



## LR1803

Preliminary

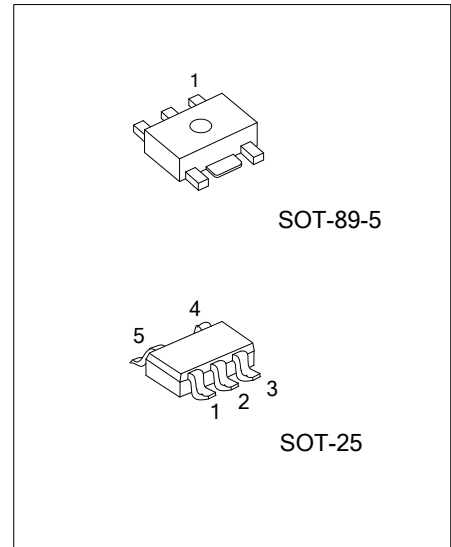
LINEAR INTEGRATED CIRCUIT

### 700mA HIGH SPEED LDO REGULATOR WITH REVERSE CURRENT PROTECTION

#### DESCRIPTION

The UTC **LR1803** operate from a +1.7V ~ +6V input supply as fast low-dropout linear regulators. Wide output voltage range options are available. The fast response characteristic to make UTC **LR1803** suitable for low voltage microprocessor application. The low quiescent current operation and low dropout quality caused by the CMOS process.

The UTC **LR1803** has low dropout voltage. The ground pin current is typically 100µA. Output Voltage Precision: Multiple output voltage options are available and ranging from 1.5V~5V at room temperature with a guaranteed accuracy of ±1.5%, and ±3.0% when varying line and load. With the reverse current protection unction of a driver transistor, the reverse current flow is prohibited when  $V_{OUT}$  voltage is higher than  $V_{IN}$  voltage. For an example, when a battery is connected to the  $V_{OUT}$  pin, battery current will not flow back to the UTC **LR1803**.



#### FEATURES

- \* The Guaranteed Output Current is 700mA DC
- \* Low Power Consumption: 100µA
- \* Dropout Voltage: 120mV @ $I_{OUT}=300mA$  ( $V_{OUT}=3.0V$ )
- \* Output Voltage Accuracy ±1.5%
- \* The reverse current protection

#### ORDERING INFORMATION

Ordering Number	Package	Packing
LR1803G-xx-AB5-R	SOT-89-5	Tape Reel
LR1803G-xx-AF5-R	SOT-25	Tape Reel

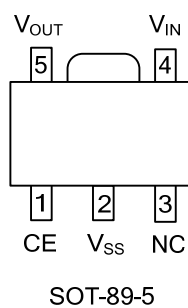
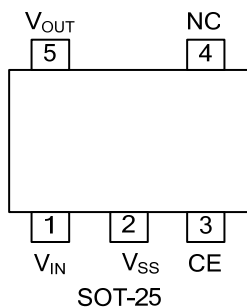
Note: xx: Output Voltage, refer to Marking Information.

<p>LR1803G-xx-AB5-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Output Voltage Code</p> <p>(4) Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) AB5: SOT-89-5, AF5: SOT-25</p> <p>(3) xx: Refer to Marking Information</p> <p>(4) G: Halogen Free and Lead Free</p>
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### MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOT-25	15 : 1.5V 18 : 1.8V 25 : 2.5V 28 : 2.8V 30 : 3.0V 33 : 3.3V 50 : 5.0V	
SOT-89-5	15 : 1.5V 18 : 1.8V 25 : 2.5V 28 : 2.8V 30 : 3.0V 33 : 3.3V 50 : 5.0V	

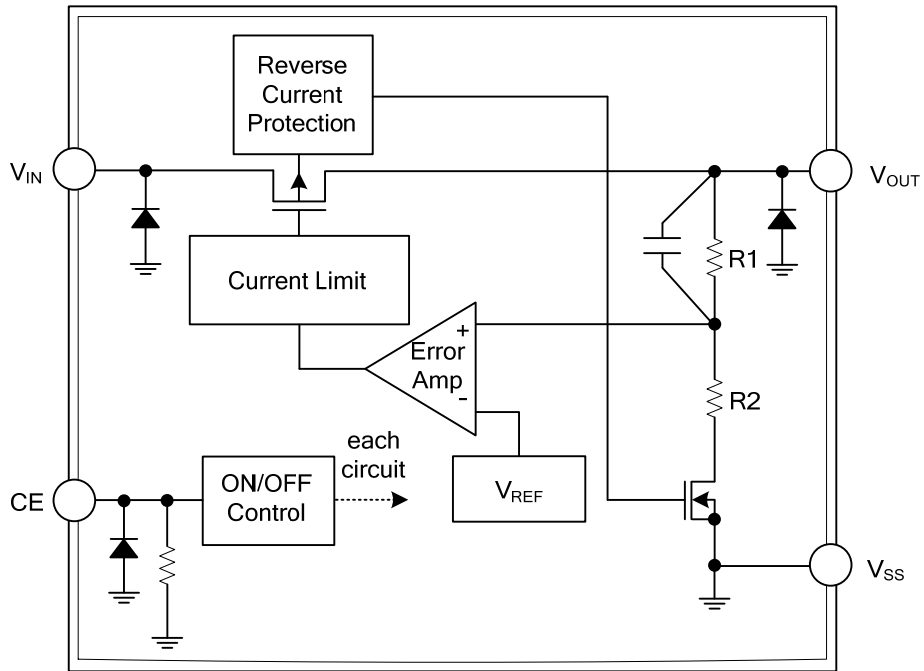
### PIN CONFIGURATION



### PIN DESCRIPTION

PIN NO.		PIN NAME	DESCRIPTION
SOT-25	SOT-89-5		
1	4	$V_{IN}$	Power Input
2	2	$V_{SS}$	Ground
3	1	CE	ON/OFF Control
4	3	NC	No Connection
5	5	$V_{OUT}$	Output

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER		SYMBOL	RATINGS	UNIT
Input Voltage		$V_{IN}$	6.5	V
Output Voltage		$V_{OUT}$	6.5	V
CE Input Voltage		$V_{CE}$	6.5	V
Power Dissipation	SOT-25	$P_D$	250	mW
	SOT-89-5		500	mW
Operating Ambient Temperature		$T_{OPR}$	-40 ~ +85	°C
Storage Temperature		$T_{STG}$	-55 ~ +125	°C

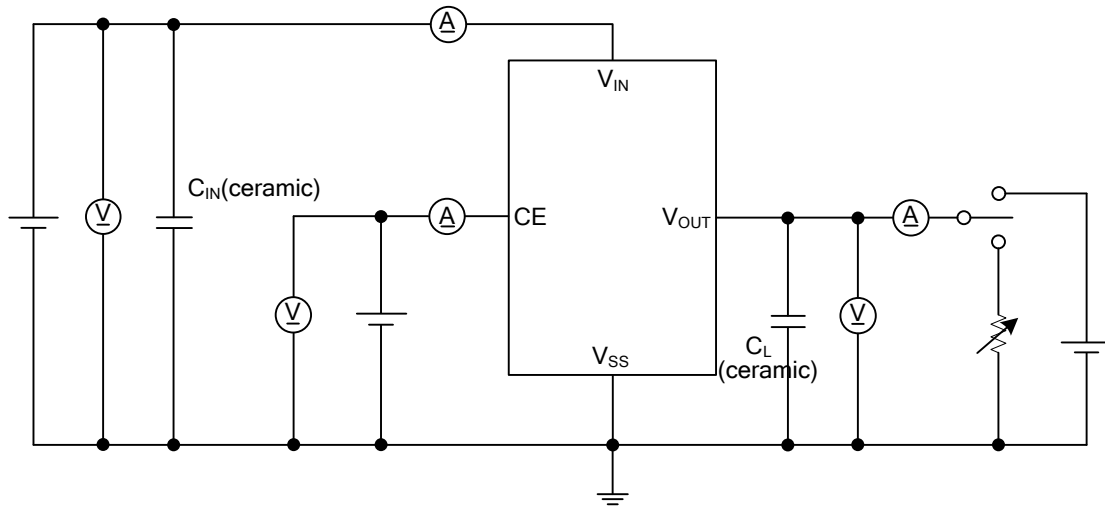
Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ )

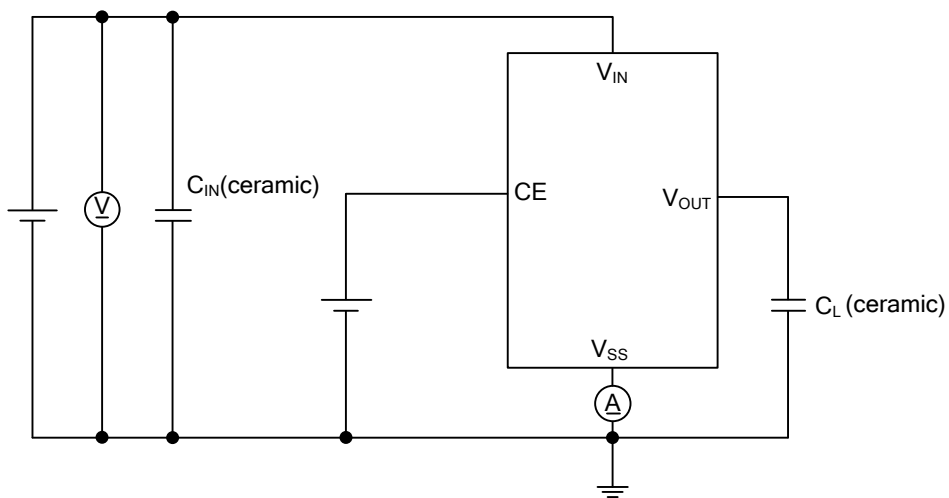
PARAMETER	SYMBOL	CIRCUIT	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	$V_{OUT(E)}$	1	$V_{CE}=V_{IN}, I_{OUT}=10\text{mA}$	$\times 0.985$	$V_{OUT(T)}$	$\times 1.015$	V
Output Current	$I_{OUTMAX}$	1	$V_{CE}=V_{IN}, V_{IN}=V_{OUT(T)}+1.0\text{V}$	700			mA
Load Regulation	$\Delta V_{OUT}$	1	$V_{CE}=V_{IN}, 0.1\text{mA} \leq I_{OUT} \leq 300\text{mA}$	-20	5	20	mV
Dropout Voltage	$V_{dif}$	1	$I_{OUT}=300\text{mA}, V_{CE}=V_{IN}$		120	300	mV
Supply Current	$I_{SS}$	2	$V_{IN}=V_{CE}=V_{OUT(T)}+1.0\text{V}, I_{OUT}=0\text{mA}$		100	200	$\mu\text{A}$
Stand-by Current	$I_{STBY}$	2	$V_{IN}=6.0\text{V}, V_{CE}=V_{SS}$		0.3	1.5	$\mu\text{A}$
Line Regulation	$\frac{\Delta V_{OUT}}{(\Delta V_{IN} \cdot V_{OUT})}$	1	$V_{OUT(T)}+0.5\text{V} \leq V_{IN} \leq 6.0\text{V}$ $V_{CE}=V_{IN}, I_{OUT}=30\text{mA}$		0.01	0.1	%/V
Input Voltage	$V_{IN}$	1				6.0	V
Output Voltage Temperature Characteristics	$\frac{\Delta V_{OUT}}{(\Delta T_A \cdot V_{OUT})}$	1	$V_{CE}=V_{IN}, I_{OUT}=30\text{mA}$ $-40^\circ\text{C} \leq T_A \leq 85^\circ\text{C}$		$\pm 100$		ppm/ °C
Power Supply Rejection Ratio	PSRR	3	$V_{IN}=\{V_{OUT(T)}+1.0\}V_{DC}+0.5\text{Vp-pAC}$ $V_{CE}=V_{IN}, I_{OUT}=30\text{mA}, f=1\text{kHz}$		65		dB
Limit Current	$I_{LIM}$	1	$V_{CE}=V_{IN}, V_{IN}=V_{OUT(T)}+1.0\text{V}$	720	950		mA
Short Current	$I_{short}$	1	$V_{CE}=V_{IN}, \text{Short } V_{OUT} \text{ to } V_{SS} \text{ Level}$		450		mA
CE High Level Voltage	$V_{CEH}$	1		1.5			V
CE Low Level Voltage	$V_{CEL}$	1				0.3	V
CE High Level Current	$I_{CEH}$	1	$V_{CE}=V_{IN}=6.0\text{V}$		2.0		$\mu\text{A}$
CE Low Level Current	$I_{CEL}$	1	$V_{CE}=V_{SS}$	-0.1		0.1	$\mu\text{A}$
Reverse Current	$I_{REV}$	1	$V_{IN}=0\text{V}, V_{OUT}=6.0\text{V}$		0.3		$\mu\text{A}$
$V_{OUT}$ Pin Sink Current	$I_{REVS}$	1	$V_{IN}=5.0\text{V}, V_{OUT}=6.0\text{V}$		0.3		$\mu\text{A}$
Thermal Shutdown Detect Temperature	$T_{TSD}$	1	Junction Temperature		150		°C
Thermal Shutdown Release Temperature	$T_{TSR}$	1	Junction Temperature		125		°C

■ TEST CIRCUIT

Circuit 1

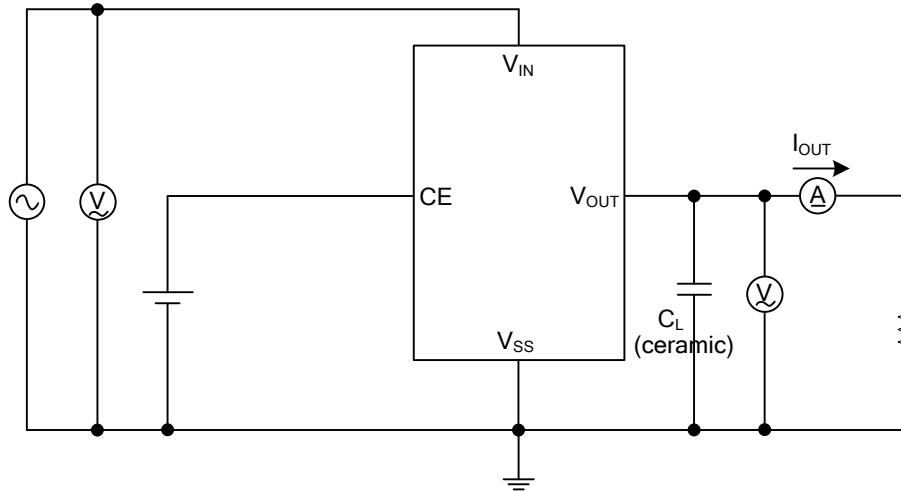


Circuit 2



## ■ TEST CIRCUIT (Cont.)

Circuit 3



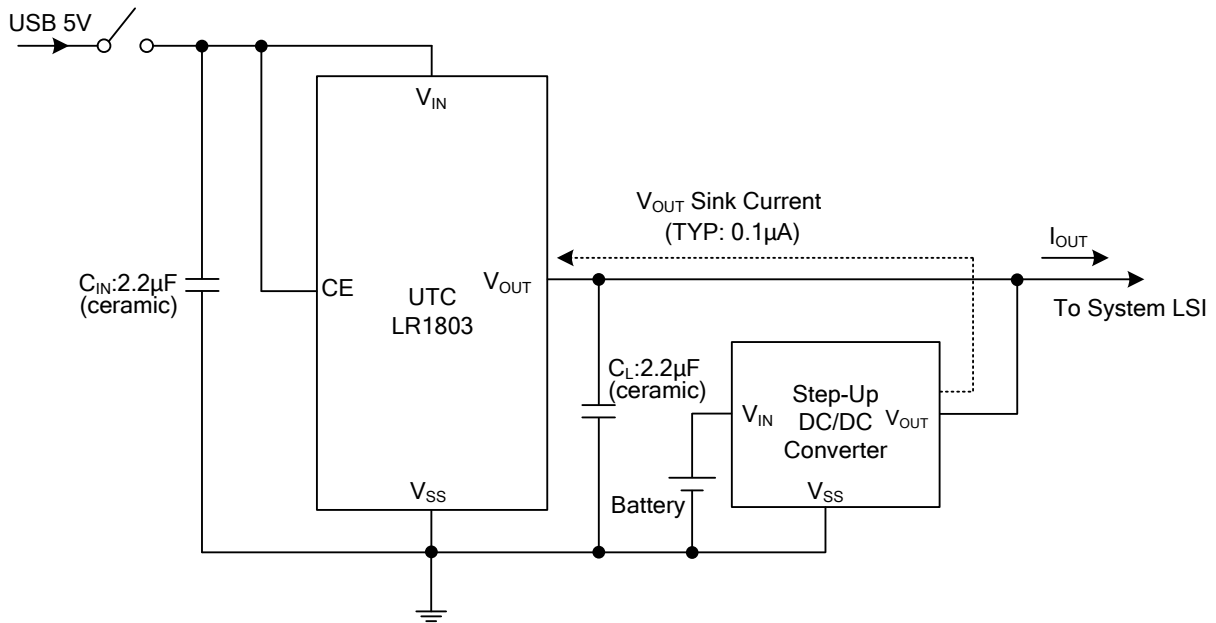
$C_{IN}$ : 2.2 $\mu$ F or higher

$C_L$ : 2.2 $\mu$ F or higher ( $V_{OUT}$ =2.5~5.0V)

4.7 $\mu$ F or higher ( $V_{OUT}$ =2.1~2.45V)

6.8 $\mu$ F or higher ( $V_{OUT}$ =0.8~2.05V)

■ TYPICAL APPLICATION CIRCUIT



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