



L1183B

Preliminary

CMOS IC

300mA CMOS LDO

DESCRIPTION

The UTC **L1183B** is a positive, linear regulator. One of the feature is the very low ground current typically as low as 30µA, and the dropout voltage is extremely low. For stable operation, the output capacitance value should be 2.2µF or more.

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

The UTC **L1183B** is generally suitable for applications, such as instrumentation, portable electronics, wireless devices, cordless phones, PC peripherals, battery powered widgets.

FEATURES

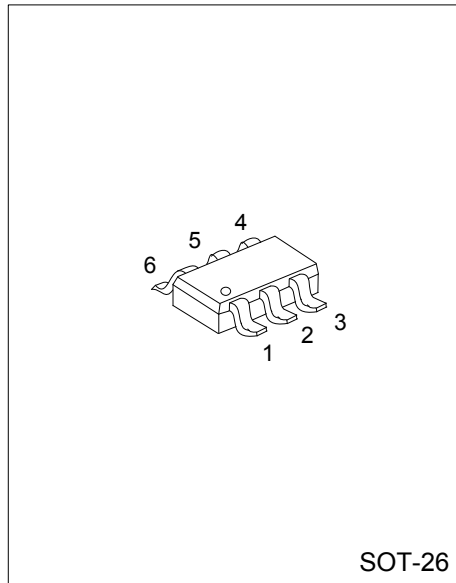
- * Very Low Dropout Voltage
- * Guaranteed Output Current: 300mA
- * Quiescent Current: 30µA (TYP.)
- * Typical Accuracy Within 2%
- * Over-Temperature Shutdown
- * Current Limiting
- * Short Circuit Current Fold-Back
- * Power Good Detector (6 pin version only)
- * Power-Saving Shutdown Mode
- * Adjustable Output Voltages
- * Low Temperature Coefficient
- * RoHS-Compliant Product

ORDERING INFORMATION

Ordering Number	Package	Packing
L1183BG-xx-AG6-R	SOT-26	Tape Reel

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

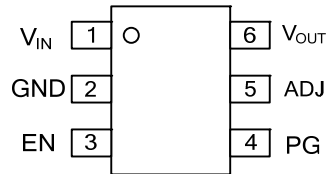
<p>L1183BG-xx-AG6-R</p> <ul style="list-style-type: none"> (1) Packing Type (2) Package Type (3) Output Voltage Code (4) Halogen Free 	<ul style="list-style-type: none"> (1) R: Tape Reel (2) AG6: SOT-26 (3) xx: Refer to Marking Information (4) G: Halogen Free
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■ MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOT-26	12 :1.2V 15 :1.5V 28 :2.8V 31 :3.1V 33 :3.3V	

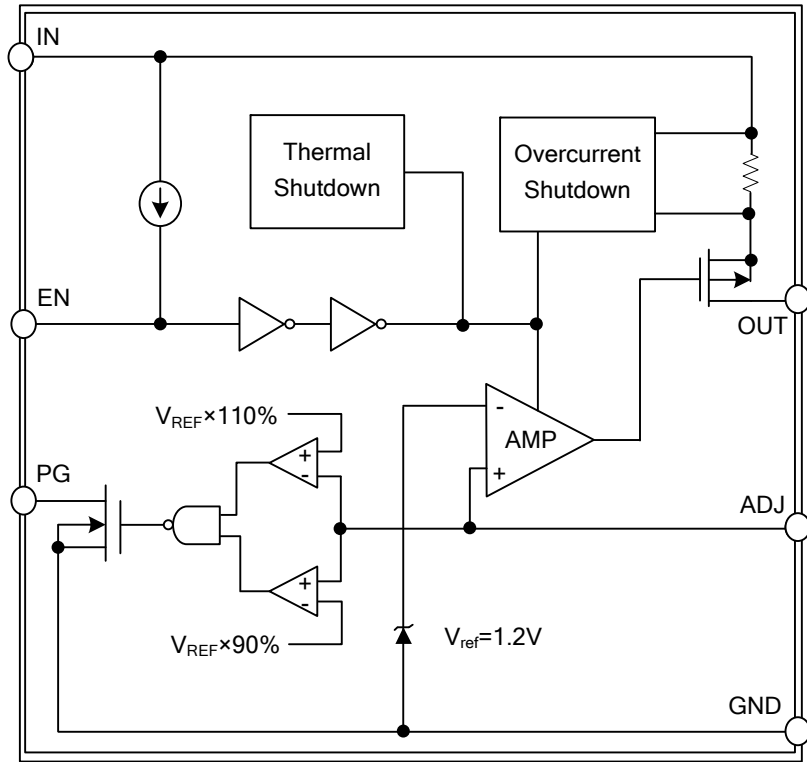
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO	PIN NAME	DESCRIPTION
1	V_{IN}	Input voltage pin
2	GND	Ground connection pin
3	EN	Enable pin
4	PG	Power-Good output
5	ADJ	Feedback output voltage for adjustable device
6	V_{OUT}	LDO voltage regulator output pin

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V_{IN}	8	V
Input, Output Voltage		GND - 0.3 ~ $V_{IN} + 0.3$	V
Output Current	I_{OUT}	$P_D / (V_{IN} - V_{OUT})$	mA
Power Dissipation	P_D	400	mW
Ambient Operating Temperature	T_{OPR}	-40 ~ +85	°C
Junction Temperature	T_J	-40 ~ +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. Caution: Stress above the listed absolute maximum rating may cause permanent damage to the device.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	140	°C/W
Junction to Case	θ_{JC}	280	

■ ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$, $V_{IN}=5\text{V}$ unless otherwise specified)

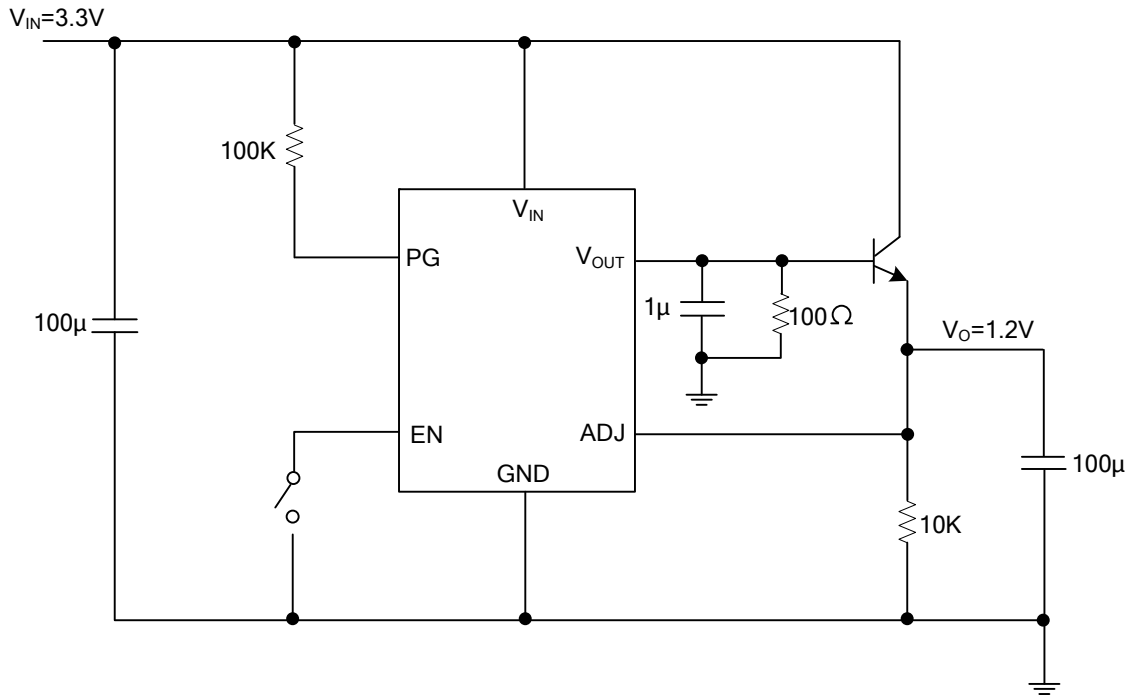
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage	V_{IN}		Note		7	V
Output Voltage	V_{OUT}	$I_{OUT}=1\text{mA}$	-3		3	%
Dropout Voltage	V_D	$I_{OUT}=300\text{mA}$	$1.2\text{V} \leq V_{O(NOM)} \leq 2.0\text{V}$		1300	mV
		$V_{OUT}=V_{ONOM}$	$2.0\text{V} < V_{O(NOM)} \leq 2.8\text{V}$		400	
		-2.0%	$2.8\text{V} < V_{O(NOM)} < 3.8\text{V}$		300	
Output Current	I_{OUT}	$V_{OUT} > 1.2\text{V}$	300			mA
Current Limit	I_{LIMIT}	$V_{OUT} > 1.2\text{V}$	300	450		mA
Short Circuit Current	I_{SC}	$V_{OUT} < 0.8\text{V}$		150	300	mA
Quiescent Current	I_Q	$I_{OUT}=0\text{mA}$		30	50	μA
Ground Pin Current	I_{GND}	$I_{OUT}=1\text{mA} \sim 300\text{mA}$		35		μA
Line Regulation	REG_{LINE}	$I_{OUT}=5\text{mA}$ $V_{IN}=V_O+1 \sim V_O+2$	$V_{OUT} < 2.0\text{V}$		0.15	%
			$V_{OUT} \geq 2.0\text{V}$	0.02	0.1	%
Load Regulation	REG_{LOAD}	$I_{OUT}=1\text{mA} \sim 300\text{mA}$		0.2	1	%
Over Temperature Shutdown	OTS			150		°C
Over Temperature Hysteresis	OTH			30		°C
V_O Temperature Coefficient	TC			30		ppm/°C
Power Supply Rejection	PSRR	$I_{OUT}=100\text{mA}$ $C_O=2.2\mu\text{F}$	$f=1\text{kHz}$	50		dB
			$f=10\text{kHz}$	20		
			$f=100\text{kHz}$	15		
Output Voltage Noise	eN	$f=10\text{Hz} \sim 100\text{kHz}$ $I_O=10\text{mA}, C_{BYP}=0\mu\text{F}$		30		μVrms
ADJ Input Bias Current	I_{ADJ}			1		μA
ADJ Reference Voltage	V_{REF}		1.176	1.2	1.224	V
EN Input Threshold	V_{EH}	$V_{IN}=2.7\text{V} \sim 7\text{V}$	2.0		V_{IN}	V
	V_{EL}	$V_{IN}=2.7\text{V} \sim 7\text{V}$	0		0.4	V
EN Input Bias Current	I_{EH}	$V_{EN}=V_{IN}, V_{IN}=2.7\text{V} \sim 7\text{V}$			0.1	μA
	I_{EL}	$V_{EN}=0\text{V}, V_{IN}=2.7\text{V} \sim 7\text{V}$			0.5	μA

Note: $V_{IN(min)}=V_{OUT}+V_D$

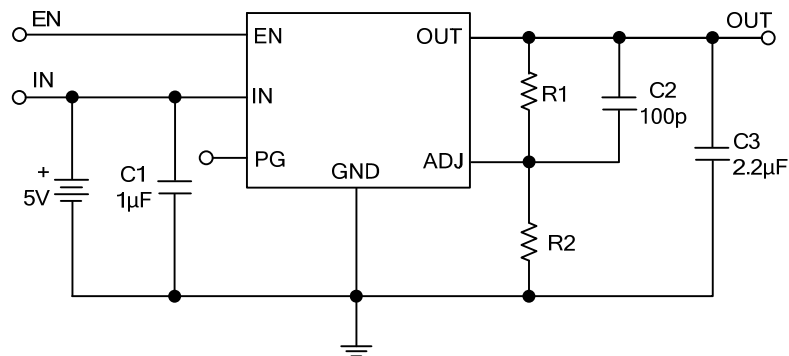
■ ELECTRICAL CHARACTERISTICS (Cont.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Shutdown Supply Current	I_{SD}	$V_{IN}=5V, V_O=0V, V_{EN}<V_{EL}$		0.5	1	μA
Shutdown Output Voltage	$V_{OUT,SD}$	$I_O=35\mu A, V_{EN}<V_{EL}$	0		0.1	V
Output Under Voltage	V_{UV}				85	% $V_{O(NOM)}$
Output Over Voltage	V_{OV}		115			% $V_{O(NOM)}$
PG Leakage Current	I_{LC}	$V_{PG}=7V$			1	μA
PG Voltage Rating	V_{PG}	V_O in regulation			7	V
PG Voltage Low	V_{OL}	$I_{SINK}=0.4mA$			0.4	V

■ ADVANCED APPLICATION



■ TYPICAL APPLICATION CIRCUIT



$$V_{OUT} = 1.2 (R1 + R2) / R2$$

C2 is unnecessary when $R1$ or $R2 < 20K\Omega$

PG pin is only available in the SOT-26 package option

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