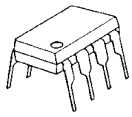
VOLTAGE AND CURRENT CONTROL IC

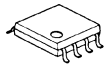
■ GENERAL DESCRIPTION

The NJM2146B is a voltage and current control IC which contains single-supply low offset voltage OP-AMP(2mV max.),low operating OP-AMP, and precision voltage reference. It is suitable for battery charger, second controller of switching regulator systems, and other battery systems.

■ PACKAGE OUTLINE



NJM2146BD



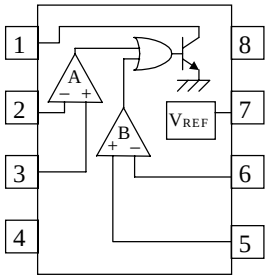
NJM2146BM

NJM2146BR

■ FEATURES

- ●Operating Voltage (2.5V ~ 18V)
- ●Internal Precision Voltage Reference (1.5V±1%)
- ●PC Terminal Current (60mA max.)
- ●Operating Current (3mA max.)
- ●Bipolar Technology
- ●Package Outline DIP8,DMP8,VSP8

■ 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 RAINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+	20	V
Differential Input Voltage	V_{ID}	(Ach) 20 (Bch) ±4	V
Power Dissipation	P_D	(DIP8) 500 (DMP8) 300 (VSP8) 320	mW
PC Terminal Current	I_{PC}	60	mA
Operating Temperature Range	Topr	–40 ~ 85	°C
Storage Temperature Range	Tstg	–50 ~ 150	°C

(note)When the supply voltage is less than 20V, the absolute maximum input voltage is equal to the supply voltage

■ RECOMMENDED OPERATING CONDITIONS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Operating Voltage	Vopr	2.5 ~ 18	V

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

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Operating Current	I_{CC}	I_{PC}=off	–	1	3	mA
Leakage Current	I_{PCLEAK}	V^+=V_{PC}=20V	–	–	100	μA
Saturation Voltage	$V_{PC(SAT)}$	I_{PC}=50mA	–	0.5	0.7	V
Reference Voltage	V_{REF}	I_{REF}=0mA	1485	1500	1515	mV
Reference Voltage Load Regulation	ΔV_{REF}/ ΔI_{REF}	I_{REF}=0 ~ 5mA	–	–	30	mV

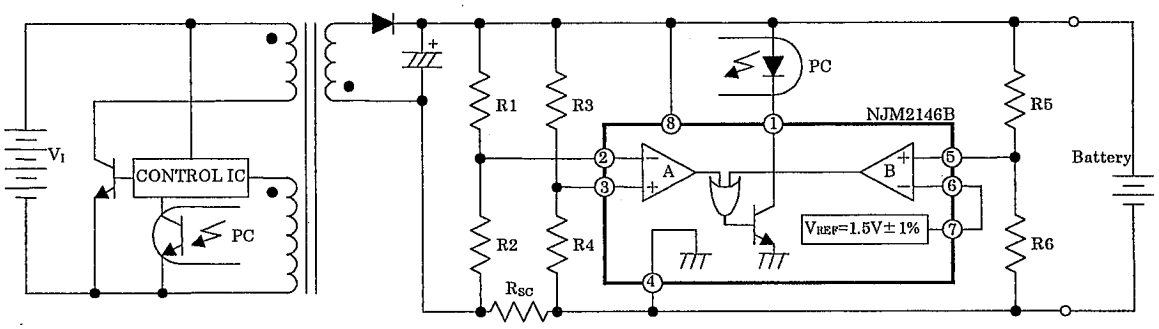
[Ach]

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{IO}		–	0.5	2	mV
Input Offset Current	I_{IO}		–	5	50	nA
Input Bias Current	I_B		–	80	250	nA
Large Signal Voltage Gain	A_V		–	80	–	dB
Input Common Mode Voltage Range	V_{ICM}		0 to 3	–	–	V
Common Mode Rejection Ratio	CMR		–	90	–	dB
Supply Voltage Rejection Ratio	SVR		–	80	–	dB
Slew Rate	SR		–	0.8	–	V/μs
Gain Bandwidth Product	GB	f=10kHz	–	2	–	MHz

[Bch]

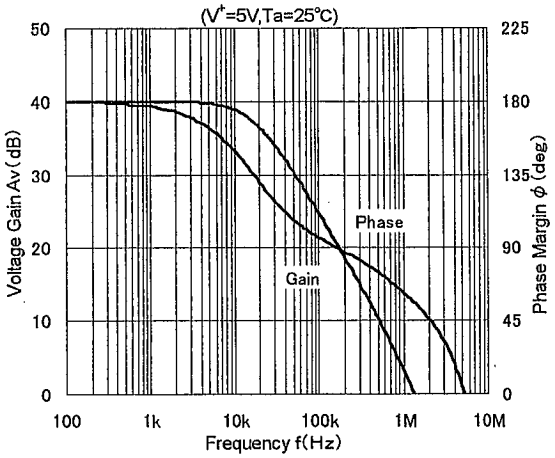
PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{IO}		–	1	6	mV
Input Offset Current	I_{IO}		–	10	50	nA
Input Bias Current	I_B		–	100	300	nA
Large Signal Voltage Gain	A_V		–	80	–	dB
Input Common Mode Voltage Range	V_{ICM}		1.0 to 4.4	–	–	V
Common Mode Rejection Ratio	CMR		–	90	–	dB
Supply Voltage Rejection Ratio	SVR		–	80	–	dB
Slew Rate	SR	A_V=1, V_{IN}=2.5V±1V	–	0.5	–	V/μs
Gain Bandwidth Product	GB	f=10kHz	–	1	–	MHz

■ TYPICAL APPLICATION

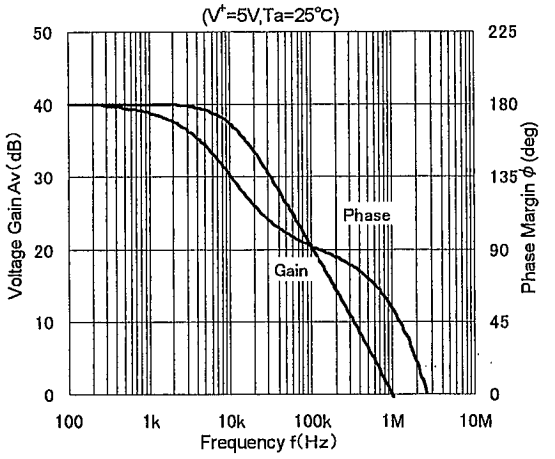


■ TYPICAL CHARACTERISTICS

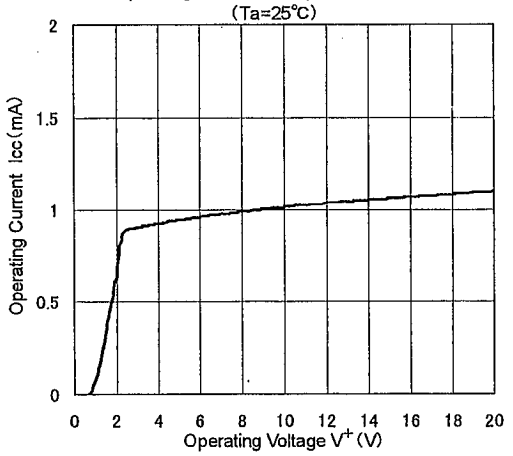
Ach Voltage Gain, Phase Margin vs. Frequency
(V^+=5V,Ta=25°C)



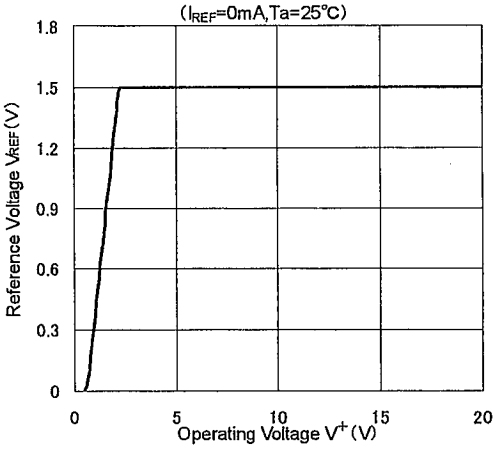
Bch Voltage Gain, Phase Margin vs. Frequency
(V^+=5V,Ta=25°C)



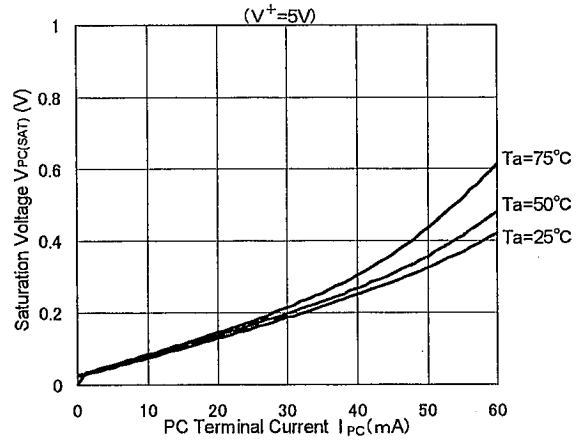
Operating Current vs. Operating Voltage
(Ta=25°C)



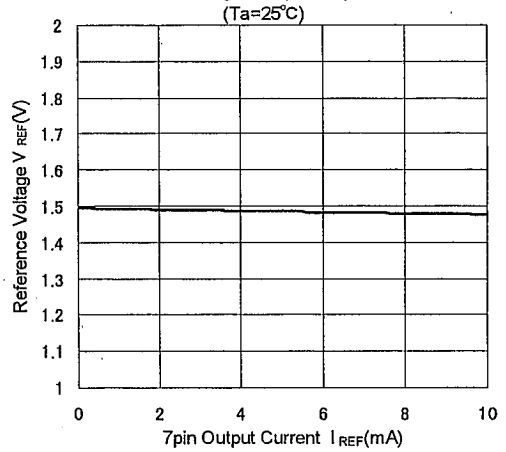
Reference Voltage vs. Operating Voltage
(I_{REF}=0mA,Ta=25°C)



Saturation Voltage vs. PC Terminal Current
(V^+=5V)



Reference Voltage vs. 7pin Output Current
(Ta=25°C)



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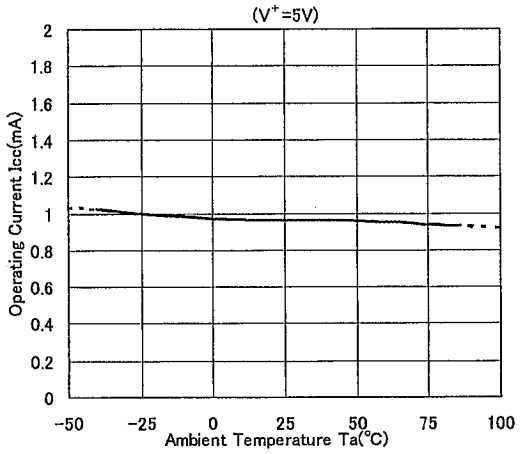
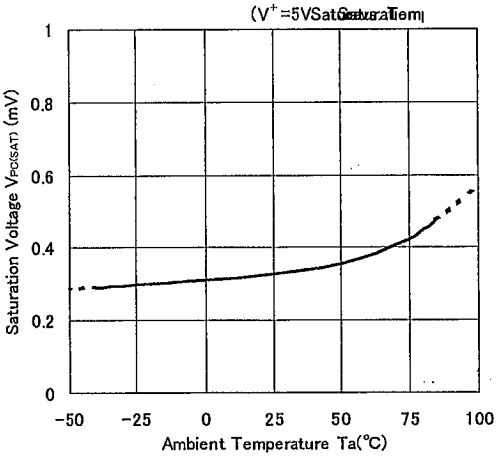
■ TYPICAL CHARACTERISTICS

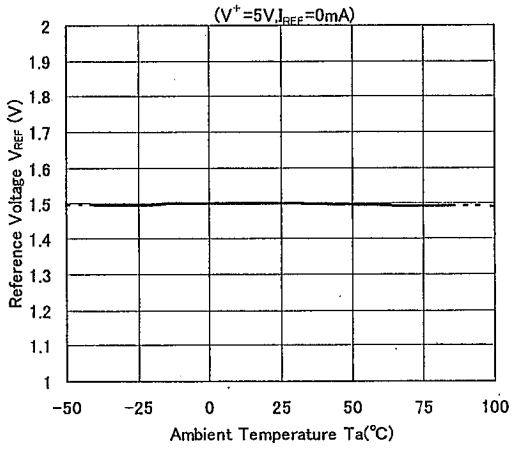
Operating Current vs. Temperature
(V^+=5V)



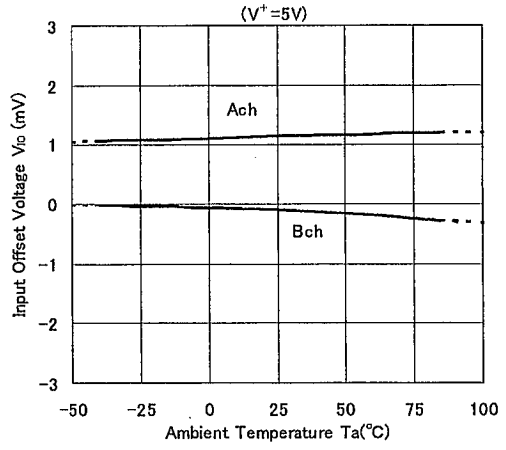
Saturation Voltage vs. Temperature
(V^+=5V



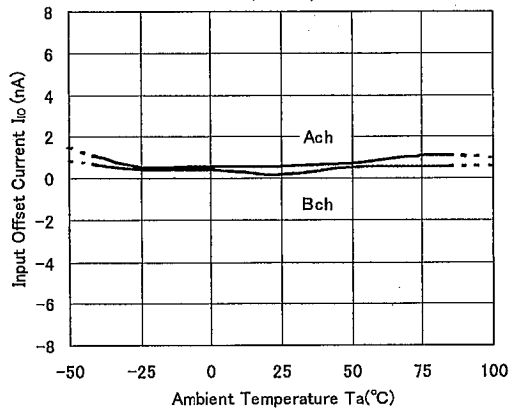
Reference Voltage vs. Temperature
(V^+=5V, I_{REF}=0mA)



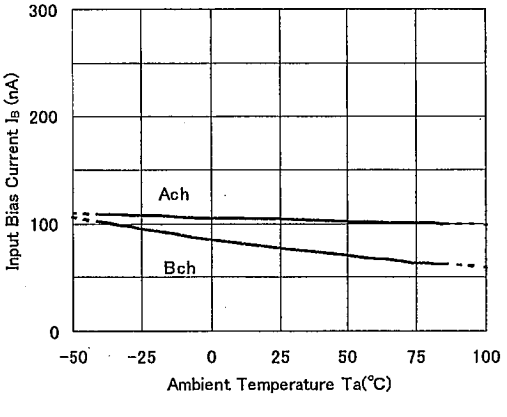
Input Offset Voltage vs. Temperature
(V^+=5V)



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



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



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MEMO

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