

HIGH PRECISION DC/DC CONVERTER CONTROL IC

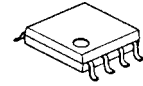
■GENERAL DESCRIPTION

NJM2340 is a high precision DC/DC converter control IC with current sense amplifier.

It uses a low side current sensing which reduces external components and improves accuracy.

It is applicable for a wide range of application since it features high operating voltage and small outline packages.

■PACKAGE OUTLINE



NJM2340M

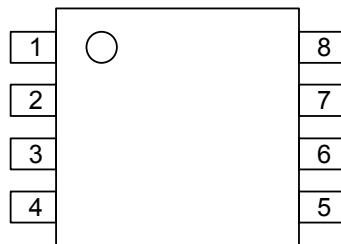


NJM2340RB1

■FEATURES

- PWM switching control
- Operating Voltage (3.6 to 32V)
- Wide Oscillator Range (20kHz to 500 kHz)
- Duty Cycle (0% to 100%)
- Current Sensing Amplifier
- High Precision Reference Voltage Voltage Detect: $1V \pm 1.5\%$
Current Detect: $150mV \pm 4\%$
- Bipolar Technology
- Package Outline DMP8, TVSP8

■PIN CONFIGURATION



NJM2340M
NJM2340RB1

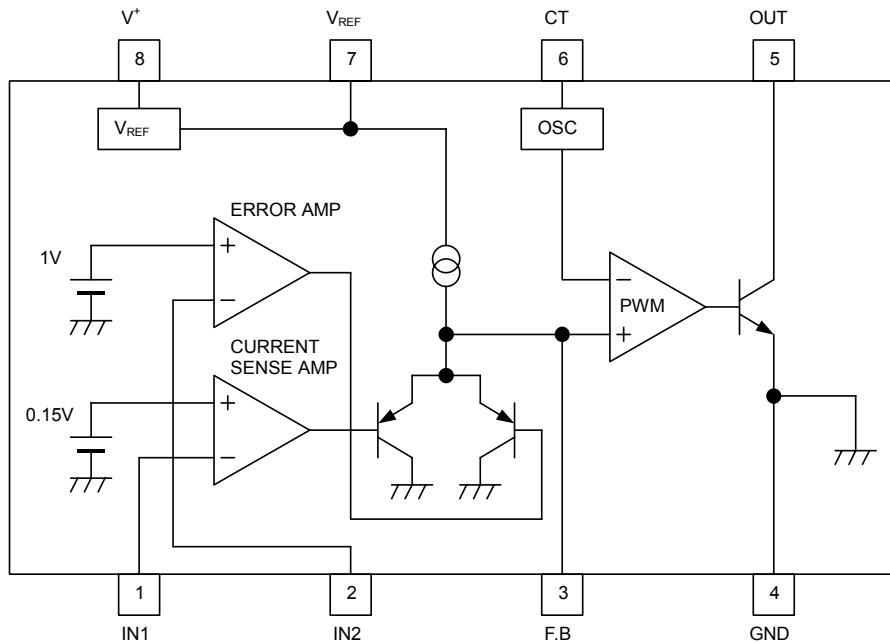
Pin Function

- 1.IN1
- 2.IN2
- 3.F.B
- 4.GND
- 5.OUT
- 6.CT
- 7.V_{REF}
- 8.V⁺

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■BLOCK DIAGRAM



■ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Maximum Supply Voltage	V ⁺	36	V
Output Sink Current	I _{SINK}	15	mA
Power Dissipation	P _D	(DMP8) 300 (TVSP8) 320	mW
Operating Temperature Range	Topr	-40 ~ +85	°C
Storage Temperature Range	Tstg	-50 ~ +150	°C

■RECOMMENDED OPERATING CONDITIONS (Ta=25°C)

PARAMETER	SYMBOL	MIN.	MAX.	UNIT
Supply Voltage	V ⁺	3.6	32	V
Oscillation Frequency	fosc	20	500	kHz
Oscillator Timing Resistance	R _T	20	100	kΩ

■ ELECTRICAL CHARACTERISTICS ($V^+=12V, T_a=25^\circ C$)

REFERENCE VOLTAGE BLOCK

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_{REF}	$I_{OR}=1mA$	1.98	2.00	2.02	V
Line Regulation	L_{INE}	$V^+=3.6 \sim 32V, I_{OR}=1mA$	–	4.0	20	mV
Load Regulation	L_{OAD}	$I_{OR}=0.1 \sim 5.0mA$	–	6.0	40	mV

OSCILLATOR BLOCK

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Oscillation Frequency	f_{OSC}	$R_T=27k\Omega, C_T=220pF$	315	350	385	kHz

CURRENT SENSE AMPLIFIER BLOCK

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Reference Voltage1	V_{B1}		144	150	156	mV
Input Bias Voltage1	I_{B1}		–	20	100	nA
Maximum Output Voltage1 (F.B Pin)	V_{OM+1}	$R_{NF}=100k\Omega$	–	V_{REF} -0.15	–	V
	V_{OM-1}	$R_{NF}=100k\Omega$	0.6	0.75	0.9	V
Maximum Source Current1 (F.B Pin)	I_{OM1}	$V_{OM1}=0.5V$	40	85	200	μA

ERROR AMPLIFIER BLOCK

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Reference Voltage2	V_{B2}		0.985	1.000	1.015	V
Input Bias Voltage2	I_{B2}		–	20	100	nA
Maximum Output Voltage2 (F.B Pin)	V_{OM+2}	$R_{NF}=100k\Omega$	–	V_{REF} -0.15	–	V
	V_{OM-2}	$R_{NF}=100k\Omega$	0.6	0.75	0.9	V
Maximum Source Current2 (F.B Pin)	I_{OM2}	$V_{OM2}=0.5V$	40	85	200	μA

PWM COMPARATE BLOCK

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Threshold Voltage (F.B Pin)	V_{TH0}	duty·cycle=0% (note)	V_{OM-}	1.0	1.1	V
Input Threshold Voltage (F.B Pin)	V_{TH100}	duty·cycle=100% (note)	–	1.4	–	V

OUTPUT BLOCK

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
L Output Voltage (OUT Pin)	V_{OL}	$I_{SINK}=10mA$	–	0.5	0.7	V

GENERAL CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Average Quiescent Current	I_{CCAV}	$R_L=\infty, \text{duty·cycle}=50\%$	–	1.5	2.0	mA

(note) Duty·Cycle is defined as follows:

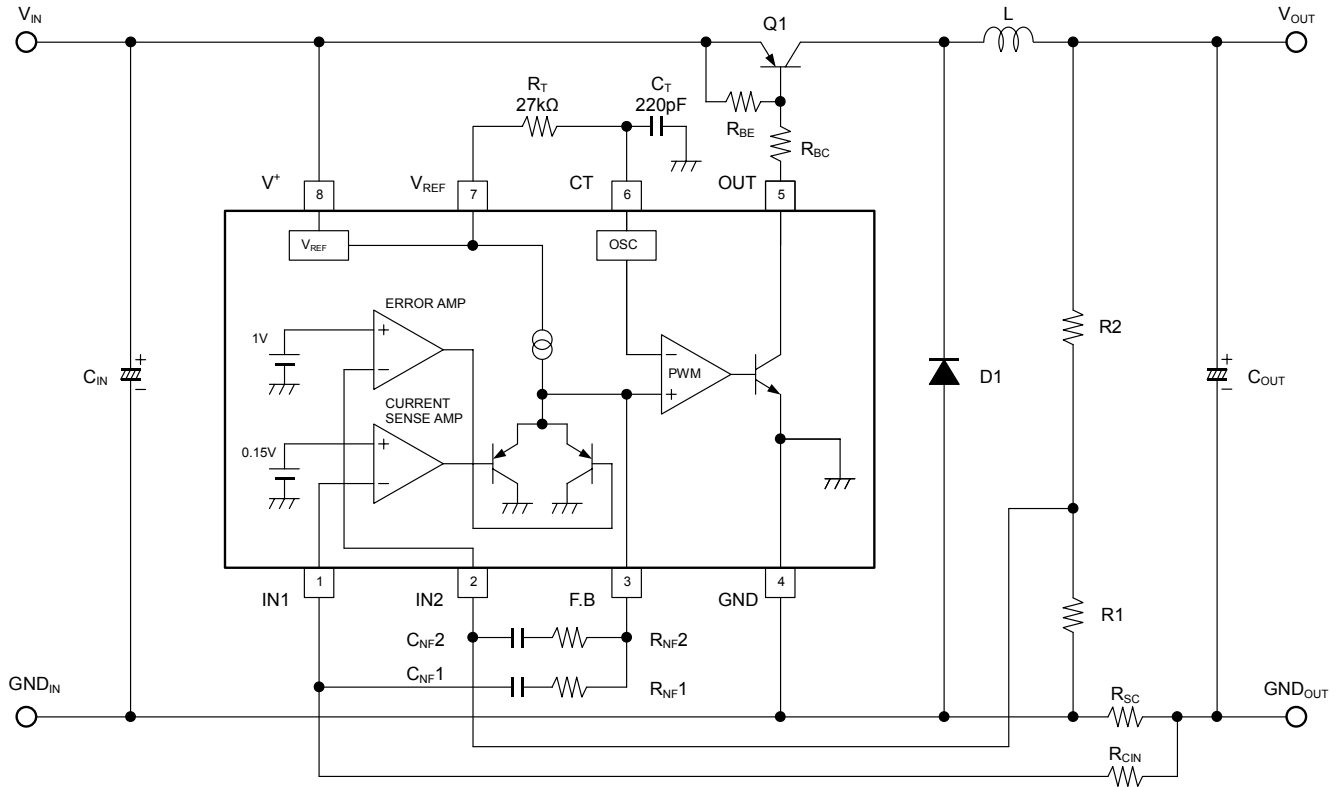
Duty·Cycle=0%: IC output transistor is OFF.

Duty·Cycle=100%: IC output transistor is ON.

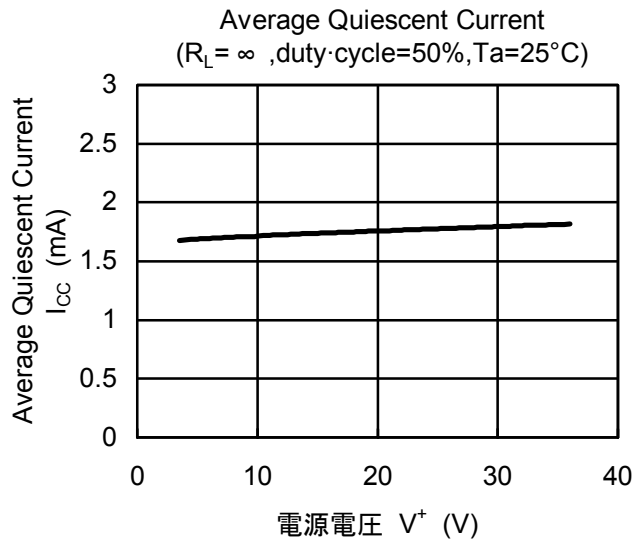
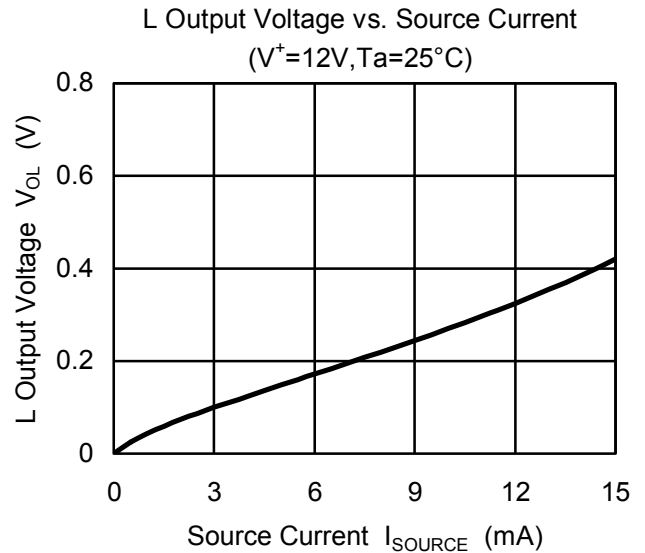
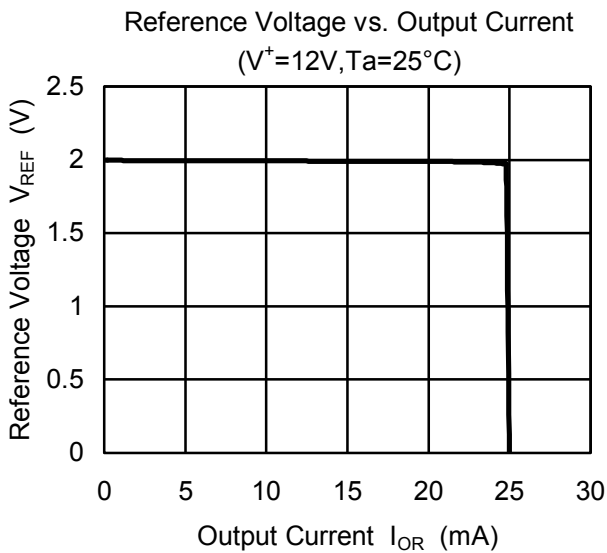
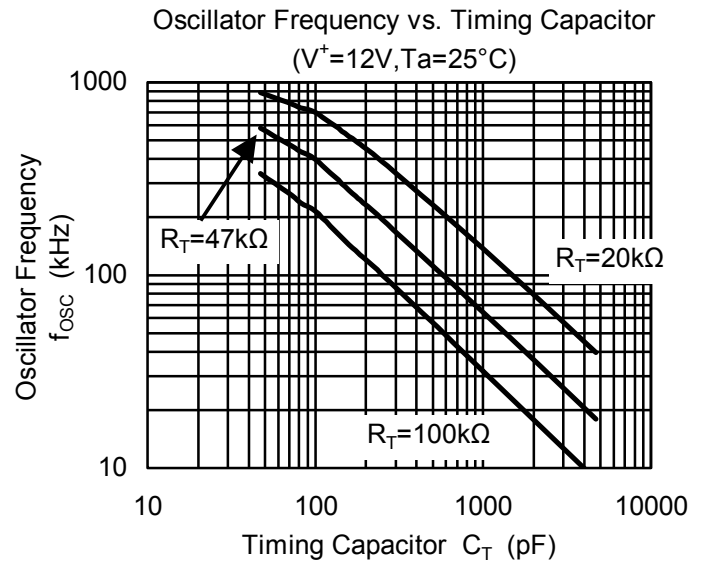
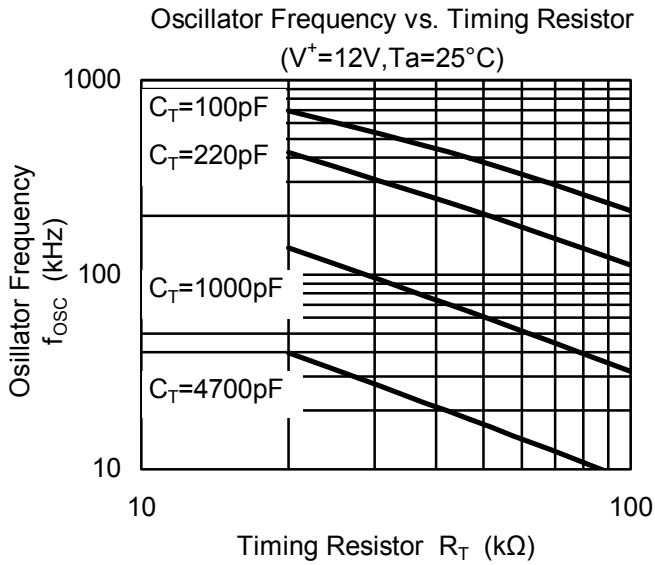
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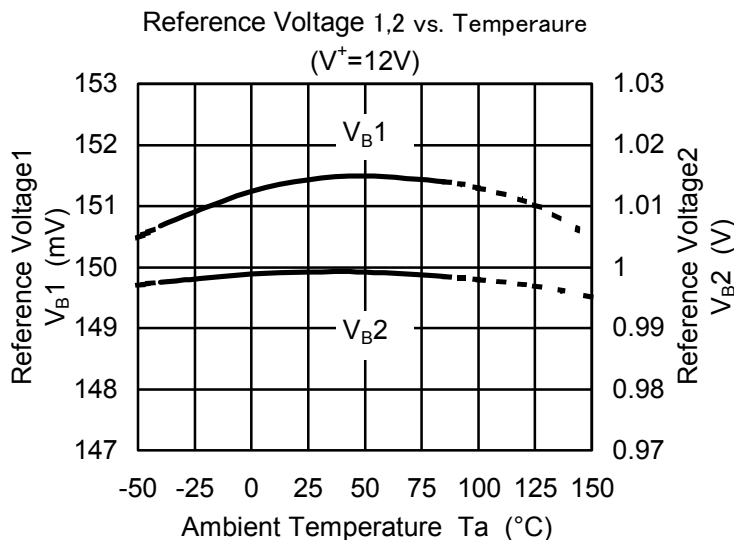
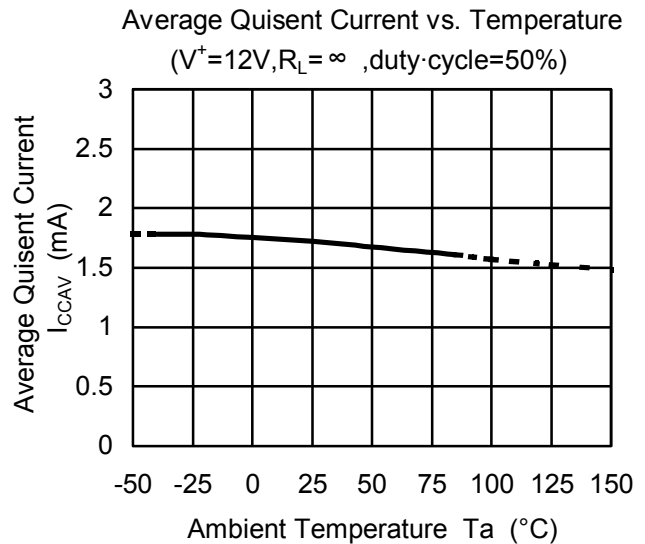
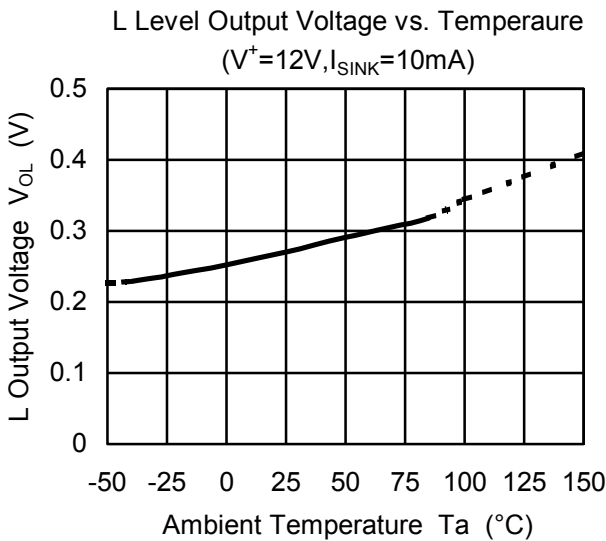
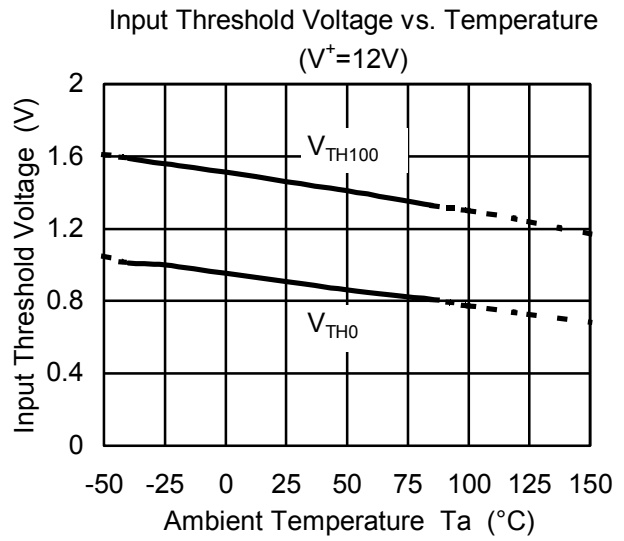
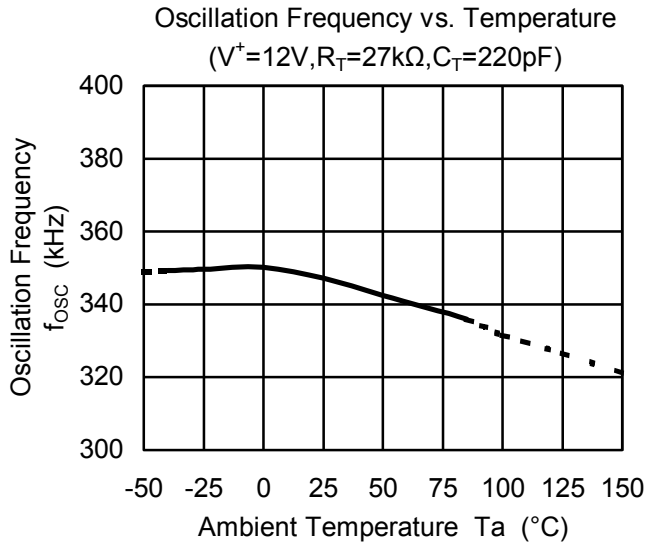
■ TYPICAL APPLICATION



TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS



[CAUTION]
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