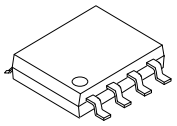
LR18115 **LINEAR INTEGRATED CIRCUIT**

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



SOP-8

■ 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
LR18115G-S08-R	SOP-8	Tape Reel

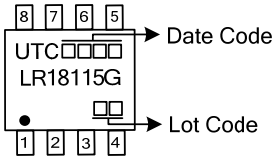
LR18115G-S08-R

(1)Packing Type — (1) R: Tape Reel

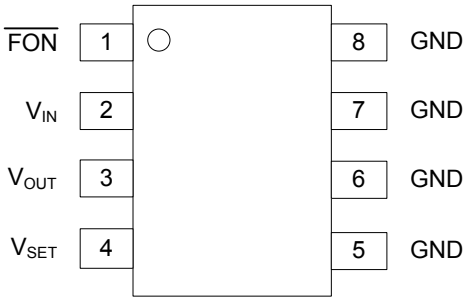
(2)Package Type — (2) S08: SOP-8

(3)Green Package — (3) G: Halogen Free and Lead Free

■ MARKING



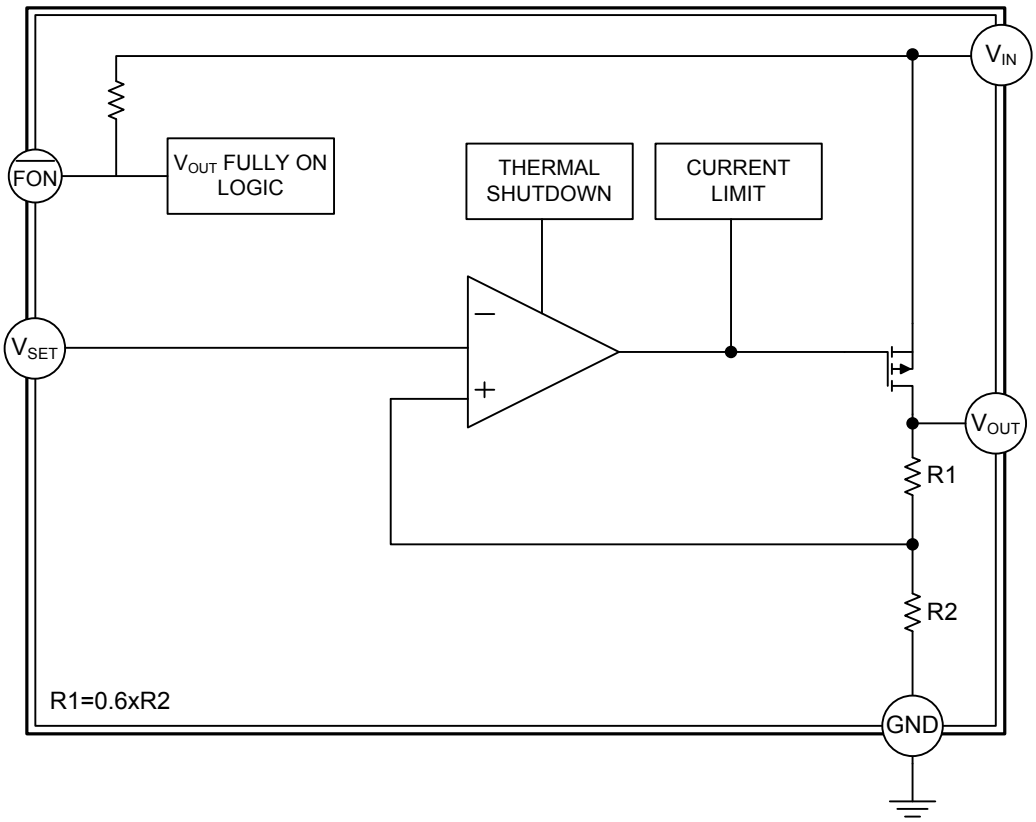
■ PIN CONFIGURATION



■ PIN DESCRIPTION

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

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Input Voltage	V_{IN}	-0.3 ~ +7	V
$\overline{FON}$ Input Voltage	$V_{\overline{FON}}$	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 RESISTANCES CHARACTERISTICS

PARAMETER	SYMBOL	RATING	UNIT
Junction to Ambient	θ_{JA}	156	°C/W
Junction to Case	θ_{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

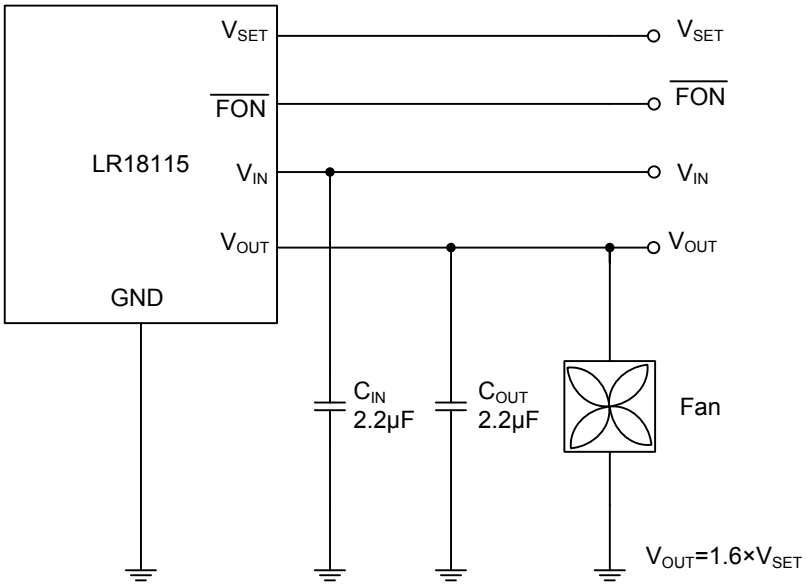
■ ELECTRICAL CHARACTERISTICS

(V_{SET}=2V, V_{IN}=5V, I_{OUT}=0.5A, C_{IN}=2.2μF, C_{OUT}=2.2μF, T_A=T_J=25°C, unless otherwise specified)(Note)

PARAMETER	SYMBOL	CONDITIONS		MIN	TYP	MAX	UNIT
V_{IN}							
Supply Voltage	V_{CC}			4.5		6	V
Quiescent Current	I_Q	$\overline{FON}$=0V , V_{OUT}=5V				3	mA
V_{OUT}							
Output Voltage/V_{SET} Voltage	$\frac{V_{OUT}}{V_{SET}}$	V_{IN}=6V,V_{SET}=1V~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≤I_{OUT}≤0.5A			0.2	0.8	%
Output Resistance	R_{OUT}	I_{OUT}=0.5A, V_{SET}=3.4V			0.2	0.3	Ω
Current Limit	I_{LIMLT}	V_{OUT}=0V			1		A
V_{SET}							
Minimum V_{SET} Voltage	$V_{SET(MIN)}$				1		V
V_{SET}pin Current	I_{SET}				80	200	nA
$\overline{FON}$							
$\overline{FON}$ Voltage	$V_{\overline{FON}}$		High	1.6			V
			Low			0.4	V
$\overline{FON}$ pin Bias Current	$I_{\overline{FON}}$	$\overline{FON}$=0V			1.5	10	μA
OVER TEMPERATURE PROTECTION							
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