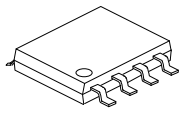
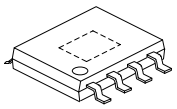
LR18220

CMOS IC

2A ULTRA LOW DROPOUT LINEAR REGULATOR



SOP-8



HSOP-8

■ 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

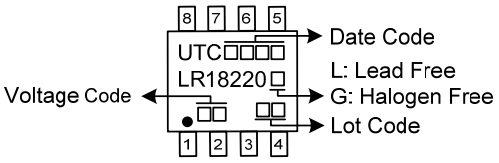
Ordering Number		Package	Packing
Lead Free	Halogen Free		
LR18220L-xx-S08-R	LR18220G-xx-S08-R	SOP-8	Tape Reel
LR18220L-xx-SH2-R	LR18220G-xx-SH2-R	HSOP-8	Tape Reel

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

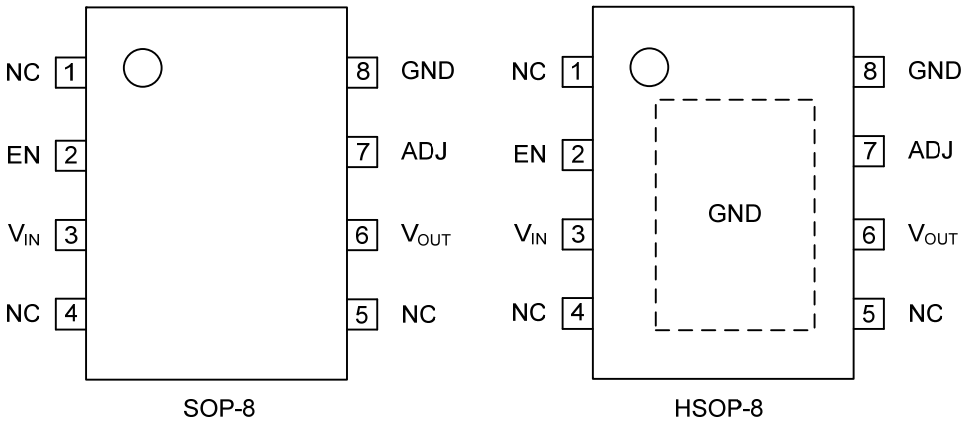
LR18220G-xx-S08-R

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

■ MARKING INFORMATION

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

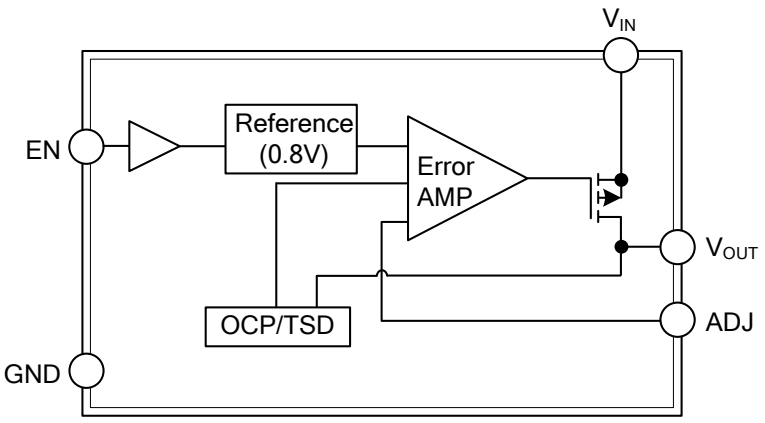
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.		PIN NAME	PIN DESCRIPTION
SOP-8	HSOP-8		
1, 4, 5	1, 4, 5	N.C	No Connect
2	2	EN	Chip Enable Pin
3	3	V_{IN}	Input Supply Voltage Pin.
6	6	V_{OUT}	Voltage Regulator Output Pin
7	7	ADJ	Feedback Pin
8	8	GND	Ground Pin
-	Exposed Pad	GND	Connect exposed pad to GND.

■ 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	θ_{JA}	150	°C/W
	HSOP-8		143	°C/W

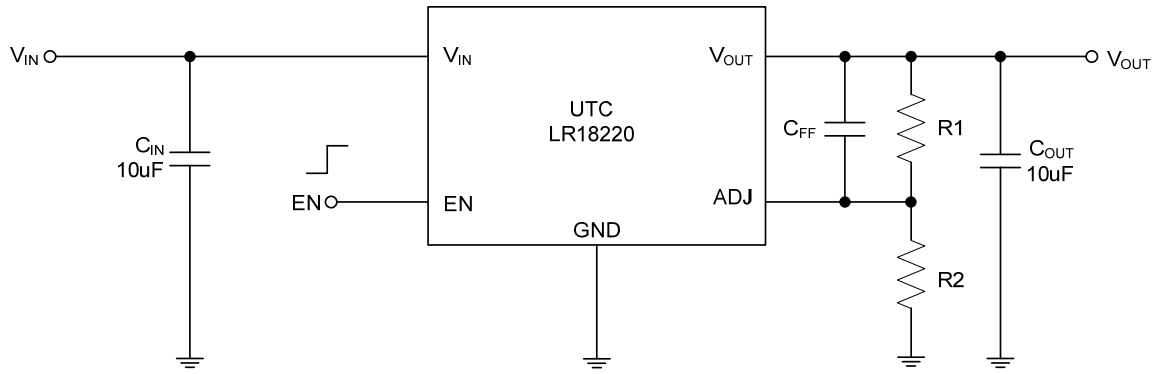
■ ELECTRICAL CHARACTERISTICS

(Limits in standard typeface are for T_J=25°C, unless otherwise specified.)
(V_{IN} (Note 1) =$V_{O\ (NOM)}$ +1V, I_L=10mA, C_{IN}=10uF, C_{OUT}=10uF, V_{EN}=V_{IN}-0.3V)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage Tolerance		V_O	V_{OUT}+1V<V_{IN}<5.5V	-3	0	3	%
Adjustable Pin Voltage		V_{ADJ}	2.5V<V_{IN}<5.5V	0.776	0.8	0.824	V
Line Regulation		ΔV_{LINE}	V_{OUT}+1V<V_{IN}<5.5V		0.15	0.40	%/V
Load Regulation (Note 2)		ΔV_{LOAD}	10mA<I_L<2A		0.20	0.60	%
Dropout Voltage (Note 3)		V_{DROP}	I_L=200mA		45	65	mV
			I_L=2A		400	600	
Ground Pin Current		I_{GND}	I_L=200mA		0.30	1.0	mA
			I_L=2A		0.30	1.0	
Ground Pin Current		$I_{GND\ OFF}$	V_{EN}<0.2V		0.5	2	uA
Power Supply Rejection Ratio		PSRR	f=1kHz		55		dB
			f=1kHz, C_{FF}=1uF		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.