

HIGH PRECISION DC/DC CONVERTER CONTROL IC

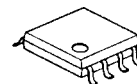
■ GENERAL DESCRIPTION

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

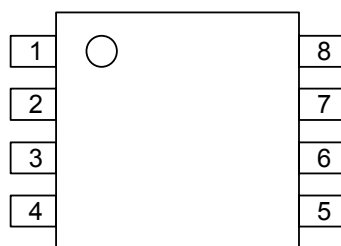


NJM2340RB1

■ 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±1.5%
 - Current Detect: 150mV±4%
- Bipolar Technology
- Package Outline DMP8, TVSP8

■ PIN CONFIGURATION



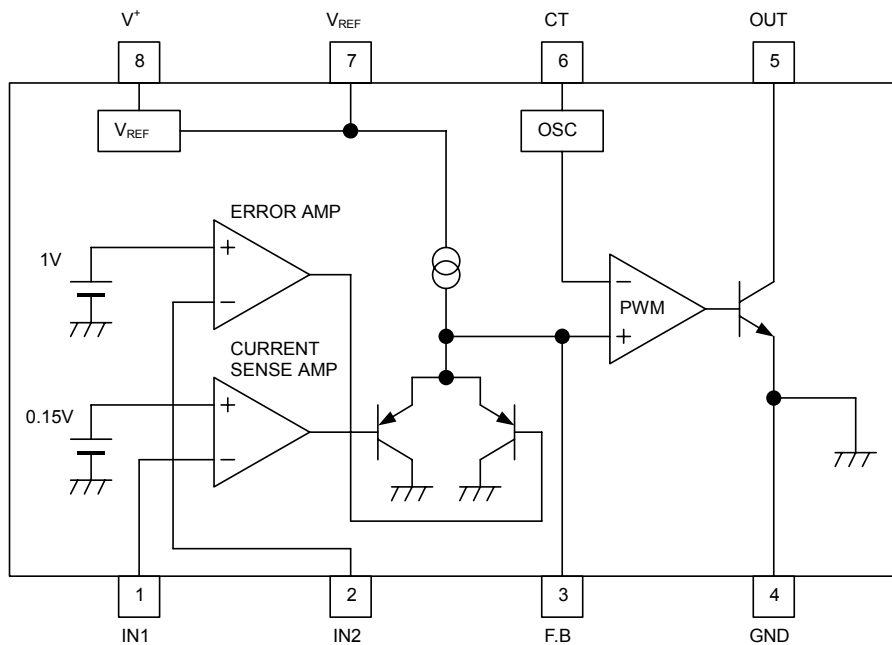
NJM2340M
NJM2340RB1

Pin Function

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

NJM2340

■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	f _{osc}	20	500	kHz
Oscillator Timing Resistance	R _T	20	100	kΩ

■ ELECTRICAL CHARACTERISTICS (V⁺=12V, Ta=25°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 ~ 32V, I _{OR} =1mA	–	4.0	20	mV
Load Regulation	L _{OAD}	I _{OR} =0.1 ~ 5.0mA	–	6.0	40	mV

OSCILLATOR BLOCK

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Oscillation Frequency	f _{OSC}	R _T =27kΩ, 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} =100kΩ	–	V _{REF} -0.15	–	V
	V _{OM-1}	R _{NF} =100kΩ	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} =100kΩ	–	V _{REF} -0.15	–	V
	V _{OM-2}	R _{NF} =100kΩ	0.6	0.75	0.9	V
Maximum Source Current2 (F.B Pin)	I _{OM2}	V _{OM2} =0.5V	40	85	200	μA

PWM COMPARE 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 =∞, duty·cycle=50%	–	1.5	2.0	mA

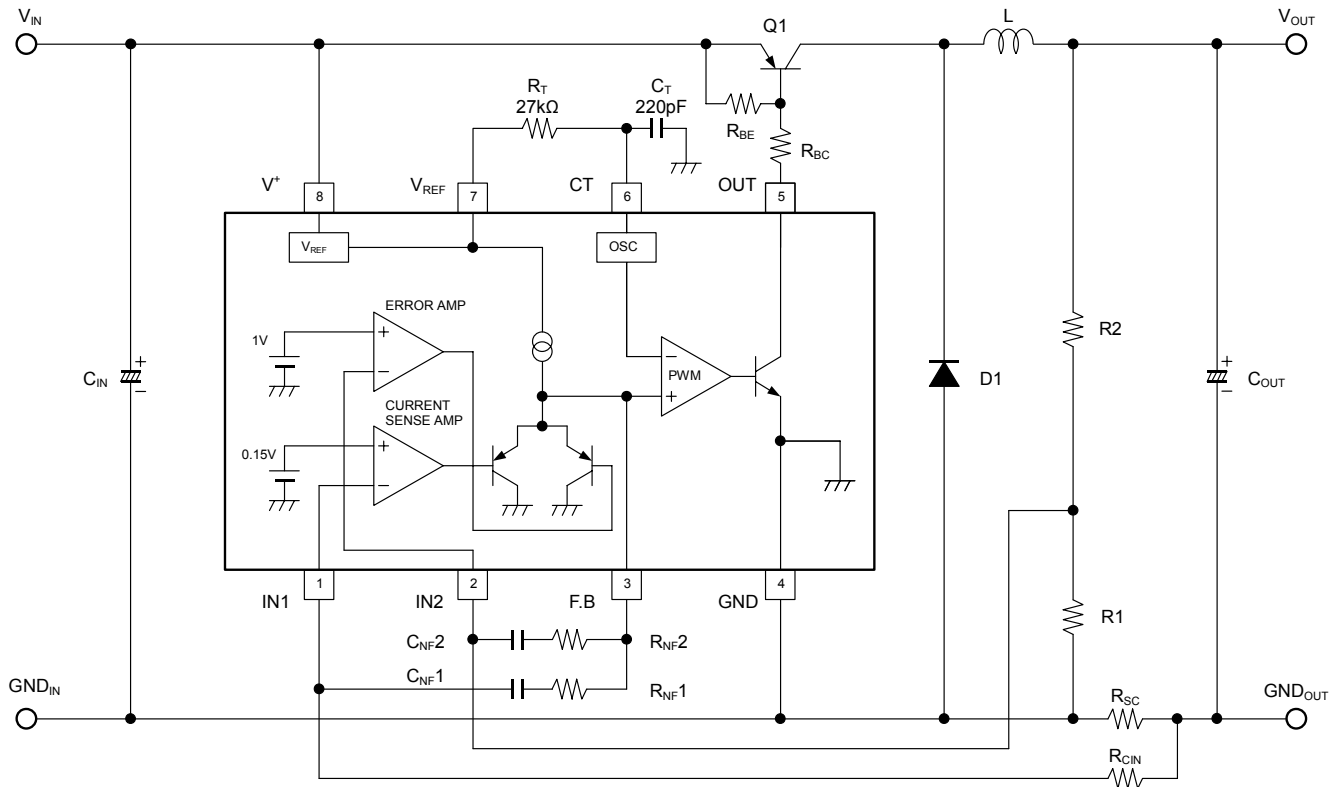
(note) Duty·Cycle is defined as follows:

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

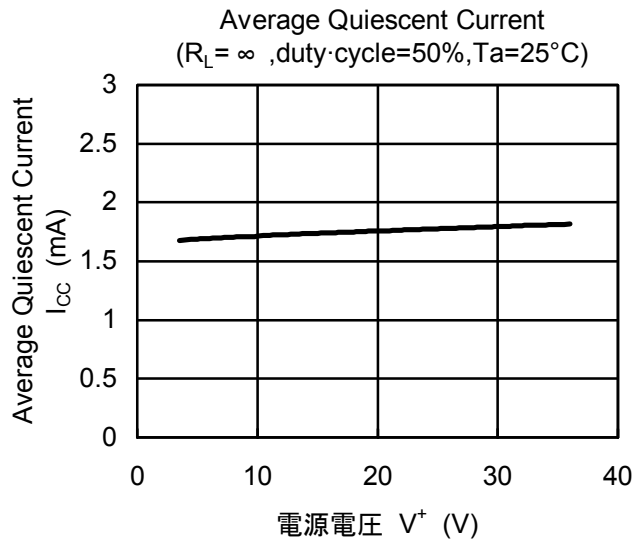
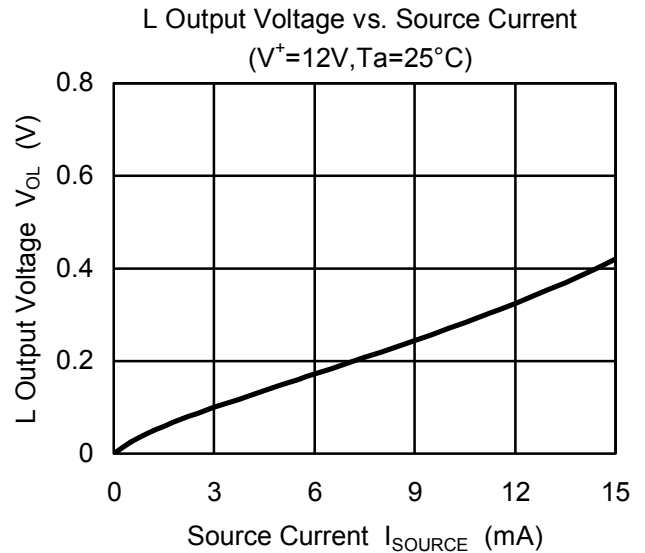
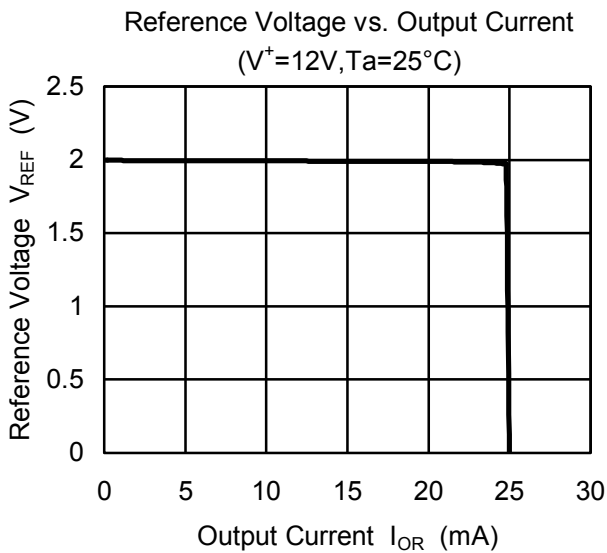
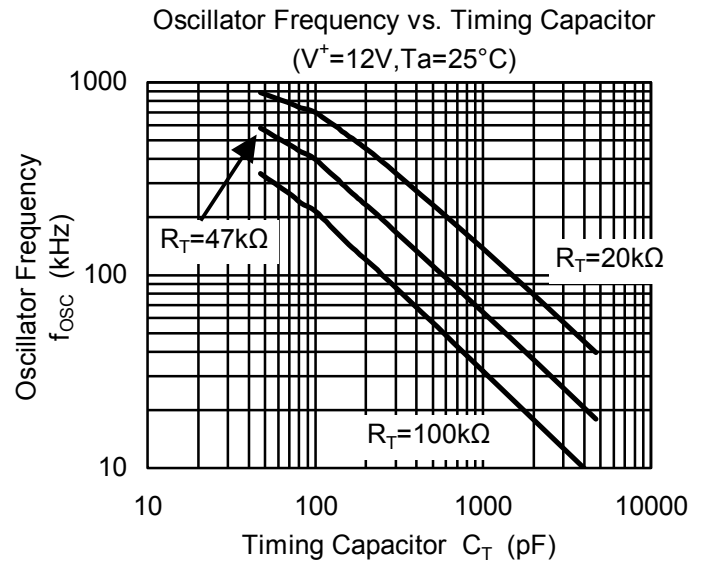
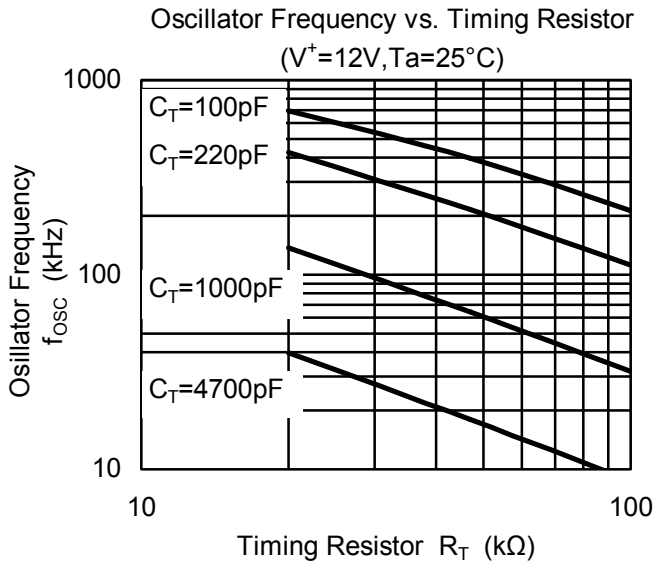
Duty·Cycle=100%: IC output transistor is ON.

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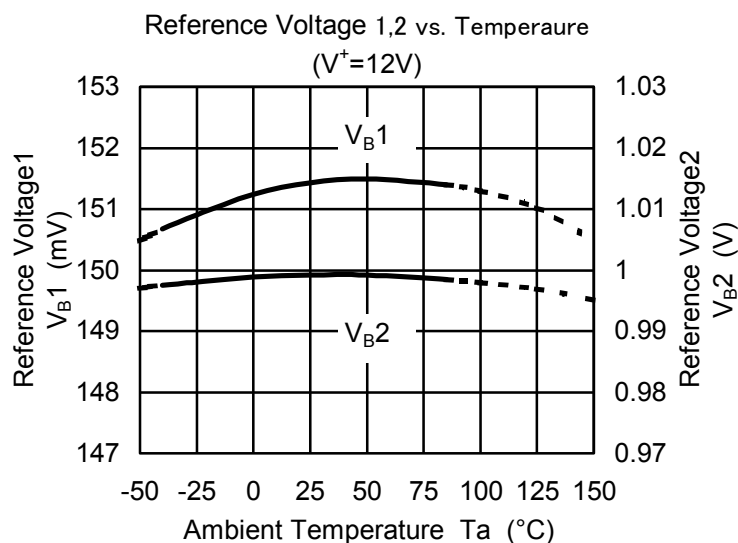
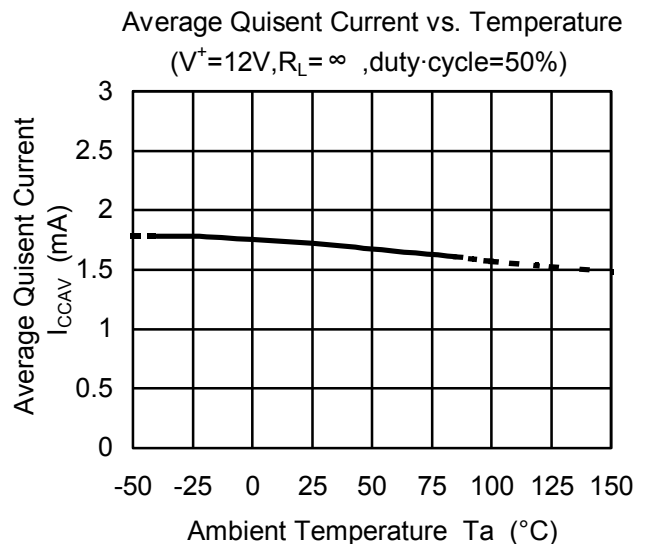
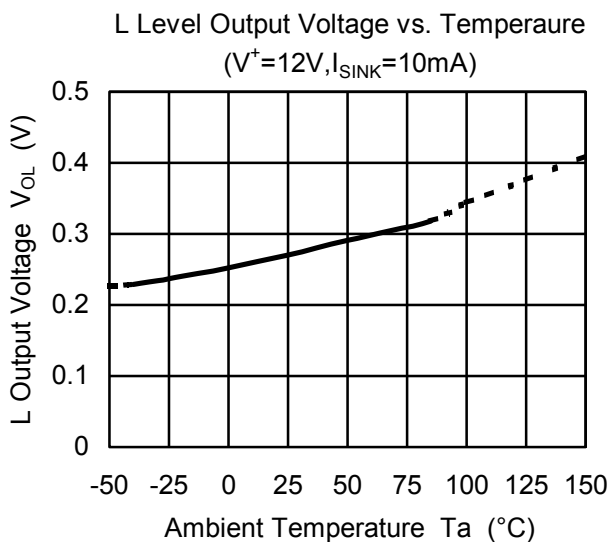
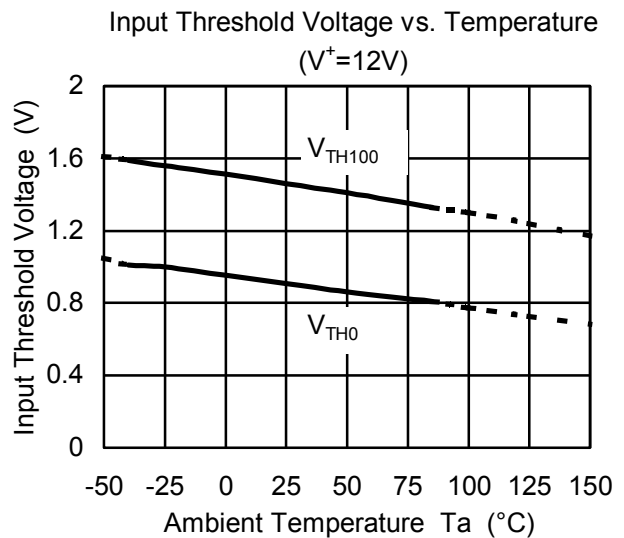
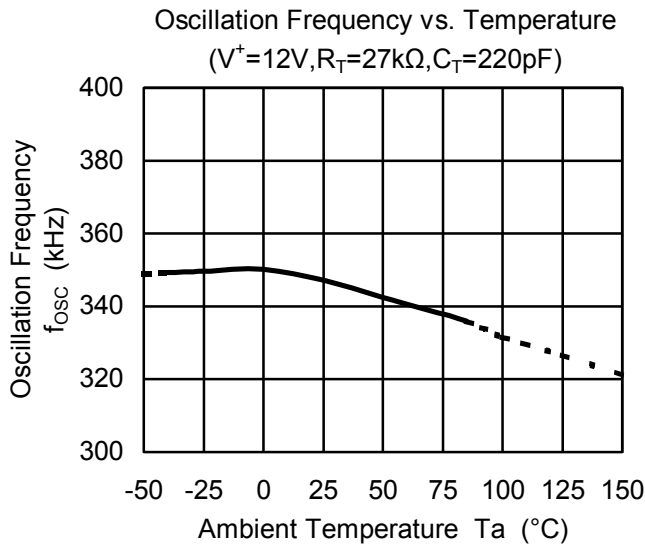
■ TYPICAL APPLICATION



■ TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS



[CAUTION]
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