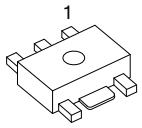
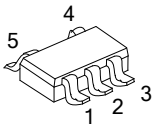
700mA HIGH SPEED LDO REGULATOR WITH REVERSE CURRENT PROTECTION



SOT-89-5



SOT-25

■ 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 VIN 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

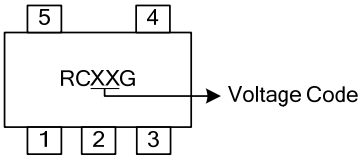
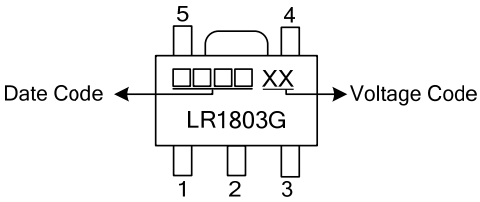
Ordering Number	Package	Packing
LR1803G-xx-AB5-R	SOT-89-5	Tape Reel
LR1803G-xx-AF5-R	SOT-25	Tape Reel

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

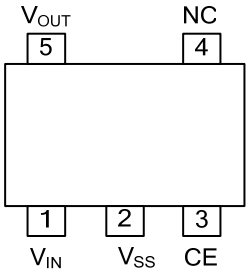
LR1803G-xx-AB5-R

(1)Packing Type	(1) R: Tape Ree
(2)Package Type	(2) AB5: SOT-89-5, AF5: SOT-25
(3)Output Voltage Code	(3) xx: Refer to Marking Information
(4)Green Package	(4) G: Halogen Free and Lead Free

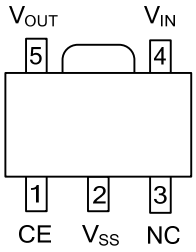
■ MARKING INFORMATION

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

■ PIN CONFIGURATION



SOT-25

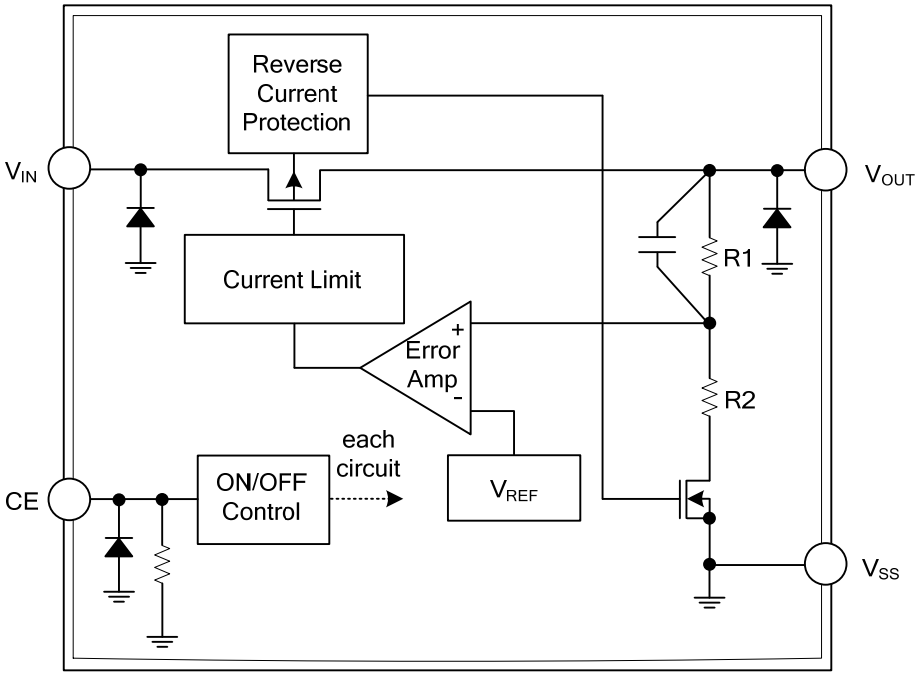


SOT-89-5

■ 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

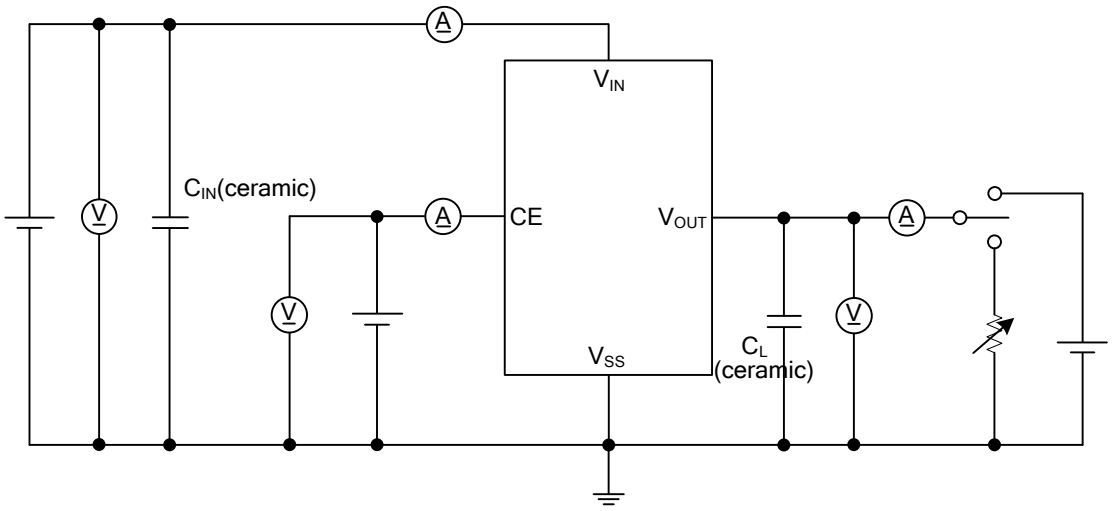
Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ ELECTRICAL CHARACTERISTICS (T_A=25°C)

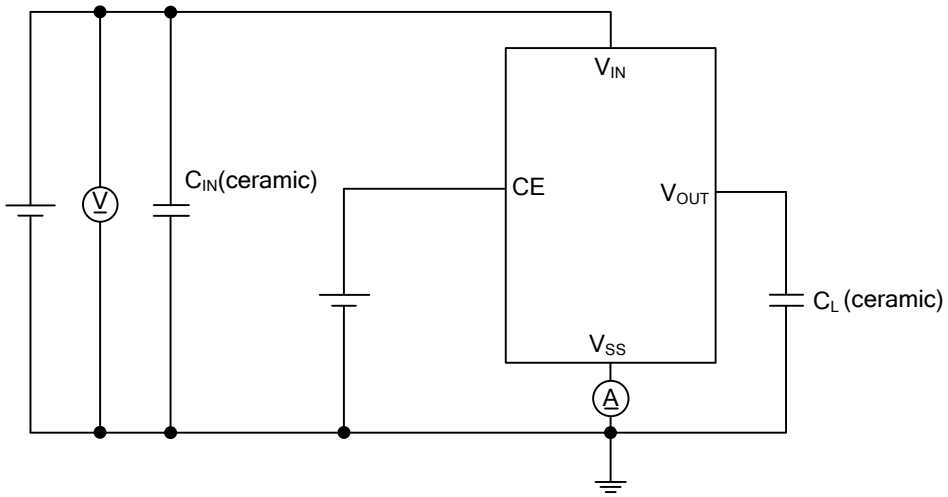
PARAMETER	SYMBOL	CIRCUIT	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	$V_{OUT(E)}$	1	V_{CE}=V_{IN}, I_{OUT}=10mA	×0.985	$V_{OUT(T)}$	×1.015	V
Output Current	I_{OUTMAX}	1	V_{CE}=V_{IN}, V_{IN}=$V_{OUT(T)}$+1.0V	700			mA
Load Regulation	ΔV_{OUT}	1	V_{CE}=V_{IN}, 0.1mA≤I_{OUT}≤300mA	-20	5	20	mV
Dropout Voltage	V_{dif}	1	I_{OUT}=300mA, V_{CE}=V_{IN}		120	300	mV
Supply Current	I_{SS}	2	V_{IN}=V_{CE}=$V_{OUT(T)}$+1.0V, I_{OUT}=0mA		100	200	μA
Stand-by Current	I_{STBY}	2	V_{IN}=6.0V, V_{CE}=V_{SS}		0.3	1.5	μA
Line Regulation	ΔV_{OUT}/ ($\Delta V_{IN} \cdot V_{OUT}$)	1	$V_{OUT(T)}$+0.5V≤V_{IN}≤6.0V V_{CE}=V_{IN}, I_{OUT}=30mA		0.01	0.1	%/V
Input Voltage	V_{IN}	1				6.0	V
Output Voltage Temperature Characteristics	ΔV_{OUT}/ ($\Delta T_A \cdot V_{OUT}$)	1	V_{CE}=V_{IN}, I_{OUT}=30mA -40°C≤T_A≤85°C		±100		ppm /°C
Power Supply Rejection Ratio	PSRR	3	V_{IN}={$V_{OUT(T)}$+1.0}V_{DC}+0.5Vp-pAC V_{CE}=V_{IN}, I_{OUT}=30mA, f=1kHz		65		dB
Limit Current	I_{LIM}	1	V_{CE}=V_{IN}, V_{IN}=$V_{OUT(T)}$+1.0V	720	950		mA
Short Current	I_{short}	1	V_{CE}=V_{IN}, Short V_{OUT} to V_{SS} 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}=6.0V		2.0		μA
CE Low Level Current	I_{CEL}	1	V_{CE}=V_{SS}	-0.1		0.1	μA
Reverse Current	I_{REV}	1	V_{IN}=0V, V_{OUT}=6.0V		0.3		μA
V_{OUT} Pin Sink Current	I_{REVS}	1	V_{IN}=5.0V, V_{OUT}=6.0V		0.3		μA
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

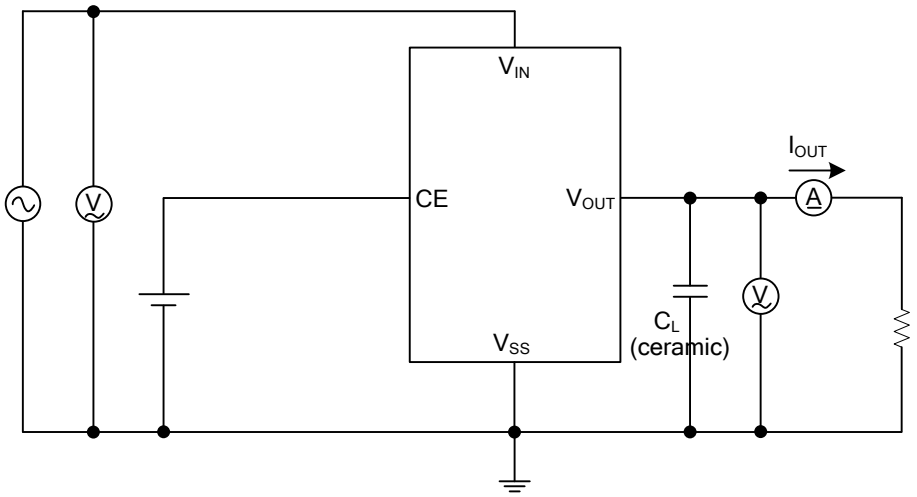


Circuit 2



■ TEST CIRCUIT (Cont.)

Circuit 3



C_{IN}: 2.2μF or higher
C_L: 2.2μF or higher (V_{OUT}=2.5~5.0V)
4.7μF or higher (V_{OUT}=2.1~2.45V)
6.8μF or higher (V_{OUT}=0.8~2.05V)

■ TYPICAL APPLICATION CIRCUIT