



LR18220

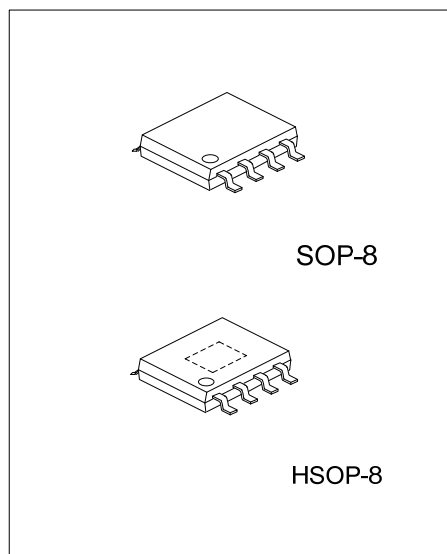
Preliminary

CMOS IC

2A ULTRA LOW DROPOUT LINEAR REGULATOR

DESCRIPTION

The UTC **LR18220** series of high performance ultra-low dropout linear regulators operates from 2.5V to 6V input supply and provides ultra-low dropout voltage, high output current with low ground current. These ultra-low dropout linear regulators respond fast to step changes in load which makes them suitable for low voltage micro-processor applications. The UTC **LR18220** is CMOS-based positive voltage and a very low dropout regulator IC which allows low quiescent current operation independent of output load current. This CMOS process also allows the UTC **LR18220** to operate under extremely low dropout conditions.



FEATURES

- * 400mV Dropout @ 2A, $V_O=2.5V$
- * Compatible with low ESR MLCC as Input/Output Capacitor
- * Good Line and Load Regulation
- * Guaranteed Output Current of 2A
- * Available in SOP-8 Package
- * Over-Temperature/Over-Current Protection

ORDERING INFORMATION

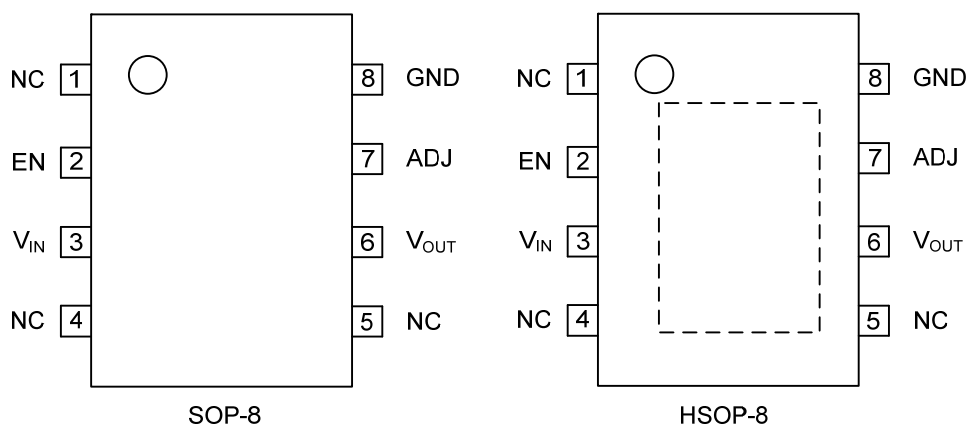
Ordering Number		Package	Packing
Lead Free	Halogen Free		
LR18220L-xx-S08-R	LR18220G-xx-S08-R	SOP-8	Tape Reel
LR18220L-xx-SH2-R	LR18220G-xx-SH2-R	HSOP-8	Tape Reel

LR18220G-xx-S08-R	(1)Packing Type (2)Package Type (3)Output Voltage Code (4)Green Package	(1) R: Tape Reel (2) S08: SOP-8, SH2: HSOP-8 (3) xx: refet to MARKING INFORMATION (4) G: Halogen Free and Lead Free, L: Lead Free
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MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOP-8 HSOP-8	AD: ADJ	

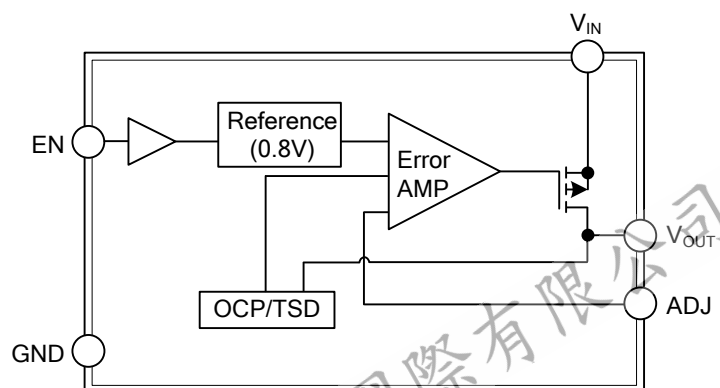
PIN CONFIGURATION



PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	N.C	No connect
2	EN	Chip Enable Pin
3	V _{IN}	Input Supply Voltage Pin.
4	N.C	No connect
5	N.C	No connect
6	V _{OUT}	Voltage Regulator Output Pin
7	ADJ	Feedback Pin
8	GND	Ground Pin

BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Input Supply Voltage (Survival)	V_{IN}	6	V
Enable Input Voltage (Survival)	V_{EN}	6	V
Maximum Output Current	I_{MAX}	2	A
Operating Junction Temperature	T_J	-40 ~ +125	°C
Storage Temperature	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	SOP-8	150	°C/W
	HSOP-8	143	°C/W

■ ELECTRICAL CHARACTERISTICS

(Limits in standard typeface are for $T_J=25^{\circ}\text{C}$, unless otherwise specified.)

(V_{IN} (Note 1) = $V_{O(NOM)} + 1\text{V}$, $I_L=10\text{mA}$, $C_{IN}=10\mu\text{F}$, $C_{OUT}=10\mu\text{F}$, $V_{EN}=V_{IN}-0.3\text{V}$)

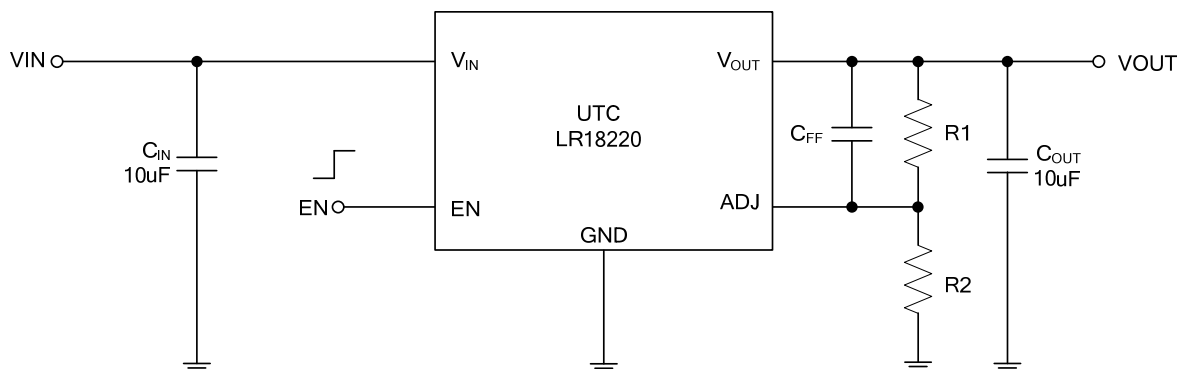
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage Tolerance	V_O	$V_{OUT}+1\text{V}<V_{IN}<5.5\text{V}$	-3	0	3	%
Adjustable Pin Voltage	V_{ADJ}	$2.5\text{V}<V_{IN}<5.5\text{V}$	0.776	0.8	0.824	V
Line Regulation	ΔV_{LINE}	$V_{OUT}+1\text{V}<V_{IN}<5.5\text{V}$		0.15	0.40	V/%
Load Regulation (Note 2)	ΔV_{LOAD}	$10\text{mA}<I_L<2\text{A}$		0.20	0.60	%
Dropout Voltage (Note 3)	V_{DROP}	$I_L=200\text{mA}$		45	65	mV
		$I_L=2\text{A}$		400	600	
Ground Pin Current	I_{GND}	$I_L=200\text{mA}$		0.30	1.0	mA
		$I_L=2\text{A}$		0.30	1.0	
Ground Pin Current	$I_{GND OFF}$	$V_{EN}<0.2\text{V}$		0.5	2	uA
Power Supply Rejection Ratio	PSRR	$f=1\text{kHz}$		55		dB
		$f=1\text{kHz}$, $C_{FF}=1\mu\text{F}$		65		
Current Limit	I_{LIMIT}			4		A
Thermal Shutdown Temperature	T_{SD}			170		°C
Enable threshold	Logic Low	V_{IL}	Output=Low		0.4	V
	Logic High	V_{IH}	Output=High	2.0		V
Enable Input Current	I_{EN}	$V_{EN}=V_{IN}$	-1	0	1	uA

Notes: 1. The minimum operating value for input voltage is equal to either ($V_{OUT,NOM}+V_{DROP}$) or 2.5V, whichever is greater.

2. Regulation is measured at constant junction temperature by using a 10ms current pulse. Devices are tested for load regulation in the load range from 10mA to 2A.

3. Dropout voltage is defined as the minimum input to output differential voltage at which the output drops 2% below the nominal value. Dropout voltage specification applies only to output voltages of 2.5V and above. For output voltages below 2.5V, the dropout voltage is nothing but the input to output differential, since the minimum input voltage is 2.5V.

TYPICAL APPLICATION CIRCUIT



Cff option notes: the capacitance of feed-forward capacitor with range of 10pF to 1uF allows to achieve better PSRR performance when required by the application

$$V_{OUT} = V_{ADJ} \times \left(1 + \frac{R1}{R2}\right) = 0.8 \times \left(1 + \frac{R1}{R2}\right)$$

The recommended R2 is 10KΩ as a typical value.

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