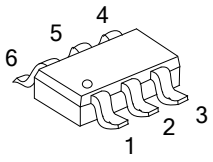
Dual, Low-Noise, 200mA LDO REGULATOR



SOT-26

■ DESCRIPTION

The UTC **LR4XXYY** are dual voltage regulator ICs that have high output voltage accuracy, low dropout, low supply current, and high ripple rejection. Every Channel of UTC **LR4XXYY** series consists of a voltage reference unit and over temperature protection, simultaneity; also consists of an error amplifier, a current limit circuit, resistors for setting output voltage, and a chip enable circuit, respectively. The EN1 and EN2 pins control each output respectively, When both outputs shutdown simultaneously, the chip will be turn off and consumes nearly zero operation current which is suitable for battery-power devices.

The load transient response and line transient response of the UTC **LR4XXYY** Series are excellent, so these ICs are suitable for hand-held communication equipment power supply.

■ FEATURES

* 200mA Guaranteed Output Current(Each LDO)
* Dual Shutdown Pins Control Each Output
* 120mV Dropout at 100mA Load
* Current Limiting Protection
* Thermal Shutdown Protection
* Excellent Line/Load Transient
* RoHS Compliant and 100% Lead (Pb)-Free

■ ORDERING INFORMATION

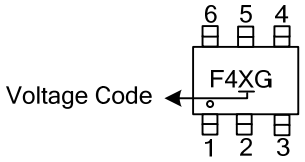
Ordering Number	Package	Packing
LR4XXYYG-AG6-R	SC59-6	Tape Reel

Note: XXYY: Output Voltage, refer to Marking Information.

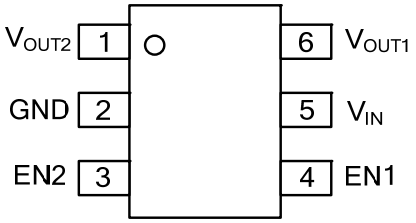
LR4XXYYG-AG6-R

(1) Packing Type	(1) R: Tape Reel
(2) Package Type	(2) AG6: SOT-26
(3) Green Package	(3) G: Halogen Free and Lead Free
(4)Voltage Code at V_{OUTY}	(4) YY: refer to Marking Information
(5)Voltage Code at V_{OUTX}	(5) XX: refer to Marking Information

■ MARKING INFORMATIONS

PACKAGE	Code	VOLTAGE CODE		MARKING
		XX	YY	
SOT-26	A	28: 2.8V	28: 2.8V	
	B	30: 3.0V	30: 3.0V	
	C	12: 1.2V	18: 1.8V	
	D	18: 1.8V	28: 2.8V	
	E	18: 1.8V	33: 3.3V	
	F	33: 3.3V	18: 1.8V	

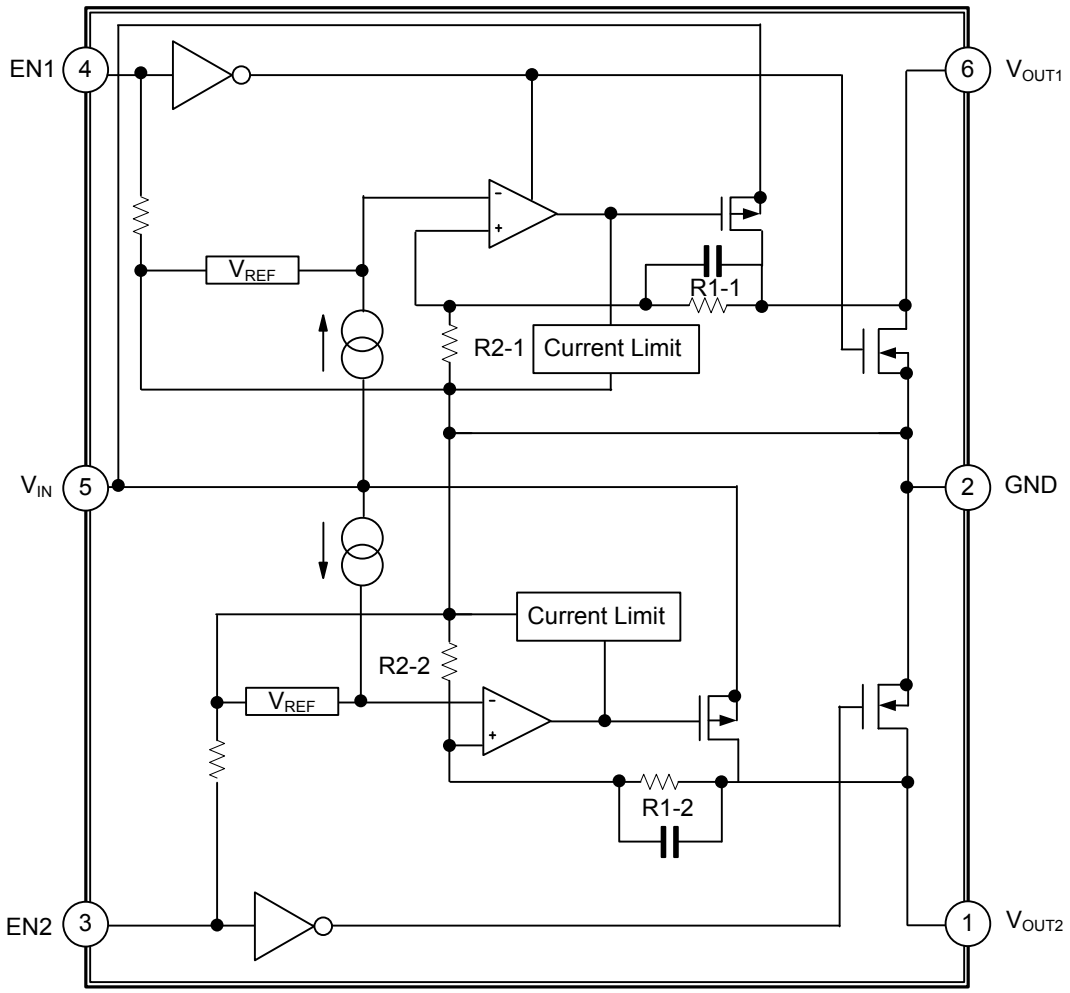
■ PIN CONFIGURATIONS



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	V_{OUT2}	Channel 2's voltage output
2	GND	Ground
3	EN2	Channel 2's output enable control Pin
4	EN1	Channel 1's output enable control Pin
5	V_{IN}	Voltage Input pin
6	V_{OUT1}	Channel 1's voltage output

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS (Note 1)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Input Voltage(Operating)	V_{IN}	2.5 ~ 5.5	V
Supply Input Voltage(Survival)		-0.3 ~ +6.5	
Enable Input Voltage	V_{EN}	0 ~ 5.5	V
Lead Temperature (Soldering, 10 sec.)		+260	°C
ESD Rating (Note 2)		2	kV
Junction Temperature	T_J	-40 ~ +125	°C
Storage Temperature Range	T_{STG}	-65 ~ +150	°C
Operation Temperature Range	T_{OPR}	-40 ~ +85	°C

■ ELECTRICAL CHARACTERISTICS

(V_{IN} = V_{OUT}+0.5V or 2.5V, C_{IN} = C_{OUT} = 2.2μF, EN1=EN2=V_{IN}, T_A= 25°C, for each LDO unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage Accuracy (Load Regulation)	ΔV_{OUT}	I_{OUT}=1mA to 200mA	-2		+2	%
Maximum Output Current	I_{MAX}	Continous	200			mA
Current Limit	I_{LIM}	R_{LOAD}=1Ω	500		1000	mA
Quiescent Current	I_G	No Load		165	260	μA
		I_{OUT}=100mA(Both LDOs)		165	260	μA
Dropout Voltage(Note3)	V_{DROP}	I_{OUT}＝1mA		20		mV
		I_{OUT}＝100mA		120		mV
		I_{OUT}＝200mA		255		mV
Line Regulation	ΔV_{LINE}	V_{IN}=(Vout+0.5V or 2.5V) to 5.5V I_{OUT}=1mA	-0.2		+0.2	%/V
En Input High Threshold	V_{IH}	V_{IN}＝2.5V to 5.5V	1.6			V
En Input Low Threshold	V_{IL}	V_{IN}＝2.5V to 5.5V			0.4	V
En Input Bias Current	I_{SD}	EN=GND or V_{IN}			100	nA
Shutdown Supply Current	I_{GSD}	EN1＝EN2＝GND		0.01	2	μA
Thermal Shutdown Temperature	T_{SD}			140		°C
Thermal Shutdown Hysteresis	ΔT_{SD}			10		°C
Output Voltage Noise	e_{NO}	10~100kHz，C_{OUT}=4.7μF， I_{LOAD}=1mA		124		μV_{RMS}
Output Voltage AC PSRR	PSRR	100Hz，C_{OUT}＝4.7μF I_{LOAD}＝100mA		62		dB

Notes：1. Limits beyond which damage to the device may occur is indicated by absolute maximum ratings. Conditions for which the device is intended to be functional is indicated by operating ratings, but specific performance` limits isn't be guaranteed. Only for the test conditions listed the guaranteed specifications can be applied. When the device is not operated under the listed test conditions some performance characteristics may degrade.

2. Which discharged through a 1.5kΩ resistor into each pin is a 100pF capacitor in the human body model.

3. The dropout voltage is defined as V_{IN} -V_{OUT}, which is measured when V_{OUT} is $V_{OUT(NORMAL)}$ − 100mV.

■ TEST CIRCUITS

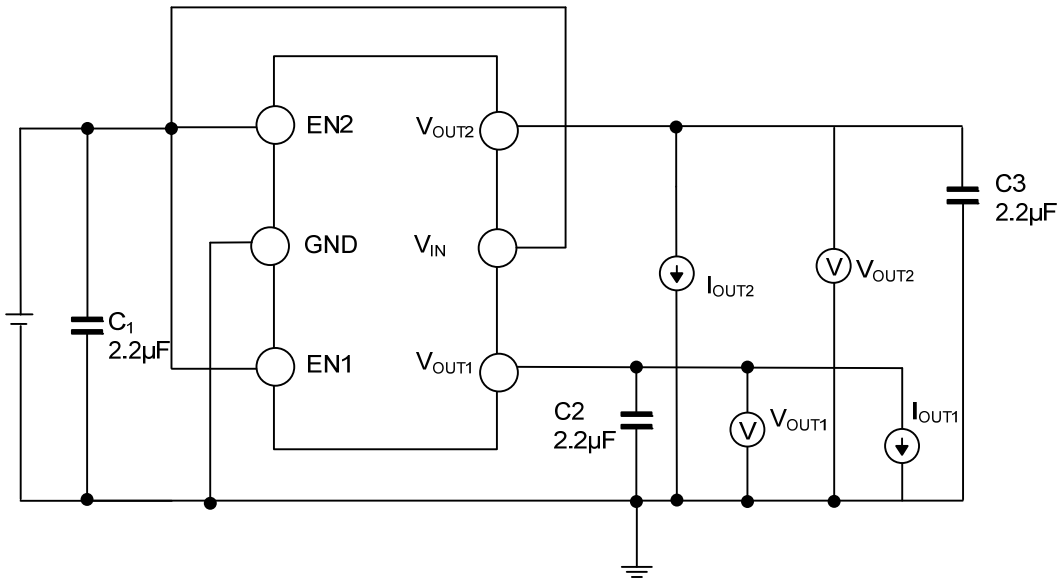


Fig.1 Standard Test Circuit

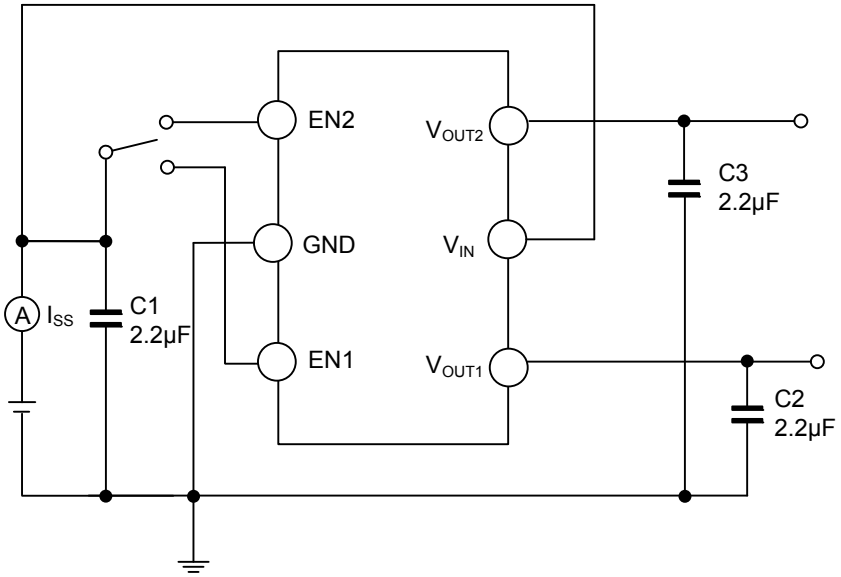


Fig.2 Supply Current Test Circuit

■ TEST CIRCUITS(Cont.)

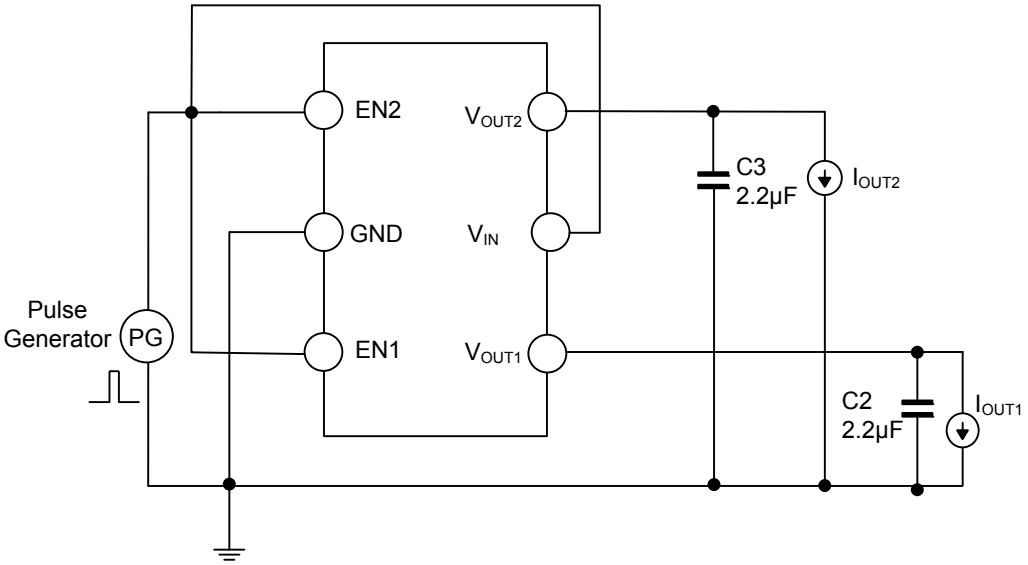


Fig.3 Ripple Rejection, Line Transient Response Test Circuit

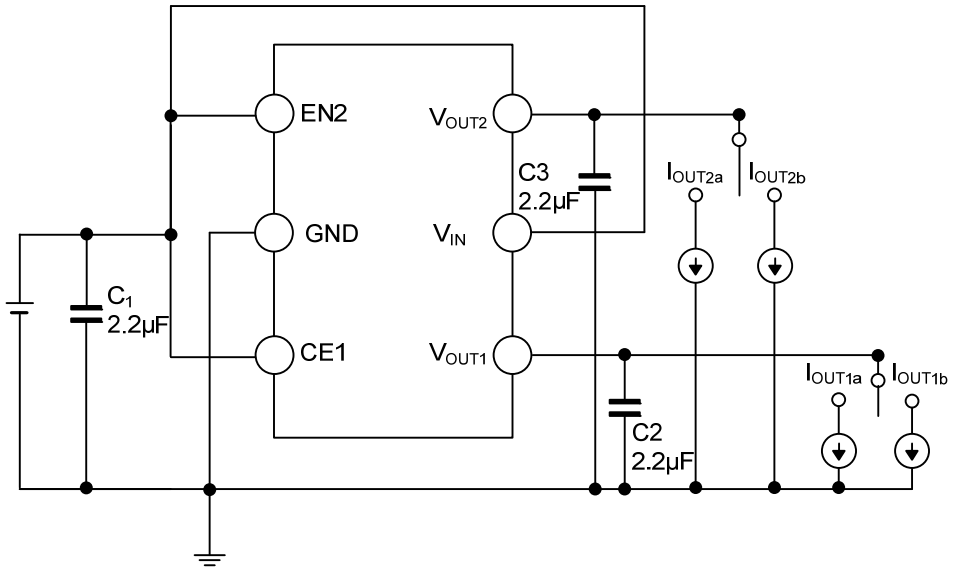


Fig.4 Load Transient Response Test Circuit

■ TYPICAL APPLICATION CIRCUIT