



PC4008

A Constant Output Current LED Driver

5 ~ 40V Supply Voltage, adjustable output current up to 80mA

A Constant LED Current regardless of supply Voltage Variation

PC4008

LED Driver Provides Constant LED Current Independent of Supply Voltage

1. General Description

The PC4008 cost efficient LED driver to drive low power LED's.

The advantages toward resistor solution are :

- Homogenous light output despite varying forward voltage in different LED strips
- Homogenous light output of LEDs despite voltage drop across long supply line
- Homogenous light output independent from supply voltage variations
- Longer lifetime of the LED's due to reduced output current at higher temperature

The advantages towards discrete solutions are :

- Lower assembly cost and smaller form factor

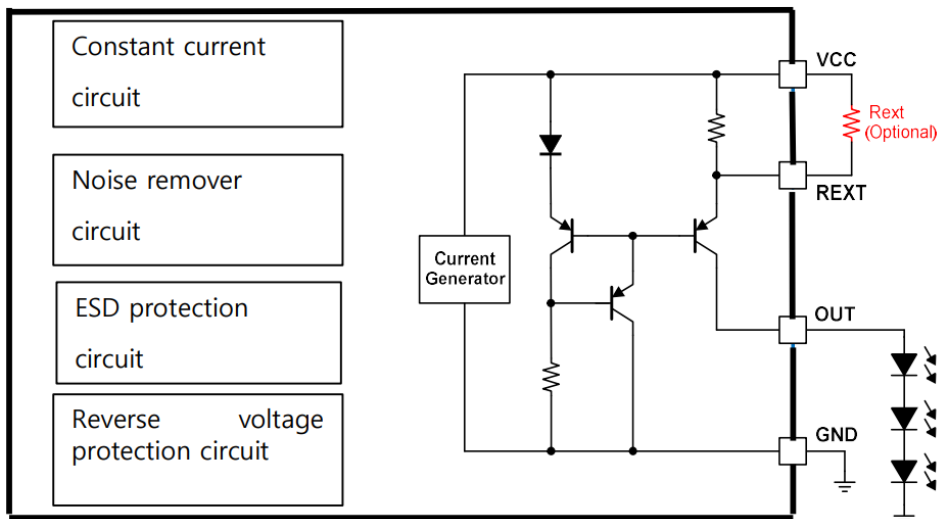
Features

- LED Drive Current of 48mA (Rext = open)
- Output Current adjustable up to 80mA with external resistor
- Low voltage current generator for error cancel
- Supply voltage up to 40V
- Easy paralleling of drives to increase current
- Low voltage overhead of 0.8V
- High current accuracy at higher temperature
-Negative thermal coefficient of -0.13%/K
- Protection of reverse voltage between ground and Power Supply
- ESD protection
- AEC-Q100 Qualification
- MSL LV1

Application

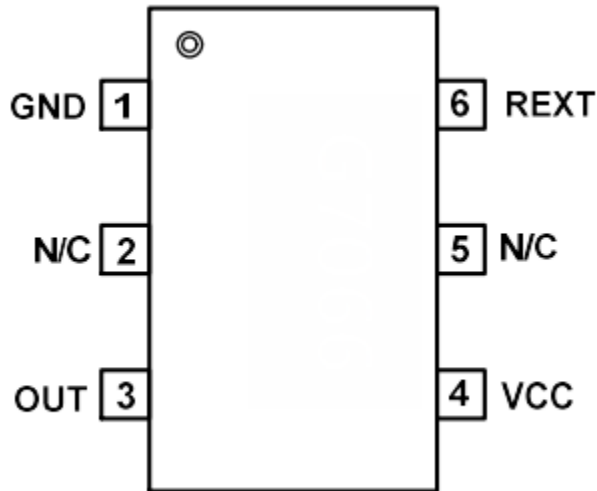
- Channel letters for advertising, LED strips for decorative lighting
- LED strips for interior decorative of automotive
- Retrofits for general lighting, white goods like refrigerator lighting
- Medical lighting and power supply any resistive or LED

2. Typical Application Circuit



3. Pin Information

▪ Pin Placement



▪ Pin Description

NO	NAME	Description
1	GND	Ground Pin
2	N/C	More than N/C processing, It is recommended as a GND processing
3	OUT	Pin is connecting to OUT of LED
4	VCC	Power Supply Pin
5	N/C	No Connection
6	REXT	Pin is connecting to external Resistor for adjust to Output Current

4. Absolute Maximum Ratings⁽¹⁾

Symbol	Description	Ratings	Unit
V_{CC}	Supply Voltage	40	V
V_R	Reverse Voltage between pin V_{CC} and GND	40	V
T_J	Operating Junction Temperature	150	°C
T_A	Operating Ambient Temperature Range	-40 to 105	°C
T_{STG}	Storage Temperature Range	-55 to 150	°C
θ_{JA}	Package Thermal Resistance (SOT-26)	500	°C/W
P_D	Power dissipation (SOT-26)	250	mW

Note :

Recommended to use within the specified P_D range.

5. RSD Ratings

Symbol	Description	Value	Unit	Class
HBM ₁₎	Supply Voltage	2,000	V	2
CDM ₂₎	Charged Device Model	750	V	C5

Note :

1) Reference Document : AEC-Q100-002-REV-E : 2013

2) Reference Document : AEC-Q100-011-REV-C1 : 2013

6-1. Electrical Specification

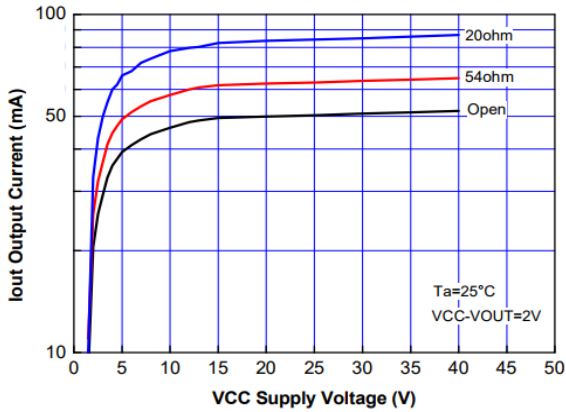
$V_{CC}=12V$, $T_A=+25^{\circ}C$, unless otherwise specified

Description	Symbol	Condition	Min	Typ	Max	Unit
Breakdown Voltage	$V_{BR(CEO)}$	No Load	40	-	-	V
Start-up Current	I_{ST}	$V_{CC}=3V$, No Load	15	21	27	mA
Supply Current	I_{CC}	$V_{CC}=12V$, $V_{OUT}=9V$	3	6	8	mA
Output Current	I_{OUT}	$V_{CC}=12V$, $V_{OUT}=9V$	43	48	53	mA
Output Current	I_{OUT}	$V_{CC}=12V$, $V_{OUT}=9V$, $R_{EXT}=20\Omega$	-	80	-	mA
Internal Resistor	R_{INT}	-	15.6	19.6	23.6	Ω
Rext Voltage Drop	V_{DROP}	$V_{CC}=12V$	0.84	0.94	1.04	V

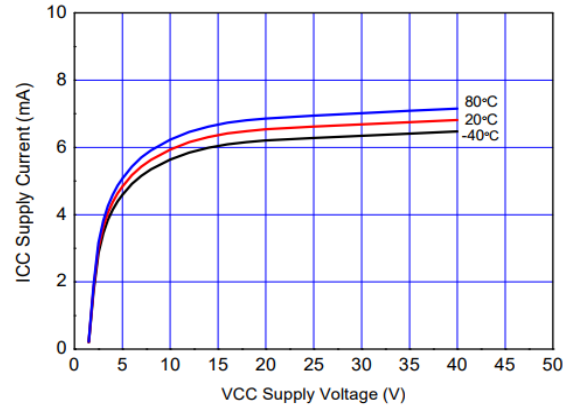
DC Characteristics with stabilized LED load

Description	Symbol	Condition	Min	Typ	Max	Unit
Output Current on Pin OUT change vs. T_A	$\Delta I_{OUT}/I_{OUT} - T_A$	$V_{CC}=12V$, $V_{OUT}=9V$, $T_A=-20$ to $100^{\circ}C$	-	-0.13	-	%/K
Output Current on Pin OUT change vs. V_{CC}	$\Delta I_{OUT}/I_{OUT} - V_{CC}/V_{OUT}$	$V_{CC}=12\sim 16V$, $V_{OUT}=9V$	-	1.6	-	%/V

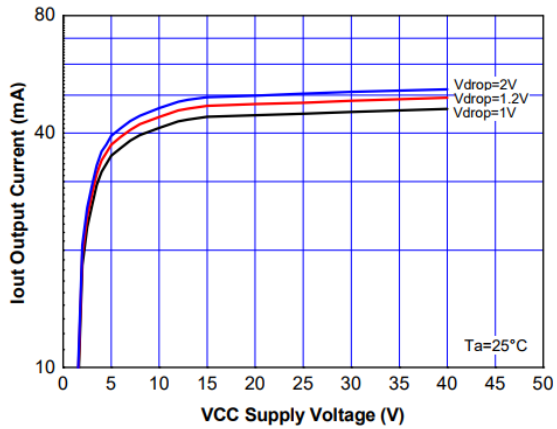
6-2. Typical Electrical Characteristics



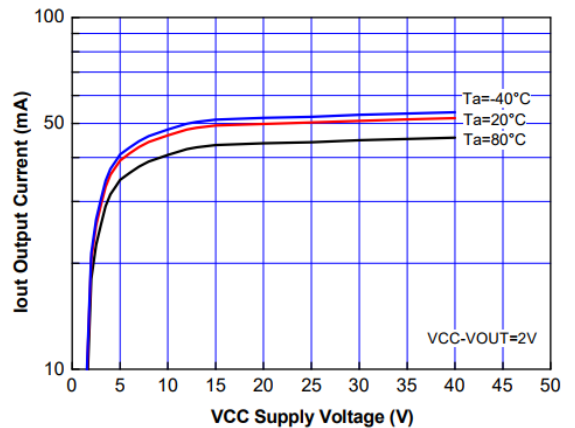
1. Supply Voltage vs. Output Current



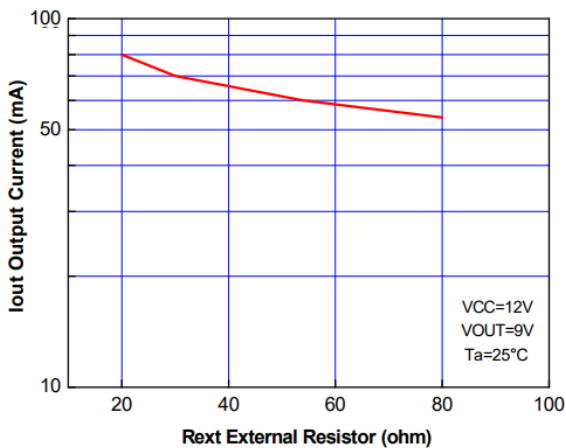
2. Supply Voltage vs. Supply Current



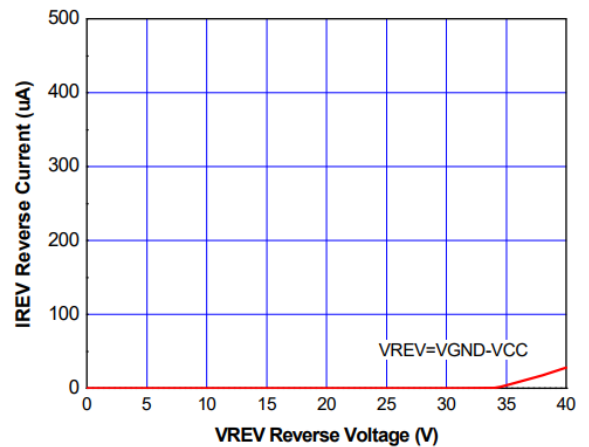
3. Supply Voltage vs. Output Current



4. Supply Voltage vs. Output Current

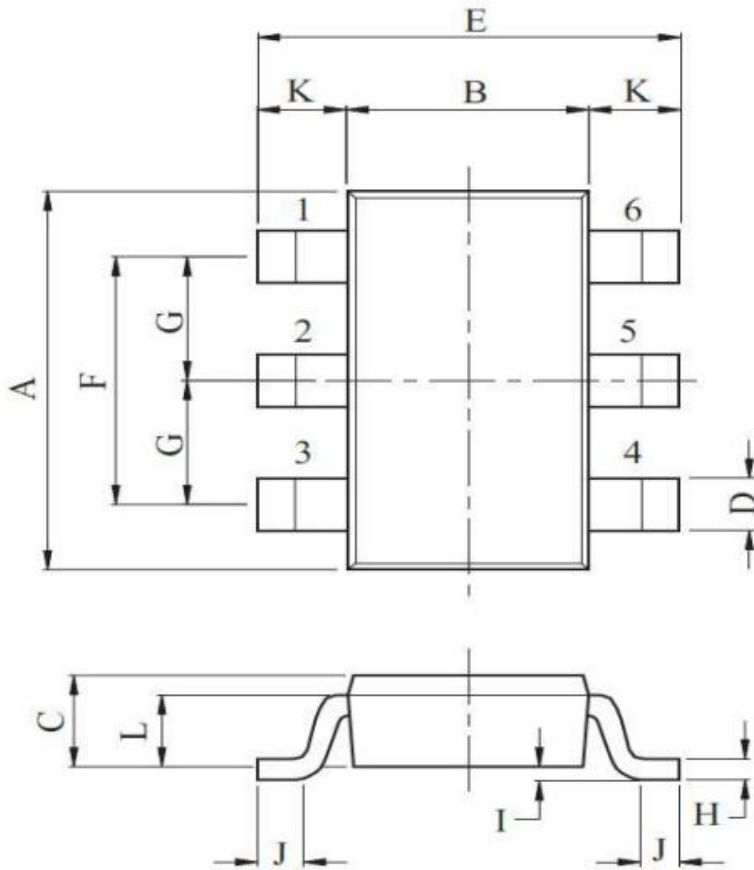


5. External Resistor vs. Output Current



6. Reverse Voltage vs. Reverse Current

Package Outline



Unit : mm

SYMBOL	DIMENSIONS		
	MIN	NOM	MAX
A	2.8	2.9	3.0
B	1.5	1.6	1.7
C	1.05	1.10	1.15
D	0.3	0.4	0.5
E	2.6	2.8	3.0
F	1.8	1.9	2.0
G	-	0.95	-
H	0.11	0.16	0.21
I	0.0	-	0.1
J	0.15	0.25	0.35
K	-	0.6	-