

Doubler Charge Pump IC

GENERAL DESCRIPTION

The NJW4190 is the doubler charge pump IC that operates wide 5V to 17V input range. With only the external part of an input/output capacitor and a charge pump capacitor, can compose the doubler voltage circuit. It has a high current capability and a corresponding to small-sized capacitor compared with conventional product such as popular 7660/7662.

For usability, it has ON/OFF function, Output Voltage Adjustable function and external synchronous function.

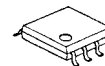
The NJW4190 is suitable for the bias voltage of CCD, sensors and operational amplifiers.

There is the NJW4191 for inverter voltage output application.

PACKAGE OUTLINE



NJW4190R



NJW4190M

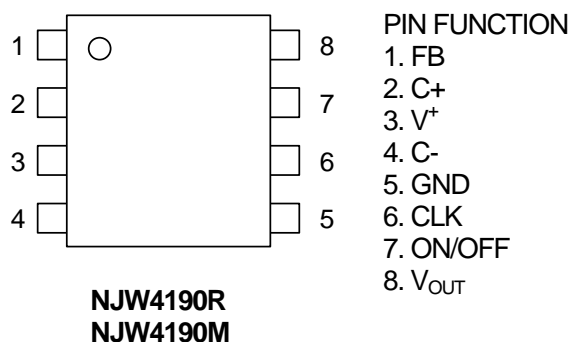
FEATURES

- Doubler Output 34V max.
- Wide Operating Voltage Range 5V to 17V
- Maximum Output Current 55mA max.
- Correspond to Ceramic Capacitor (MLCC)
- V_{OUT} Programmable
- ON/OFF Function
- Built-in Oscillation Circuit 300kHz typ.
- External Synchronization Function divide-by-4 counter (A ver.)
- Thermal Shutdown
- Function Compatible to NJU7660/NJU7662 Doubler Circuit*
- Package Outline NJW4190R : MSOP8 (VSP8)**
NJW4190M : DMP8

* The NJW4190 is not pin compatible to NJU7660/62.

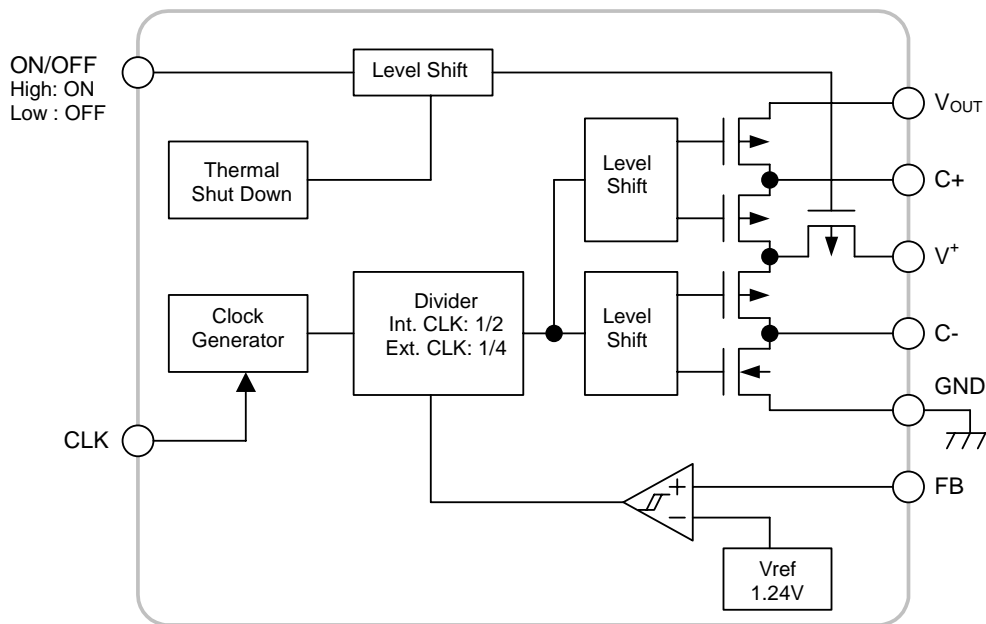
** MEET JEDEC MO-187-DA

PIN CONFIGURATION



NJW4190

■ BLOCK DIAGRAM



■ PRODUCT CLASSIFICATION

PART NUMBER	Divider
NJW4190R-A NJW4190M-A	External CLK: 1/4

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	MAXIMUM RATINGS	UNIT
Input Voltage	V ⁺	+20	V
FB pin Voltage	V _{FB}	-0.3 to +6	V
ON/OFF pin Voltage	V _{ON/OFF}	-0.3 to +6	V
CLK pin Voltage	V _{CLK}	-0.3 to +6	V
Maximum Output Current	I _{OUT}	55	mA
Power Dissipation	P _D	MSOP8 (VSP8) : 595 (*1) DMP8 : 530 (*1)	mW
Operating Temperature	T _{opr}	-40 to +85	°C
Storage Temperature	T _{stg}	-40 to +150	°C

(*1): Mounted on glass epoxy board. (76.2×114.3×1.6mm:EIA/JDEC standard size, 2Layers)

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V ⁺	5	–	17	V
External CLK Input Range A version (*2)	f _{CLK}	300	–	2,000	kHz
External CLK Duty Input Range	DUTY	45	–	80	%

(*2): The oscillation frequency is output from the V_{OUT} pin that external clock input frequency divided by four (4).

■ ELECTRICAL CHARACTERISTICS

(Unless otherwise noted, $V^+ = 10V$, $V_{ON/OFF} = 5V$, $V_{FB} = GND$, $V_{CLK} = GND$, $C1 = C2 = C3 = 1\mu F$, $T_a = 25^\circ C$)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
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General Characteristics

Supply Current	I_{DD1}	$V_{ON/OFF} = 5V$, $R_L = \text{no Load}$	–	950	1,250	μA
	I_{DD2}	$V_{ON/OFF} = GND$	–	55	75	μA
Output Resistance	R_O	$I_{OUT} = 20mA$	–	30	42	Ω
Oscillation Frequency	f_{OSC}		–	300	–	kHz
Power Efficiency	P_{EF}	$R_L = 2k\Omega$	88	93	–	%
Voltage Conversion Efficiency	V_{EF}	$R_L = \text{no Load}$	97	99.9	–	%

ON/OFF Block

ON Control Voltage	V_{ON}	$V_{ON/OFF} = L \rightarrow H$	1.7	–	5.5	V
OFF Control Voltage	V_{OFF}	$V_{ON/OFF} = H \rightarrow L$	0	–	0.6	V
ON/OFF pin Current	$I_{ON/OFF}$	$V_{ON/OFF} = 1.7V$	–	2	5	μA

FB Block

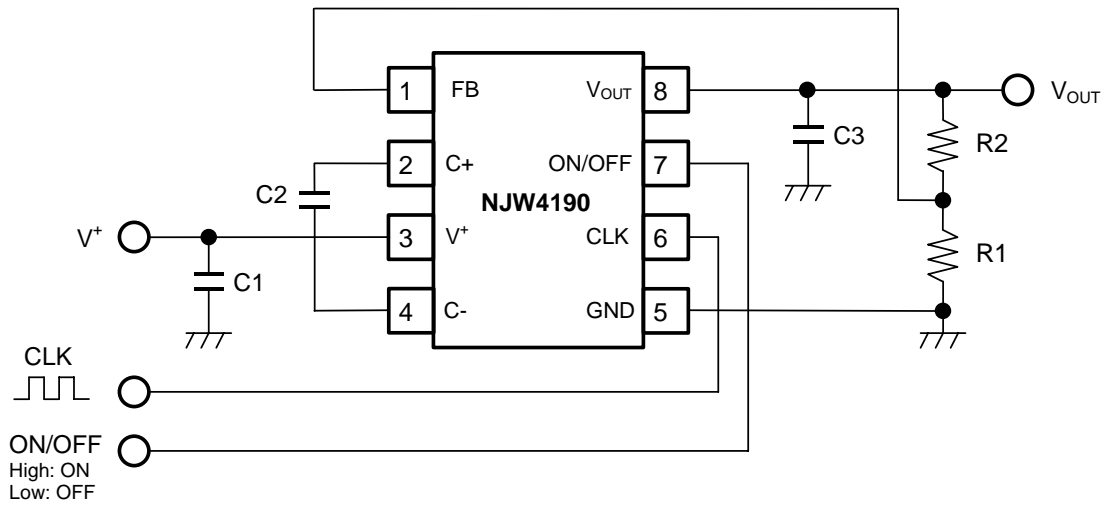
Detection Voltage	V_T	$V_{FB} = L \rightarrow H$	-10%	1.24	+10%	V
FB pin Sink Current	I_{FB}	$V_{FB} = 5.5V$	–	0.01	1	μA

CLK Block

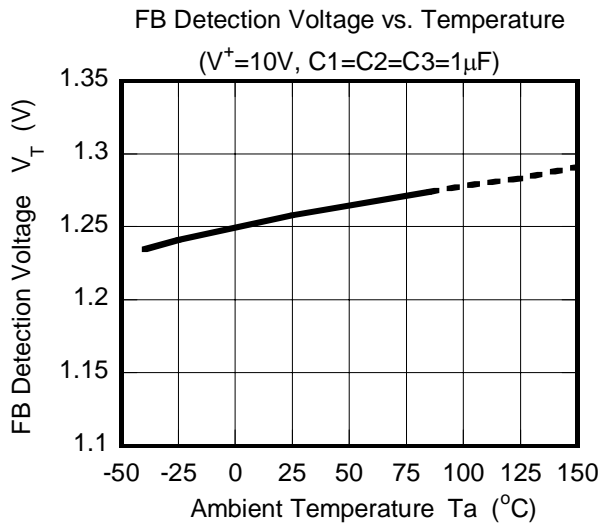
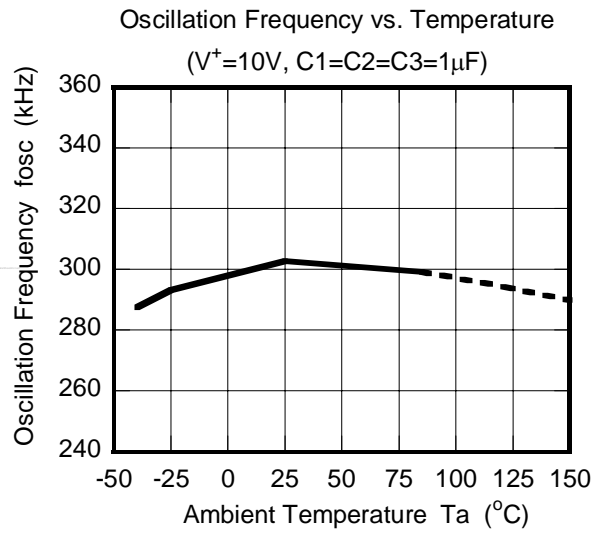
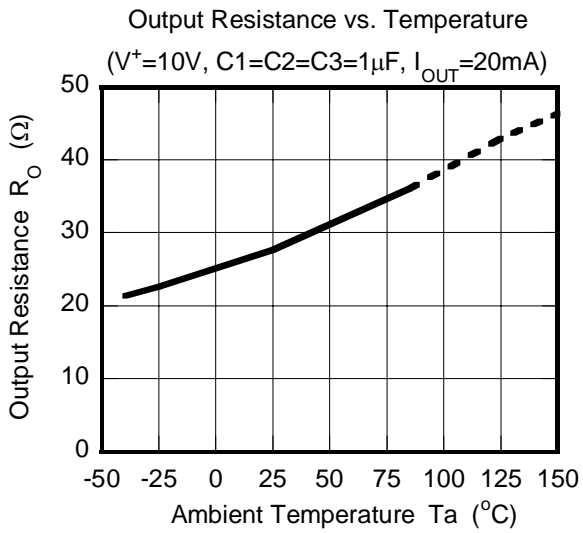
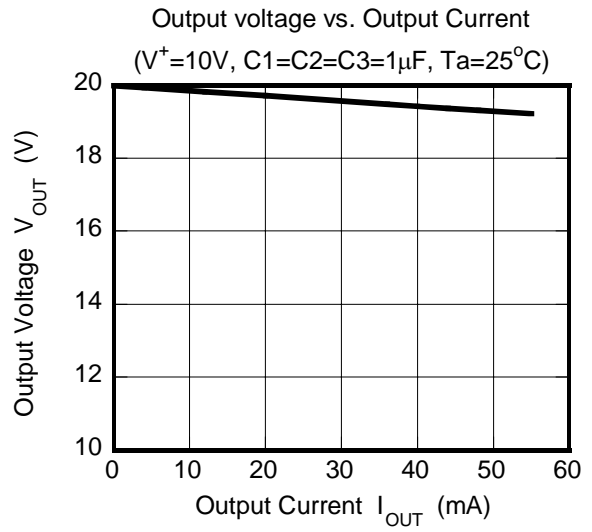
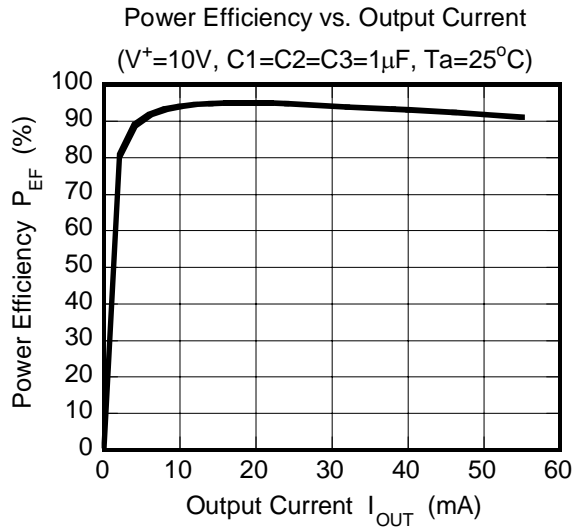
CLK Threshold (High)	V_{CLK_H}		2.4	–	5.5	V
CLK Threshold (Low)	V_{CLK_L}		0	–	0.7	V
CLK pin Sink Current	I_{CLK}	$V_{CLK} = 5.5V$	–	6	10	μA

NJW4190

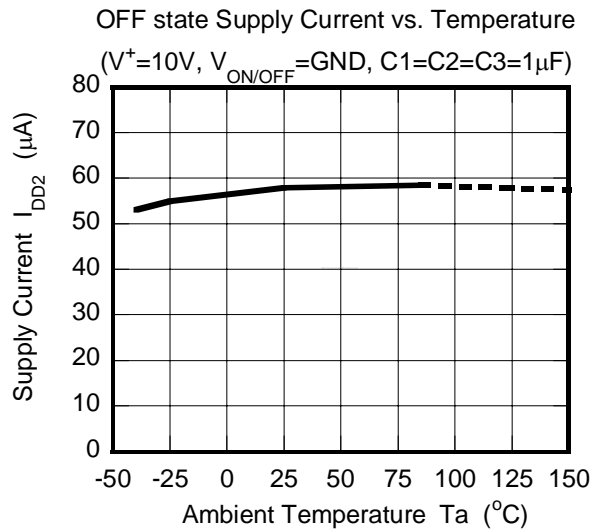
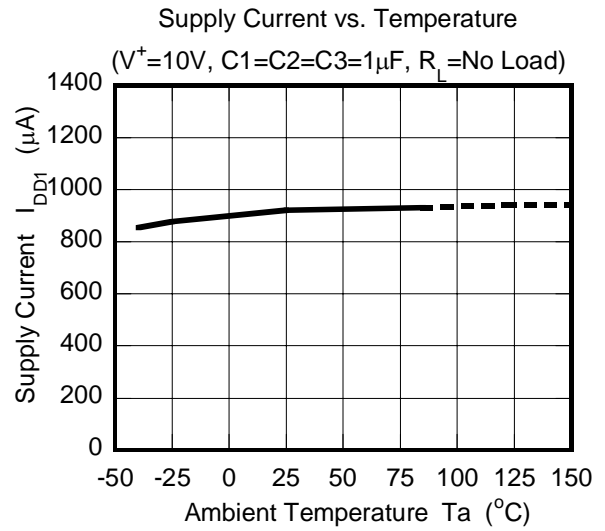
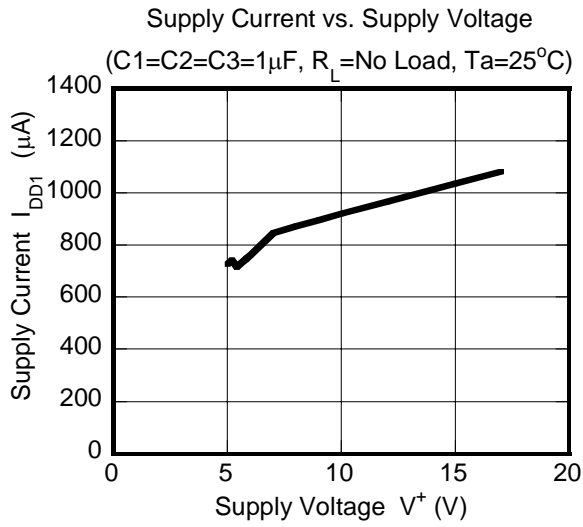
■ TYPICAL APPLICATION



■ CHARACTERISTICS



CHARACTERISTICS



MEMO

[CAUTION]

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