



DESCRIPTION

The A8169-020 Series is a fixed frequency, constant current step-up DC/DC converter ideal for driving LEDs used in high-definition screen backlight LED driver etc. The highest output voltage is 24V, the input voltage of 3.6V can drive 3 series, 17 in parallel, a total of 51 LED. The internal circuit integrated overvoltage protection circuit and temperature protection circuit, and the brightness of the LEDs can be controlled with a PWM signal. The internal circuit integrates a large pipes of 0.2 ohms.

The A8169-020 is available in SOT-26 package.

ORDERING INFORMATION

Package Type	Part Number	
SOT-26 SPQ: 3,000pcs/Reel	E6	A8169E6R-020
		A8169E6VR-020
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

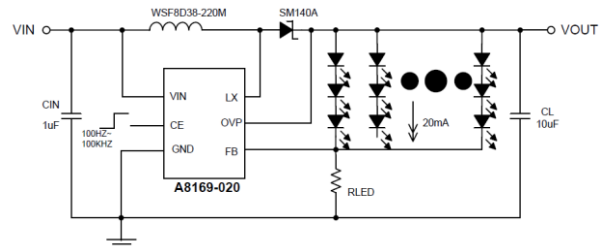
FEATURES

- Input voltage range: 3.0V~6.0V
- Output voltage range: up to 24V
- Oscillation frequency: 1.2MHz±20%
- Efficiency: 88%
- Control mode: PWM control
- Stand-by Current: I_{STB}=1.0μA(MAX)
- Load capacitor: 10μF, ceramic
- Available in SOT-26 package

APPLICATION

- HD screen LED driver

TYPICAL APPLICATION

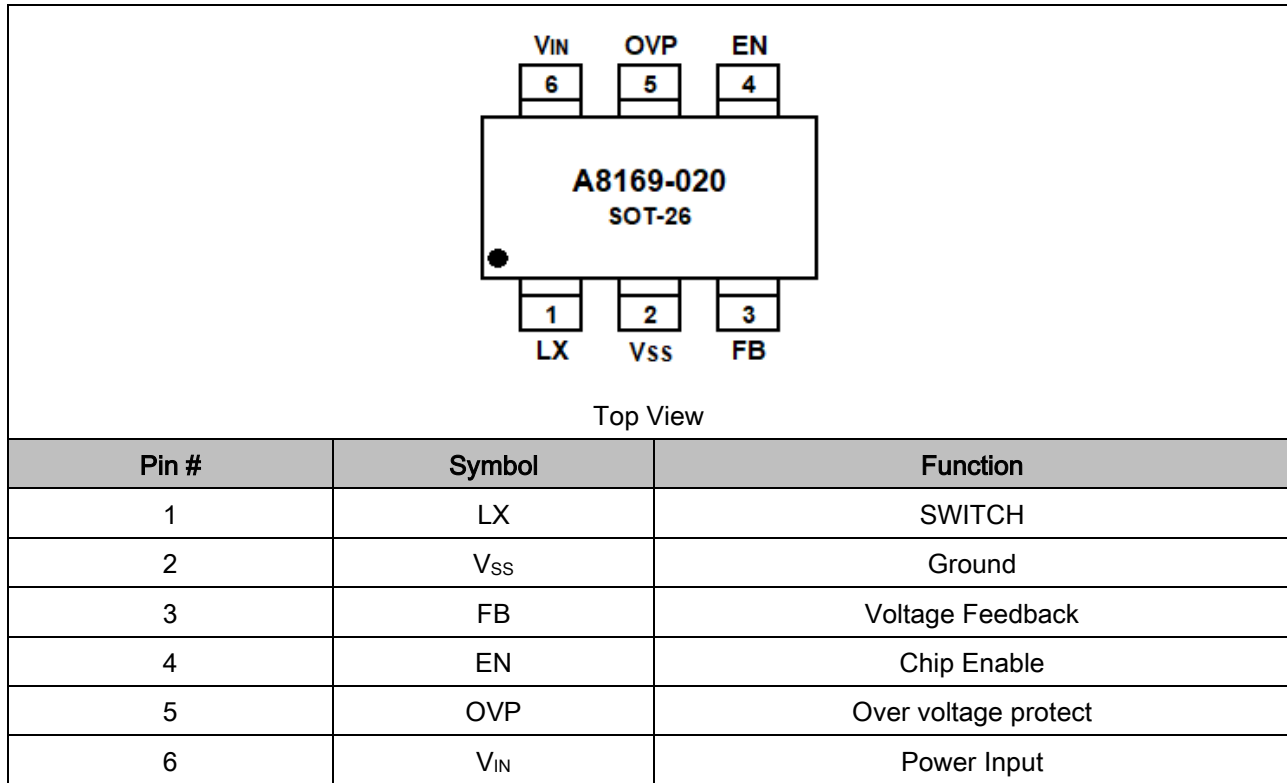


The application of single section lithium electricity power supply

Caution: The value of the resistance named R_{LED}: $R_{LED} = V_{FB} / (I_{LED} * n)$; V_{FB} is the voltage of the FB pin; I_{LED} is the current of LED and equal to 20mA usually. n is the number of LEDs in the circuit in parallel.



PIN DESCRIPTION



ABSOLUTE MAXIMUM RATINGS

V _{IN} , V _{IN} Pin Voltage	V _{SS} -0.3V ~ V _{SS} +7V
V _{OUT} , OUT Pin Voltage	V _{SS} -0.3V ~ V _{SS} +26V
V _{LX} , LX Pin Voltage	V _{SS} -0.3V ~ V _{SS} +26V
V _{FB} , FB Pin Voltage	V _{SS} -0.3V ~ V _{SS} +7V
V _{EN} , EN Pin Voltage	V _{SS} -0.3V ~ V _{SS} +7V
I _{LX} , LX Pin Current	2500mA
V _{OVP} , OVP Pin Voltage	V _{SS} -0.3V ~ V _{SS} +26V
P _D , Power Dissipation	SOT-26 250mW
T _{OPR} , Operating Temperature Range	-40°C ~ 85°C
T _{STG} , Storage Temperature Range	-55°C ~ 125°C

Stress beyond above listed "Absolute Maximum Ratings" may lead permanent damage to the device. These are stress ratings only and operations of the device at these or any other conditions beyond those indicated in the operational sections of the specifications are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.



ELECTRICAL CHARACTERISTICS

T_A=25°C, unless otherwise noted

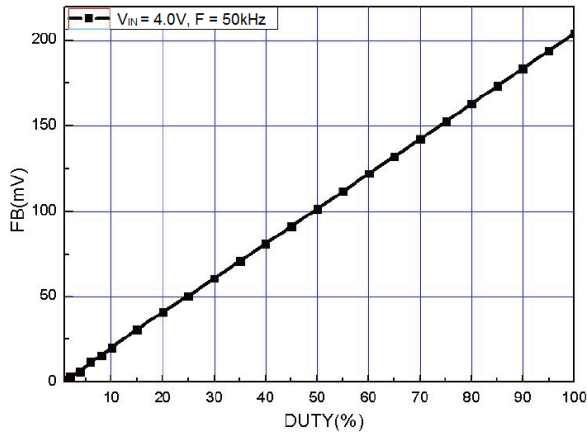
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	Circuits
FB Control Voltage	V _{FB}		0.19	0.20	0.21	V	1
Output Voltage Range	V _{OUT}		V _{IN}	-	24	V	1
LX Operating Voltage Range	V _{LX}		-	-	24	V	1
Operating Voltage Range	V _{IN}		3.0	-	6.0	V	1
Stand-by Current	I _{STB}	V _{EN} =0V, V _{LX} =5V	-	-	1	μA	3
Supply Current 1	I _{DD1}		-	800	-	μA	2
Supply Current 2	I _{DD2}	V _{IN} =V _{LX} , V _{FB} =0.4V	-	250	-		3
Oscillation Frequency	f _{OSC}		1.0	1.2	1.4	MHz	2
Maximum Duty Cycle	MAXDTY	V _{CONT} =0.4V	86	92	98	%	2
Efficiency	EFF1	V _{IN} =3.6V; R _{LED} =20Ω	-	88	-	%	1
Current Limit	I _{LIM}	V _{IN} =3.6V	-	2500	-	mA	4
OVP Overvoltage Limit	OVPOVL		-	24	-	V	2
LX On Resistance		V _{IN} =3.6V, V _{LX} =0.4V	-	0.2	-	Ω	2
LX Leak Current	I _{LXL}		-	0	1	μA	3
EN 'H' Voltage	V _{ENH}		1	-	-	V	2
EN 'L' Voltage	V _{ENL}		-	-	0.6	V	2
EN 'H' Current	I _{ENH}	V _{IN} =V _{LX} , V _{FB} =0.4V	-	-	0.1	μA	3
EN 'L' Current	I _{ENL}	V _{EN} =0V, V _{LX} =5V	-	-	-0.1	μA	3
FB 'H' Current	I _{FBH}	V _{IN} =V _{LX} , V _{FB} =0.4V	-	-	0.1	μA	3
FB 'L' Current	I _{FBL}	V _{EN} =0V, V _{LX} =5V	-	-	-0.1	μA	3



TYPICAL PERFORMANCE CHARACTERISTICS

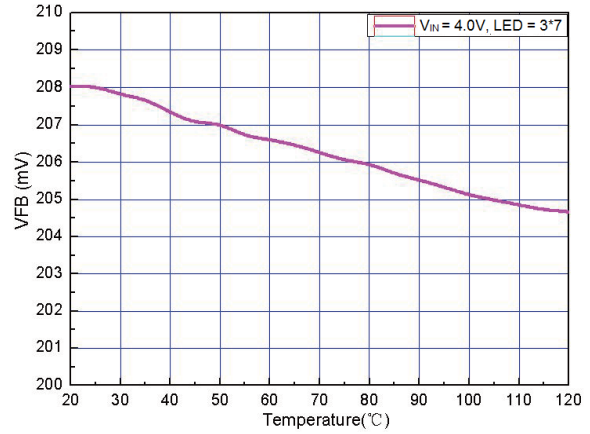
1. FB dimming characteristic curve

V_{IN}=3.6, LED: 3*17



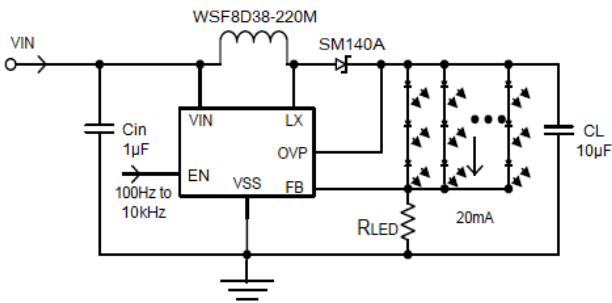
2. V_{FB} vs. Temperature

V_{IN}= 4.0V, LED=3*7

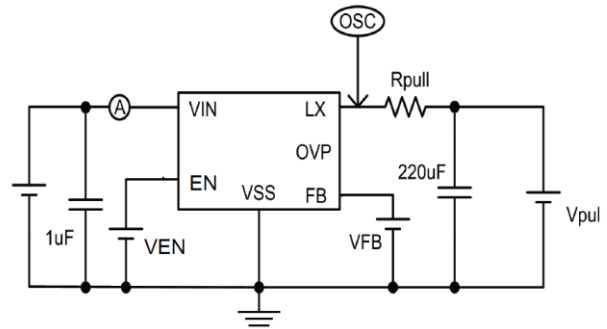


TEST CIRCUIT

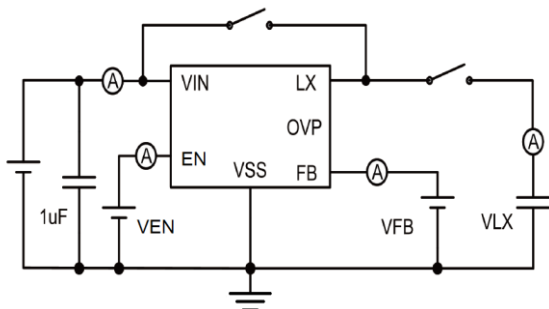
Circuit 1



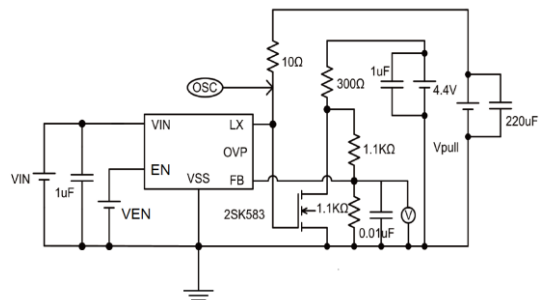
Circuit 2



Circuit 3



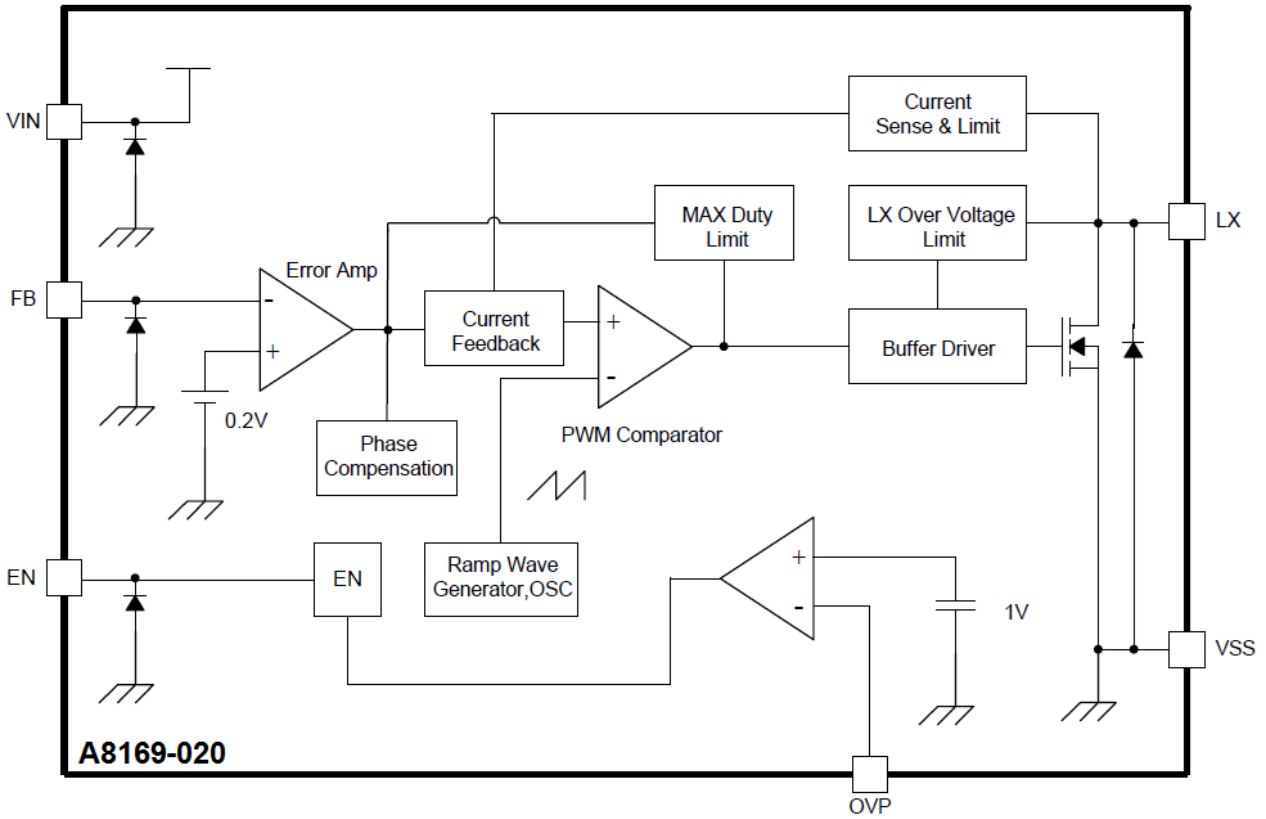
Circuit 4



Caution: The value of the resistance named R_{LED}: $R_{LED} = V_{FB} / (I_{LED} * n)$; V_{FB} is the voltage of the FB pin; I_{LED} is the current of LED and equal to 20mA usually. n is the number of LEDs in the circuit in parallel.



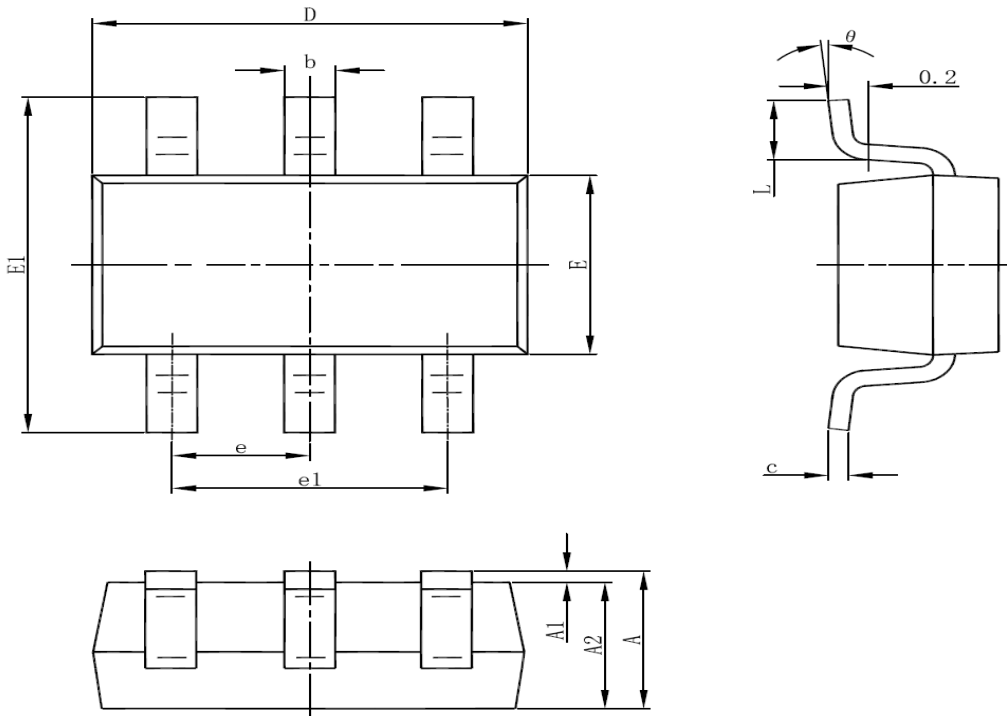
BLOCK DIAGRAM





PACKAGE INFORMATION

Dimension in SOT-26 Package (Unit: mm)



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950 BSC		0.037 BSC	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
theta	0°	8°	0°	8°



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