16路LED驱动器和GPIO控制器

16-CHANNEL LED DRIVER AND GPIO CONTROLLER

■ FEATURES

・Power supply range : 2.5V~5.5V

・16 multifunctional IO_S, capable of LED driving (current-source dimming) or GPIO

・256 steps linear dimming in LED mode

・Any IO can be configured as an input or an output independently

・Interrupt function, 8μs deglitch, active low

・Standard I²C interface, 4 programmable device addresses

・1.8V/3.3V logic input (SDA, SCL, RSTN, IO)

・Shutdown function, active low

・Pb-free Packages, QFN4×4-24L

・供电范围：2.5V~5.5V

・16个多功能IO，支持LED驱动或GPIO（电流源调光）

・LED模式下具有256阶线性调光

・任意IO可配置为独立的输入或输出

・中断功能，8μs防抖，低电平有效

・标准I²C接口，4个I²C器件地址可选

・支持1.8V/3.3V逻辑电平(SDA, SCL, RSTN, IO)

・具有关断功能，低电平有效

・QFN4×4-24L，无铅封装

■ APPLICATIONS

・Cell Phone   ・Speakers

・Other Consumer electronics

・手机   ・音箱

・其他消费类电子产品

■ DESCRIPTION

HTR3316 is a 16 multifunctional LED driver and GPIO controller with 2.5V~5.5V power supply. Any of the 16 IOs can be configured as LED mode or GPIO mode. Meanwhile, any GPIO can be configured as an input or an output independently.

After power on, all the 16 IOs are configured as GPIO output as default, and their default states are decided by AD0 and AD1. When the IOs are configured as inputs, they are continuously monitored for state changes with 8μs deglitch. State changes are indicated at the INTN output. Once the GPIO state are read through the I²C interface, the INTN output is cleared.

When the IOs are configured as LED mode, the LED driver's current, divided by 256 steps linear dimming, can be set between 0~I_{MAX} by I²C interface. The default maximum current (I_{MAX}) is 37mA, and I_{MAX} can be changed in GloCTL register.

HTR3316 is available in QFN4×4-24L package.

HTR3316是一款16路多功能LED驱动器和GPIO控制器，2.5V~5.5V电源供电。16个IO端口中的任何一个都可以配置为LED模式或GPIO模式。此外，任何GPIO都可以单独配置为输入或输出。

通电后，16个IO端口配置默认为GPIO输出，默认状态根据AD0和AD1决定。所有配置为输入的IO端口都会持续监控状态变化，并具有8μs的防抖动时间，IO口的变化由INTN输出指示。当GPIO状态通过I²C接口被读取时，INTN输出被清除。

当IO端口配置为LED模式时，可以通过I²C接口将LED驱动器的电流设置在0~I_{MAX}之间，并可以以该值除以256步进行线性调光。默认最大电流（I_{MAX}）为37mA，可在全局在控制寄存器中更改I_{MAX}。

HTR3316提供QFN4×4-24L封装。

■ ORDERING INFORMATION

Ordering Number	Package Type	Marking	Operating Temperature Range	Shipping Package / MOQ
HTR3316SQER	QFN4×4-24L (SQE)	HTR3316 YYYMAAB[1]	-40℃～85℃	Tape and Reel (R) 5000PCS

Ordering Number

HTR3316 SQE R

→ Shipping Package

→ Package Type

→ Part Number

Production Tracking Code

YYY M AA B

→ Random Code

→ Lot Number

→ Date Code - Month

→ Internal Code

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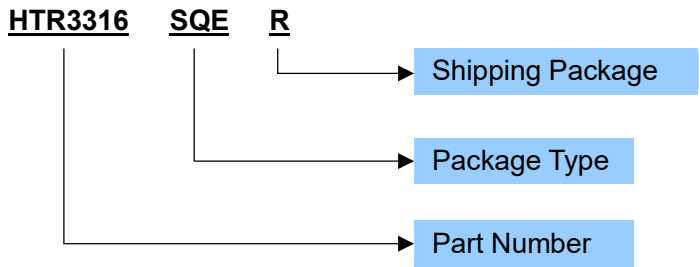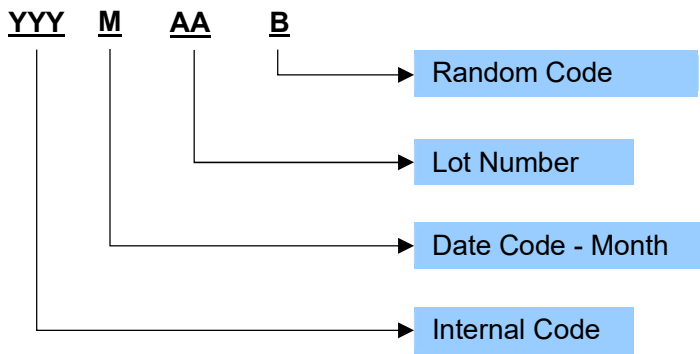
[1] YYYMAAB is production tracking code

■ TYPICAL APPLICATION

16 functional LED drivers, with 6 capable of driving LED backlights

Functional LED drivers, IO and Keyboard expander

■ TERMINAL CONFIGURATION
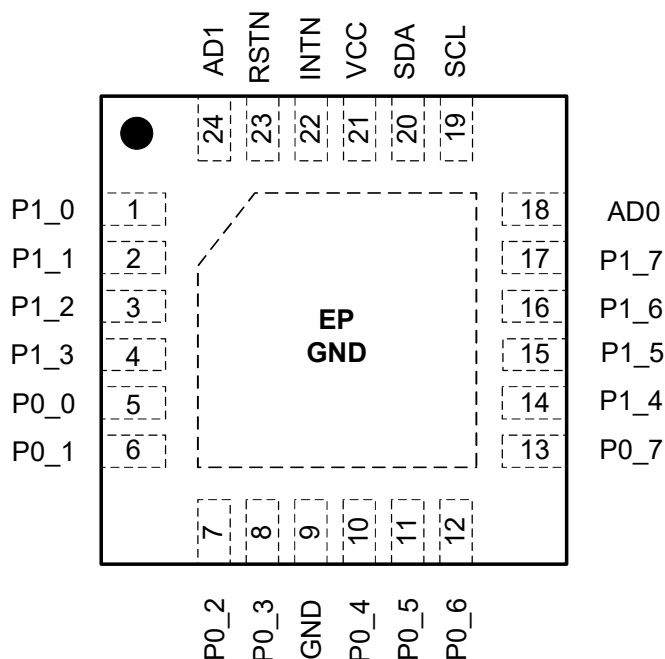
■ TERMINAL FUNCTION

Terminal No.	Name	Description
1~4	P1_0~P1_3	GPIO mode default, input or output (push-pull), the state after power on is decided by AD1 and AD0 terminals. Can be configured as LED mode. 默认GPIO模式，输入或输出（推挽结构），上电默认状态由AD1和AD0决定。可设置为LED模式。
5~8	P0_0~P0_3	GPIO mode default, input or output (open-drain (default) or push-pull), the state after power on is decided by AD1 and AD0 terminals. Can be configured as LED mode. 默认GPIO模式，输入或输出（开漏结构（默认）或推挽结构），上电默认状态由AD1和AD0决定。可设置为LED模式。
9	GND	Ground. 地
10~13	P0_4~P0_7	GPIO mode default, input or output (open-drain (default) or push-pull), the state after power on is decided by AD1 and AD0 terminals. Can be configured as LED mode. 默认GPIO，输入或输出（开漏结构（默认）或推挽结构），上电默认状态由AD1和AD0决定。可设置为LED模式。
14~17	P1_4~P1_7	GPIO mode default, input or output (push-pull), the state after power on is decided by AD1 and AD0 terminals. Can be configured as LED mode. 默认GPIO，输入或输出(推挽结构)，，上电默认状态由AD1和AD0决定。可设置为LED模式。
18	AD0	I²C device address, connect to VCC or GND，and control the default state of GPIOs (see table 1)。 I²C器件地址选择，接VCC或GND，并设置GPIO状态（见表1）。
19	SCL	I²C serial clock. I²C时钟
20	SDA	I²C serial data. I²C数据
21	VCC	Power supply. 电源输入端.
22	INTN	Interrupt output pin, open-drain, need external pull-up resistor; active low. 中断输出，开漏结构，需外部上拉电阻；低有效
23	RSTN	Hardware reset pin, active low; internal 100 kΩ (typical) pull-down

		resistor. 硬件复位，低为复位；内部下拉100 kΩ（典型值）电阻
24	AD1	I²C device address, connect to VCC or GND，and control the default state of GPIO (see table 1)。 I²C器件地址选择，接VCC或GND，并设置GPIO状态（见表1）。
EP	GND	Provides both electrical and thermal connection from the device to the board. Connect to the system ground. 接地。

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