



L1131B

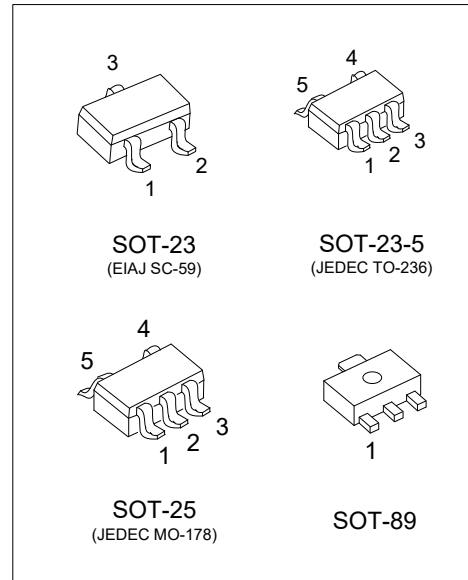
CMOS IC

LOW NOISE 200mA LDO REGULATOR

DESCRIPTION

The UTC **L1131B** is a COMS positive linear regulator. One of it's feature is the very low quiescent current typical as low as 1.5 μ A and its dropout voltage is extremely low with 200mA output current, and high ripple rejection. Each of these ICs consists of a voltage reference unit, an error amplifier, resistor-net for voltage setting, a short current limit circuit, a chip enable circuit, and so on.

These ICs perform with low dropout voltage and the chip-enable function. The supply current at no load of this IC is only 1.5 μ A, and the line transient response and the load transient response of the UTC **L1131B** Series are excellent, thus these ICs are very suitable for the power supply for hand-held communication equipment.



FEATURES

- * Low supply current Typ. 1.5 μ A
- * Standby mode Typ. 0.1 μ A
- * Output Voltage Range 1.2V ~ 5.0V
- * Built-in fold back protection circuit
- * Ceramic capacitors are recommended to be used with this IC
C_{IN}=C_{OUT}=1 μ F

ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
L1131BL-xx-AB3-R	L1131BG-xx-AB3-R	SOT-89	Tape Reel
L1131BL-xx-AE3-R	L1131BG-xx-AE3-R	SOT-23	Tape Reel
L1131BL-xx-AE5-R	L1131BG-xx-AE5-R	SOT-23-5	Tape Reel
L1131BL-xx-AF5-R	L1131BG-xx-AF5-R	SOT-25	Tape Reel
L1131BL-xx-AE5-F-R	L1131BG-xx-AE5-F-R	SOT-23-5	Tape Reel
L1131BL-xx-AF5-F-R	L1131BG-xx-AF5-F-R	SOT-25	Tape Reel

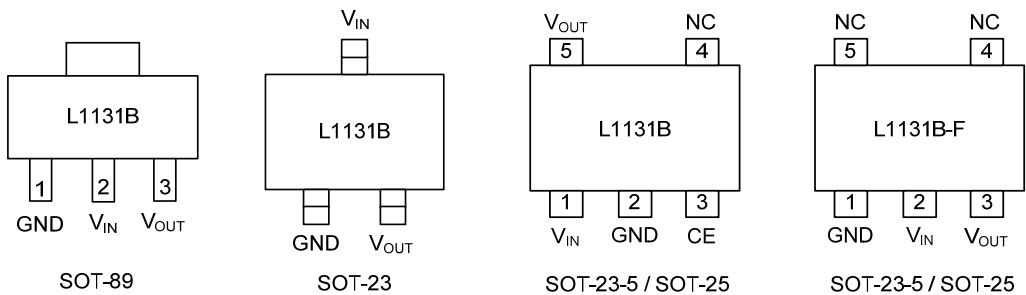
Note: xx: Output Voltage, refer to Marking Information.

<p>L1131BG-xx-AE5-F-R</p>	<p>(1) R: Tape Reel, B: Tape Box, K: Bulk (2) refer to Pin Assignment (3) AB3: SOT-89, AE3: SOT-23, AE5: SOT-23-5, AF5: SOT-25 (4) xx: refer to Marking Information (5) G: Halogen Free and Lead Free, L: Lead Free</p>
---------------------------	---

MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOT-23		
SOT-23-5 SOT-25	15: 1.5V 20: 2.0V 22: 2.2V 25: 2.5V 28: 2.8V 30: 3.0V	
SOT-23-5 SOT-25 (L1131B-F)	33: 3.3V 36: 3.6V 50: 5.0V	
SOT-89		

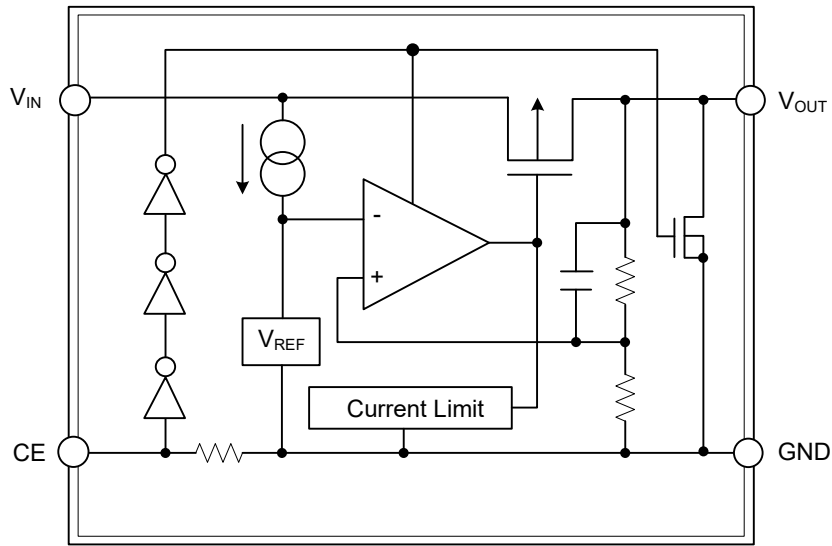
PIN CONFIGURATION



PIN DESCRIPTION

PIN NO.				PIN NAME	DESCRIPTION
L1131		L1131-F			
SOT-23	SOT-89	SOT-23-5 SOT-25	SOT-23-5 SOT-25		
1	1	2	1	GND	Ground pin
2	3	5	3	V _{OUT}	Output pin
3	2	1	2	V _{IN}	Input pin
-	-	3	-	CE	Chip enable pin
-	-	4	4, 5	NC	No connection

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER		SYMBOL	RATINGS	UNIT
Input Voltage		V_{IN}	11	V
Input Voltage (CE Pin)		V_{CE}	6.5	V
Output Voltage		V_{OUT}	-0.3 ~ $V_{IN}+0.3$	V
Output Current		I_{OUT}	200	mA
Power Dissipation	SOT-23	P_D	330	mW
	SOT-23-5		350	mW
	SOT-25		360	mW
	SOT-89		530	mW
Operating Temperature Range		T_{OPR}	-40 ~ +125	°C
Storage Temperature Range		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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN} = \text{Set } V_{OUT}+1V, V_{OUT} \leq 3.0V$	$\times 0.985$		$\times 1.015$	V
		$1mA \leq I_{OUT} \leq 30mA, V_{OUT} > 3.0V$	$\times 0.980$		$\times 1.020$	V
Output Current	I_{OUT}	$V_{IN}-V_{OUT}=1.0V$	200			mA
Load Regulation	$\Delta V_{OUT}/\Delta I_{OUT}$	$V_{IN}=\text{Set } V_{OUT}+1V, 1mA \leq I_{OUT} \leq 150mA,$ $1.2V \leq V_{OUT} < 2.0V,$		28	55	mV
		$2.0V \leq V_{OUT} < 3.0V$		33	66	mV
		$3.0V \leq V_{OUT}$		35	80	mV
Dropout Voltage	V_{DIF}	refer to the ELECTRICAL CHARACTERISTICS by OUTPUT VOLTAGE				
Supply Current	I_{SS}	$V_{IN}=\text{Set } V_{OUT}+1V,$ $I_{OUT}=0mA$	SOT-23 SOT-89		3.0	μA
			SOT-23-5 SOT-25		1.5	2.5
Supply Current (Standby)	$I_{standby}$	$V_{IN}=\text{Set } V_{OUT}+1V, V_{CE}=\text{GND}$		0.1	1.0	μA
Line Regulation	$\Delta V_{OUT}/\Delta V_{IN}$	Set $V_{OUT}+0.5V \leq V_{IN} \leq 10V,$ $I_{OUT}=30mA$			0.3	%/V
Ripple Rejection	RR	$f=1kHz$		50		dB
Input Voltage	V_{IN}		1.8		10	V
Short Current Limit	I_{LIM}	$V_{OUT}=0V$		60		mA
CE Pull-Down Resistance	I_{PD}			0.5		μA
CE Input Voltage "H"	V_{CEH}		1.5		6.0	V
CE Input Voltage "L"	V_{CEL}		0.0		0.3	V
On Resistance of Nch Tr. for auto-discharge (Only for D version)	R_{LOW}	$V_{CE}=0V$		70		Ω

■ ELECTRICAL CHARACTERISTICS BY OUTPUT VOLTAGE

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Dropout Voltage	V_{DIF}	$I_{OUT}=150mA$	$V_{OUT}=1.2V$		0.65	V
			$1.5V < V_{OUT} \leq 1.6V$		0.48	V
			$1.6V < V_{OUT} \leq 1.7V$		0.41	V
			$1.7V < V_{OUT} \leq 2.0V$		0.35	V
			$2.0V < V_{OUT} \leq 2.7V$		0.21	V
			$2.7V < V_{OUT} \leq 5.0V$		0.18	V

■ TEST CIRCUIT

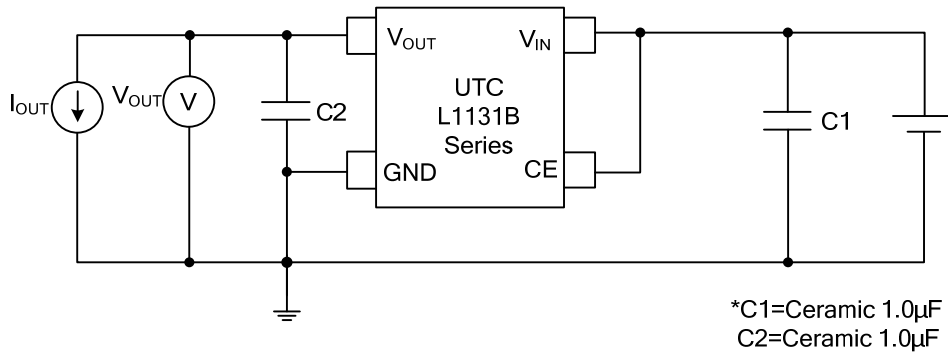


Fig.1 Standard test Circuit

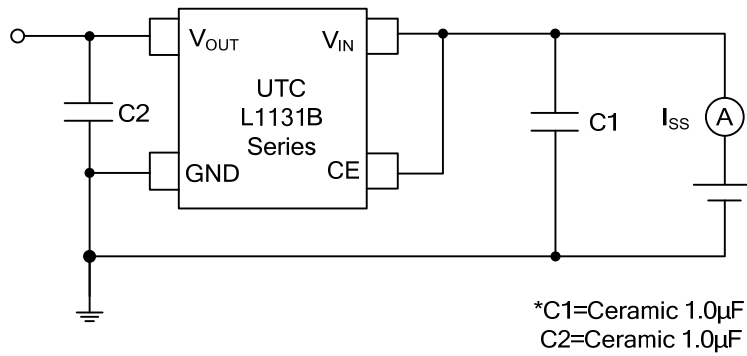


Fig.2 Supply Current Test Circuit

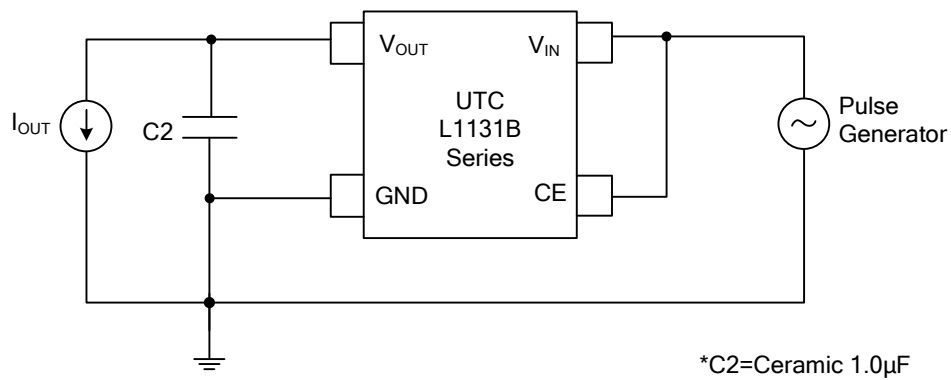
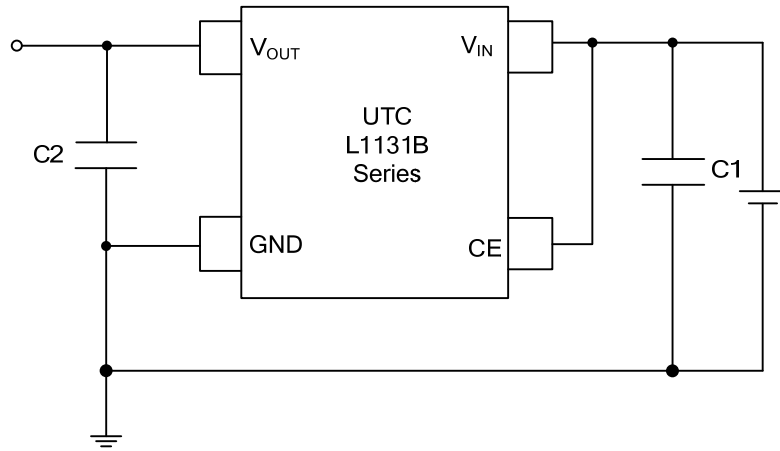


Fig.3 Ripple Rejection, Line Transient

■ TYPICAL APPLICATION CIRCUIT



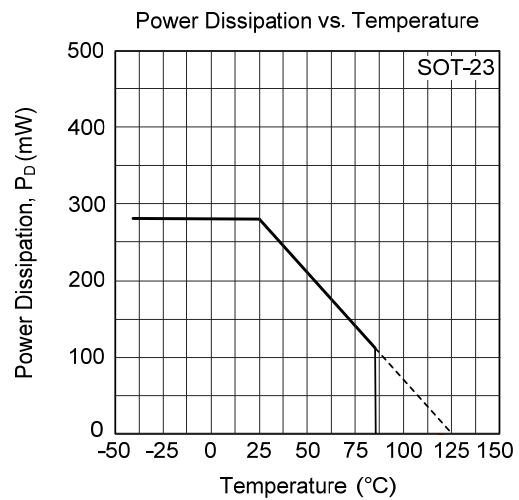
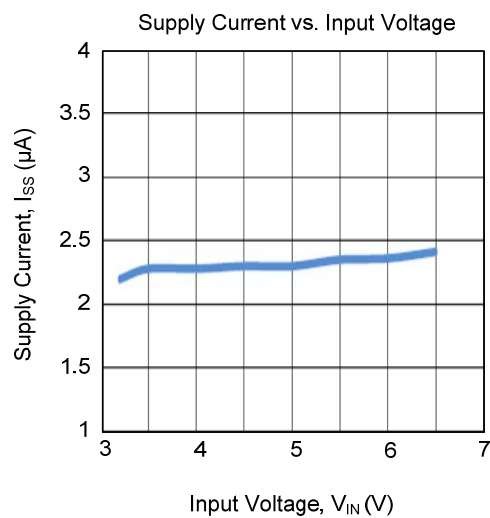
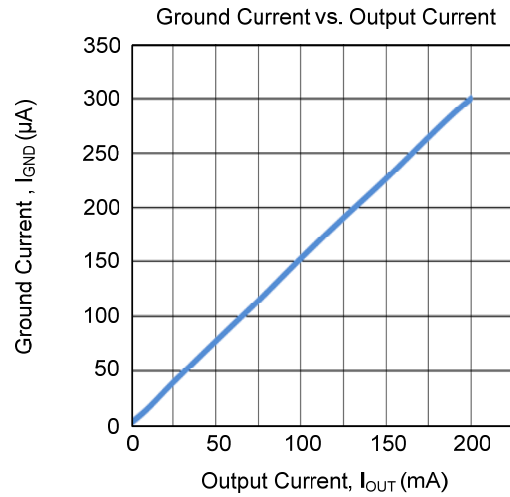
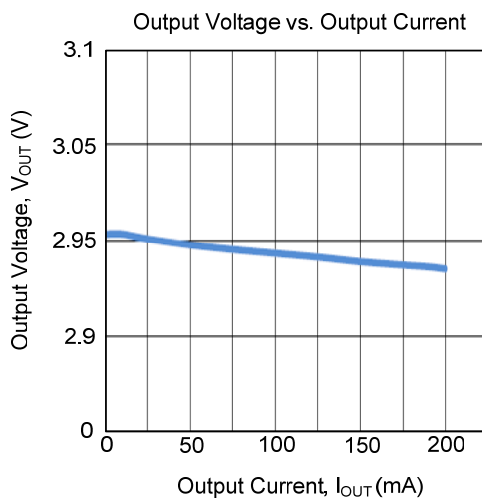
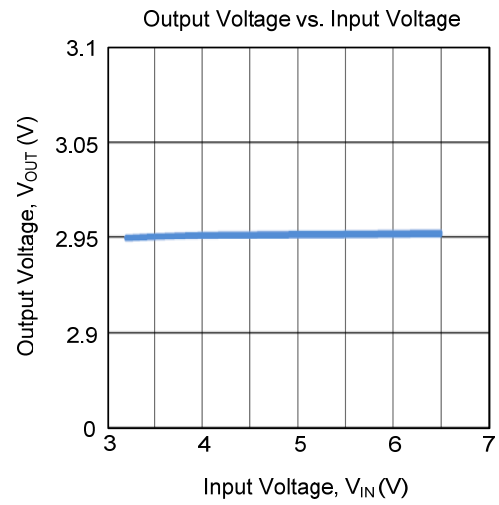
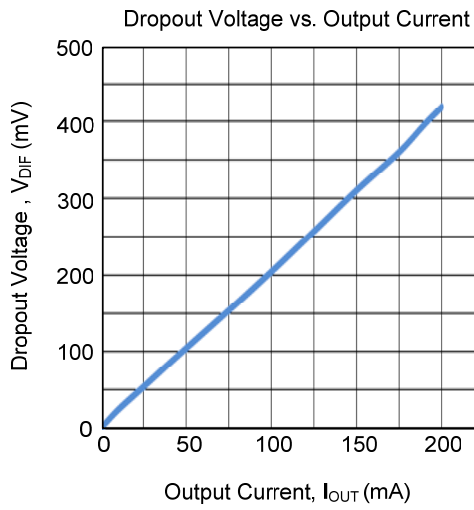
(External Components)

C1 Ceramic 1.0 μ F

C2 Ceramic 1.0 μ F

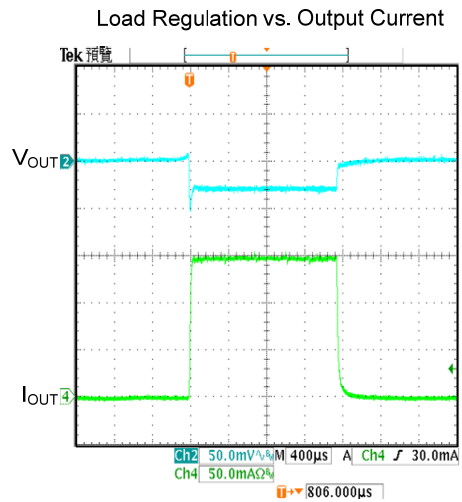
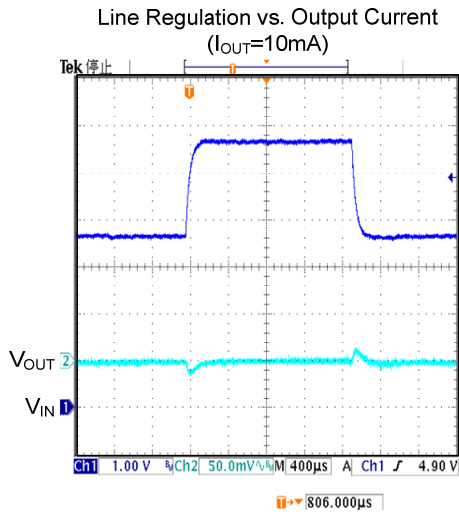
■ TYPICAL CHARACTERISTICS

L1131B-3.0V

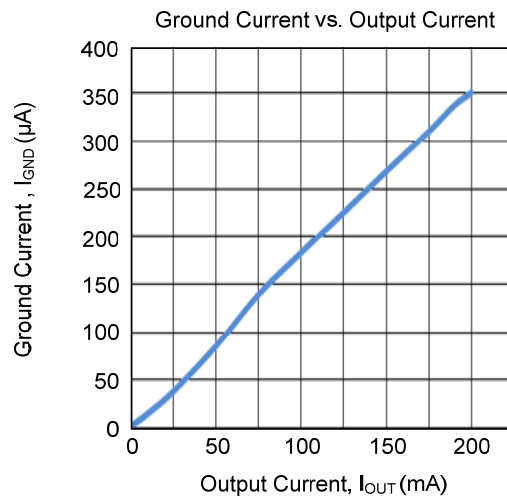
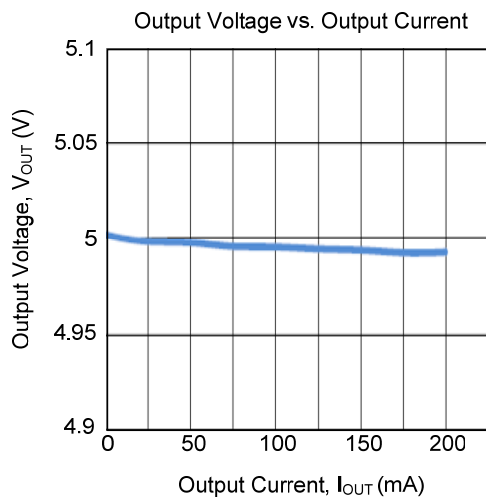
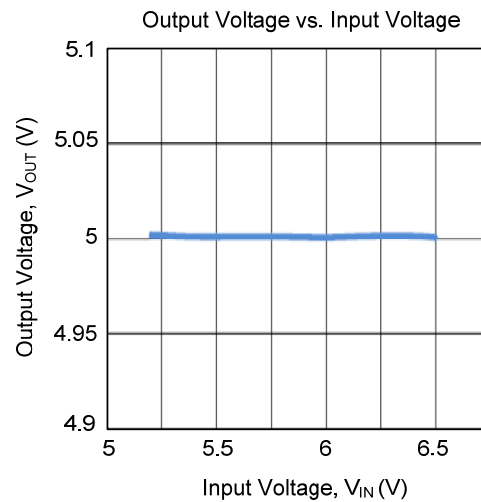
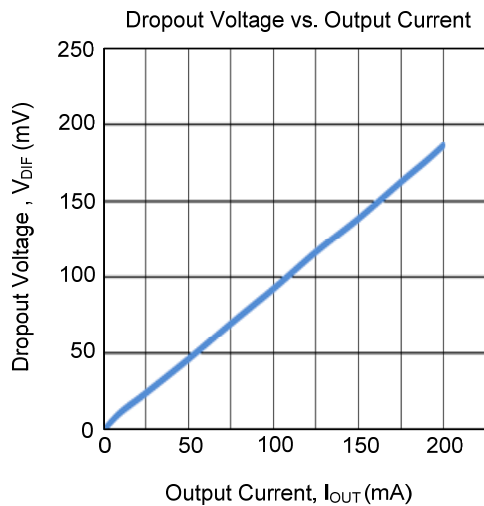


■ TYPICAL CHARACTERISTICS (Cont.)

L1131B-3.0V

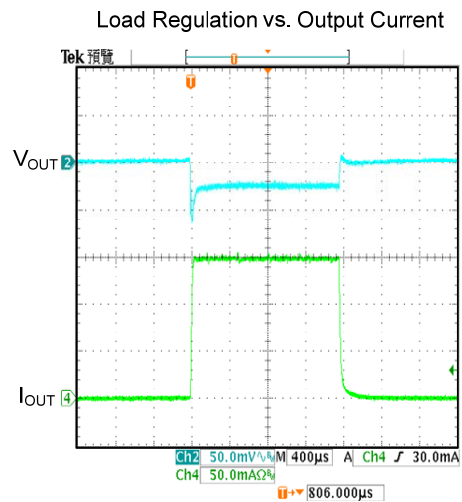
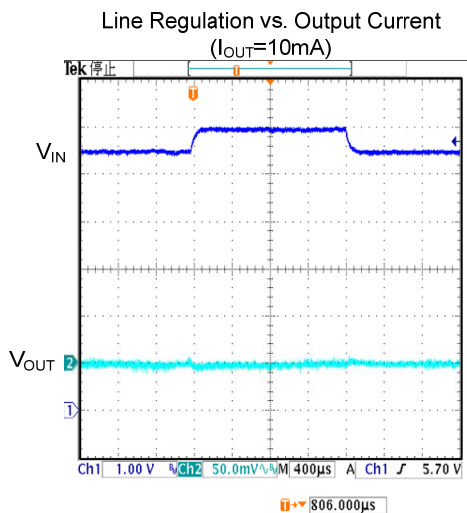
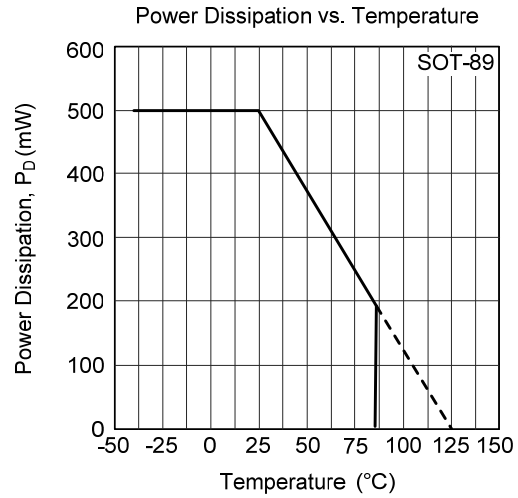
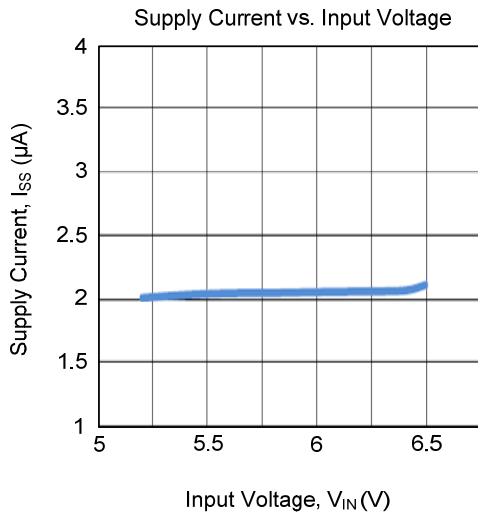


L1131B-5.0V



■ TYPICAL CHARACTERISTICS (Cont.)

L1131B-5.0V



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. UTC reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.