

AT7370

Isolation with active PFC LED Controller(patented)



Immense Advance Tech.

FEATURES

- Primary-side feedback constant current control
- Universal rectified 85VAC to 275VAC Input Voltage Range
- Transition-mode PFC operating
- Constant current control LED driver
- Built-in output short and open circuit protections
- Line compensation
- Over voltage protection
- Series/Parallel Combinations
- SOT23-6 Package Available
- Patent Pending

DESCRIPTION

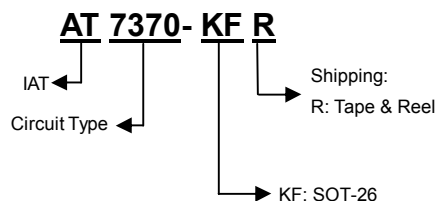
The AT7370 is a high performance LED driver with uses primary side feedback technology to reduced cost. The AT7370 removes the need for secondary feedback circuitry while achieving excellent line regulation. The transition mode PFC function with low switch loss maximizes the system efficiency.

Compared with a traditional LED driver, the AT7370 can reduce total costs, size, and components while simultaneously increasing efficiency and system reliability.

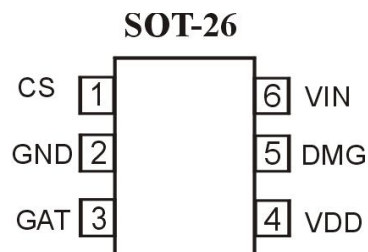
APPLICATION

- Isolation AC/DC LED driver application
- Isolation DC/DC LED driver application
- Industrial and commercial lighting
- Retro-fit lamps, e.g. E27, GU10.

ORDER INFORMATION



PIN CONFIGURATIONS (TOP VIEW)



AT7370

Isolation with active PFC LED Controller(patented)

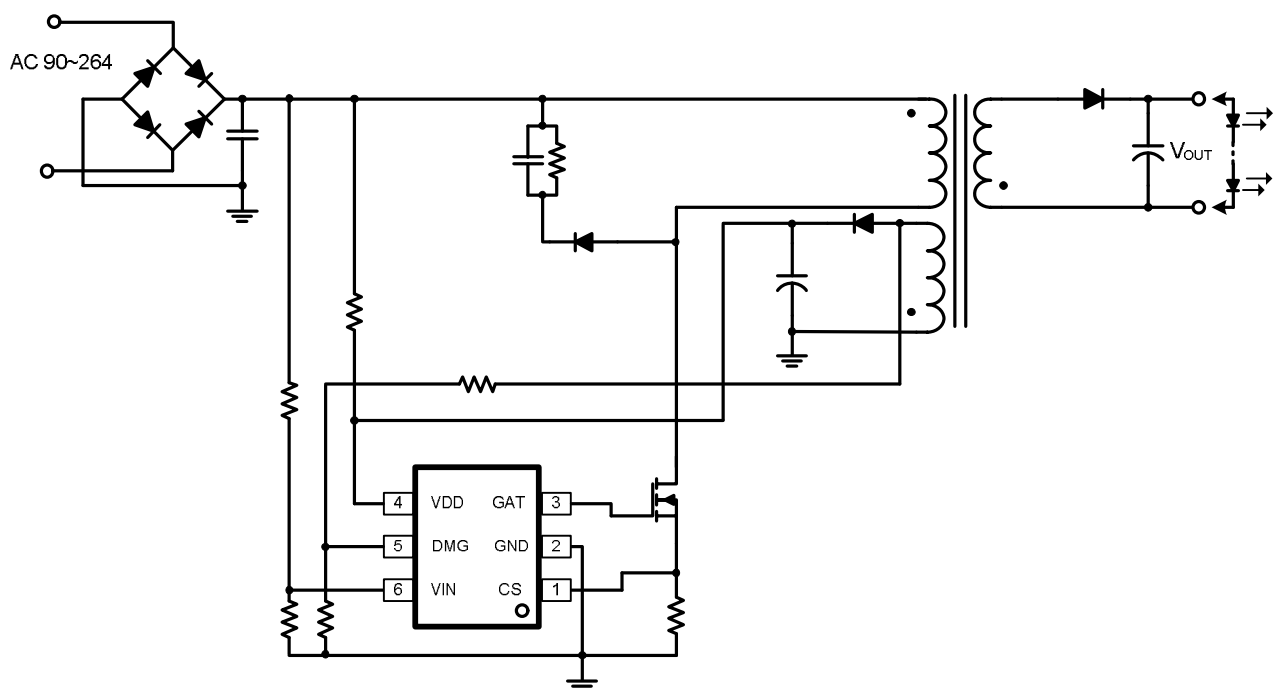


Immense Advance Tech.

PIN DESCRIPTIONS

Pin Symbol	Pin Description
CS	Current sense
GND	Ground return for all internal circuitry
GAT	Gate driver output
VDD	Power supply pin for all internal circuit
DMG	This pin is zero current demagnetization sensing for transition-mode operation
VIN	This pin is connected to the rectified voltage to provides the sinusoidal reference

TYPICAL APPLICATION CIRCUITS



ABSOLUTE MAXIMUM RATINGS (Note 1)

Parameter	Symbol	Range	Unit
Operating voltage on Internal regulator	V _{DD}	22	V
DMG voltage to GND	V _{ZCD}	-0.3 to 5	V
VIN voltage to GND	V _{IN}	-0.3 to 12	V
CS voltage to GND	V _{CS}	-0.3 to 5	V
GAT voltage to GND	V _{GAT}	-0.3 to 18	V
Operating junction temperature rang	T _J	-40 to + 125	°C
Operating ambient temperature rang	T _{OPA}	-40 to +85	°C
Storage temperature rang	T _{STG}	-65 to +150	°C
Lead temperature (Soldering 10 sec)	T _{LEAD}	260	°C
Power dissipation @T _A =25 °C	P _D	0.3	W
Thermal resistance junction to ambient (Note 2)	θ _{JA}	220	°C/W
ESD rating (Human body mode) (Note 3)	V _{ESD}	2	kV

RECOMMENDED OPERATING CONDITIONS (Note4)

Parameter	Symbol	Operation Conditions	Unit
Supply voltage	V _{DD}	20	V
VIN voltage to GND	V _{IN}	-0.3~6.5	V
Junction Temperature Range	T _J	-40 to +125	°C
Ambient Temperature Range	T _A	-40 to +85	°C

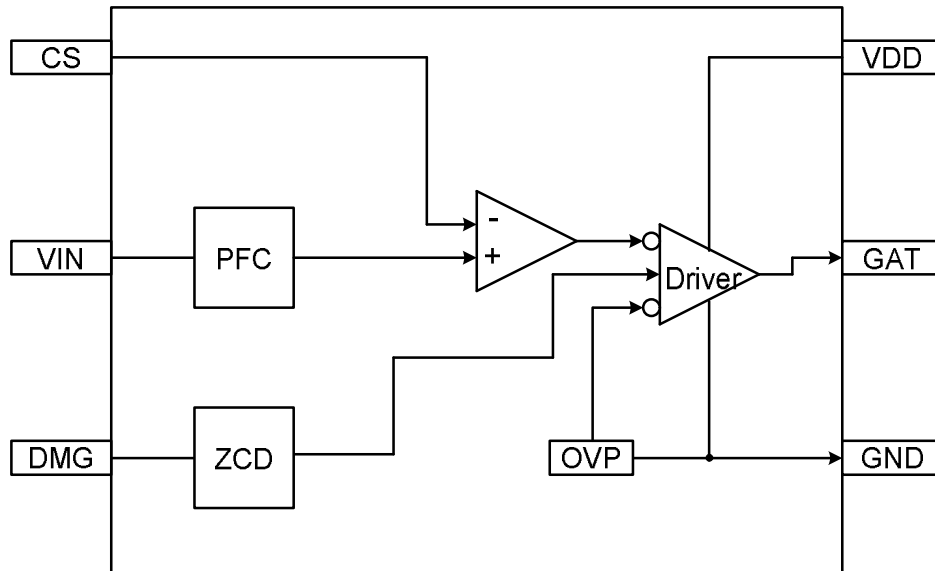
Note 1: Stresses listed as the above “Absolute Maximum Ratings” may cause permanent damage to the device. These are for stress ratings. Functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may remain possibility to affect device reliability.

Note 2 : Thermal Resistance is specified with the component mounted on a low effective thermal conductivity test board in free air at T_A=25°C.

Note 3: Devices are ESD sensitive. Handling precaution recommended.

Note 4: The device is not guaranteed to function outside its operating conditions.

BLOCK DIAGRAM

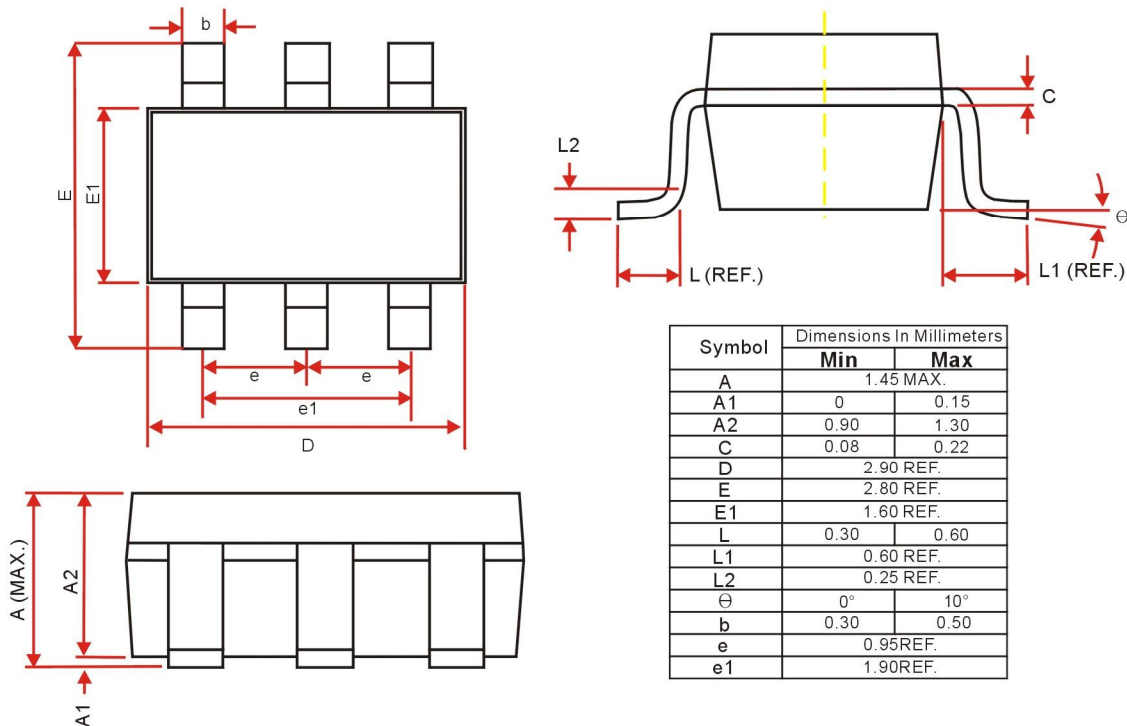


ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Condition	Min	Typ	Max	Unit
V_{DD} SECTION						
V _{DD} operation range	V _{DD}	After turn-on	10		16	V
V _{DD} turn-on threshold	V _{DDON}		11	12	13	V
V _{DD} turn-off threshold	V _{DDOFF}		8.5	9.5	10.5	V
V _{DD} UVLO hysteresis	V _{UVLOHY}			2.5		V
Over voltage protection	OVP			18		V
Operation current	I _{OP}	V _{DD} =12 V C _{OUT} = 1nF		2		mA
Quiescent Current	I _q	During Protection		100		μA
ZERO CURRENT DETECTION FUNCTION						
Input bias current	I _{ZCD}	V _{ZCD} = 1 ~ 3V		2		μA
Source current	I _{ZCDSRC}		-2.5		-5.5	mA
LINE VOLTAGE SECTION						
Linear operation range	V _{IN}			0~10		V
CURRENT SENSE SECTION						
Current sense reference voltage	V _{CS}		240	250	260	mV
Leading edge blanking time	T _{LEB}		400	500	600	ns
GATE DRIVER SECTION						
Fall time	T _F	V _{DD} =12 V C _{OUT} = 1nF		30	70	ns
Rise time	T _R	V _{DD} =12 V C _{OUT} = 1nF		40	80	ns

PACKAGE OUTLINE DIMENSIONS

SOT-26 PACKAGE OUTLINE DIMENSIONS



Note :

Information provided by IAT is believed to be accurate and reliable. However, we cannot assume responsibility for use of any circuitry other than circuitry entirely embodied in an IAT product; nor for any infringement of patents or other rights of third parties that may result from its use. We reserve the right to change the circuitry and specifications without notice.

Life Support Policy: IAT does not authorize any IAT product for use in life support devices and/or systems. Life support devices or systems are devices or systems which, (I) are intended for surgical implant into the body or (II) support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user. Typical numbers are at 25°C and represent the most likely norm.

The products may be covered by one or more R.O.C. and foreign patents, or potentially by pending R.O.C. and foreign patent applications assigned to IAT