PAM2812

4-CHANNEL LOW DROPOUT CURRENT SINK

Description

The PAM2812 provides 4 regulated current sinks, capable of sinking up to 20mA current to accommodate 4 white LEDs. It requires no charge pump, has no noise and EMI, and significantly improves the efficiency in Li battery range.

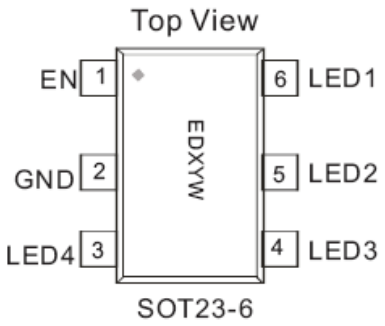
LED brightness can be controlled by EN PWM dimming techniques.

The PAM2812 is available in SOT23-6L package.

Features

- Support up to 4 LEDs
- LED sink current 20mA
- Low Dropout Voltage
- Low Quiescent Supply Current:330μA(typ)
- No Noise and EMI
- Shutdown Current Less than 1μA
- Over Temperature Protection
- Small Package: SOT23-6L
- RoHS Compliant and Green Package

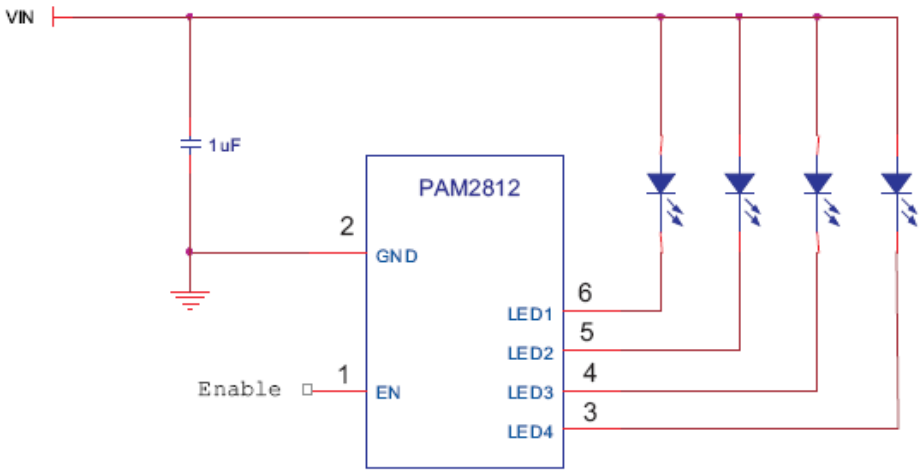
Pin Assignments



Applications

- Mobile Phone
- Digital Camera
- PDA,MP3,MP4

Typical Applications Circuit

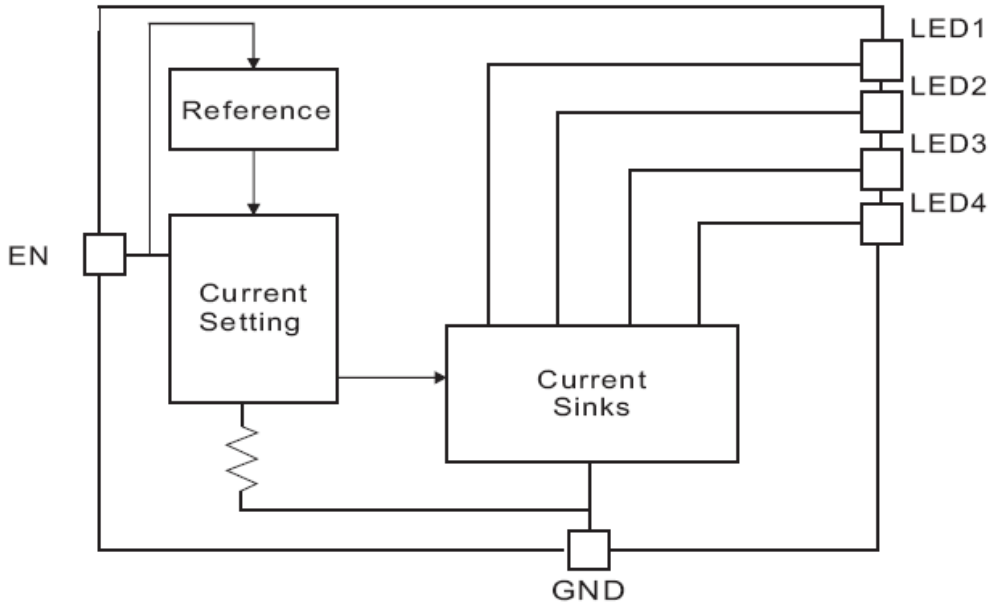


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Pin Descriptions

Pin Number	Pin Name	Function
1	EN	Enable Pin. Active high.
2	GND	Ground
3	LED4	LED4 Pin, Connect to the LED cathode, leave it to connect GND or open if unused.
4	LED3	LED3 Pin, Connect to the LED cathode, leave it to connect GND or open if unused.
5	LED2	LED2 Pin, Connect to the LED cathode, leave it to connect GND or open if unused.
6	LED1	LED1 Pin, Connect to the LED cathode, leave it to connect GND or open if unused.

Functional Block Diagram



Absolute Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

These are stress ratings only and functional operation is not implied. Exposure to absolute maximum ratings for prolonged time periods may affect device reliability. All voltages are with respect to ground.

Parameter	Rating	Unit
EN Voltage Range	-0.3 to +6.0	V
Input Voltage Range	-0.3 to +6.0	V
The Other Pins	-0.3 to +6.0	V
Maximum Junction Temperature	150	°C
Storage Temperature	-65 to +165	
Soldering Temperature	300, 5sec	

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Recommended Operating Conditions (@T_A = +25°C, unless otherwise specified.)

Parameter	Rating	Unit
EN Voltage Range	2.7 to 5.5	V
Junction Temperature Range	-40 to +125	°C
Ambient Temperature Range	-40 to +85	

Thermal Information

Parameter	Package	Symbol	Max	Unit
Thermal Resistance (Junction to Ambient)	SOT23-6L	θ_{JA}	250	°C/W
Thermal Resistance (Junction to Case)	SOT23-6L	θ_{JC}	130	
Internal Power Dissipation	SOT23-6L	P_D	400	mW

Electrical Characteristics (Note 1) (@T_A = +25°C, V_{IN} = 3.6V, unless otherwise specified.)

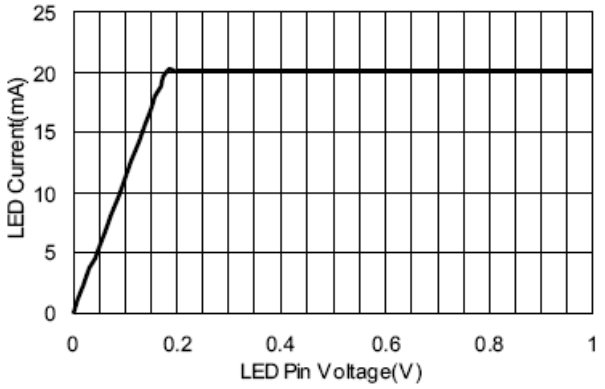
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Operation Voltage Range	V_{EN}		2.7		5.5	V
LED Sink Current	I_{LED}	All LEDs 100% setting	18	20	22	mA
LED Current Matching		All LEDs 100% setting			5	%
LED Dropout Voltage	V_{DO}	I_{LED} = 20mA		180		mV
Quiescent Current	I_Q	I_{LED} = 0		330	500	μA
Shutdown Current	I_{SD}	V_{EN} = 0V			1	μA
Startup Time	T_{ON}			3		μs
EN Input Logic High	V_{HI}		2.7			V
EN Input Logic Low	V_{LO}				0.4	V
Thermal Shutdown Temperature	T_P			150		°C
Hysteresis Temperature				30		°C

Note: 1. Recommend EN pin maximum PWM dimming frequency is 1Khz. Recommended EN pin minimum PWM dimming pulse width is 100μs.

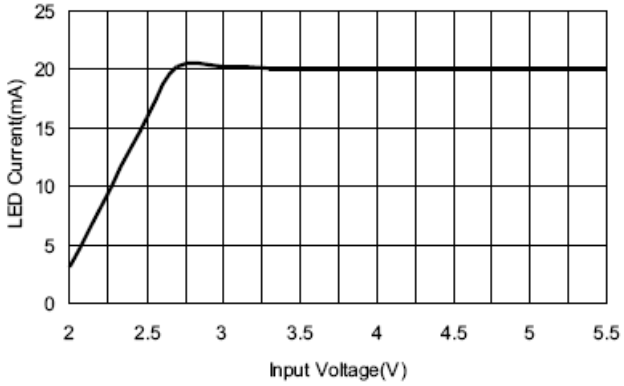
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Typical Performance Characteristics (@T_A = +25°C, EN = 5.0V, unless otherwise specified.)

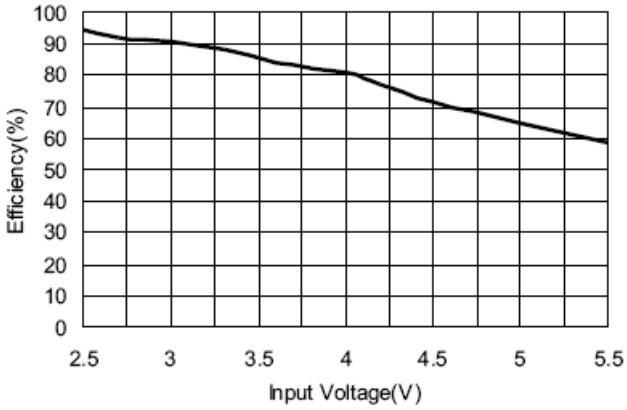
LED Current VS LED Pin Voltage



LED Current VS Input Voltage



Efficiency VS Input Voltage



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Application Information

The PAM2812 is a 4-channel programmable white-LED driver. It is capable of supplying 20mA per channel with a total of 80mA output current available. LED brightness control of PAM2812 can be achieved with a pulses signal.

Enable Input

The EN input is used to enable or disable the PAM2812. Pulling the EN pin higher than 2.7V will enable the device. For producing constant, nonpulsating output current compare to conventional pulse width modulation (PWM) dimming scheme. A constant current is sourced as long as the EN signal remains high. The shutdown feature reduces quiescent current to less than 0.1μA.

LED Connection

The PAM2812 supports up to 4 white LEDs. The four LEDs are connected from VIN to LEDx respectively. If the LED is not used, it should be connected to GND or open.

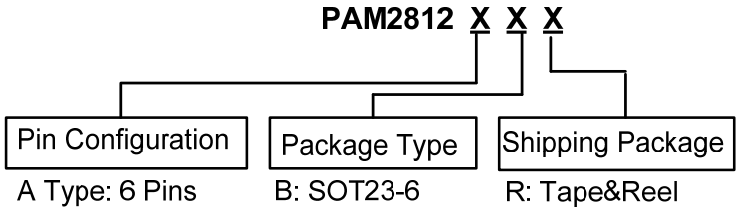
Over Temperature Protection

The PAM2812 equips over temperature protection. When the junction temperature (T_J) exceeds +150°C, the current source turns off automatically. The device will turn on again after the IC's T_J cools down under +120°C. Operating at absolute maximum temperature is not recommended.

LED Brightness Dimming Control

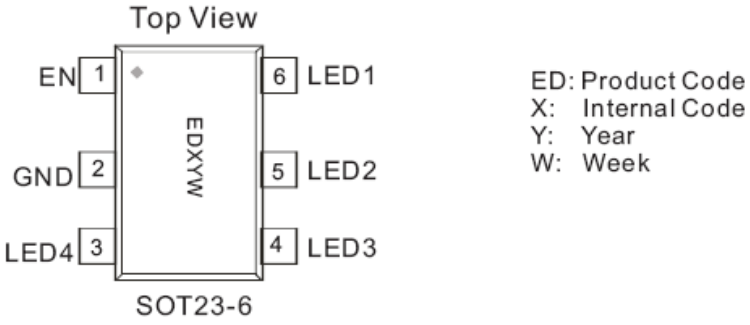
For controlling the LED brightness, the PAM2812 can perform the dimming control by applying a PWM signal to EN pin. When an external PWM signal is connected to the EN pin, brightness of white LED is adjusted by the duty cycle. The average LED current is proportional to the PWM signal duty cycle. The magnitude of the PWM signal must be higher than the minimum level of enable input high level, in order to let the dimming control perform correctly, the suggested PWM frequency range is 1kHz to 200Hz.

Ordering Information



Part Number	Part Marking	Package Type	Standard Package
PAM2812ABR	EDXYW	SOT23-6	3000 Units/Tape&Reel

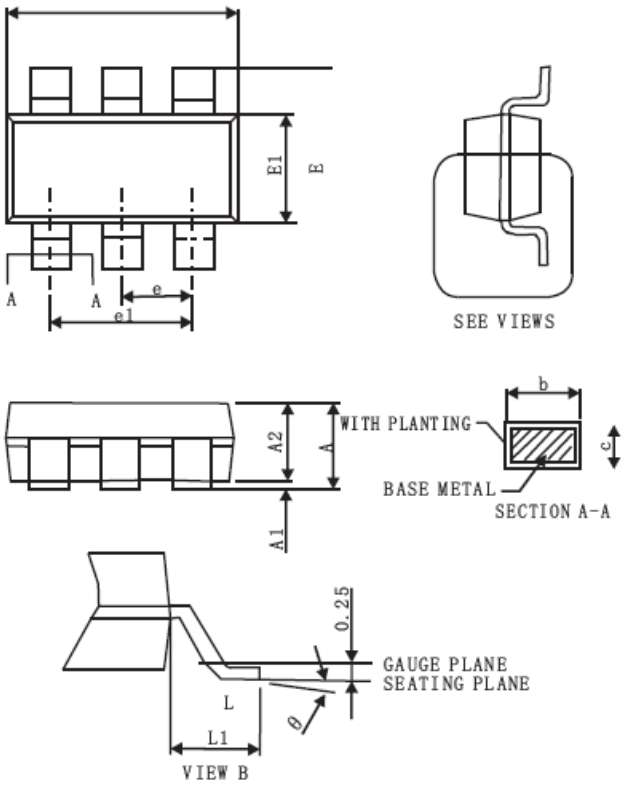
Marking Information



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Package Outline Dimensions (All dimensions in mm.)

SOT23-6L



Symbol	A	A1	A2	b	c	D	E
Spec	1.20±0.25	0.10±0.05	1.10±0.2	0.40±0.1	0.15±0.0.7	2.90±0.1	2.80±0.2
Symbol	E11	e	e 1	L	L1	θ	
Spec	1.60±0.1	0.95BSC	1.90BSC	0.55±0.25	0.60REF	4°±4°	

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