



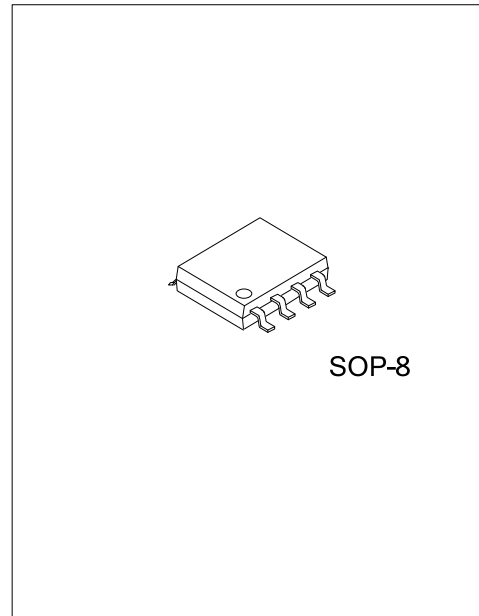
# LR18115

## LINEAR INTEGRATED CIRCUIT

### 1.6X LINEAR FAN DRIVER WITH $V_{OUT}$ FULLY ON CONTROL

#### DESCRIPTION

The UTC LR18115 is a low output resistance 1.6X positive voltage linear fan driver with very low dropout voltage at up to 500mA. The UTC LR18115 consists of an error amplifier, output stage, voltage divider, over temperature protection, current limiting scheme and Fully Control logic.  $V_{OUT}$  voltage follows the 1.6 times of  $V_{SET}$  voltage until it reaches  $V_{IN}$  voltage. The  $V_{SET}$  voltage must be larger than 1V to guarantee  $V_{OUT}$  1.6 times of  $V_{SET}$ . When given low,  $V_{OUT}$  can be fully turned on by  $\overline{FON}$  pin. Good regulation over variation in line, load and temperature is also provided by UTC LR18115.



#### FEATURES

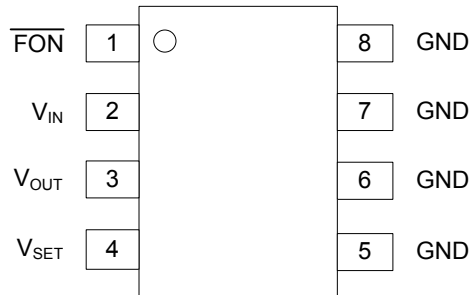
- \*  $V_{OUT}$  Follows 1.6 Times of  $V_{SET}$
- \* 0.3Ω Output Resistance @ 0.5A
- \* Over Temperature Protection
- \* Current Limiting Protection
- \*  $\overline{FON}$  Pin to Turn  $V_{OUT}$  Fully On

#### ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
LR18115L-S08-R	LR18115G-S08-R	SOP-8	Tape Reel
LR18115L-S08-T	LR18115G-S08-T	SOP-8	Tube

<p>LR18115L-S08-R</p> <p>(1) Packing Type (2) Package Type (3) Lead Free</p>	<p>(1) R: Tape Reel, T: Tube (2) S08: SOP-8 (3) G: Halogen Free, L: Lead Free</p>
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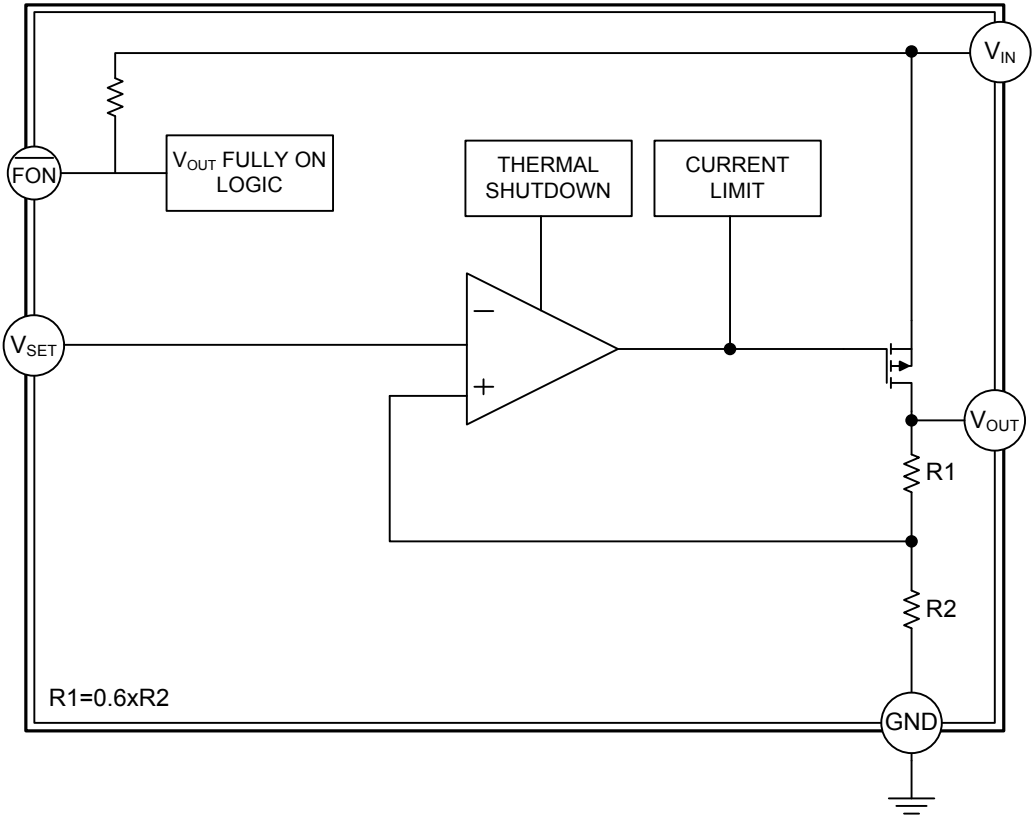
### ■ PIN CONFIGURATION



### ■ PIN DESCRIPTION

PIN NO.	NAME	DESCRIPTION
1	$\overline{\text{FON}}$	$\overline{\text{FON}}$ Input. Pulling the regulator fully on when this pin below 0.4V. Internally pulled high.
2	$V_{\text{IN}}$	Supply Input.
3	$V_{\text{OUT}}$	This pin is output voltage of regulator. Its voltage is 1.6 times of $V_{\text{SET}}$ .
4	$V_{\text{SET}}$	This pin sets output voltage. Its voltage must be larger than 1V to guarantee $V_{\text{OUT}}$ 1.6 times of $V_{\text{SET}}$ .
5~8	GND	Common Ground. Use all four pins on SOP-8 device for heat sinking.

■ BLOCK DIAGRAM



## ■ ABSOLUTE MAXIMUM RATING (unless otherwise specified )

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Input Voltage	$V_{IN}$	-0.3 ~ +7	V
FON Input Voltage	$V_{FON}$	0 ~ 7	V
Power Dissipation	$P_D$	Internally Limited	
Junction Temperature	$T_J$	+150	°C
Operation Temperature	$T_{OPR}$	-40~+85	°C
Storage Temperature	$T_{STG}$	-65~+150	°C

Note: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.  
Absolute maximum ratings are stress ratings only and functional device operation is not implied.

## ■ THERMAL DATA

PARAMETER	SYMBOL	RATING	UNIT
Junction to Ambient	$\theta_{JA}$	156	°C/W
Junction to Case	$\theta_{JC}$	39	°C/W

## ■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS
Supply Voltage	$V_{CC}$	4.5		6	V
Operating Temperature	$T_A$	-40		85	°C

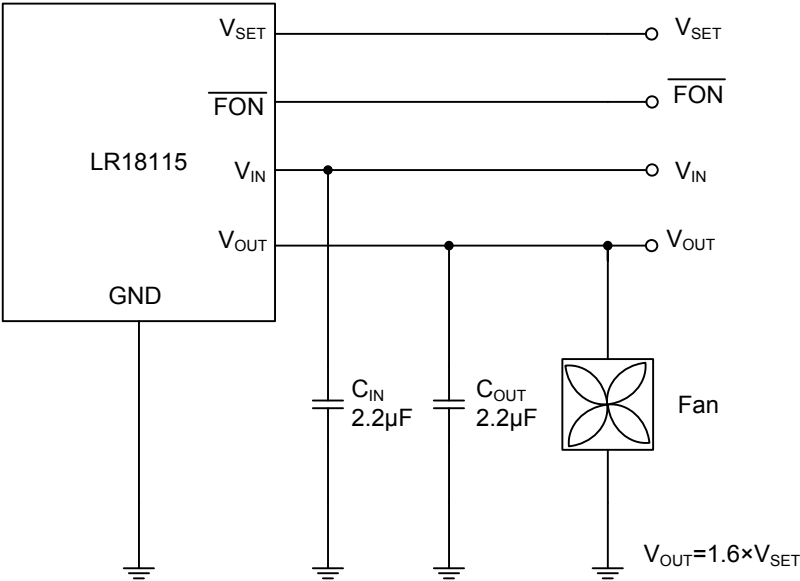
## ■ ELECTRICAL CHARACTERISTICS

( $V_{SET}=2V$ ,  $V_{IN}=5V$ ,  $I_{OUT}=0.5A$ ,  $C_{IN}=2.2\mu F$ ,  $C_{OUT}=2.2\mu F$ ,  $T_A=T_J=25^\circ C$ , unless otherwise specified )(Note)

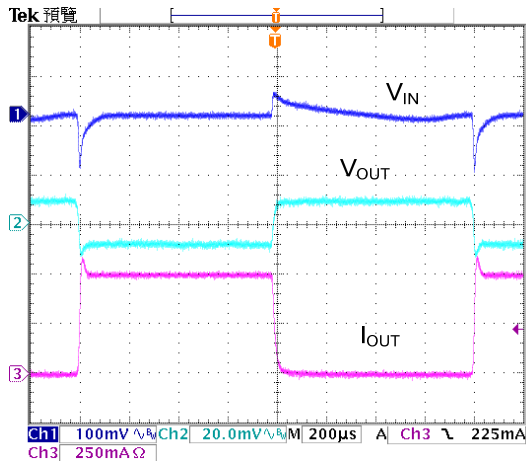
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
<b><math>V_{IN}</math></b>						
Supply Voltage	$V_{CC}$		4.5		6	V
Quiescent Current	$I_Q$	$FON=0V$ , $V_{OUT}=5V$			3	mA
<b><math>V_{OUT}</math></b>						
Output Voltage/ $V_{SET}$ Voltage	$\frac{V_{OUT}}{V_{SET}}$	$V_{IN}=6V$ , $V_{SET}=1V\sim 3.3V$	1.552	1.6	1.648	V/V
Line Regulation	$\frac{\Delta V_{OUT}}{V_{OUT}}$	$V_{IN}=4.5V$ to 6V		0.2	0.5	%
Load Regulation	$\frac{\Delta V_{OUT}}{V_{OUT}}$	$10mA \leq I_{OUT} \leq 0.5A$		0.2	0.8	%
Output Resistance	$R_{OUT}$	$I_{OUT}=0.5A$ , $V_{SET}=3.4V$		0.2	0.3	$\Omega$
Current Limit	$I_{LIMLT}$	$V_{OUT}=0V$		1		A
<b><math>V_{SET}</math></b>						
Minimum $V_{SET}$ Voltage	$V_{SET(MIN)}$			1		V
$V_{SET}$ pin Current	$I_{SET}$			80	200	nA
<b>FON</b>						
$\overline{FON}$ Voltage	$V_{FON}$	High	1.6			V
		Low			0.4	V
$\overline{FON}$ pin Bias Current	$I_{FON}$	$\overline{FON}=0V$		1.5	10	$\mu A$
<b>OVER TEMPERATURE PROTECTION</b>						
Over Temperature Shutdown	OTS			150		°C
Over Temperature Hysteresis	OTH			25		°C

Note: Low duty pulse techniques are used during test to maintain junction temperature as close to ambient as possible.

■ TYPICAL APPLICATION CIRCUIT



## ■ TYPICAL CHARACTERISTICS



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