

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.

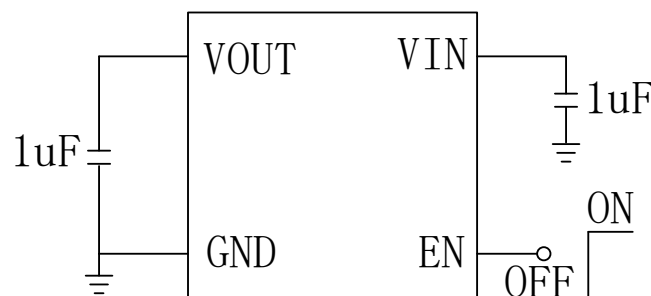
FEATURES

- 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 : 45 μ A Typ.
- Shut-down current: < 1 μ A
- Recommend capacitor: 1 μ F
- Ultra-low output noise: 20 μ V_{RMS}

APPLICATIONS

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

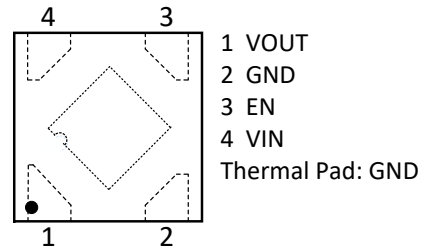
TYPICAL APPLICATION CIRCUIT



PIN ASSIGNMENT



DFN1x1-4L



DFN1x1-4L (Top View)

ORDER INFORMATION

PART NO	PACAKGE	VOUT DISCHARGE	TEMPERATURE	TAPE & REEL
SK6019AD4-XX ^{Note}	DFN1x1-4L	Yes	-40 ~ +85°C	10000/REEL

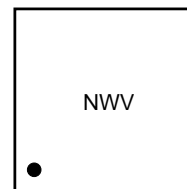
Note: XX indicates 1.0V~3.6V by 0.1V step. For example, 28 means product outputs 2.8V

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	DESCRIPTION
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)

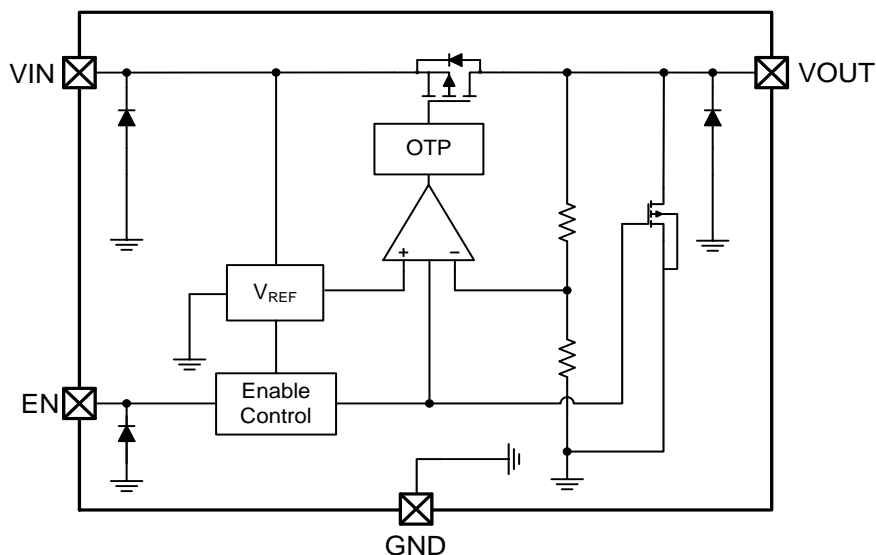
SYMBOL	ITEMS	VALUE	UNIT
V _{IN}	Input Voltage	-0.3~8	V
I _{OUT}	Output Current	750	mA
P _{DMAX}	Power Dissipation	DFN1x1-4L	0.3
T _J	Junction Temperature	-40~125	°C
T _A	Ambient Temperature	-40~85	°C
T _{STG}	Storage Temperature	-55 to 150	°C
T _{SOLDER}	Package Lead Soldering Temperature	260°C, 10s	

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

RECOMMENDED 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	°C

SIMPLIFIED BLOCK DIAGRAM



ELECTRICAL CHARACTERISTICS

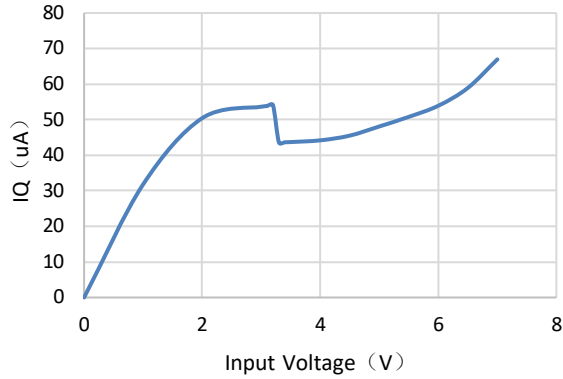
The following specifications apply for $V_{IN}=4.3V$, $V_{OUT}=3.3V$, $T_A=25^{\circ}C$, unless specified otherwise.

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	%
		$V_{OUT} \geq 2V$, $I_{OUT}=1mA$	-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	
ΔV_{LINE}	Line Regulation	$V_{IN}=3.5\sim 5.5V$, $I_{OUT}=1mA$		0.01	0.15	%/V
ΔV_{LOAD}	Load Regulation	$V_{OUT}=3.3V$, $I_{OUT}=1\sim 300mA$		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, $C_{OUT}=1\mu F$		20		μV_{RMS}
T_{SD}	Thermal Shutdown Protection	$V_{IN}=V_{EN}=4.3V$, $I_{OUT}=1mA$		160		$^{\circ}C$

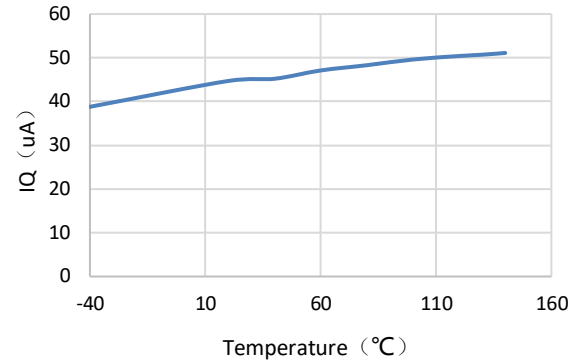
TYPICAL PERFORMANCE CHARACTERISTICS

$C_{IN}=1\mu F$, $C_{OUT}=1\mu F$, $V_{IN}=4.3V$, $V_{OUT}=3.3V$ $T_A=25^\circ C$, unless specified otherwise.

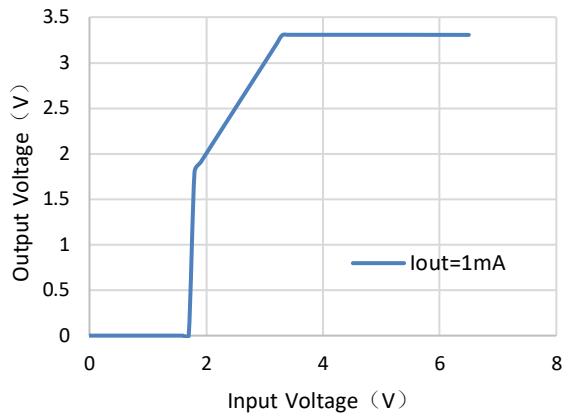
IQ vs. Input Voltage



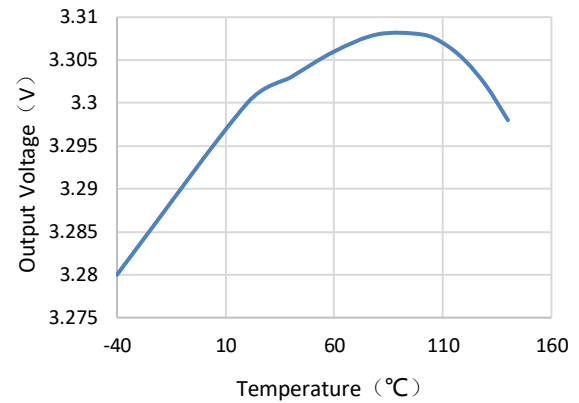
IQ vs. Temperature



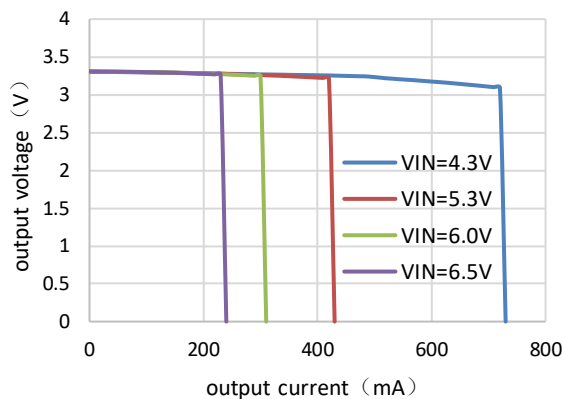
Output Voltage vs. Input Voltage



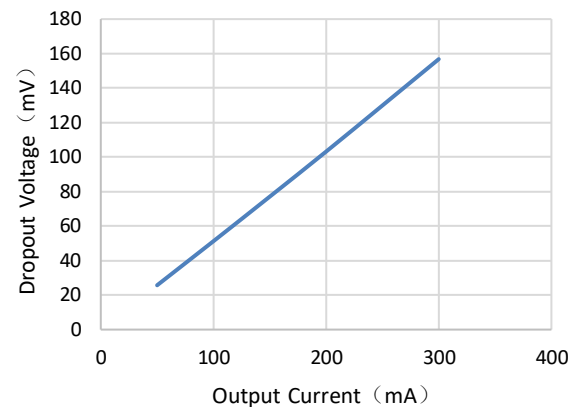
Output Voltage vs. Temperature



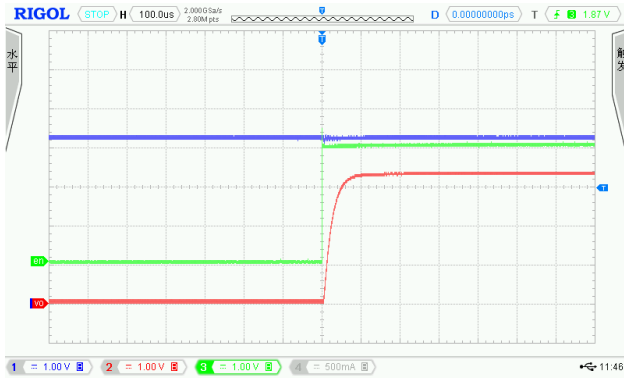
output voltage vs. output current



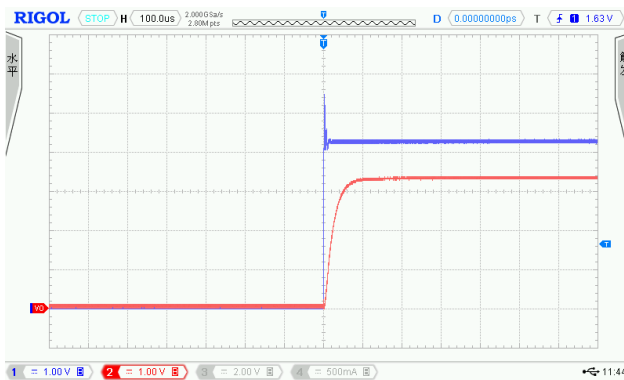
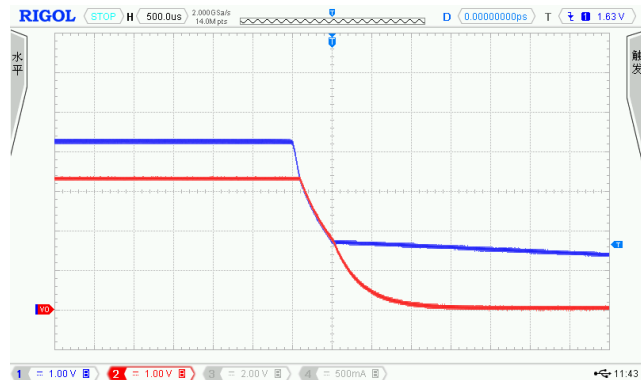
Dropout Voltage vs. Output Current



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

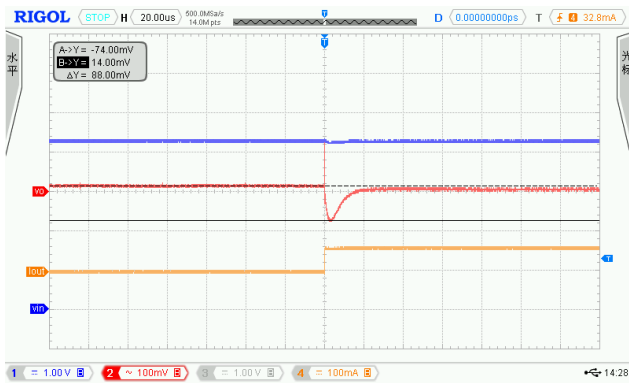
 V_{IN}=0V to 4.3V, I_{OUT}=10mA

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

LINE TRANSIENT

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

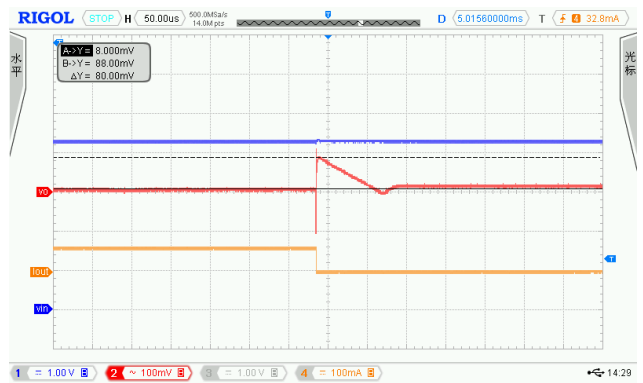
 V_{IN}=5.3V to 4.3V, I_{OUT}=10mA


LOAD TRANSIENT

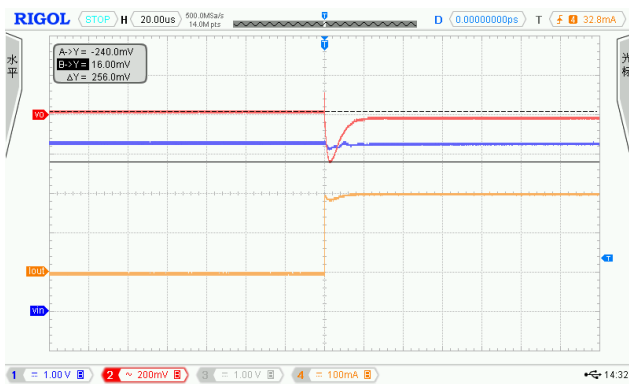
$V_{IN}=4.3V, I_{OUT}=1mA \text{ to } 60mA$



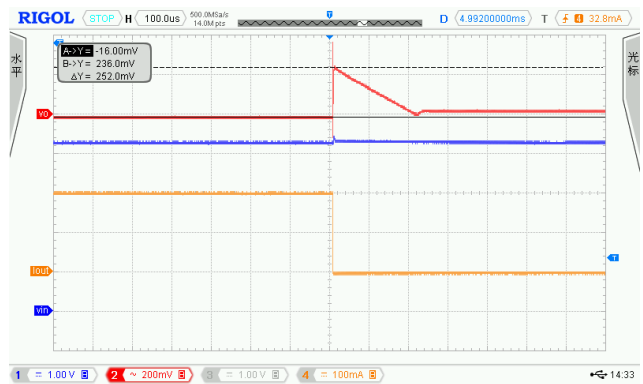
$V_{IN}=4.3V, I_{OUT}=60mA \text{ to } 1mA$



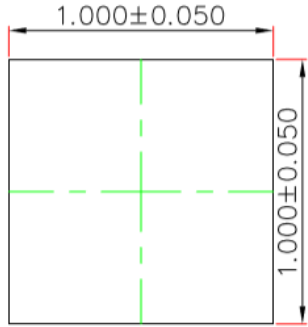
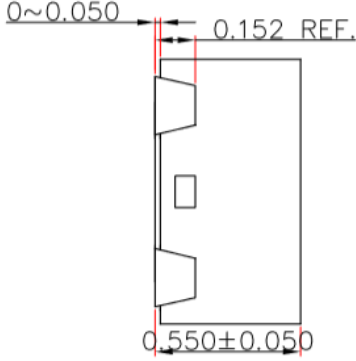
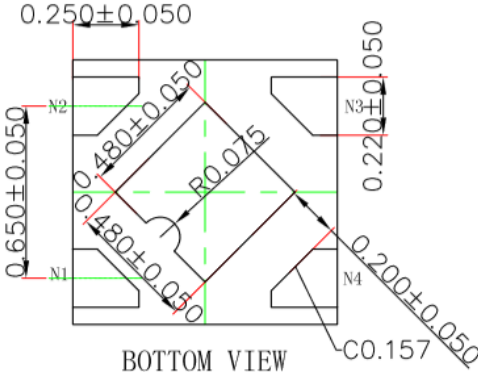
$V_{IN}=4.3V, I_{OUT}=1mA \text{ to } 200mA$



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



PACKAGE OUTLINE

Package	DFN1x1-4L	Devices per reel	10000Pcs	Unit	mm
Package Dimension:					
 <p style="text-align: center;">TOP VIEW [顶视图]</p>		 <p style="text-align: center;">SIDE VIEW 侧视图</p>			
 <p style="text-align: center;">BOTTOM VIEW 背视图</p>					

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