

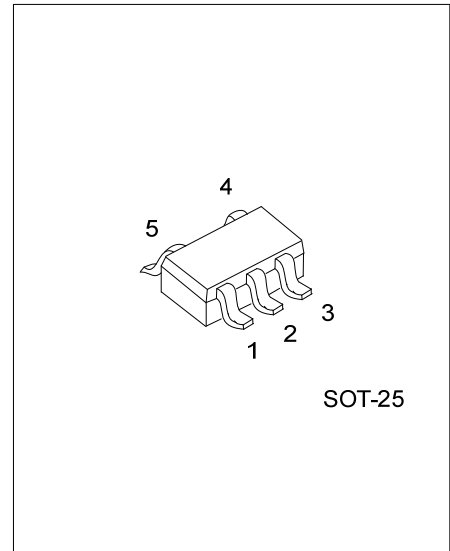


UR6222

Advance

CMOS IC

BUILT-IN INRUSH CURRENT PROTECTION, 700mA HIGH SPEED LDO VOLTAGE REGULATOR



DESCRIPTION

The UR6222 series is a high speed LDO regulator that features high accurate, low noise, high ripple rejection, low dropout and low power consumption. The series consists of a voltage reference, an error amplifier, a driver transistor, a current limiter, a phase compensation circuit, a thermal shutdown circuit and an inrush current protection circuit.

The CE function enables the circuit to be in stand-by mode by inputting low level signal. In the stand-by mode, the series enables the electric charge at the output capacitor CL to be discharged via the internal switch, and as a result the VOUT pin quickly returns to the VSS level. The output stabilization capacitor CL is also compatible with low ESR ceramic capacitors.

The output voltage is selectable in 0.05V increments within the range of 1.2V to 4.0V which fixed by laser trimming technologies. The over current protection circuit and the thermal shutdown circuit are built-in. These two protection circuits will operate when the output current reaches current limit level or the junction temperature reaches temperature limit level.

APPLICATIONS

- * Digital still cameras
- * Camera modules
- * IC recorders
- * Bluetooth
- * Wireless LAN
- * Cell phone

FEATURES

- * Maximum Output Current : 700mA
- * Stand-by Current: 0.1µA (Typ.)
- * Low Dropout Voltage: 0.1V (Typ.) (IOUT = 300mA)
- * Excellent Line Regulation: 0.01%/V (Typ.)
- * High Ripple Rejection: 65 dB (Typ.) (f = 1kHz)
- * Output Voltages: 1.2~4.0V(Accuracy ± 2%)
0.05V increments

ORDERING INFORMATION

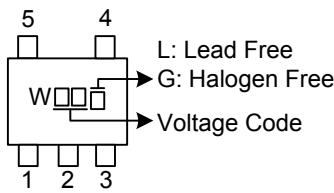
Ordering Number		Package	Pin Assignment					Packing
Lead Free	Halogen Free		1	2	3	4	5	
UR6222L-xx-AF5-R	UR6222G-xx-AF5-R	SOT-25	I	G	C	N	O	Tape Reel

Notes: 1. xx: Output Voltage, Refer to Marking Information.

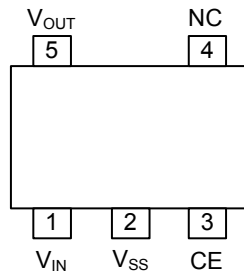
2. Pin Assignment: I: VIN G: VSS C: CE/CE N: No Connection O: VOUT

<p>UR6222G-xx-AF5-R</p> <p>(1)Packing Type (2)Package Type (3)Output Voltage Code (4)Green Package</p>	<p>(1) R: Tape Reel (2) AF5: SOT-25 (3) xx: refer to Marking Information (4) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOT-25	12: 1.2V	 <p>L: Lead Free G: Halogen Free Voltage Code</p>
	15: 1.5V	
	18: 1.8V	
	20: 2.0V	
	25: 2.5V	
	28: 2.8V	
	30: 3.0V	
	33: 3.3V	
40: 4.0V		

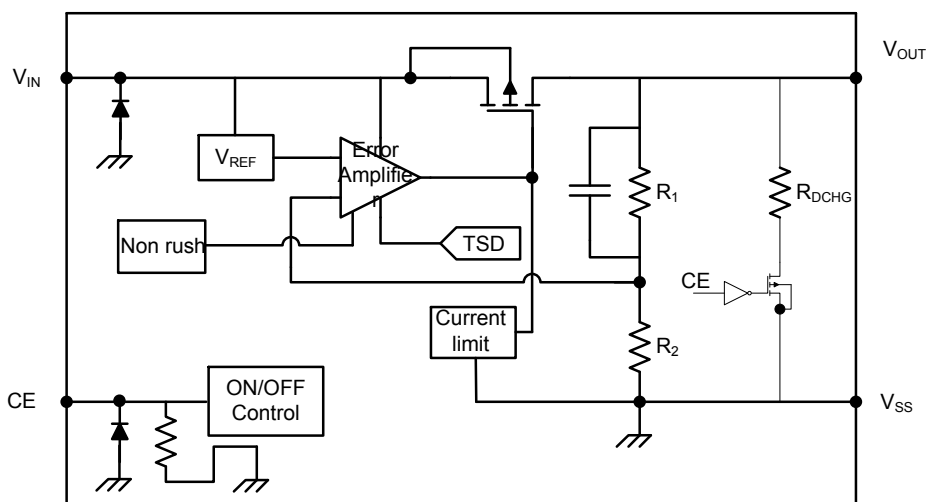
PIN CONFIGURATION



PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	V_{IN}	Power Input Pin
2	V_{SS}	Ground Pin
3	CE	ON/OFF Control Pin
4	NC	No Connection
5	V_{OUT}	Output Pin

BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V_{IN}	6.0	V
Input Voltage	V_{CE}	6.0	V
Output Voltage	V_{OUT}	$V_{SS}-0.3 \sim V_{IN}+0.3$	V
Output Current (Note 2)	I_{OUT}	700	mA
Power Dissipation	SOT-25 P_D	250	mW
Junction Temperature	T_J	+125	°C
Operating Temperature	T_{OPR}	-40 ~ +85	°C
Storage Temperature	T_{STG}	-55 ~ +125	°C

Notes: 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.

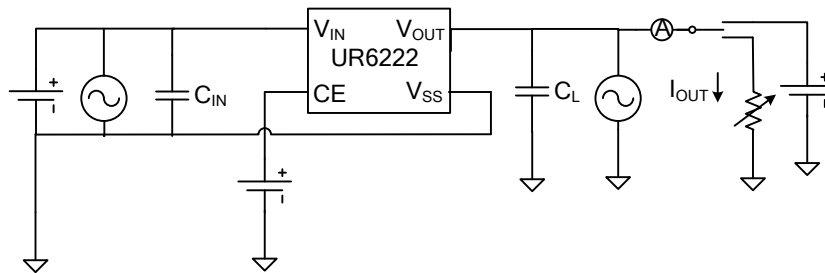
2. $I_{OUT} \leq P_D / (V_{IN}-V_{OUT})$

■ ELECTRICAL CHARACTERISTICS

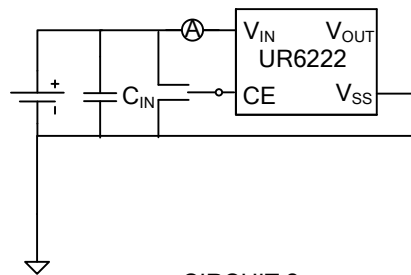
($T_{OPR}=25^{\circ}\text{C}$, unless otherwise stated regarding input voltage conditions, $V_{IN}=V_{OUT(T)}+1.0\text{V}$, $C_{in}=1\mu\text{F}$, $C_L=2.2\mu\text{F}$)

PARAMETER	SYMBOL	CIRCUIT	CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	$V_{OUT(E)}$	1	$V_{OUT(T)}$, $V_{CE}=V_{IN}$, $I_{OUT}=10\text{mA}$	$V_{OUT(T)} \times 0.98$	$V_{OUT(T)}$	$V_{OUT(T)} \times 1.02$	V
Maximum Output Current	I_{OUT_MAX}	1	$V_{CE}=V_{IN}$	700			mA
Load Regulation	ΔV_{OUT}	1	$V_{CE}=V_{IN}$, $0.1\text{mA} \leq I_{OUT} \leq 300\text{mA}$		25	60	mV
Dropout Voltage	V_{DIF1}	1	$V_{OUT}=1.8\text{V} @ I_{OUT}=300\text{mA}$		0.15		V
	V_{DIF2}	1	$V_{OUT}=3.3\text{V} @ I_{OUT}=300\text{mA}$		0.1		V
Supply Current	I_{SS}	2	$V_{CE}=V_{IN}$		60	120	μA
Stand-by Current	I_{STB}	2	$V_{CE}=V_{SS}$		0.01	1	μA
Line Regulation	$\Delta V_{OUT} / (\Delta V_{IN} \times V_{OUT})$	1	$V_{OUT(T)}+0.5\text{V} \leq V_{IN} \leq 5.5\text{V}$ $V_{CE}=V_{IN}$, $I_{OUT}=50\text{mA}$		0.01	0.1	%/V
Input Voltage	V_{IN}	1				5.5	V
Power Supply Rejection Ratio	PSRR	3	$V_{OUT(T)}$ $V_{IN}=\{V_{OUT(T)}+1.0\}$ $V_{DC}+0.5\text{Vp-Pac}$ $V_{CE}=V_{OUT(T)}+1.0\text{V}$ $I_{OUT}=30\text{mA}$, $f=1\text{kHz}$		65		dB
Current Limit	I_{LIM}	1	$V_{CE}=V_{IN}$	750	1000		mA
Short Current	I_{SHORT}	1	$V_{CE}=V_{IN}$, $V_{OUT}=V_{SS}$		100		mA
CE High Level Voltage	V_{CEH}	4		1.0			V
CE Low Level Voltage	V_{CEL}	4				0.3	V
CE High Level Current	I_{CEH}	4	$V_{CE}=V_{IN}=5.5\text{V}$	1.0	3.0	9.0	μA
CL Discharge Resistance	R_{DCHG}	1	$V_{IN}=5.5\text{V}$, $V_{OUT}=2.0\text{V}$, $V_{CE}=V_{SS}$		350		Ω
Inrush Current	I_{rush}	5	$V_{IN}=V_{CE}=V_{OUT}+1\text{V}$		250		mA
Thermal Shutdown Detect Temperature	T_{TSD}	1	Junction Temperature		150		°C

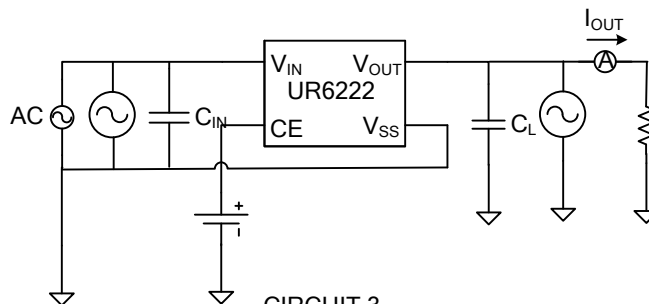
■ TEST CIRCUITS



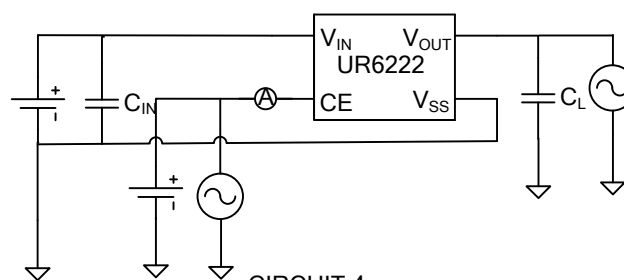
CIRCUIT 1



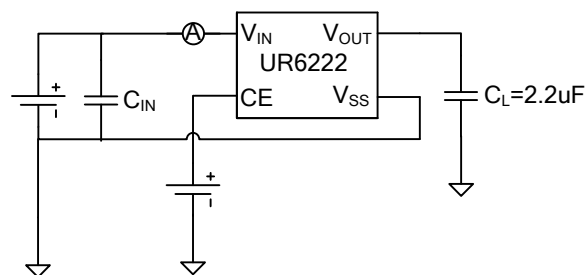
CIRCUIT 2



CIRCUIT 3

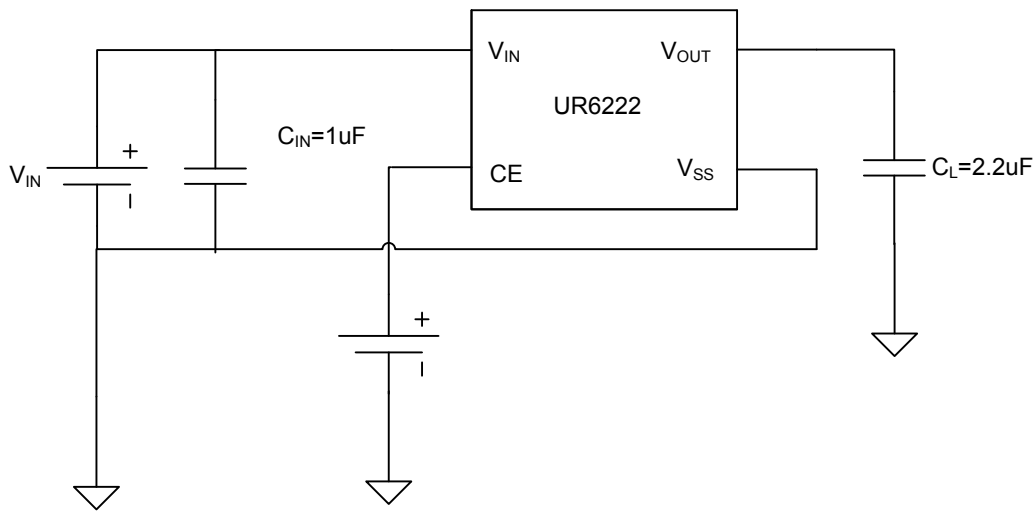


CIRCUIT 4



CIRCUIT 5

■ TYPICAL APPLICATION



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