# HIGH PRECISION DC/DC CONVERTOR CONTROL IC

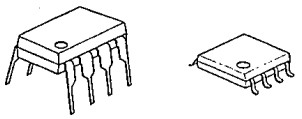
## ■ GENERAL DESCRIPTION

The NJM2360A is a control circuit containing the primary functions required for DC to DC CONVERTOR.

This device consist of high precision reference, comparator controlled duty cycle oscillator with an active current limit circuit, driver and high current output switch.

This IC was speciffically designed to be incorporated in step-up, step-down and inverting applications with a minimum number of external components. This IC is desiged to be ±5% output voltage by using precision 1% resistance on external detected resistance.

## ■ PACKAGE OUTLINE

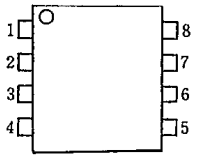


NJM2360AD NJM2360AM

## ■ FEATURES

- Operating Voltage (2.5V~40V)
- Precision ±2% Reference
- Low Standby Current
- Output Voltage $V_{OR}$ 1.25~40V
- Oscillator Frequency $f_{OSC}$ 100Hz~100kHz
- Output Switch Current to 1.5A
- Package Outline DIP8, DMP8
- Bipolar Technology

## ■ PIN COFIGURATION

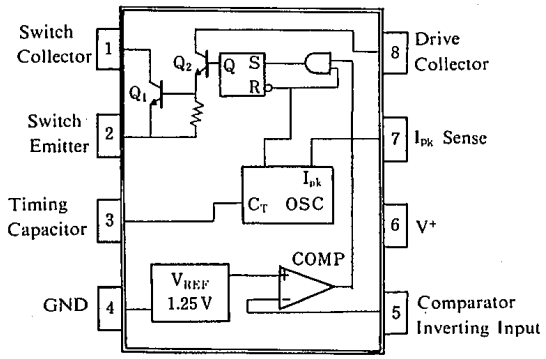



NJM2360AD
NJM2360AM

PIN FUNCTION

1. $C_S$
2. $E_S$
3. $C_T$
4. GND
5. $INV_{IN}$
6. $V^+$
7. $S_I$
8. $C_D$

## ■ BLOCK DIAGRAM



## ■ ABSOLUTE MAXIMUM RATINGS

(Ta=25℃)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|---|---|---|---|
| Supply Voltage | $V^+$ | 40 | V |
| Comparator Input Voltage Range | $V_{IR}$ | −0.3～40 | V |
| Power Dissipation | $P_D$ | (DIP8) 875<br>(DMP8) 750(note 1) | mW<br>mW |
| Switch Current | $I_{SW}$ | 1.5 | A |
| Operating Temperature Range | $T_{opr}$ | −40～+85 | ℃ |
| Storage Temperature Range | $T_{stg}$ | −40~+150 | ℃ |

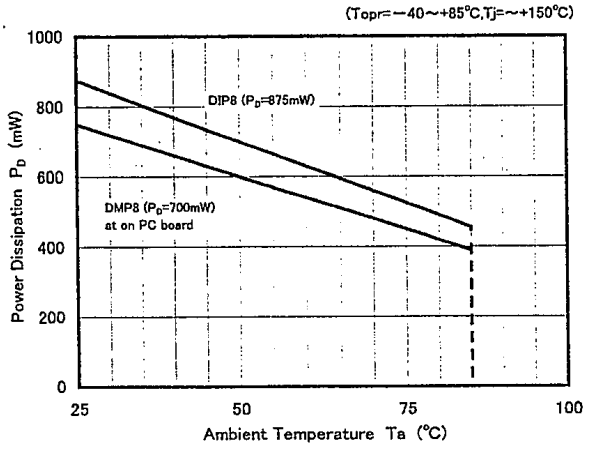
(note 1) At on PC board

## ■ ELECTRICAL CHARACTERISTICS

- DC Characteristics ($V^+$=5V, Ta=25℃)

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|
| Operating Current | $I_{CC}$ | 5V≦$V^+$≦40V, $C_T$=0.001μF<br>$S_I$=$V^+$, INV$_{IN}$>$V_{th}$, $E_S$=GND | — | 2.4 | 3.5 | mA |
| **Oscillator** | | | | | | |
| Charge Current | $I_{chg}$ | 5V≦$V^+$≦40V | 20 | 35 | 50 | μA |
| Discharge Current | $I_{dischg}$ | 5V≦$V^+$≦40V | 150 | 200 | 250 | μA |
| Voltage Swing | $V_{OSC}$ | | — | 0.5 | — | $V_{P-P}$ |
| Discharge to Charge Current Ratio | $I_{dischg}/I_{chg}$ | $S_I$=$V^+$ | — | 6 | — | — |
| Peak Current Sense Voltage | $V_{IPK(sense)}$ | $I_{chg}$=$I_{dischg}$ | 250 | 300 | 350 | mV |
| **Output Switch (Note 2)** | | | | | | |
| Saturation Voltage 1 | $V_{CE(sat)}$1 | Darlington Connection ($C_S$=$C_D$)<br>$I_{SW}$=1.0A | — | 1.0 | 1.3 | V |
| Saturation Voltage 2 | $V_{CE(sat)}$ 2 | $I_{SW}$=1.0A, $I_{C(driver)}$=50mA<br>(Forced β≒20) | — | 0.5 | 0.7 | V |
| DC Current Gain | $h_{FE}$ | $I_{SW}$=1.0A, $V_{CE}$=5.0V | 35 | 120 | — | — |
| Collector Off−State Current | $I_{C(off)}$ | $V_{CE}$=40V | — | 10 | — | nA |
| **Comparator** | | | | | | |
| Threshold Voltage | $V_{th}$ | | 1.225 | 1.250 | 1.275 | V |
| Input Bias Current | $I_{IB}$ | $V_{IN}$=OV | — | 40 | 400 | nA |

Note 2 : Output switch tests are performed under pulsed conditions to minimize power dissipation.



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