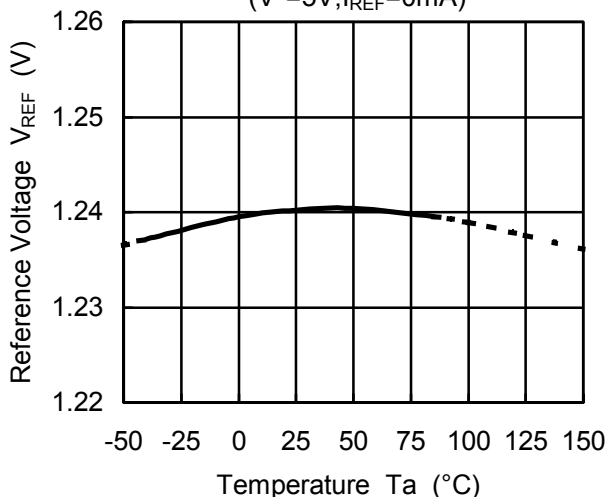
Operating Current vs. Temperature
($V^+=5V, I_{PC}=\text{off}$)



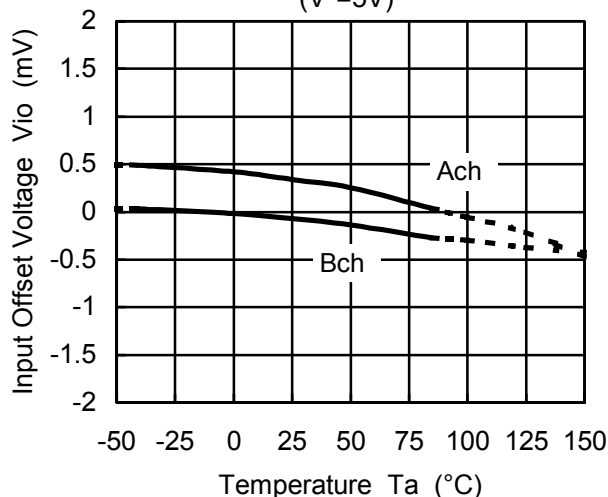
Saturation Voltage vs. Temperature
($V^+=5V, I_{PC}=20\text{mA}$)



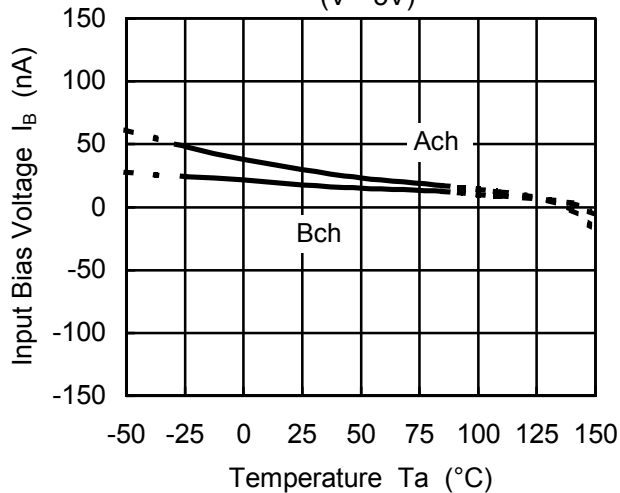
Reference Voltage vs. Temperature
($V^+=5V, I_{REF}=0\text{mA}$)



Input Offset Voltage vs. Temperature
($V^+=5V$)



Input Bias Voltage vs. Temperature
($V^+=5V$)



[CAUTION]
The specifications on this databook are only given for information, without any guarantee as regards either mistakes or omissions. The application circuits in this databook are described only to show representative usages of the product and not intended for the guarantee or permission of any right including the industrial rights.