

DESCRIPTION

The AMC7123/4 is member of ADDM North Star White/Blue LED driver family. No external component is required. Especially good for use flashlight LED driver. The special circuit design provides over 90% efficiency in low noise. The AMC7123/4 is Integrated with 2 control pins for LEDs driving current control.

Target end applications are camera flash light LCD driver for mobile phone, smart phone, PDA, Digital Still Camera, etc.

OPTIONS

Device Name	Maximum LED Drive Current	Minimum LED Drive Current	LED Channel
AMC7123DN	120mA	20mA	1
AMC7124DN	120mA	20mA	3

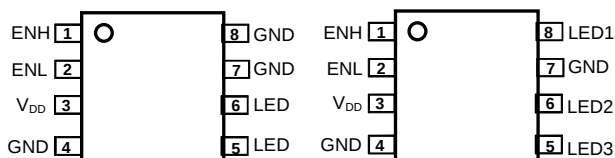
APPLICATIONS

- Mobile Phone, Smart Phone Camera LED Flash Light.
- Digital Still Camera LED Flash Light.

FEATURES

- No external component required.
- Programmable output current control by ENL, ENH.
- 120mA LED driving capability.
- Output short / open circuit protection.
- 1 channel, 3 channels available in MSOP-8 package.
- High efficiency.
- Thermal Shutdown protection.
- Supply voltage range 2.7V ~ 6V
- 0.1uA Shut-Down current
- Advanced Bi-CMOS process.

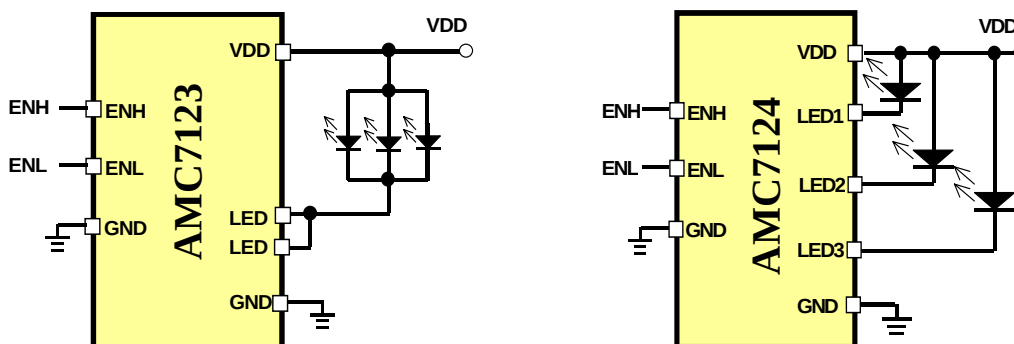
PACKAGE PIN OUT



AMC7123DN

AMC7124DN

TYPICAL APPLICATION



ORDER INFORMATION

T _A (°C)	DN	Plastic MSOP-8 8-pin	
		AMC7123DN	AMC7123DNF (Lead Free)
0 to 70		AMC7124DN	AMC7124DNF (Lead Free)

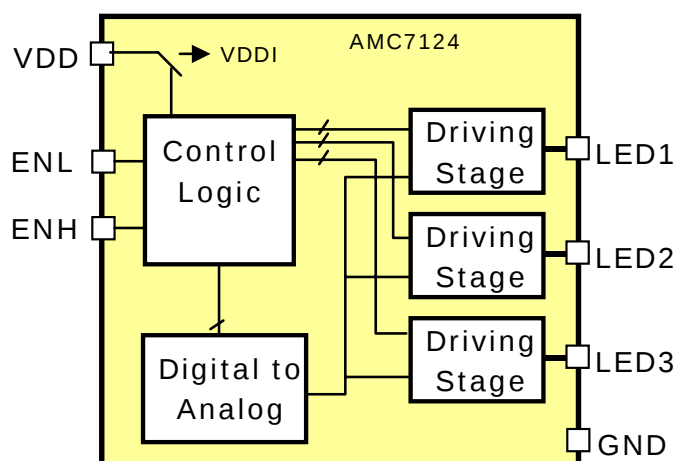
Note : 1. All surface-mount packages are available in Tape & Reel. Append the letter "T" to part number (i.e. AMC7123/24).
2. The letter "F" is marked for Lead Free process.

ABSOLUTE MAXIMUM RATINGS (Note)

Input Voltage, V_{DD}	-0.3V to 7V
Output Voltage, V_{LEDn}	-0.3V to 7V
Voltage at all other pins	-0.3V to 5.5V
Maximum Junction Temperature, T_J	150 °C
Storage Temperature Range	-40 °C to 150 °C
Lead Temperature (soldering, 10 seconds)	260 °C
Note: Exceeding these ratings could cause damage to the device. All voltages are with respect to Ground. Currents are positive into, negative out of the specified terminal.	

POWER DISSIPATION TABLE

Package	θ_{JA} (°C/W)	Derating factor (mW/°C) $T_A \geq 25^\circ\text{C}$	$T_A \leq 25^\circ\text{C}$ Power rating (mW)	$T_A = 70^\circ\text{C}$ Power rating (mW)	$T_A = 85^\circ\text{C}$ Power rating (mW)
DN	180	5.56	695	444	361
DNF	180	5.56	695	444	361
Note: Junction Temperature Calculation: $T_J = T_A + (P_D \times \theta_{JA})$. P_D : Power Dissipation, T_A : Ambient temperature, θ_{JA} : Thermal Resistance-Junction to Ambient The θ_{JA} numbers are guidelines for the thermal performance of the device/PC-board system. All of the above assume no ambient airflow.					

BLOCK DIAGRAM

PIN DESCRIPTION

Pin Name	Pin Function															
LED. LED1~3	Output pins; connect to LED’s cathode.															
ENL, ENH	This pin combined enable and output sink current programming function. <table><tr><th><u>ENH</u></th><th><u>ENL</u></th><th><u>LED, LED1, LED2, LED3</u></th></tr><tr><td>0</td><td>0</td><td>Shut-Down</td></tr><tr><td>0</td><td>1</td><td>1/6 x I_{max}</td></tr><tr><td>1</td><td>0</td><td>1/2 x I_{max}</td></tr><tr><td>1</td><td>1</td><td>I_{max}</td></tr></table>	<u>ENH</u>	<u>ENL</u>	<u>LED, LED1, LED2, LED3</u>	0	0	Shut-Down	0	1	1/6 x I _{max}	1	0	1/2 x I _{max}	1	1	I _{max}
<u>ENH</u>	<u>ENL</u>	<u>LED, LED1, LED2, LED3</u>														
0	0	Shut-Down														
0	1	1/6 x I _{max}														
1	0	1/2 x I _{max}														
1	1	I _{max}														
V _{DD}	Power supply.															
GND	Ground															

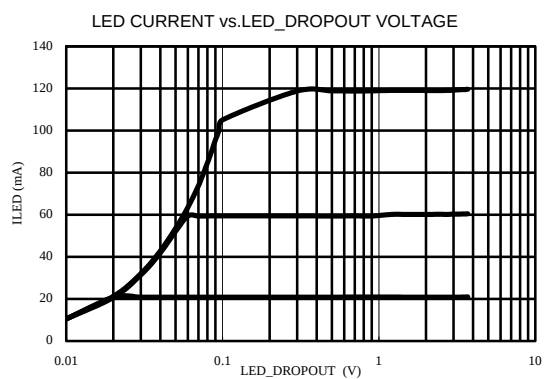
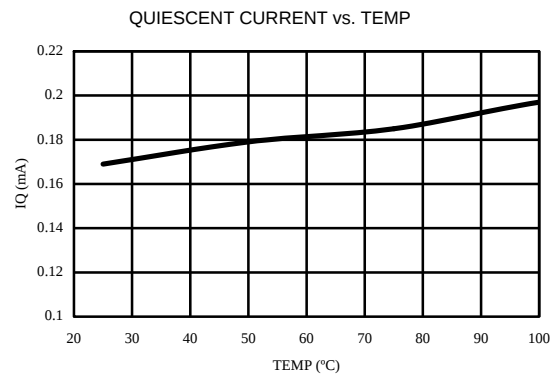
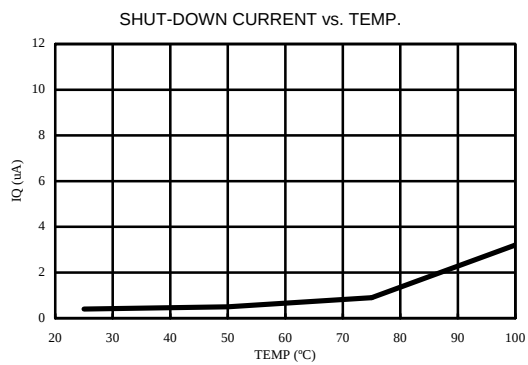
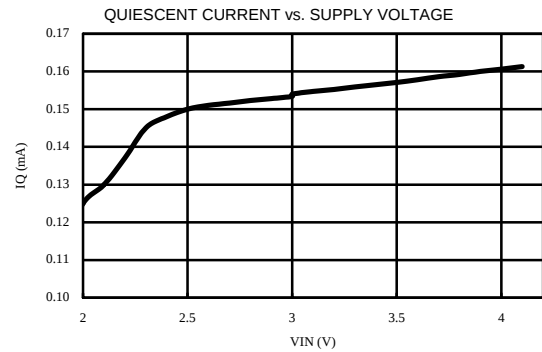
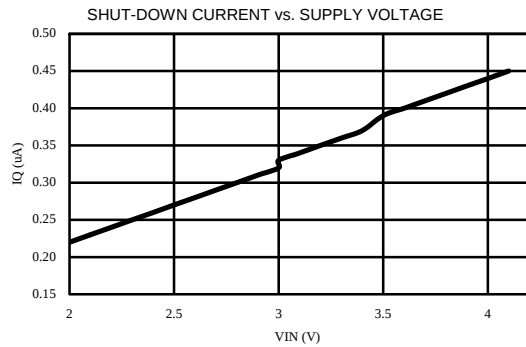
RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min	Typ	Max	Unit
Supply Voltage	V_{DD}	2.7		6	V
Output Sink current	I_{LED}			130	mA
Operating free-air temperature range	T_a	-40		+85	°C

ELECTRICAL CHARACTERISTICS

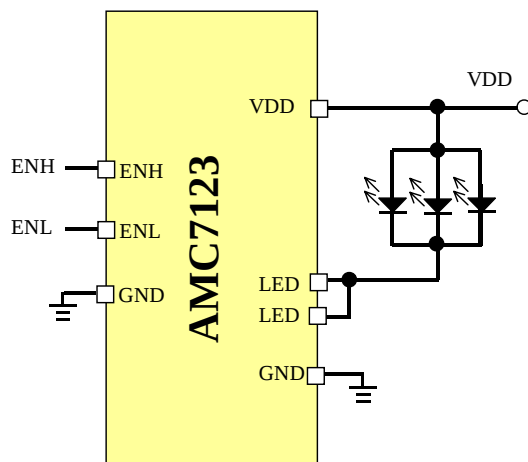
$V_{DD}=3.7V$, $T_a=25^{\circ}C$, No Load, Input: $V_{IH}=3.3V$, $V_{IL}=GND$. (Unless otherwise noted)							
Parameter	Symbol	Condition	Min	Typ	Max	Unit	Apply Pin
“Low” Input Voltage	V_{IL}				0.8	V	ENL, ENH
“High” Input Voltage	V_{IH}		2			V	
“Low” Input Current	I_{IL}		-5.0		+5.0	μA	
“High” Input Current	I_{IH}		-5.0		+5.0	μA	
LED Maximum Sink Current	I_{max}	ENH=ENL=“1”, All outputs	114	120	126	mA	LEDn
LED Half Sink Current	I_{half}	ENH=“1”, ENL=“0”	$45\% \times I_{max}$		$55\% \times I_{max}$	mA	
LED Low sink current	I_{min}	ENH=“0”, ENL=“1”	$9\% \times I_{max}$		$25\% \times I_{max}$	mA	
LED Dropout Voltage	V_{LEDL}	$I_{LEDn} = 120mA$, Note 1		120		mV	
Supply Current Consumption	I_{DD}			200		μA	V_{DD}
Shut-Down Current	I_{DDSD}			0.1		μA	

Note 1: LED dropout voltage: $90\% \times I_{LEDn}$ @ $V_{LEDn}=200mV$

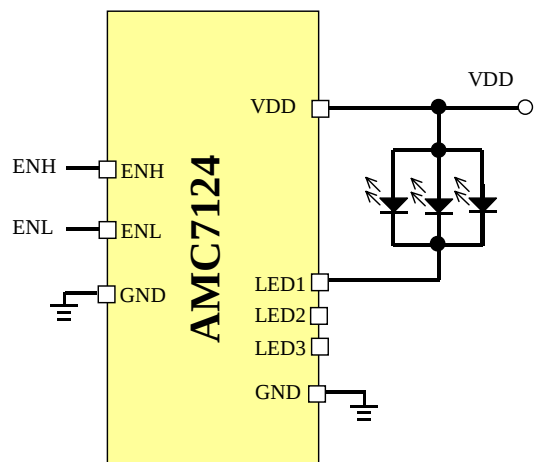
CHARACTERIZATION CURVES


APPLICATION INFORMATION

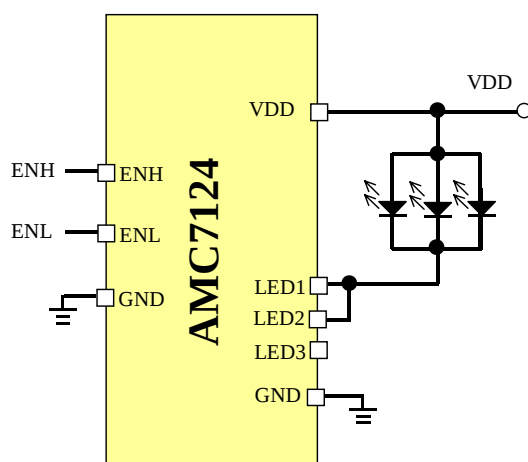
ENH	ENL	Typical Flashlight Current
0	0	Shut-Down
0	1	20mA
1	0	60mA
1	1	120mA



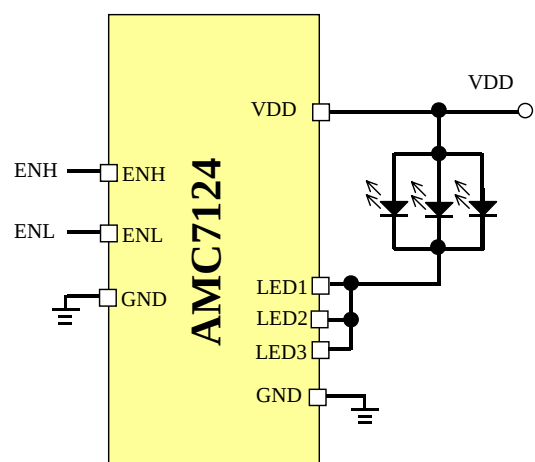
ENH	ENL	Typical Flashlight Current
0	0	Shut-Down
0	1	20mA
1	0	60mA
1	1	120mA

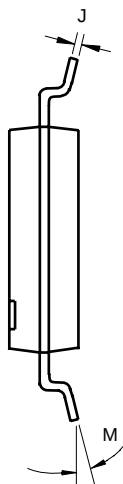
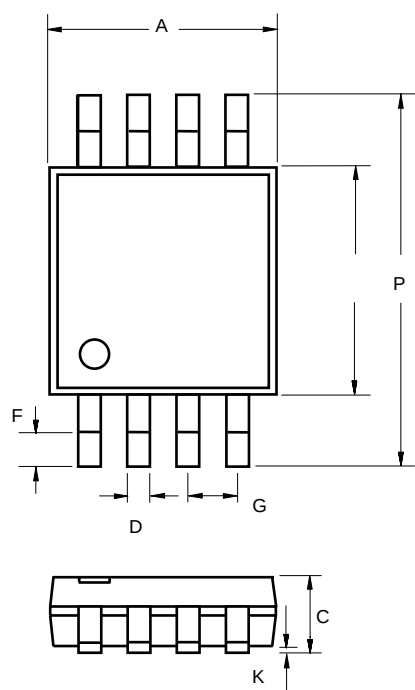


ENH	ENL	Typical Flashlight Current
0	0	Shut-Down
0	1	40mA
1	0	120mA
1	1	240mA



ENH	ENL	Typical Flashlight Current
0	0	Shut-Down
0	1	60mA
1	0	180mA
1	1	360mA



PACKAGE
8-Pin Plastic MSOP (DN)


	INCHES			MILLIMETERS		
	MIN	TYP	MAX	MIN	TYP	MAX
A	0.114	0.118	0.122	2.90	3.00	3.10
B	0.114	0.118	0.122	2.90	3.00	3.10
C		0.040	0.044		1.02	1.12
D		0.012			0.30	
F	0.016	0.021	0.031	0.40	0.53	0.80
G	-	0.026	-	-	0.65	-
J		0.006			0.15	
K	0.000	-	0.006	0.00	-	0.15
M	0°	-	8°	0°	-	8°
P	0.185	0.193	0.201	4.70	4.90	5.10

IMPORTANT NOTICE

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