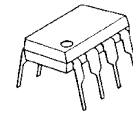


## VOLTAGE AND CURRENT CONTROL IC

### ■ 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

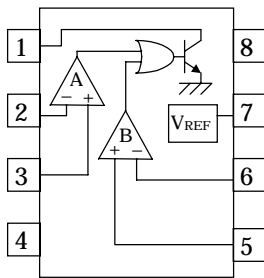


NJM2146BR

### ■ 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<sub>REF</sub>
8. V<sup>+</sup>

### ■ ABSOLUTE MAXIMUM RAIINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V <sup>+</sup>	20	V
Differential Input Voltage	V <sub>ID</sub>	(Ach) 20 (Bch) ±4	V
Power Dissipation	P <sub>D</sub>	(DIP8) 500 (DMP8) 300 (VSP8) 320	mW
PC Terminal Current	I <sub>PC</sub>	60	mA
Operating Temperature Range	T <sub>opr</sub>	-40 ~ 85	°C
Storage Temperature Range	T <sub>stg</sub>	-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	V <sub>opr</sub>	2.5 ~ 18	V

**■ ELECTRICAL CHARACTERISTICS**

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

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Operating Current	$I_{CC}$	$I_{PC}=\text{off}$	–	1	3	mA
Leakage Current	$I_{PCLEAK}$	$V^+=V_{PC}=20V$	–	–	100	$\mu A$
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	$\Delta V_{REF}/\Delta I_{REF}$	$I_{REF}=0 \sim 5mA$	–	–	30	mV

[Ach]

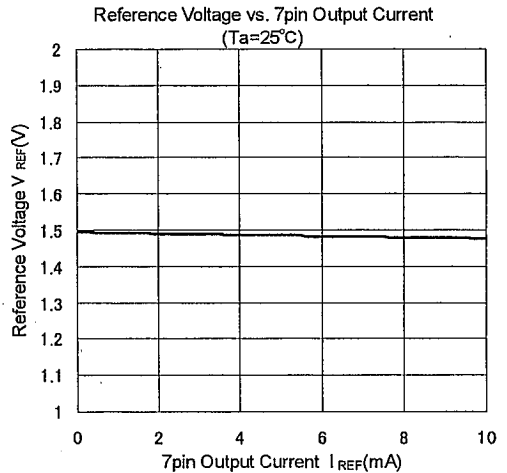
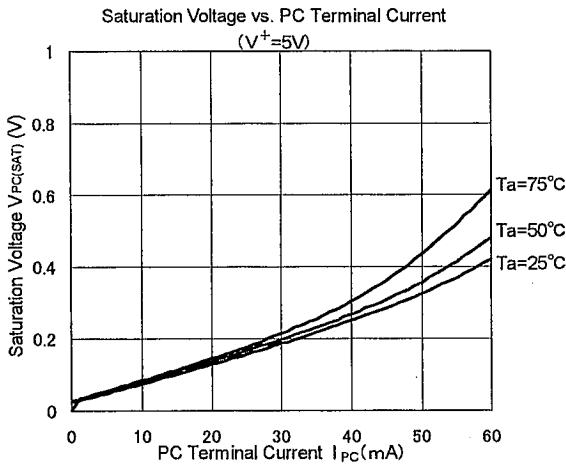
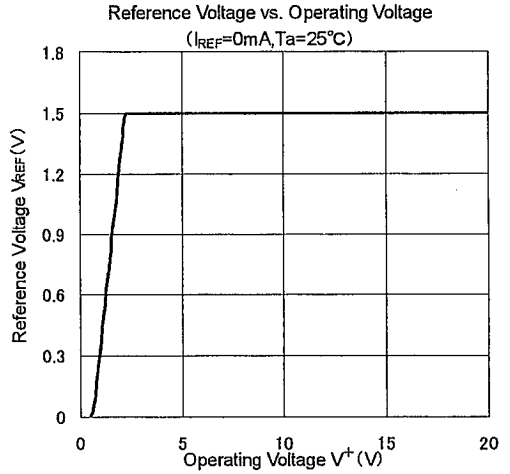
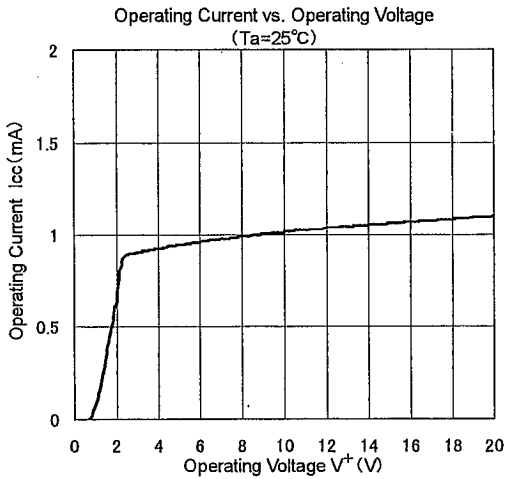
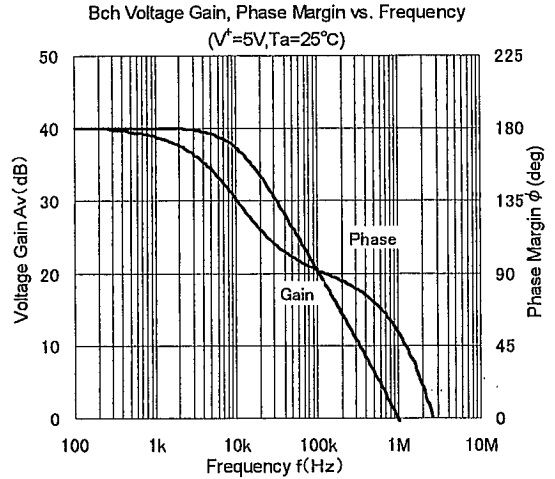
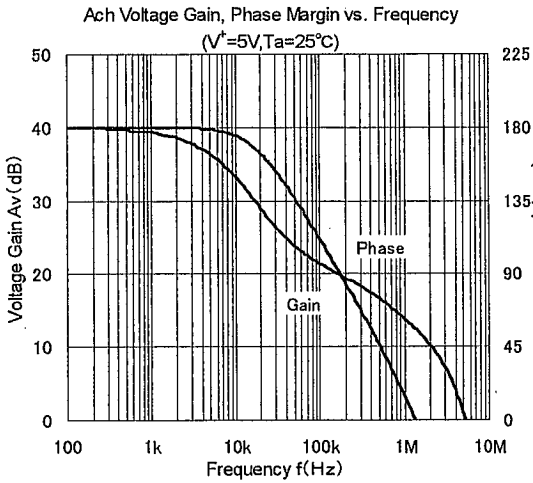
PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	$V_{IO}$		–	0.5	2	mV
Input Offset Current	$I_{IO}$		–	5	50	nA
Input Bias Current	$I_B$		–	80	250	nA
Large Signal Voltage Gain	$A_V$		–	80	–	dB
Input Common Mode Voltage Range	$V_{ICM}$		0 to 3	–	–	V
Common Mode Rejection Ratio	CMR	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

[Bch]

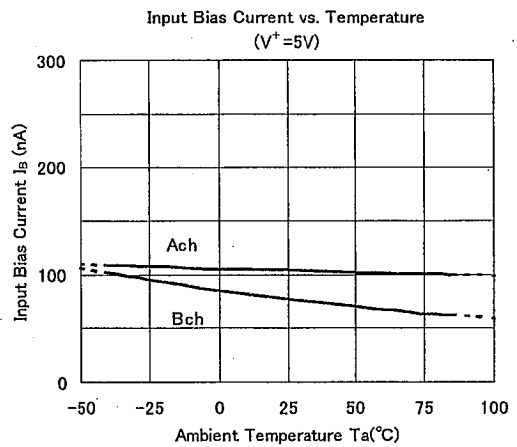
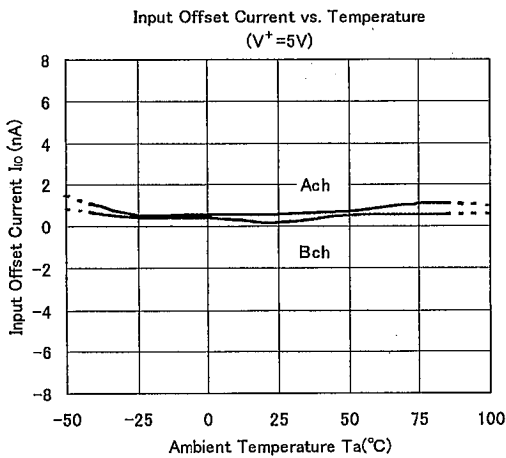
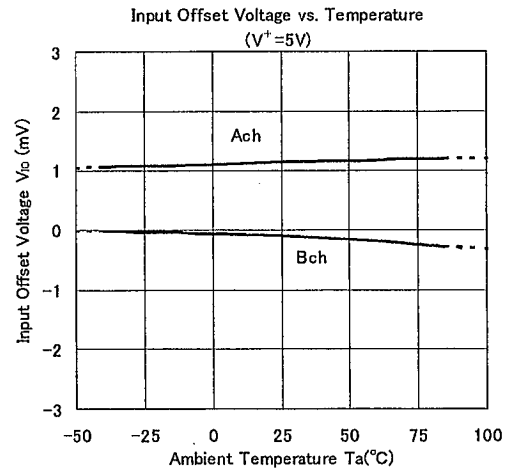
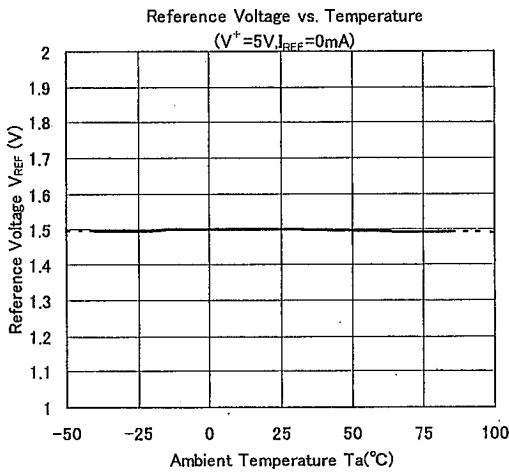
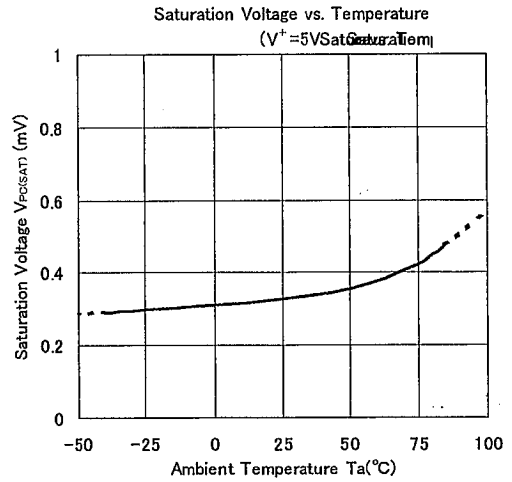
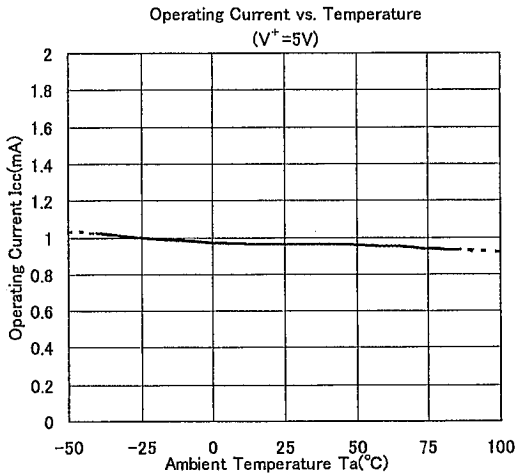
PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	$V_{IO}$		–	1	6	mV
Input Offset Current	$I_{IO}$		–	10	50	nA
Input Bias Current	$I_B$		–	100	300	nA
Large Signal Voltage Gain	$A_V$		–	80	–	dB
Input Common Mode Voltage Range	$V_{ICM}$		1.0 to 4.4	–	–	V
Common Mode Rejection Ratio	CMR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



## TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS



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# MEMO

**[CAUTION]**

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