SK6019 --- Low Noise, High PSRR, High Speed, CMOS LDO

GENERAL DESCRIPTION

The SK6019 is a high accuracy, low noise, high speed, low dropout CMOS Linear regulator with high ripple rejection and fast discharge function. The device offers a new level of cost effective performance in cellular phones, surveillance system, Bluetooth, wireless and other portable electronic devices.

SK6019 can provide product selections of output value in the range of 1.0V~3.6V by every 0.1V step.

SK6019 offer over temperature protection to ensure the device working in well conditions.

The SK6019 regulators are available in standard DFN1x1-4L packages. Standard products are Pb-free and Halogen-free.

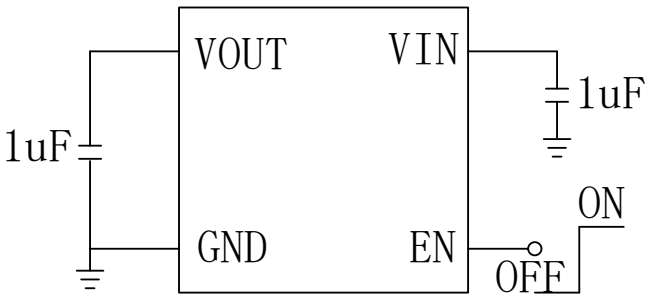
FEATURES

- Input voltage: 2.5V~6.5V
- Output range: 1.0V~3.6V
  (customized by every 0.1V step)
- Maximum output current: 750mA @ V_{IN}-V_{OUT}=0.5V
- PSRR: 75dB @1KHz 55dB@1MHz
- Dropout voltage: 110mV @ I_{OUT}=200mA
- Quiescent current: 45μA Typ.
- Shut-down current: < 1μA
- Recommend capacitor: 1μF
- Ultra-low output noise: 20μV_{RMS}

APPLICATIONS

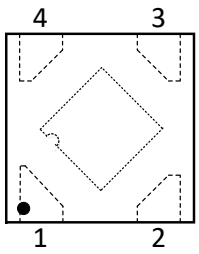
- Digital cameras
- Cellphones
- Bluetooth and wireless handsets
- Other portable electronic devic

TYPICAL APPLICATION CIRCUIT



PIN ASSIGNMENT

DFN1x1-4L



1 VOUT
2 GND
3 EN
4 VIN
Thermal Pad: GND

DFN1x1-4L（Top View）

ORDER INFORMATION

PART NO	PACAKGE	VOUT DISCHARGE	TEMPERATURE	TAPE & REEL
SK6019AD4-XX[Note]	DFN1x1-4L	Yes	-40 ~ +85℃	10000/REEL

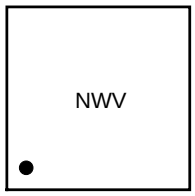
Note: *XX indicates 1.0V~3.6V by 0.1V step. For example, 28 means product outputs 2.8V*

PART NUMBER RULES

SK6019 [1]-[2]-[3]

Code	Description
[1]	Vout discharge A: Yes
[2]	Package: D4: DFN1x1-4L
[3]	Voltage version: XX: 1.0V~3.6V by 0.1V step Example: 28: 2.8V

MARKING DESCRIPTION:



DFN1x1-4L

"N": Product code, here use "N" stands for "SK6019".

"W": The week of manufacturing. "A" stands for week 1, "Z" stands for week 26, "a" stands for week 27, "z" stands for week 52.

"V": Output voltage code.

PIN DESCRIPTION

PIN NO	SYMBOL	I/O	DESCRIPTTION
1	VOUT	O	Output
2	GND	Ground	Ground
3	EN	I	Enable (active high, do not float)
4	VIN	Power	Input

TYPICAL OUTPUT VOLTAGE CODE TABLE

V_{OUT}	CODE	V_{OUT}	CODE
1.0V	A	1.2V	B
1.5V	C	1.8V	D
2.8V	M	3.0V	G
3.3V	H	3.6V	I

ABSOLUTE MAXIMUM RATINGS (Note)

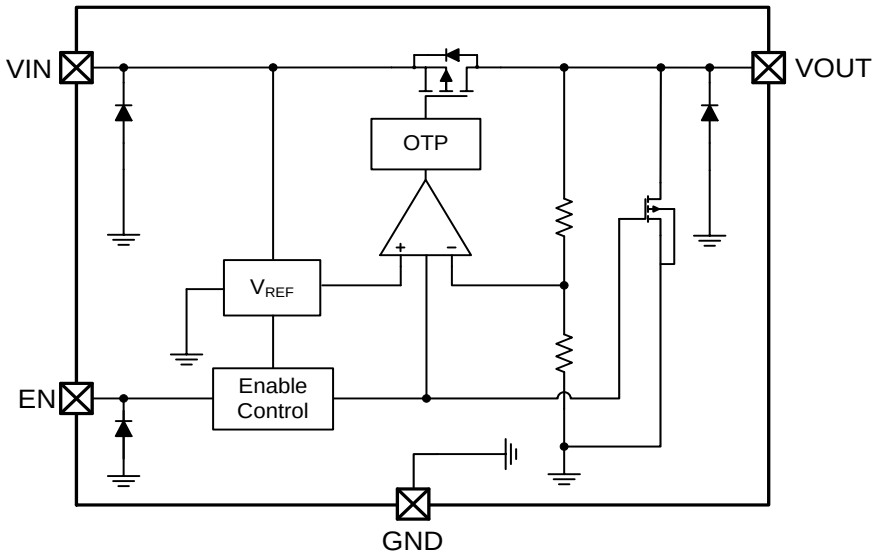
SYMBOL	ITEMS		VALUE	UNIT
V_{IN}	Input Voltage		-0.3~8	V
I_{OUT}	Output Current		750	mA
P_{DMAX}	Power Dissipation	DFN1x1-4L	0.3	W
T_J	Junction Temperature		-40~125	℃
T_A	Ambient Temperature		-40~85	℃
T_{STG}	Storage Temperature		-55 to 150	℃
T_{SOLDER}	Package Lead Soldering Temperature		260℃, 10s	

Note: *Exceed these limits to damage to the device. Exposure to absolute maximum rating conditions may affect device reliability.*

RECOMMANDED OPERATING RANGE

SYMBOL	ITEMS	VALUE	UNIT
V_{IN}	Supply Voltage	2.5 to 6.5	V
I_{OUT}	Output Current	<500	mA
T_{OPT}	Operating Temperature	-40 to +85	℃

SIMPLIFIED BLOCK DIAGRAM



ELECTRICAL CHARACTERISTICS

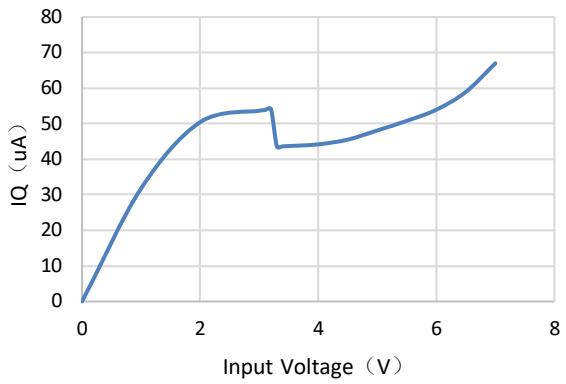
The following specifications apply for V_{IN}=4.3V, V_{OUT}=3.3V, T_A=25℃, unless specified otherwise.

SYMBOL	ITEMS	CONDITIONS	MIN	TYP	MAX	UNIT
V_{IN}	Input Voltage				6.5	V
V_{OUT}	Output Range	V_{OUT} <2V V_{IN}=2.7V, I_{OUT}=1mA	-3	V_{OUT}	3	%
		V_{OUT} ≥2V, I_{OUT}=1mA	-2	V_{OUT}	2	
I_Q	Quiescent Current	V_{OUT}=3.3V, I_{OUT}=0		45		μA
I_{OUT_PK}	Maximum Output Current	V_{IN}=V_{EN}=4.3V		700		mA
V_{DROP}	Dropout Voltage	V_{OUT}=3.3V, I_{OUT}=200mA		110	125	mV
		V_{OUT}=3.3V, I_{OUT}=300mA		160	175	
△V_{LINE}	Line Regulation	V_{IN}=3.5~5.5V, I_{OUT}=1mA		0.01	0.15	%/V
△V_{LOAD}	Load Regulation	V_{OUT}=3.3V, I_{OUT}=1~300mA		40	70	mV
I_{SHDN}	Shut-down Current	V_{EN}=0V			1	μA
PSRR	Power Supply Rejection Rate	V_{IN}=5V_{DC}+0.5V_{P-P} F=1KHz, I_{OUT}=10mA		75		dB
		V_{IN}=5V_{DC}+0.5V_{P-P} F=1MHz, I_{OUT}=10mA		55		
V_{ENH}	EN logic high voltage	V_{IN}=5.5V, I_{OUT}=1mA	1.2		V_{IN}	V
V_{ENL}	EN logic low voltage	V_{IN}=5.5V, V_{OUT}=0V			0.4	V
I_{EN}	EN Input Current	V_{EN}= 0 to 5.5V			1.0	μA
e_{NO}	Output Noise Voltage	10Hz to 100KHz, C_{OUT}=1μF		20		μV_{RMS}
T_{SD}	Thermal Shutdown Protection	V_{IN}=V_{EN}=4.3V, I_{OUT}=1mA		160		℃

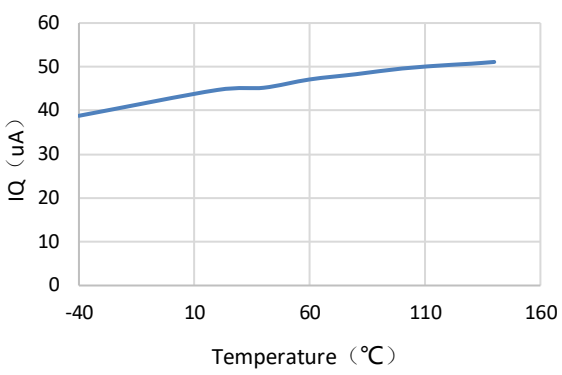
TYPICAL PERFORMANCE CHARACTERISTICS

C_{IN}=1uF, C_{OUT}=1uF, V_{IN}=4.3V, V_{OUT}=3.3V T_A=25℃, unless specified otherwise.

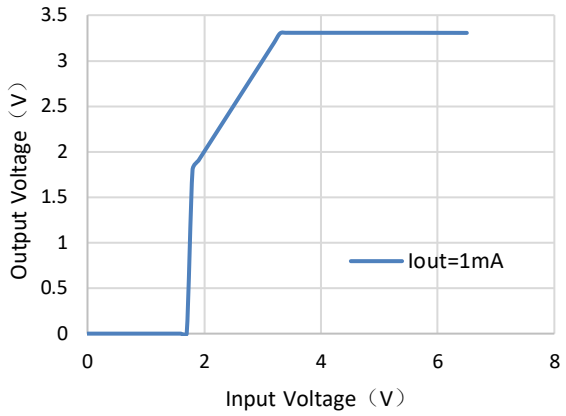
IQ vs. Input Voltage



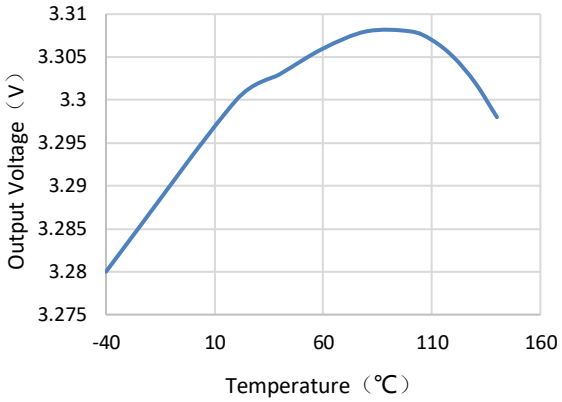
IQ vs. Temperature



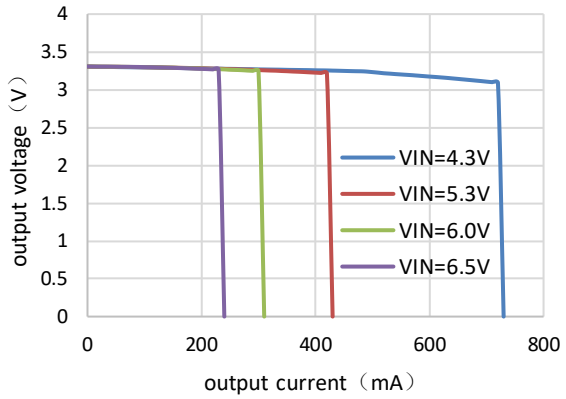
Output Voltage vs. Input Voltage



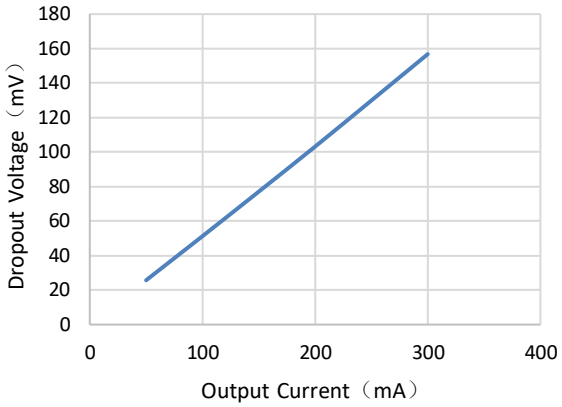
Output Voltage vs. Temperature



output voltage vs. output current



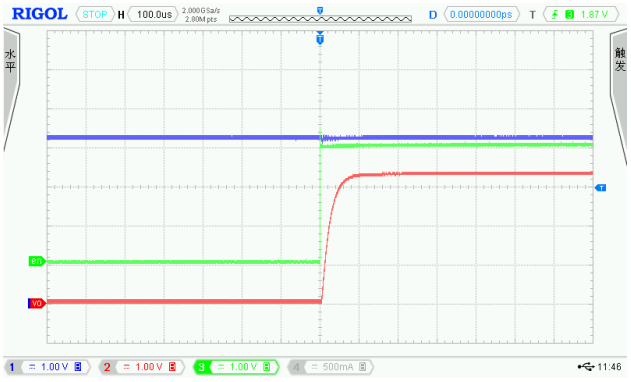
Dropout Voltage vs. Output Current



CH1:V_{IN} **CH2:V_{OUT}** **CH3:EN** **CH4:I_{OUT}**

EN ON/OFF

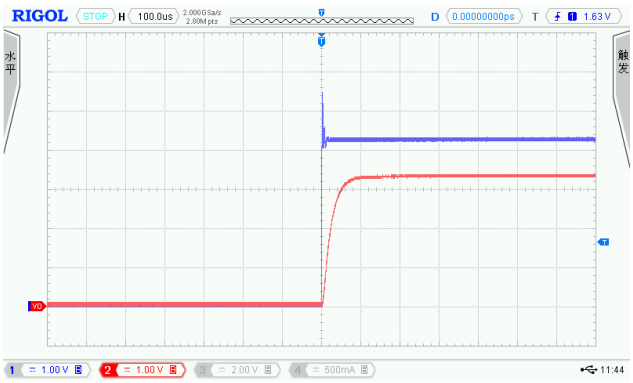
EN=0V to 3V, I_{OUT}=10mA



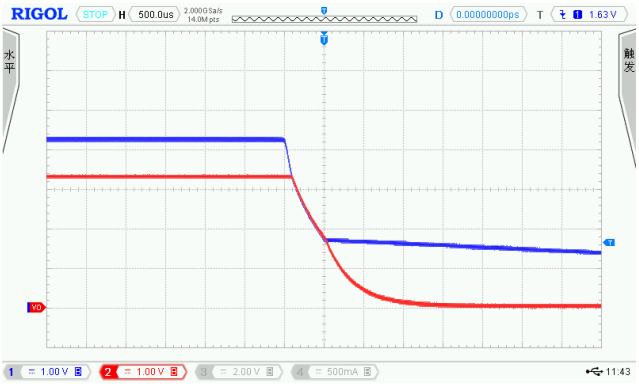
EN=3V to 0V, I_{OUT}=10mA

POWER ON/OFF

V_{IN}=0V to 4.3V, I_{OUT}=10mA



V_{IN}=4.3V to 0V, I_{OUT}=10mA



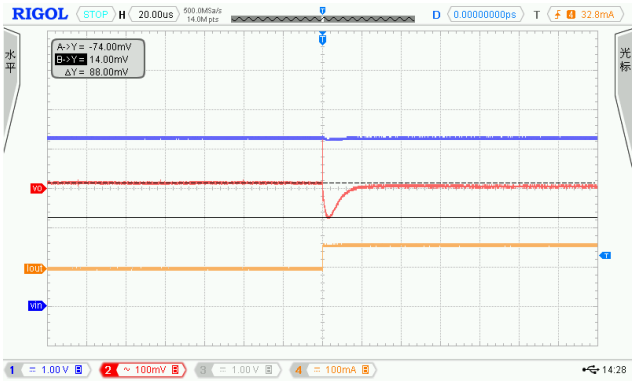
LINE TRANSIENT

V_{IN}=4.3V to 5.3V, I_{OUT}=10mA

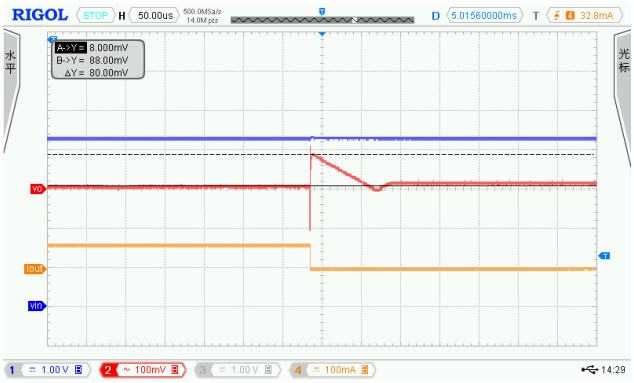
V_{IN}=5.3V to 4.3V, I_{OUT}=10mA

LOAD TRANSIENT

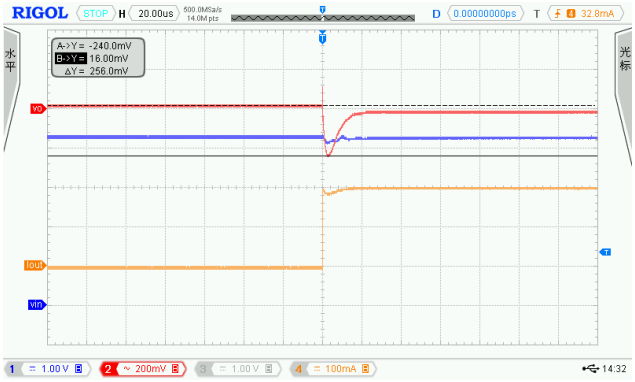
V_{IN}=4.3V, I_{OUT}=1mA to 60mA



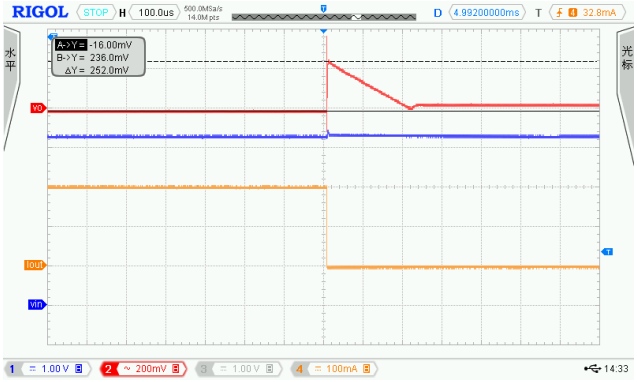
V_{IN}=4.3V, I_{OUT}=60mA to 1mA



V_{IN}=4.3V, I_{OUT}=1mA to 200mA



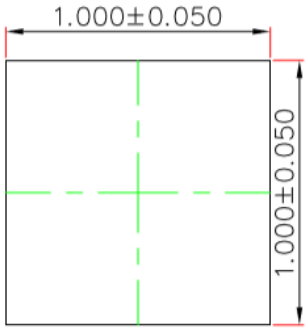
V_{IN}=4.3V, I_{OUT}=200mA to 1mA



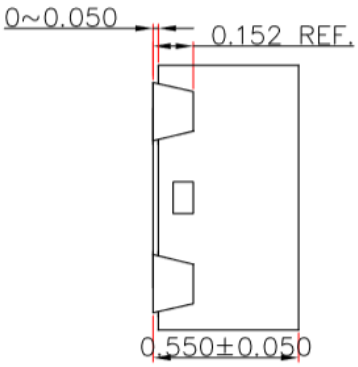
PACKAGE OUTLINE

Package	DFN1x1-4L	Devices per reel	10000Pcs	Unit	mm

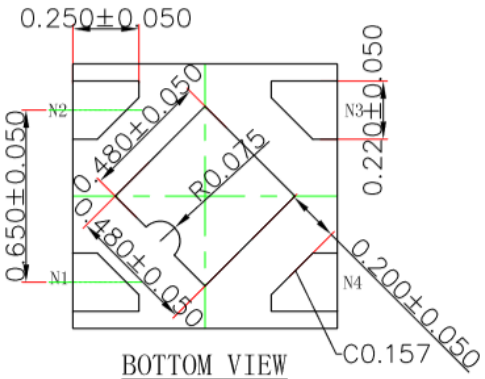
Package Dimension：



TOP VIEW
[顶视图]



SIDE VIEW
侧视图



BOTTOM VIEW
背视图

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