



# ACE51255R

## Output Adjustable Linear Regulator

### Description

The ACE51255R is a 3A ultra low dropout linear regulator. The IC needs two supply voltages, one is a control voltage (VCNTL) for the control circuitry, the other is a main supply voltage (VIN) for power conversion, to reduce power dissipation and provide extremely low dropout voltage. The ACE51255R has a built-in power-on reset that detects the supply voltage on the VIN and VCNTL pins to prevent incorrect operation. The functions of thermal shutdown and current-limit protect the device against thermal and current over-loads. A POK indicates the output voltage status with a delay time set internally. It can control other converter for power sequence. The ACE51255R can be enabled by other power systems via the Enable (EN) pin, Pulling and holding the EN voltage below 0.4V shuts off the output. The ACE51255R is available in ESOP-8 and DFN3\*3-10 packages with a Exposed Pad that increases heat dissipation and thus extends the power range of the application.

### Features

- Operating voltage: VCNTL: 3.0V~5.5V; VIN : 1.2V~5.5V
- Adjustable Output Voltage:0.8V~VIN-VDROP
- High Output Accuracy:  $\pm 1.5\%$  ( Full Line and Load range )
- 0.8V Reference Voltage
- Ultra Low Dropout: 230mV@ IOUT =3A
- Low Shutdown Quiescent Current ( <30uA )
- Low ESR Output Capacitor (Multi-layer Chip Capacitors (MLCC)) Applicable
- Internal Soft-Start
- Fast Load Transient Response
- Enable control
- Power-On-Reset Monitoring on Both VCNTL and VIN Pins
- Current-Limit and Short Current-Limit Protections
- Thermal Shutdown with Hysteresis
- Open-Drain VOUT Voltage Indicator ( POK )

### Application

- DDR Front-end Power Supply
- Motherboard Applications
- Note Book PC Applications



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### Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit	
VIN Supply Voltage	VIN	-0.3~6	V	
VCNTL Supply Voltage	VCNTL	-0.3~6.5	V	
VOUT Output Voltage	VOUT	-0.3~ VIN+0.3	V	
POK Voltage		-0.3~6.5	V	
EN · FB Voltage		-0.3~ VCNTL+0.3	V	
VOUT Output Current	IOUT	9	A	
Internal Power Dissipation	ESOP-8	Pd	1.98	W
	DFN3*3-10		1.79	W
Thermal resistance (Junction to air)	ESOP-8	$\theta_{JA}$	63	°C/W
	DFN3*3-10		70	°C/W
Operating Ambient Temperature Range	T <sub>Op</sub> r	-40~85	°C	
Storage Temperature Range	T <sub>stg</sub>	-55~150	°C	
Maximum junction temperature	T <sub>J</sub>	-40~150	°C	
Welding temperature (time)	T <sub>LEAD</sub>	260°C ( 10s )		

Note:

- (1). Stresses at or above those listed under Absolute Maximum Ratings may cause permanent damage to the product.
- (2). The maximum allowable power dissipation is a function of the maximum junction temperature T<sub>J</sub> (MAX), the junction-to-ambient thermal resistance  $\theta_{JA}$ , and the ambient temperature T<sub>A</sub>. The maximum allowable continuous power dissipation at any ambient temperature is calculated by  $PD(MAX)=(T_J(MAX)-T_A)/\theta_{JA}$ . Exceeding the maximum allowable power dissipation produces an excessive die temperature, and the regulator goes into thermal shutdown. Internal thermal shutdown circuitry protects the device from permanent damage.
- (3). The  $\theta_{JA}$  values given in this table are for comparison with other packages only and cannot be used for design purposes. They do not represent the performance achieved in real-world applications.

### Recommended Operating Condition

Parameter	Rating	Unit
VIN Supply Voltage	1.2~5.5	V
VCNTL Supply Voltage	3.0~5.5	V
VOUT Output Voltage	0.8~VIN-VDROP	V
Operating Ambient Temperature Range	-40 ~ 85	°C

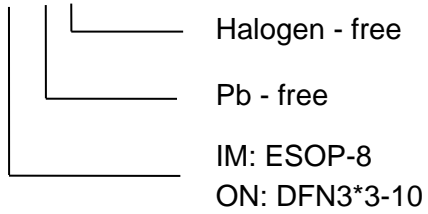


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## Ordering information

ACE51255R XX + H





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### Notes

ACE does not assume any responsibility for use as critical components in life support devices or systems without the express written approval of the president and general counsel of ACE Technology Co., LTD. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) 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.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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