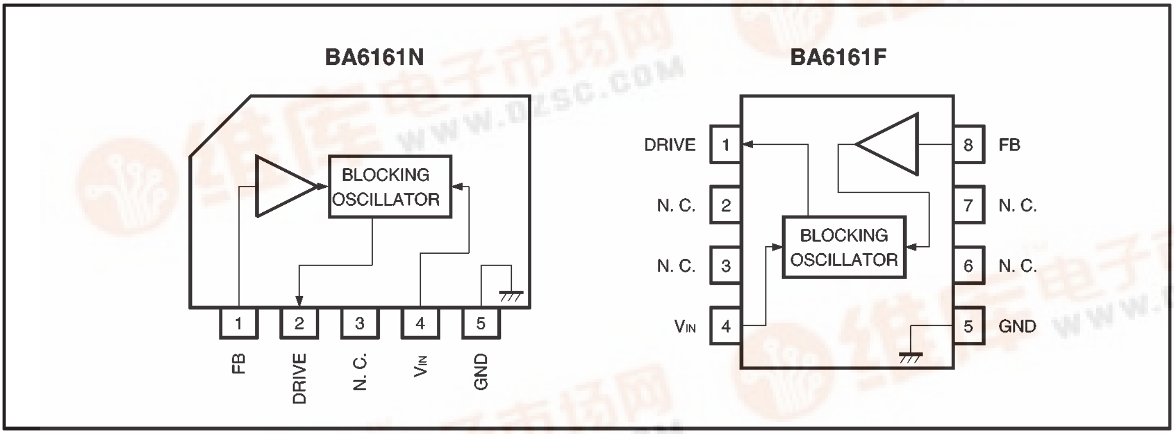
Switching regulator for electronic tuning
BA6161N / BA6161F

The BA6161N and BA6161F are switching regulators that contain a temperature compensation circuit. They can be used for electronic tuning DC-DC converters.

●Applications
Electronic tuners in televisions and other electronic equipment that requires high voltage (30～45V).

●Features
1) Output changes are small against input voltage variations.
2) Temperature compensation circuit provides stable output.
3) Reduced number of attached parts.

●Block diagram


●Pin descriptions

Pin No.		Pin name	Function
BA6161N	BA6161F		
1	8	FB	Feedback current return
2	1	DRIVE	Oscillation drive
4	4	V_{IN}	Power supply input
5	5	GND	GND
3	2, 3, 6, 7	N.C.	N.C.

●Absolute maximum ratings (Ta = 25°C)

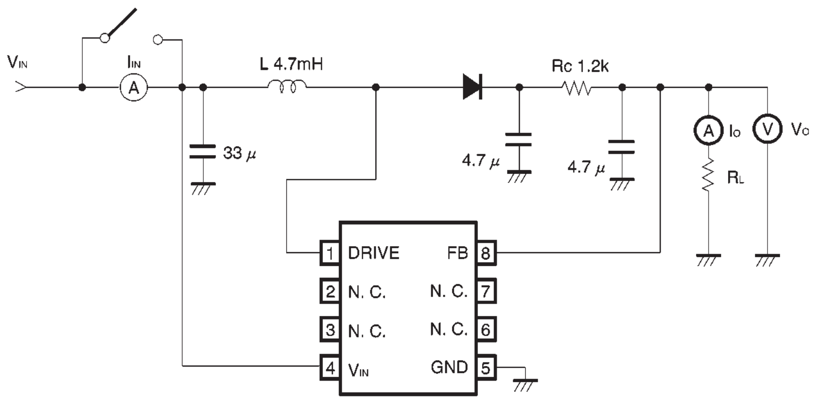
Parameter		Symbol	Limits	Unit
Applied voltage		$V_{INMax.}$	18	V
Power dissipation	BA6161N	Pd	400*1	mW
	BA6161F		450*2	
Operating temperature		Topr	−20～+75	℃
Storage temperature		Tstg	−55～+125	℃

*1 Reduced by 4.0 mW for each increase in Ta of 1℃ over 25℃.
*2 Reduced by 4.5 mW for each increase in Ta of 1℃ over 25℃.

●Electrical characteristics (unless otherwise noted, Ta = 25°C and Vin = 9.0V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Current dissipation	I_{IN}	−	11	15	mA	I_O=1mA, V_{CC} =9V
Input voltage	V_{IN}	3.0	−	16	V	I_O≦0.5mA, V_{FB} =V_O
Output voltage	V_O	30.0	−	35.0	V	I_O=1mA, V_{FB} =V_O
Power supply voltage variation	ΔV_O	−	−	50	mV	I_O=1mA, V_{IN} =7～11V
Temperature variation	ΔV_O/ Ta	−	±1.0	−	mV / ℃	I_O=1mA, ΔTa=−20～+75℃
Output current	I_O	−	−	3.0	mA	V_{IN}≧9.0V, ΔV_O≦50mV
Maximum applied voltage of DRIVE pin	$V2_{Max.}$	−	−	42	V_{P-P}	During blocking oscillation
Oscillation frequency	f	−	100	−	kHz	I_O=1mA, L=4.7mH

●Measurement circuit



*BA6161N has a different pin arrangement.

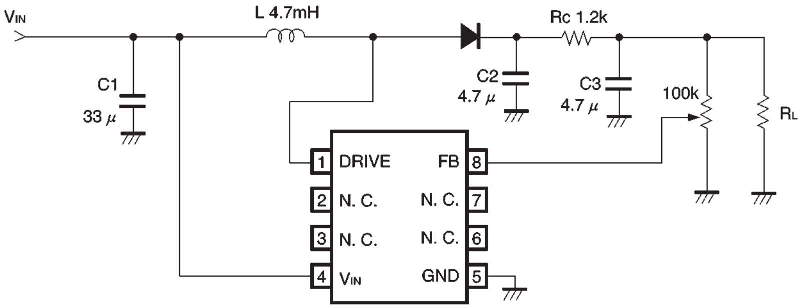
Fig.1

●Circuit operation

A zener diode on the feedback pin provides reference voltage and compensates for temperature changes. Feedback current is fed from the zener diode to the oscillator.

Blocking oscillation is provided by connecting the external coil L between the oscillator drive pin and the V_{IN} pin. The potential at the oscillator drive pin can be raised by using this oscillation. The output voltage is constant because the feedback current is always supplied to the oscillation circuit.

●Application example



✻BA6161N has a different pin arrangement.

Fig.2

●Operation notes

(1) When an output voltage greater than the reference output voltage (33.3V) is required, use a variable resistor (Murata RVG6P02-104M or equivalent product) with good temperature characteristics as shown in the application circuit. Make sure, however, that the voltage of the oscillator drive pin does not exceed 42V.

(2) The coil to be connected between pins 2 and 3 should have the lowest possible DC resistance (under 10Ω) and an inductance of 4.7mH (Sumida Electronics RC095-472K or equivalent product).

●Electrical characteristics curves

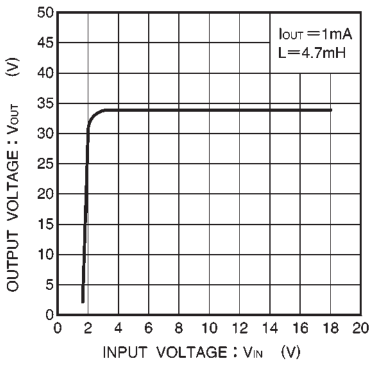


Fig.3 Output voltage vs. input voltage

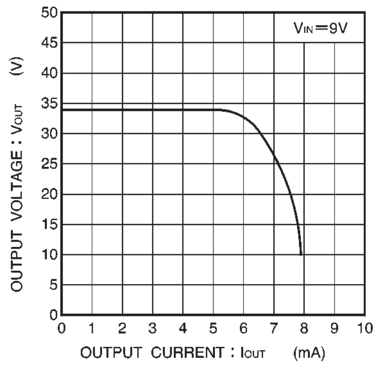


Fig.4 Output voltage vs. output current

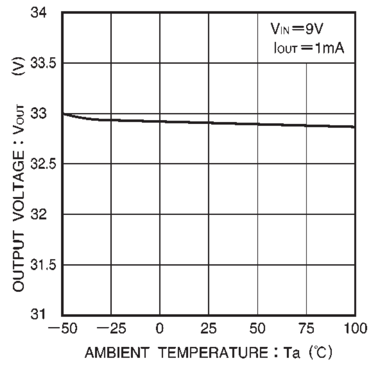


Fig.5 Output voltage vs. ambient temperature

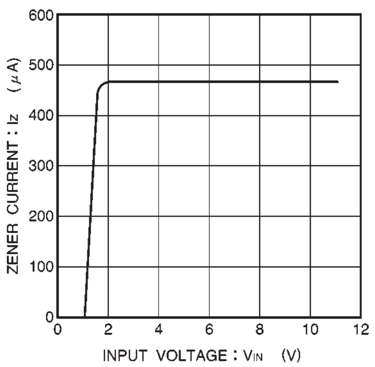


Fig.6 Zener current vs. input voltage

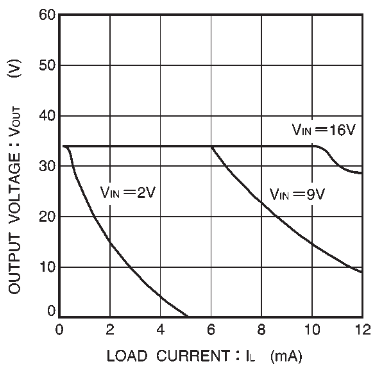


Fig.7 Output voltage vs. load current

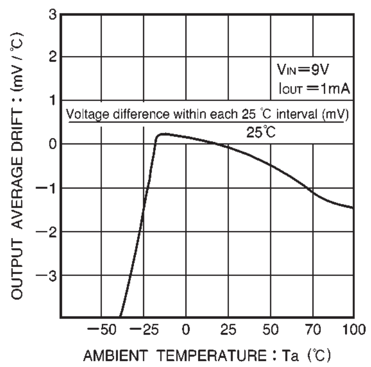


Fig.8 Output average drift within each 25℃

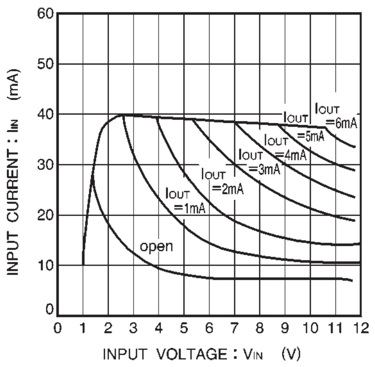


Fig.9 Input current vs. input voltage

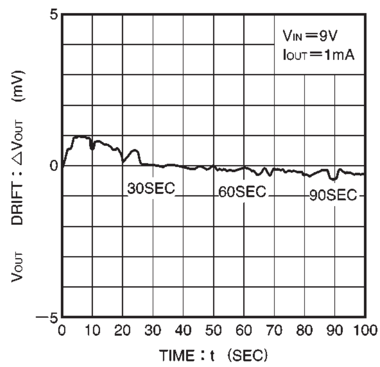


Fig.10 Output voltage variation for 100 sec after power on

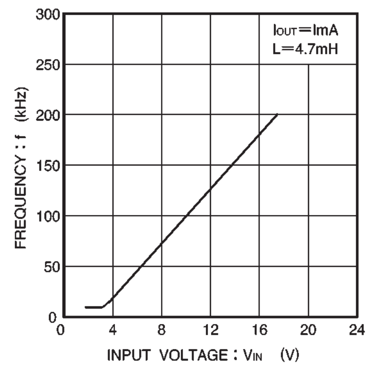
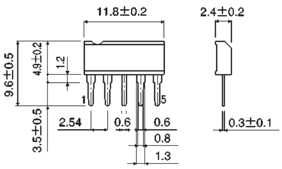


Fig.11 Oscillation frequency vs. input voltage

● External dimensions (Units: mm)

BA6161N



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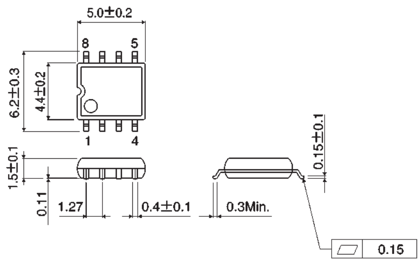
BA6161F



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