iW7016 Product Summary

6-Channel LED Driver for LCD Panel Backlighting

1.0 Features

- 9V to 36V input power supply
- Intergrated 6-channel LED drivers, 65V (max) per channel
- Patented BroadLED™ adaptive switch mode technology for high current matching at maximum efficiency
  - » Current matching accuracy ±2%
  - » Enables use of cheaper, loosely binned LED arrays for lower BOM cost
- 300mA per channel average current, and 600mA for 3D mode with PWM duty up to 25%
- Integrated DC-DC boost controller
  - » 10V gate drive voltage
  - » Programmable switching frequency from 100KHz to 208KHz
  - » Internal soft start to limit the inrush current
- Supports two direct PWM dimming modes
  - » Multiple direct PWM inputs and multiple PWM outputs
  - » Single direct PWM input to multiple PWM output with phase shift for low EMI and low output ripple.
- Supports PWM tail shift mode
- Comprehensive protection features:
  - » LED open fault detection
  - » LED short fault detection
  - » Over-temperature shutdown
  - » Boost controller output over-current, over-voltage and UVLO protection
  - » Boost input UVLO protection

2.0 Description

The iW7016 is a high current, versatile, 6-channel LED driver. It integrates an internal step-up DC-DC converter to drive up to 6 separate strings of multiple series-connected LEDs.

The iW7016 provides high thermal performance by compensating for LED forward voltage mismatch with using Dialog's proprietary digital power management and patented BroadLED™ adaptive switch mode LED current regulation technologies.

The iW7016 has multiple features to protect the LED channels from fault conditions. These protections are employed on a cycle-by-cycle basis to ensure system reliability and provide consistent operation.

3.0 Applications

- LED backlighting for LCD-TV sets and LCD monitors

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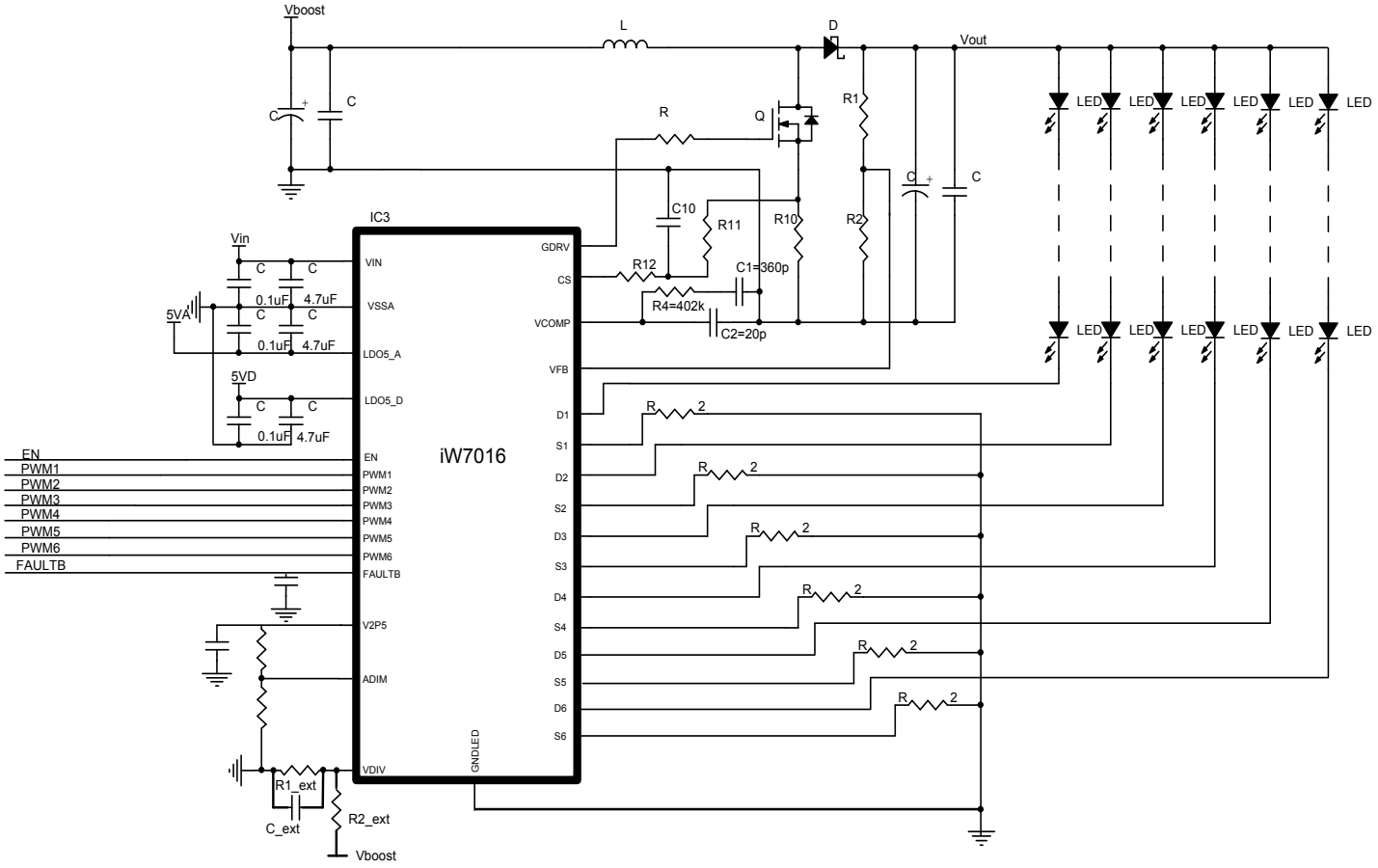


Figure 3.1 : iW7016 Typical Application Diagram

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4.0 Pinout Description

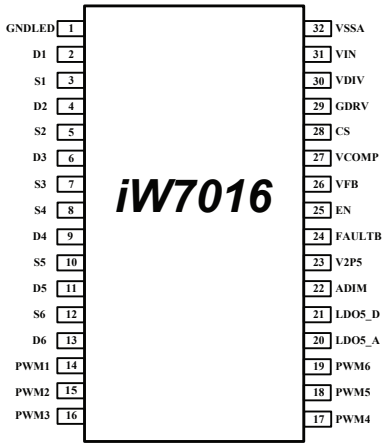


Figure 4.1 : SOP-32

Pin #	Name	Type	Pin Description
1	GNDLED	GND	Ground for internal MOSFET LED driver
2	D1	AI	Drain of internal MOSFET LED driver
3	S1	AI	Source of internal MOSFET LED driver
4	D2	AI	Drain of internal MOSFET LED driver
5	S2	AO	Source of internal MOSFET LED driver
6	D3	AI	Drain of internal MOSFET LED driver
7	S3	AO	Source of internal MOSFET LED driver
8	S4	AO	Source of internal MOSFET LED driver
9	D4	AI	Drain of internal MOSFET LED driver
10	S5	AO	Source of internal MOSFET LED driver
11	D5	AI	Drain of internal MOSFET LED driver
12	S6	AO	Source of internal MOSFET LED driver
13	D6	AI	Drain of internal MOSFET LED driver
14	PWM1	DI	PWM input, internally pulled down (100K)
15	PWM2	DI	PWM input, internally pulled down (100K); NC in single direct PWM mode
16	PWM3	DI	PWM input, internally pulled down (100K); NC in single direct PWM mode
17	PWM4	DI	PWM input, internally pulled down (100K); NC in single direct PWM mode

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Pinout Description (cont.)

Pin #	Name	Type	Pin Description
18	PWM5	DI	PWM input, internally pulled down (100K); NC in single direct PWM mode
19	PWM6	DI	PWM input, internally pulled down (100K); NC in single direct PWM mode
20	LDO5_A	Power	Connects to decoupling cap for internal generated 5V analog supply
21	LDO5_D	Power	Connects to decoupling cap for internal generated 5V digital supply
22	ADIM	AI	Analog dimming control input
23	V2P5	AI	2.5V reference for ADIM
24	FAULTB	DO	Fault output, open drain (active low)
25	EN	DI	Chip enable signal
26	VFB	AI	Boost controller voltage feedback pin
27	VCOMP	AO	Boost controller loop compensation pin
28	CS	AI	Boost output current sense pin
29	GDRV	AI	Boost gate drive for external MOSFET
30	VDIV	AI	Boost input UVLO detection pin
31	VIN	Power	Chip input power
32	VSSA	GND	Quiet analog ground

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5.0 Absolute Maximum Ratings

Absolute maximum ratings are the parameter values or ranges which can cause permanent damage if exceeded. For maximum safe operating conditions, refer to the iW7016 datasheet.

Parameter	Symbol	Value	Units
DC supply voltage at V_{IN}	V_{IN}	-0.3 to 36	V
Maximum voltage for 5V pins	V_{5V}	-0.3 to 7	V
Maximum voltage for pin D1-D6	V_{DX}	-0.3 to 65	V
Latch-up immunity	$I_{LATCHUP}$	-100 to 100	mA
Storage temperature	T_{STRG}	-55 to 150	°C
Humidity		5 to 85	%
Electrostatic discharge on all 5V pins	V_{ESD}	-2000 to 2000	V
Body temperature during soldering	T_{BODY}	0 to 260	°C

6.0 Recommended Operating conditions

Parameter	Min	Typ	Max	Units
Thermal resistance junction (2-Layer JEDEC board)		61.57		°C/W
Operating temperature	-40		85	°C
Junction temperature	-40		150	°C
LEDn voltage			65	V
Supply voltage	9		36	V

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7.0 Physical Dimensions

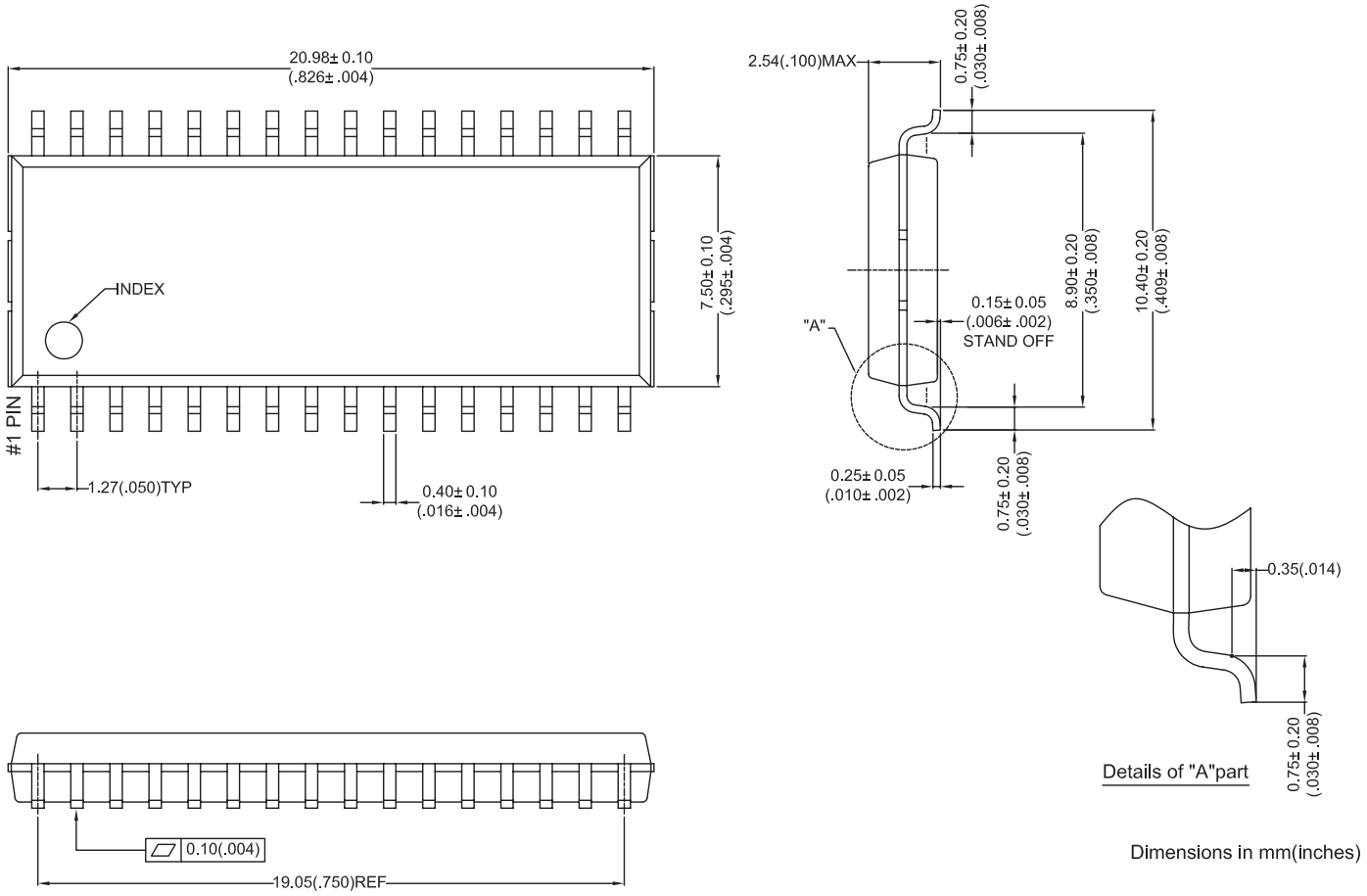


Figure 7.1 : Physical Dimensions for SOP-32

8.0 Ordering Information

Part Number	Options	Package	Description
iW7016-00-SO32		SOP-32	Tape and Reel[1]
iW7016-01-SO32	Tail mode, Short level = 12V, ADP range = 150%, Boost switching freq = 138kHz, 1 IN 6 OUT	SOP-32	Tape and Reel[1]
iW7016-02-SO32	Head mode, Short level = 6V, ADP range = 150%, Boost switching freq = 100kHz, 6 IN 6 OUT	SOP-32	Tape and Reel[1]

Note 1: Tape and Reel packing quantity is 1,000/reel. Minimum ordering quantity is 1,000.

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