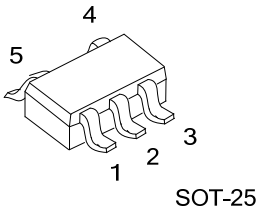
LR1122D

CMOS IC

LOW NOISE 200mA LDO REGULATOR



SOT-25

■ DESCRIPTION

The UTC **LR1122D** is a typical LDO (linear regulator) with the features of high output voltage accuracy, low supply current, low ON-resistance, and high ripple rejection.

During operation of the UTC **LR1122D**, the dropout voltage is very low and the response of line transient and load transient are very well.

Internally, there're many functions of UTC **LR1122D** which can be seen in the block figure. There are a voltage reference unit, an error amplifier, resistor-net for voltage setting, a current limit circuit, and a chip enable circuit in each UTC **LR1122D**.

The UTC **LR1122D** can be used as an ideal of the power supply for hand-held communication equipment, such as: power source for portable communication equipment, power source for electrical appliances, for example, cameras, VCRs and camcorders and power source for battery-powered equipment.

■ FEATURES

* Ultra Supply Current: 18μA (Typ.)
* Standby Mode: 0.1μA (Typ.)
* Very Low Dropout Voltage: 0.13V (Typ.) @I_{OUT}=150mA, V_{OUT}=2.85V
* Ripple Rejection: 75dB (Typ.) @f=1kHz,V_{OUT}=2.85V
* Temperature-Drift Coefficient of Output Voltage: ±30ppm/°C (Typ.)
* Well Line Regulation: 0.02%/ V (Typ.)
* Output Voltage Accuracy: ±0.8% (Typ.)
* Internal Fold Back Protection Circuit: 40mA (Typ.) @ short mode
* C_{IN}=C_{OUT}=1μF or more (Ceramic capacitors) are recommended to be used with this IC

■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
LR1122DL-xx-AF5-R	LR1122DG-xx-AF5-R	SOT-25	Tape Reel

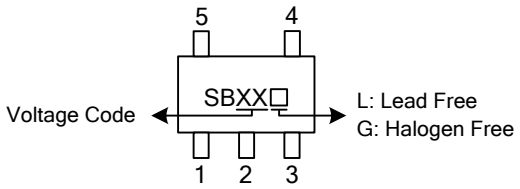
Note: xx: Output Voltage, refer to Marking Information.

LR1122DL-xx-AF5-R
- (1)Packing Type
- (2)Package Type
- (3)Output Voltage Code
- (4)Lead Free
- (5)Designation of Mask Option

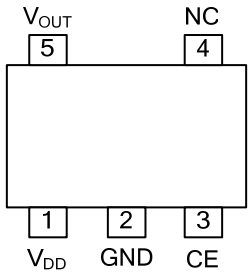
(1) R: Tape Reel
(2) AF5: SOT-25
(3) xx: Refer to Marking Information
(4) G: Halogen Free, L: Lead Free
(5) D: active high, with auto discharge function at OFF state.

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■ MARKING

PACKAGE	VOLTAGE CODE	MARKING
SOT-25	12:1.2V 15:1.5V 16:1.6V 18:1.8V 20:2.0V 25:2.5V 2J:2.85V 30:3.0V 33:3.3V	

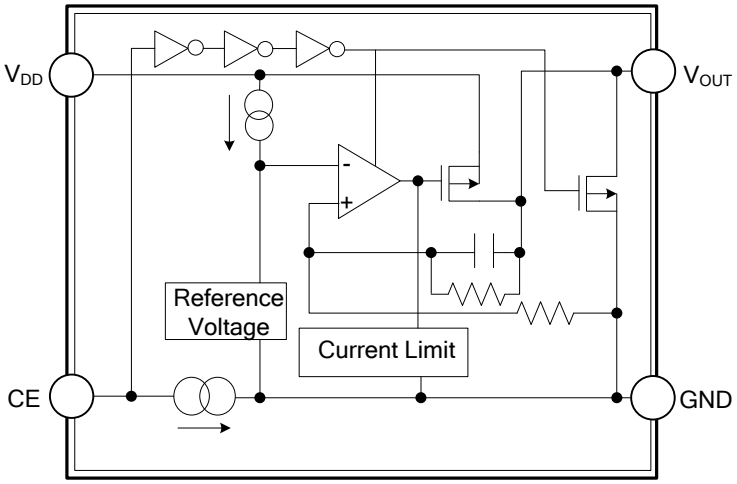
■ PIN CONFIGURATION



■ PIN DESCRIPTIONS

PIN NO.	PIN NAME	DESCRIPTION
1	V_{DD}	Input Pin
2	GND	Ground Pin
3	CE	Chip Enable Pin. Active when this Pin is high.
4	NC	No Connection
5	V_{OUT}	Output Pin

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V_{IN}	6.0	V
Input Voltage(CE Pin)	V_{CE}	6.0	V
Output Voltage	V_{OUT}	-0.3~ V_{IN}+0.3	V
Output Current	I_{OUT}	300	mA
Power Dissipation	P_D	420	mW
Junction Temperature	T_J	+125	°C
Operating Temperature	T_{OPR}	-40~+85	°C
Storage Temperature	T_{STG}	-55~+125	°C

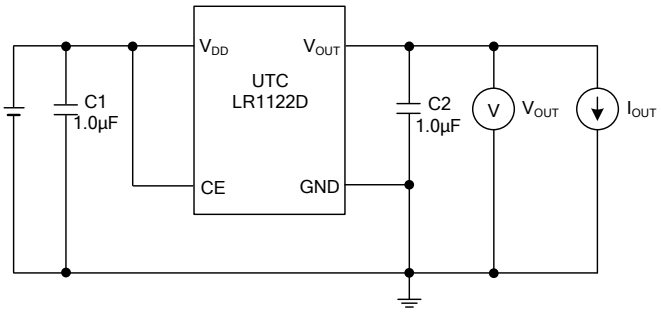
Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ ELECTRICAL CHARACTERISTICS

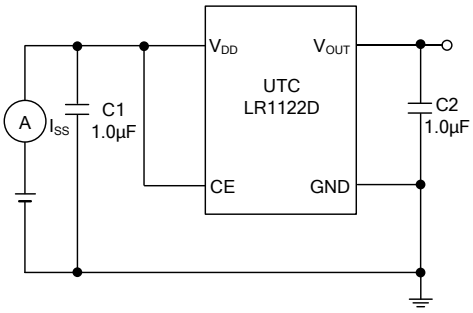
(T_A=25°C, V_{IN}=Set V_{OUT}+1V, I_{OUT}=1mA, C_I =C_O=1μF, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Output Voltage		V_{OUT}	V_{IN} = Set V_{OUT}+1V	V_{OUT} > 2.0V	×0.992		×1.008	V
				V_{OUT} ≤ 2.0V	-16		+16	mV
Input Voltage		V_{IN}					5.0	V
Load Regulation		$\frac{\Delta V_{OUT}}{\Delta I_{OUT}}$	1mA≤I_{OUT}≤150mA			20	40	mV
Output Current		I_{OUT}			200			mA
Supply Current		I_{SS}	I_{OUT}=0A			18	25	μA
Supply Current (Standby)		I_{ST-BY}	V_{CE}=0V			0.1	2	μA
Short Current Limit		I_{LIMIT}	V_{OUT}=0V			40		mA
CE Pull-down Current		I_{PD}				0.3		μA
CE Input Voltage	High	V_{CEH}			1.5			V
	Low	V_{CEL}					0.3	V
Output Noise		eN	B_W=10Hz to 100kHz, I_{OUT} =30mA			30		μVrms
Ripple Rejection		RR	f=1kHz, Ripple 0.2V_{P-P} V_{IN}=Set V_{OUT}+1V, I_{OUT}=30mA (In case that V_{OUT}=2.0V, V_{IN}=3V)			75		dB
Dropout Voltage		V_D	I_{OUT}=150mA	1.2V≤V_{OUT}＜1.5V		0.40	0.50	V
				1.5V≤V_{OUT}＜1.7V		0.24	0.38	
				1.7V≤V_{OUT}＜2.0V		0.21	0.34	
				2.0V≤V_{OUT}＜2.5V		0.17	0.30	
				2.5V≤V_{OUT}＜2.8V		0.14	0.25	
				2.8V≤V_{OUT}＜3.3V		0.13	0.23	
Line Regulation		$\frac{\Delta V_{OUT}}{\Delta V_{IN}}$	Set V_{OUT}+0.5V≤V_{IN}≤5V			0.02	0.10	%/V
Output Voltage Temperature Coefficient		$\frac{\Delta V_{OUT}}{\Delta T}$	-40°C≤T_{OPR}≤85°C			±30		ppm/°C
Low Output Nch Tr. ON Resistance		R_{LOW}	VIN=4.0,VCE=0V			70		Ω

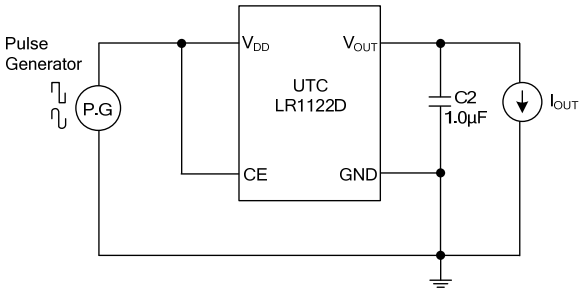
■ TEST CIRCUIT



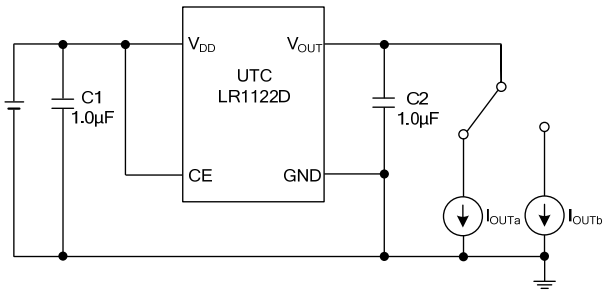
Basic Test Circuit



Test Circuit for Supply Current

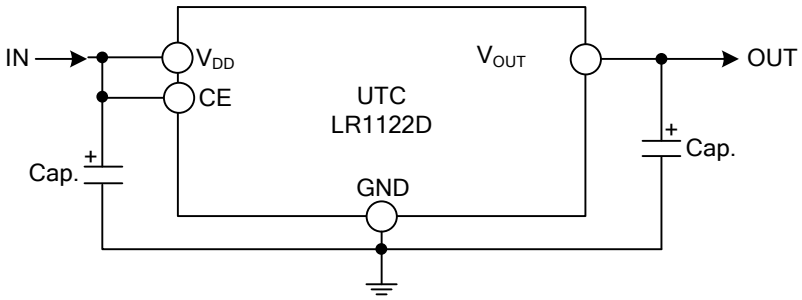


Test Circuit for Ripple Rejection

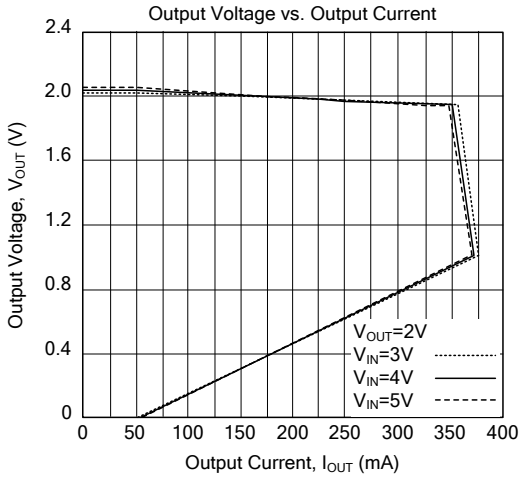


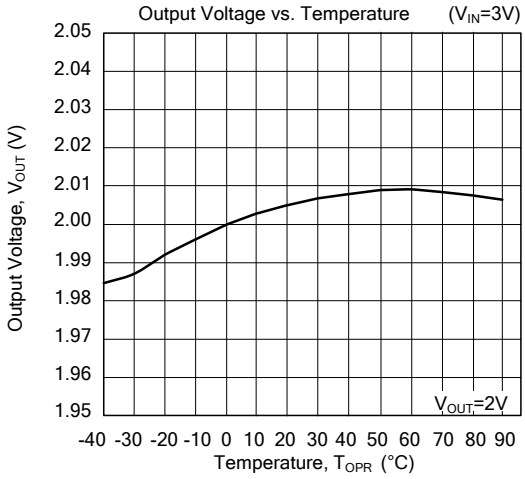
Test Circuit for Load Transient Response

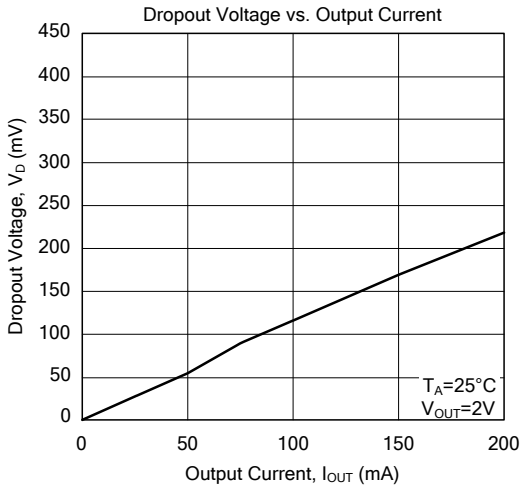
■ TYPICAL APPLICATION CIRCUIT

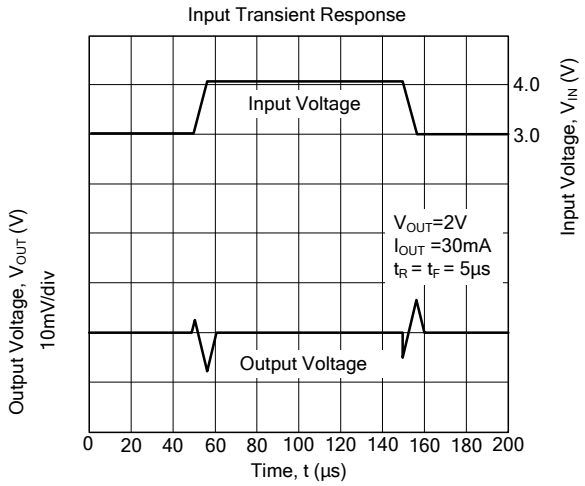


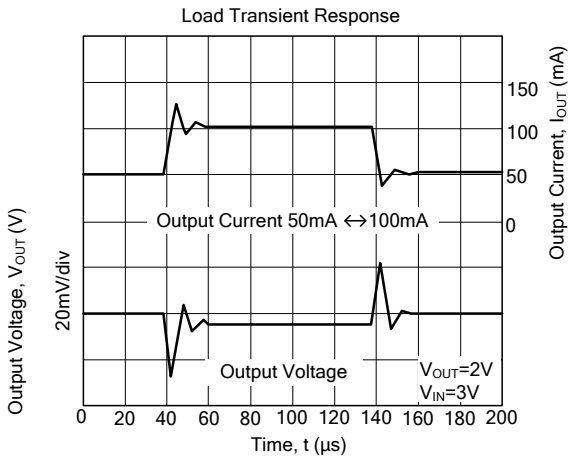
■ TYPICAL CHARACTERISTICS

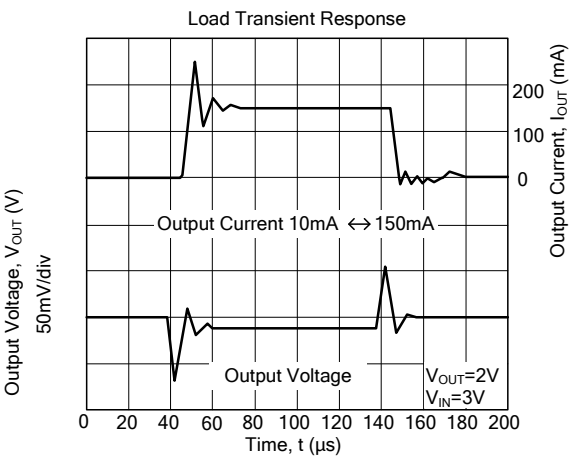




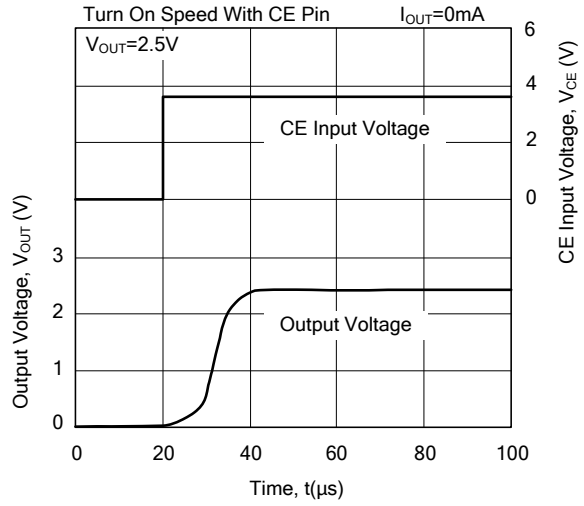


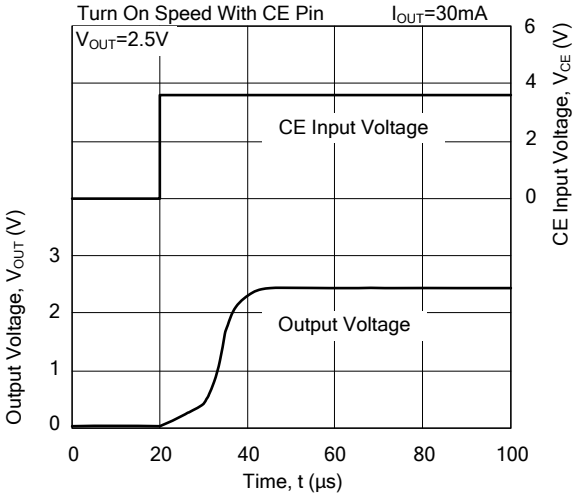


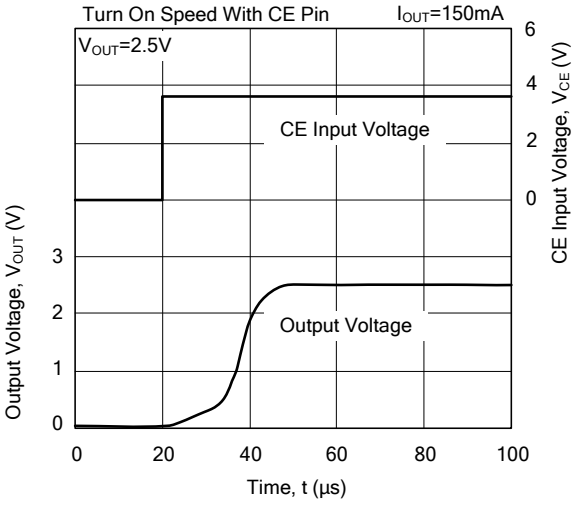


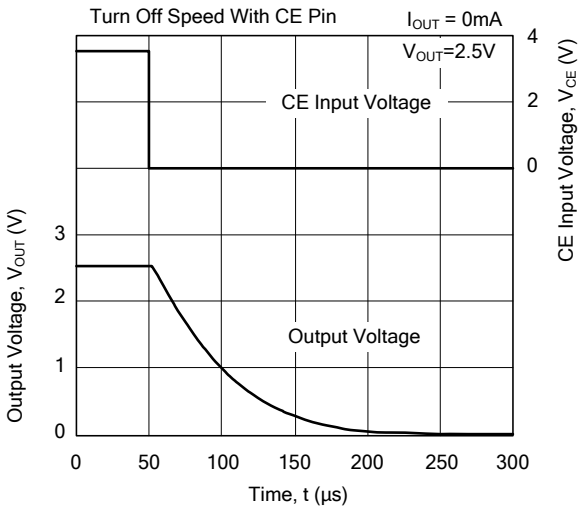


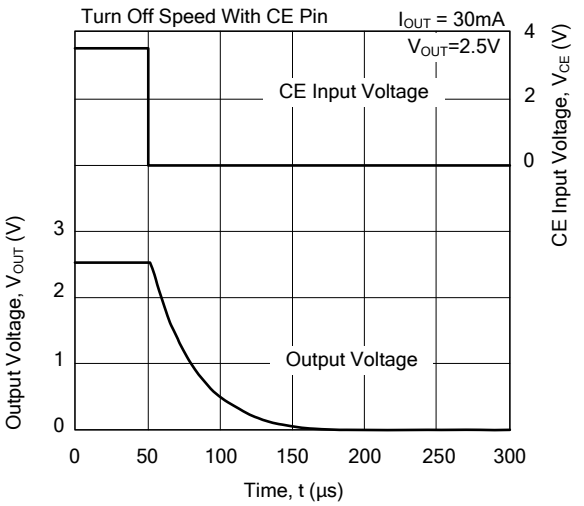
■ TYPICAL CHARACTERISTICS(Cont.)

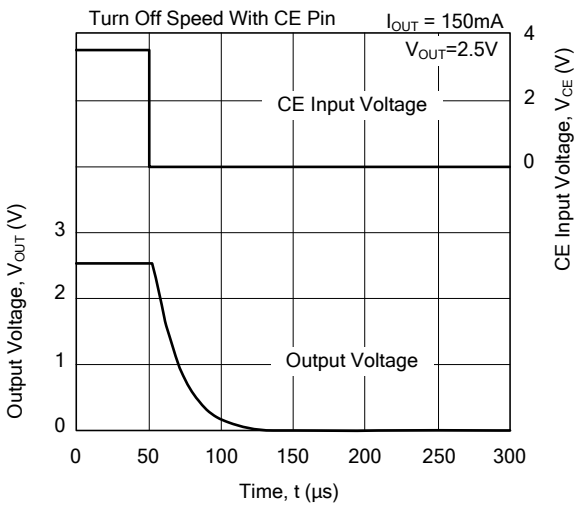












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