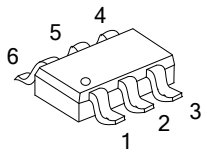
WHITE LED STEP-UP CONVERTER



SOT-26

■ DESCRIPTION

The UTC **L5109** is an inductor-based DC/DC converter designed to drive up to six white LEDs in series or 2 rows of LEDs with 5 for each in parallel for backlight. Only one feedback resistor is needed to control the LED current and obtain required brightness.

■ FEATURES

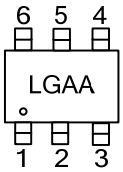
* Inherently Uniform LED Current
* High Efficiency up to 83.5%
* No Need for External Schottky Diode
* Over Output Voltage Protection
* OVP
* 1.2MHz Switching Frequency

■ ORDERING INFORMATION

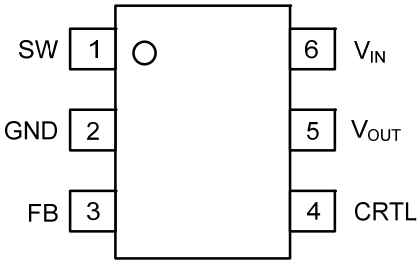
Ordering Number	Package	Packing
L5109G-AG6-R	SOT-26	Tape Reel

L5109G-AG6-R (1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel (2) AG6: SOT-26 (3) G: Halogen Free and Lead Freee

■ MARKING



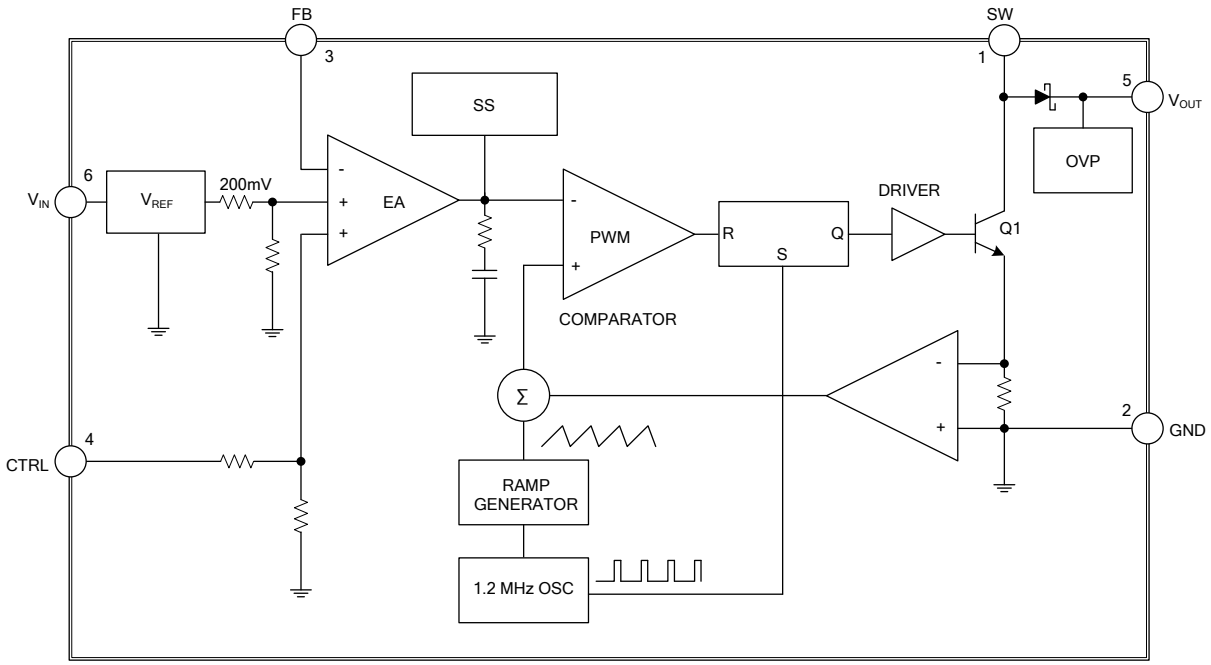
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	SW	Switch Pin.
2	GND	Ground Pin
3	FB	Feedback Voltage.
4	CTRL	Shutdown and Dimming Pin.
5	V_{OUT}	Output Pin.
6	V_{IN}	Input Supply Pin.

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V_{IN}	20	V
SW Voltage	V_{SW}	38	V
FB Voltage	V_{FB}	20	V
CTRL Voltage	V_{CTRL}	20	V
Operating Junction Temperature	T_{OPR}	+150	°C
Storage Temperature Range	T_{STG}	-65 ~ 150	°C

Note: 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	RATINGS	UNIT
Junction to Ambient	θ_{JA}	265	°C/W
Junction to Case	θ_{JC}	60	°C/W

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	RATINGS	UNIT
Operating Temperature Range	T_{OPR}	-40 ~ 85	°C
Input Voltage	V_{IN}	2.5 ~ 16	V
CTRL Voltage	V_{CTRL}	16	V

■ ELECTRICAL CHARACTERISTICS (V_{IN}=3V, V_{CTRL}=3V, T_A=25°C, unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Minimum Operating Voltage	V_{IN}		2.5		16	V
Feedback Voltage	V_{FB}	I_{OUT}=20mA, 4 LEDs, T_A=-40°C~85°C	188	200	212	mV
FB Pin Bias Current	I_{FB}			35	100	nA
Supply Current	I_{CC}	V_{FB}=V_{IN}, No Switching		2.5	3.2	mA
Shutdown Quiescent Current	I_Q	V_{CTRL}=0V	2.0	3.2	5.0	μA
Switching Frequency	f			1.2		MHz
Maximum Duty Cycle	D_{MAX}		90	93		%
Switch Current Limit	I_{LIMIT}	T_A=25°C, D=40%		550		mA
		T_A=25°C, D=80%		550		
Switch VCE Saturation Voltage	V_{CESAT}	I_{SW}=250mA		360		mV
Switch Leakage Current		V_{SW}=5V		0.01	5	μA
CTRL Pin Voltage	V_{CTRL}	High	1.8			V
		Low			0.05	
CTRL Pin Bias Current	I_{CTRL}		40	55	72	μA
		T_A=85°C		50		
		T_A=-40°C		75		
OVP Voltage	V_{OV}			29		V
Schottky Forward Drop	V_{DROP}	I_D=150mA		0.7		V
Schottky Leakage Current		Reverse Voltage V_R=23V		0.1	4	μA
		Reverse Voltage V_R=27V			150	
Soft Start Time	t			300		μS

■ TYPICAL APPLICATION CIRCUIT