



## L1183A

CMOS IC

### 300mA CMOS LDO

#### DESCRIPTION

The UTC **L1183A** is a COMS positive linear regulator. One of it's feature is the very low quiescent current typical as low as 30 $\mu$ A and its dropout voltage is extremely low with 300mA output current.

The internal circuit includes current fold-back to prevent device failure when the circuit is operated in the bad conditions.

In application, the UTC **L1183A** needs a low noise, regulated supply. For stable operation, the output capacitance value should be 2.2 $\mu$ F or more.

The UTC **L1183A** is an ideal for battery applications, such as instrumentations, portable electronics, wireless devices, cordless phones, PC peripherals, and battery powered widgets.

#### FEATURES

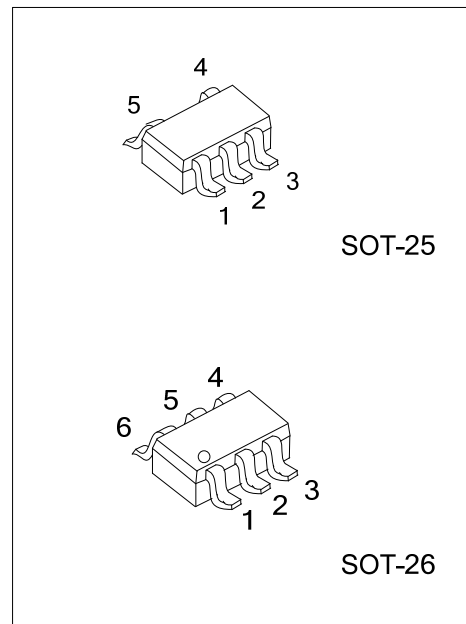
- \* Accurate To Within 1.5%
- \* Quiescent Current: 30 $\mu$ A
- \* With Current Limiting
- \* Internal Short Circuit Current Fold-Back
- \* Has Power-Saving Shutdown Mode
- \* Very Low Temperature Coefficient

#### ORDERING INFORMATION

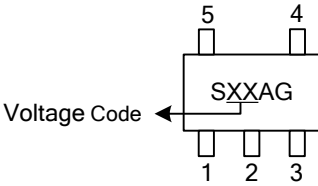
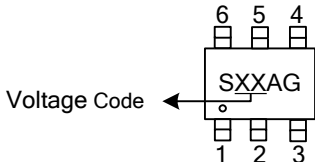
Ordering Number	Package	Packing
L1183AG-xx-AF5-R	SOT-25	Tape Reel
L1183AG-xx-AG6-R	SOT-26	Tape Reel

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

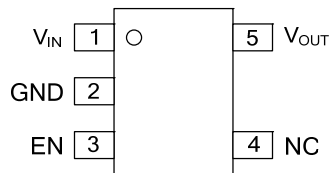
L1183AG-xx-AF5-R	(1) Packing Type	(1) R: Tape Reel
	(2) Package Type	(2) AF5: SOT-25, AG6: SOT-26
	(3) Output Voltage Code	(3) xx: Refer to Marking Information
	(4) Green Package	(4) G: Halogen Free and Lead Free



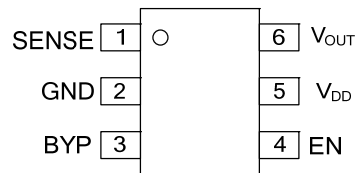
## MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOT-25	12:1.2V 15 :1.5V 18:1.8V 25:2.5V 28 :2.8V	
SOT-26	30: 3.0V 31 :3.1V 33 :3.3V 50:5.0V	

## PIN CONFIGURATION



SOT-25

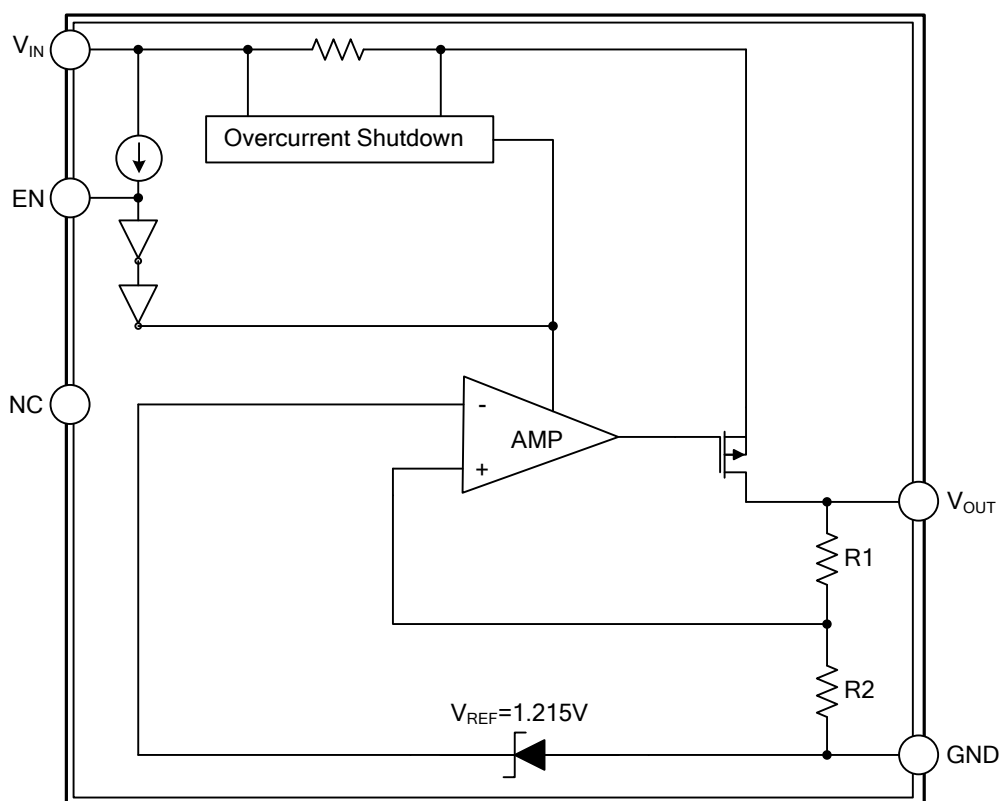


SOT-26

## PIN DESCRIPTION

PACKAGE	PIN NO.	PIN NAME	DESCRIPTION
SOT-25	1	V <sub>IN</sub>	Input for voltage input. A 1μF or greater capacitor should be placed in this pin.
	2	GND	Ground.
	3	EN	Enable pin. Pulling this pin low, can shut down the PMOS pass transistor, and the current consuming can be set less than 1μA.
	4	NC	
	5	V <sub>OUT</sub>	Output voltage pin. The capacitor which connected between this pin and GND should be decoupled with a 2.2μF or a greater value low ESR ceramic capacitor.
SOT-26	1	SENSE	Remote Sense.
	2	GND	Ground.
	3	BYP	Bypass capacitor for noise reduction.
	4	EN	Enable Input.
	5	V <sub>DD</sub>	Supply Input.
	6	V <sub>OUT</sub>	Output Voltage.

## ■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING (Unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	$V_{IN}$	-0.3~ +6.5	V
Input Voltage (EN,BYP)		-0.3~ +6.5	V
Output Voltage	$V_{OUT}$	-0.3~ $V_{IN}+0.3$	V
Output Current	$I_{OUT}$	300	mA
Power Dissipation	$P_D$	400	mW

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.

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	RATINGS	UNIT
Ambient Temperature	$T_A$	- 40 ~ +85	°C
Junction Temperature	$T_J$	150	°C
Storage Temperature	$T_{STG}$	-65 ~ +150	°C

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	$\theta_{JA}$	280	°C/W
Junction to Case (Note)	$\theta_{JC}$	140	°C/W

Note:  $\theta_{JC}$  on center of molding compound if IC has on tab.

■ ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C, Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Input Voltage	V <sub>IN</sub>			Note1		6.5	V
Line Regulation	$\frac{\Delta V_{OUT}}{V_{OUT}}$	V <sub>IN</sub> =V <sub>OUT</sub> +1~V <sub>OUT</sub> +2 I <sub>OUT</sub> =1mA	1.2V≤V <sub>OUT</sub> ≤1.4V	-0.2		0.2	%
			1.4V<V <sub>OUT</sub> ≤2.0V	-0.15		0.15	%
			2.0V<V <sub>OUT</sub> <4.0V	-0.1	0.02	0.1	%
		V <sub>IN</sub> =V <sub>OUT</sub> +1~V <sub>OUT</sub> +1.5V I <sub>OUT</sub> =1mA	V <sub>OUT</sub> =5.0V	-0.1	0.02	0.1	%
Load Regulation	$\frac{\Delta V_{OUT}}{V_{OUT}}$	I <sub>OUT</sub> =1mA~300mA		-2	0.2	2	%
Output Voltage Accuracy		I <sub>OUT</sub> =1mA		-1.5		1.5	%
		I <sub>OUT</sub> =300mA		-2.5		2.5	%
Quiescent Current	I <sub>Q</sub>	I <sub>OUT</sub> =0mA			30	50	μA
Dropout Voltage	V <sub>D</sub>	I <sub>OUT</sub> =300mA V <sub>OUT</sub> =V <sub>O(NOM)</sub> -2.0%	1.2V≤V <sub>O(NOM)</sub> ≤2.0V			1300	mV
			2.4V<V <sub>O(NOM)</sub> ≤2.8V			400	
			2.8V<V <sub>O(NOM)</sub> ≤5.0V			300	
Power Supply Ripple Rejection	PSRR	I <sub>OUT</sub> =100mA C <sub>OUT</sub> =2.2μF	f=100Hz		60		dB
			f=1kHz		50		dB
			f=10kHz		20		dB
Output Voltage Noise	eN	I <sub>OUT</sub> =10mA,C <sub>OUT</sub> =2.2μF,f=10Hz~100kHz			30		μV <sub>RMS</sub>
Output Current	I <sub>OUT</sub>	V <sub>OUT</sub> >1.2V		300			mA
Current Limit	I <sub>LIMIT</sub>	V <sub>OUT</sub> >1.2V		300	450		mA
Short Circuit Current (Note2)	I <sub>SC</sub>	V <sub>OUT</sub> <0.8V			150	300	mA
Ground Pin Current	I <sub>GND</sub>	I <sub>OUT</sub> =1mA ~300mA			35		μA
Temperature Coefficient of Output Voltage	T <sub>C</sub> V <sub>O</sub>				30		ppm/°C
EN Input Threshold	V <sub>EH</sub>	V <sub>IN</sub> =2.7V~6.5V		2.0		V <sub>IN</sub>	V
	V <sub>EL</sub>	V <sub>IN</sub> =2.7V~6.5V		0		0.4	V
EN Input Bias Current	I <sub>EH</sub>	V <sub>EN</sub> =V <sub>IN</sub> , V <sub>IN</sub> =2.7V~6.5V				2.0	μA
	I <sub>EL</sub>	V <sub>EN</sub> =0V, V <sub>IN</sub> =2.7V~6.5V				0.5	μA
Shutdown Supply Current	I <sub>SD</sub>	V <sub>IN</sub> =6.5V, V <sub>O</sub> =0V, V <sub>EN</sub> <V <sub>EL</sub>			0.5	1	μA
Shutdown Output Voltage	V <sub>SD</sub>	I <sub>O</sub> =0.4mA, V <sub>EN</sub> <V <sub>EL</sub>		0		0.4	V

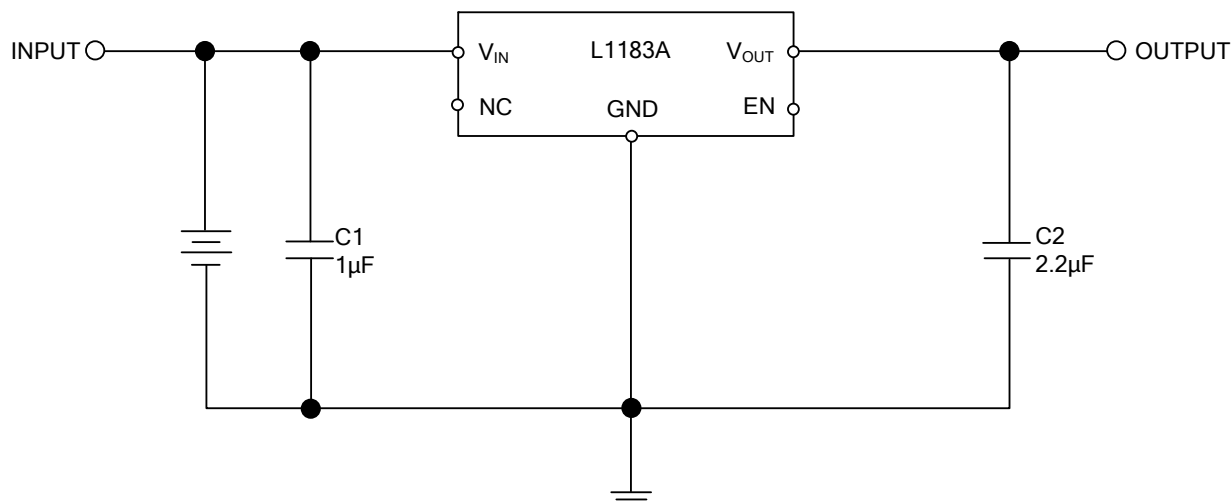
Notes: 1. V<sub>IN(MIN)</sub> = V<sub>OUT</sub> + V<sub>D</sub>

2. To prevent the short circuit current protection feature from being prematurely activated, the input voltage must be applied before a current source load is applied.

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## ■ TYPICAL APPLICATION CIRCUIT



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