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## HIGH PRECISION DC/DC CONVERTER CONTROL IC

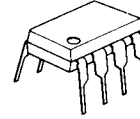
### ■ GENERAL DESCRIPTION

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

### ■ PACKAGE OUTLINE



NJM2360AD



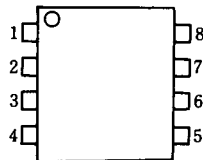
NJM2360AM

### ■ FEATURES

- Precision Reference  $1.25V \pm 2\%$
- Output Switch Current 1.5A (MAX)
- Operating Voltage  $2.5V^*$  to 40V
- Internal Over Current Limit Circuit
- Supply Voltage  $V^+$   $2.5V^*$  to 40V
- Output Voltage  $V_{OR}$  1.25V to 40V
- Oscillator Frequency  $f_{OSC}$  100Hz to 100kHz
- Package Outline DIP8, DMP8

\* $T_a = 25^\circ C$ . At low temperature, the minimum voltage is 3.0V.

### ■ PIN CONFIGURATION

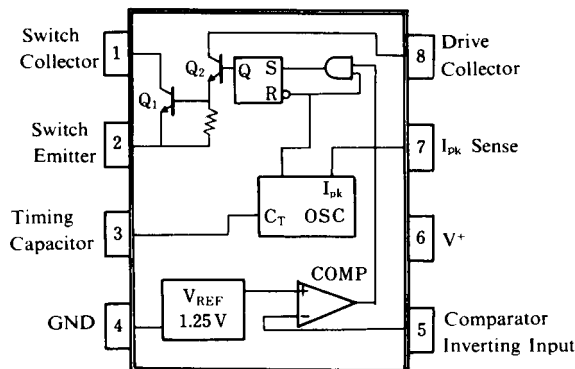


NJM2360AD  
NJM2360AM

#### 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



# NJM2360A

## ■ ABSOLUTE MAXIMUM RATINGS

( $T_a = 25^\circ\text{C}$ )

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V^+$	40	V
Comparator Input Voltage Range	$V_{IR}$	-0.3 to 40	V
Power Dissipation	$P_D$	(DIP8) 875 (DMP8) 750 (note1)	mW mW
Switch Current	$I_{SW}$	1.5	A
Operating Temperature Range	$T_{opr}$	-40 to +85	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-40 to +150	$^\circ\text{C}$

(note 1) At on PC board

## ■ ELECTRICAL CHARACTERISTICS

● DC Characteristics ( $V^+ = 5\text{V}$ ,  $T_a = 25^\circ\text{C}$ )

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current	$I_{CC}$	$5\text{V} \leq V^+ \leq 40\text{V}$ , $C_T = 0.001\mu\text{F}$ $S_1 = V^+$ , $INV_{IN} > V_{th}$ , $E_S = \text{GND}$	-	2.4	3.5	mA

### Oscillator

Charge Current	$I_{chg}$	$5\text{V} \leq V^+ \leq 40\text{V}$	20	35	50	$\mu\text{A}$
Discharge Current	$I_{dischg}$	$5\text{V} \leq V^+ \leq 40\text{V}$	150	200	250	$\mu\text{A}$
Voltage Swing	$V_{OSC}$		-	0.5	-	$V_{P-P}$
Discharge to Charge Current Ratio	$I_{dischg}/I_{chg}$	$S_1 = V^+$	-	6	-	-
Peak Current Sense Voltage	$V_{IPK(sense)}$	$I_{chg} = I_{dischg}$	250	300	350	mV

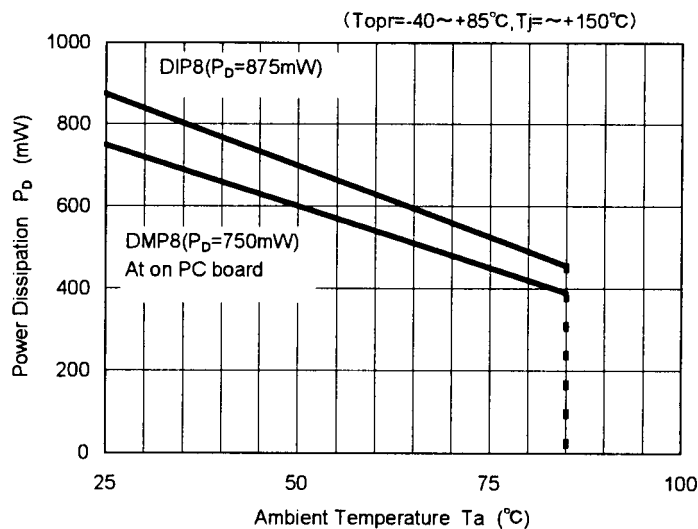
### Output Switch (Note 2)

Saturation Voltage 1	$V_{CE(sat)1}$	Darlington Connection ( $C_S = C_D$ ) $I_{SW} = 1.0\text{A}$	-	1.0	1.3	V
Saturation Voltage 2	$V_{CE(sat)2}$	$I_{SW} = 1.0\text{A}$ , $I_C$ (driver) = 50mA (Forced $\beta=20$ )	-	0.5	0.7	V
DC Current Gain	$h_{FE}$	$I_{SW} = 1.0\text{A}$ , $V_{CE} = 5.0\text{V}$	35	120	-	-
Collector Off-State Current	$I_{C(off)}$	$V_{CE} = 40\text{V}$	-	10	-	nA

### Comparator

Threshold Voltage	$V_{th}$		1.225	1.250	1.275	V
Input Bias Current	$I_{IB}$	$V_{IN} = 0\text{V}$	-	40	400	nA

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



#### [CAUTION]

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