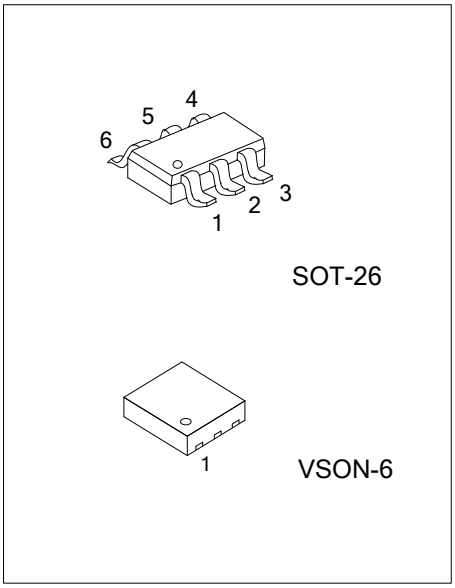
LR6401

CMOS IC

DUAL CHANNEL LDO REGULATORS WITH ENABLE FUNCTION



■ DESCRIPTION

The UTC **LR6401** is a low noise and high accuracy LDO voltage regulator which has enable soft start function. Designers can reduce power consumption more easily by applying EN function that can turn off the output of each device and control the in rush current through the soft the start function.

The UTC **LR6401** comes with low design cost and outstanding output stability and its compatibility of working with low ESR ceramic capacitors is undoubted. Besides, and this level of stability is ensured by the perfect transient response and PSRR derived from a large frequency range.

■ FEATURES

* V_D=150mV @100mA (Typ.), V_{OUT} ≥2.8V
* Range of Operating Voltage:2.5V ~ 6.0V
* Range of Output Voltage Range:1.2V ~ 4.0V
* Range of Output Current:300mA / Channel
* Low Power Consumption:30μA (Typ.) for Each Channel
* Standby Current:0.1μA (Typ.)
* Accurate：±2%
* High PSRR: 65 dB
* Each Channel Output Current Limit Protection:450mA
* With Short Circuit Protection
* Output ON/OFF Control Function

■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
LR6401xL-AG6-R	LR6401xG-AG6-R	SOT-26	Tape Reel
LR6401xL- VB06-2018-R	LR6401xG- VB06-2018-R	VSON-6	Tape Reel

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

LR6401xL-AG6-R (1) Packing Type (2) Package Type (3) Lead Free (4) Output Voltage Code	(1) R: Tape Reel (2) AG6: SOT-26, VB06-2018: VSON-6 (3) G: Halogen Free, L: Lead Free (4) x: Refer to Marking Information

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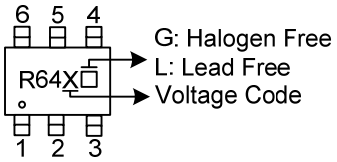
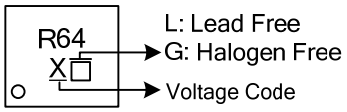
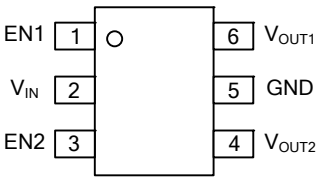
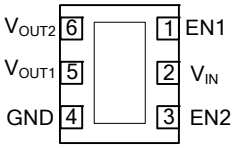
■ MARKING INFORMATION

PACKAGE	VOLTAGE	VOLTAGE CODE	MARKING
SOT-26	1.8V + 3.3V 1.8V + 2.8V 2.5V + 3.3V 2.8V + 3.3V 2.8V + 1.8V 3.3V + 2.8V 2.85V+2.85V	A B C D E F H	
VSON-6			

■ PIN CONFIGURATION



For SOT-26

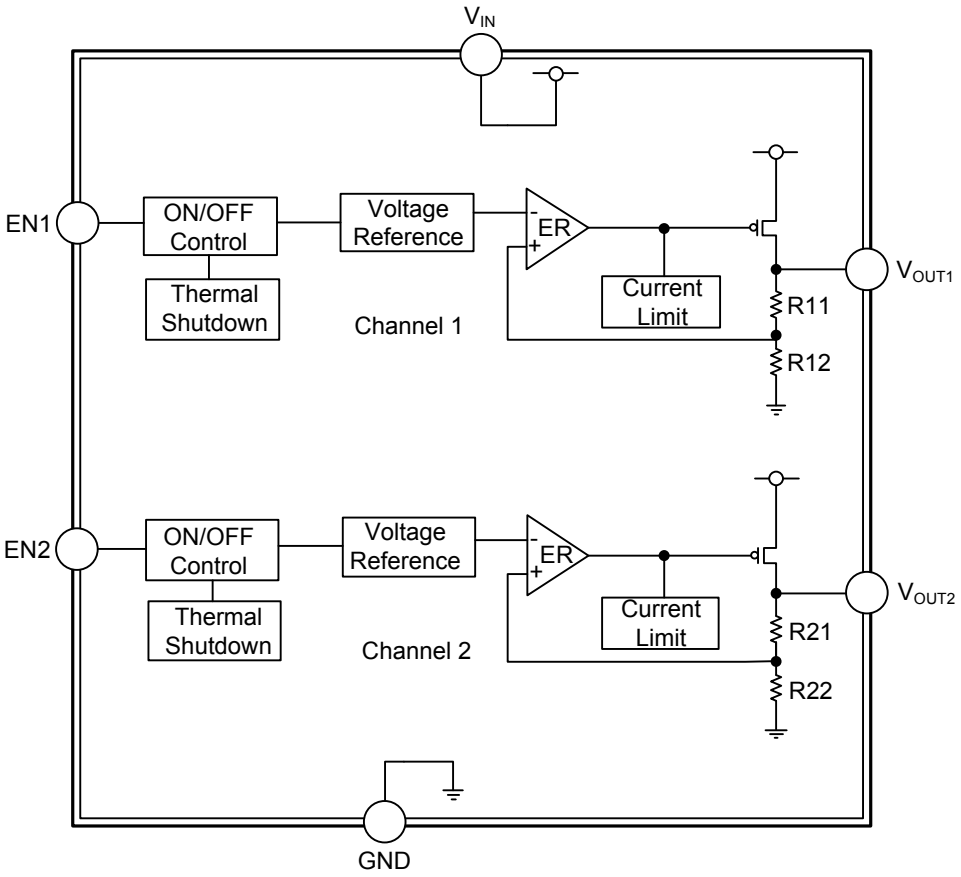


For VSON-6
(BOTTOM VIEW)

■ PIN DESCRIPTION

PIN NO.		PIN NAME	DESCRIPTION
SOT-26	VSON-6		
1	1	EN1	Channel 1's output enable control Pin
2	2	V_{IN}	Voltage Input pin
3	3	EN2	Channel 2's output enable control Pin
4	6	V_{OUT2}	Channel 2's voltage output
5	4	GND	Ground
6	5	V_{OUT1}	Channel 1's voltage output

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER		SYMBOL	RATINGS	UNIT
Input Voltage		V_{IN}	7.0	V
EN Pin Voltage		V_{EN}	V_{SS}-0.3~V_{IN}+0.3	V
Output Voltage		V_{OUT}	V_{SS}-0.3~V_{IN}+0.3	V
Output Current		I_{OUT1}+I_{OUT2}	700	mA
Power Dissipation	SOT-26	P_D	400	mW
	VSON-6		1000	
Junction Temperature		T_J	150	°C
Operating 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.

■ THERMAL DATA

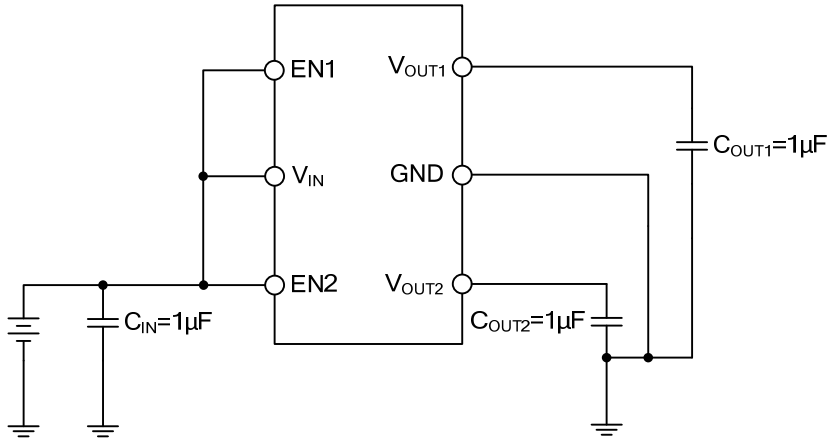
PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOT-26	θ_{JA}	250	°C/W
	VSON-6		100	

■ ELECTRICAL CHARACTERISTICS (Ta = 25°C, unless otherwise specified.)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage		V_{IN}		2.5		6.0	V
Output Voltage		V_{OUT}	V_{IN}=V_{OUT}+1.0V, I_{OUT}=30mA	V_{OUT} ×0.98	V_{OUT}	V_{OUT} ×1.02	V
Line Regulation		$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	V_{OUT}+1.0V≤V_{IN}≤6.0V I_{OUT}=1mA		0.02	0.1	%/V
Load Regulation		ΔV_{OUT}	V_{IN}=V_{OUT}+1.0V, 1mA ≤ I_{OUT} ≤ 150mA		13	60	mV
			V_{IN}=V_{OUT}+1.0V, 1mA ≤ I_{OUT} ≤300mA		30	90	mV
Output Current		I_{OUT}	V_{OUT}+1.0V≤V_{IN}≤6V (Note 1)		300		mA
Supply Current		I_{SS}	V_{IN}=V_{EN}=V_{OUT}+1.0V, I_{OUT}=0mA		60	90	μA
Standby Current		I_{STN-BY}	V_{IN}=V_{OUT}+1.0V, V_{EN}=V_{SS}		0.1	1	μA
Current Limite		I_{LIMIT}	V_{IN}=V_{OUT}+1.0V, V_{IN}=V_{EN}		450		mA
Short-Circuit Current		I_{SC}	V_{IN}=V_{OUT}+1.0V, V_{IN}=V_{EN}		150		mA
Dropout Voltage		V_D	I_{OUT}=100mA		150	250	mV
			I_{OUT}=300mA		450	750	mV
EN Pin Input Voltage	High	V_{IH}	(Note 2)	1.2			V
	Low	V_{IL}	(Note 2)			0.4	V
Temperature Coefficient of Output Voltage		T_CV_O	I_{OUT}=30mA, -25°C≤T_{OPR}≤+85°C		±100		ppm/°C
Over Temperature Shutdown		OTS			150		°C
Over Temperature Hysteresis		OTH			40		°C
Power Supply Rejection Rate		PSRR	I_{OUT}=30mA, F=100Hz		65		dB

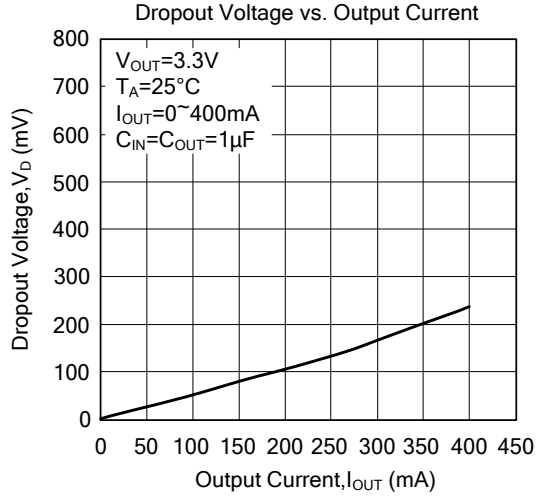
Notes: 1. Measured using a double sided board with 1" x 2" square inches of copper area connected to the GND pins for "heat spreading".
2. EN pin input voltage must be always less than or equal to input voltage.

■ TYPICAL APPLICATION CIRCUIT

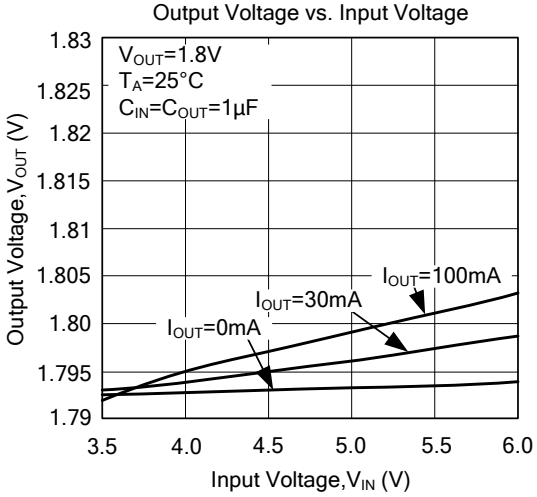


■ TYPICAL CHARACTERISTICS

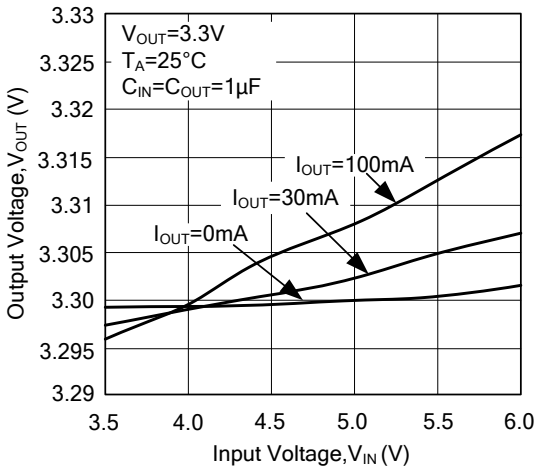
Dropout Voltage vs. Output Current



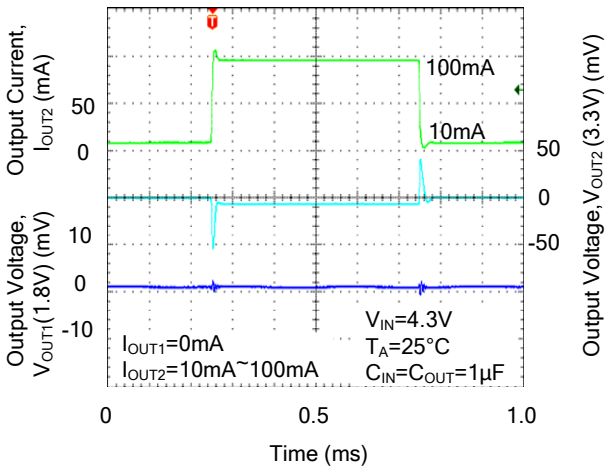
Output Voltage vs. Input Voltage



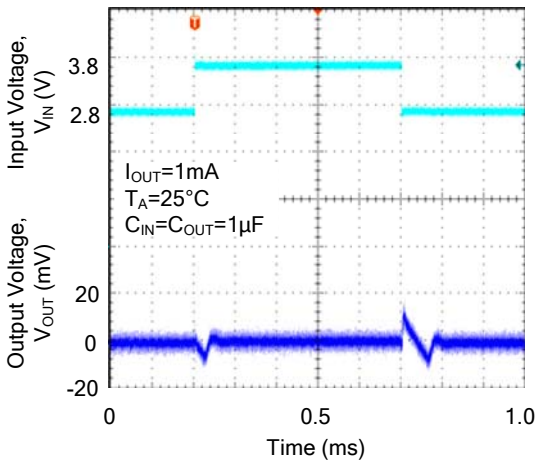
Output Voltage vs. Input Voltage



Cross Talk



Input Transient Reponse (V_{OUT}=1.8V)



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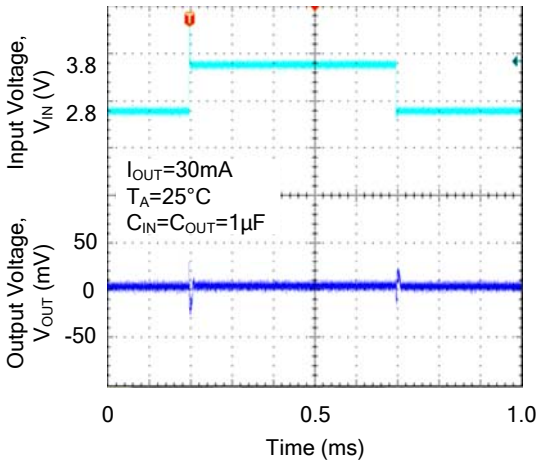
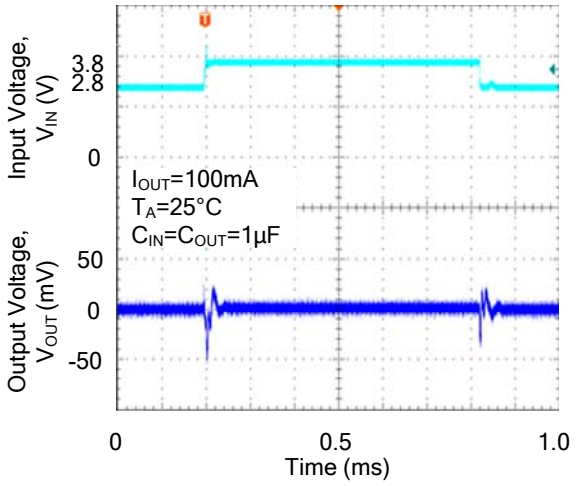
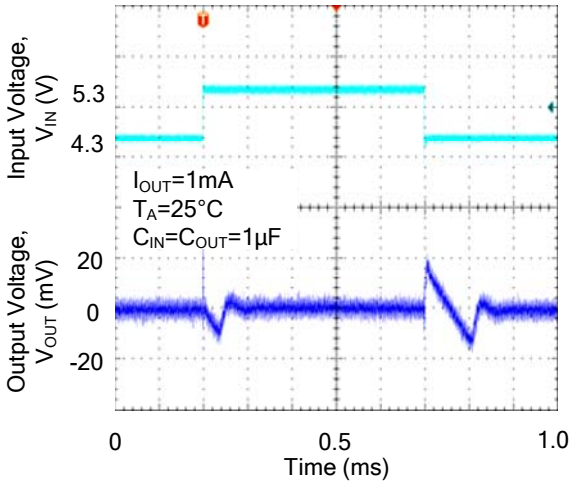


■ TYPICAL CHARACTERISTICS(Cont.)

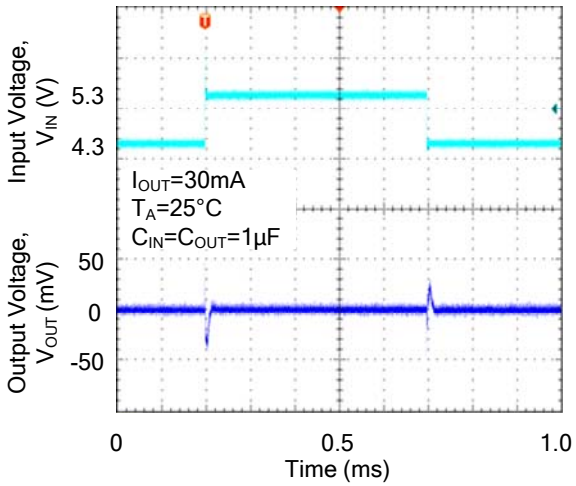
Input Transient Reponse (V_{OUT}=1.8V)



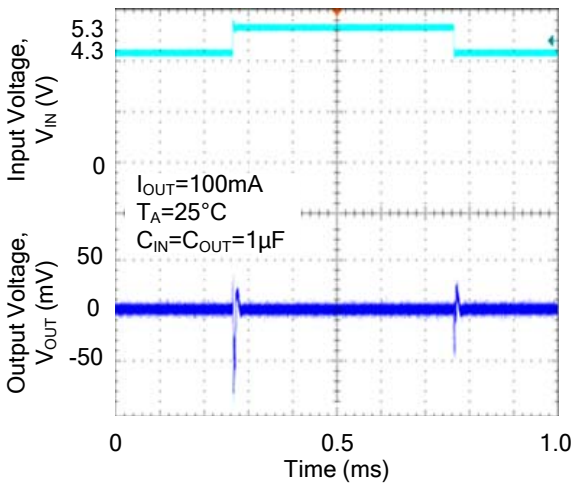
Input Transient Reponse (V_{OUT}=3.3V)



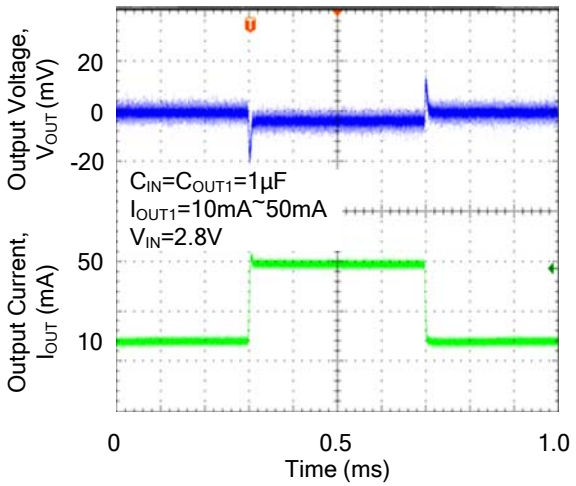
Input Transient Reponse (V_{OUT}=3.3V)



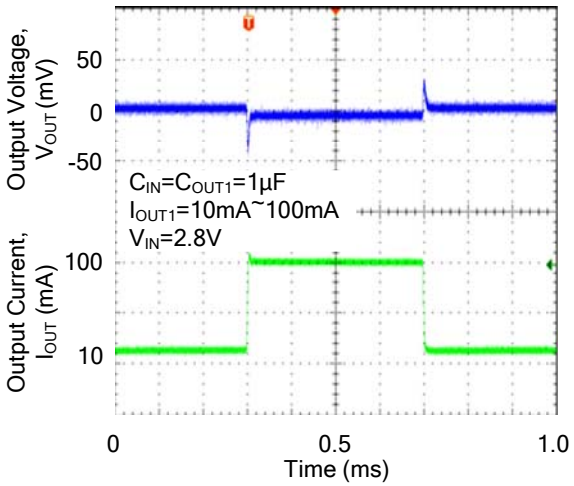
Input Transient Reponse (V_{OUT}=3.3V)



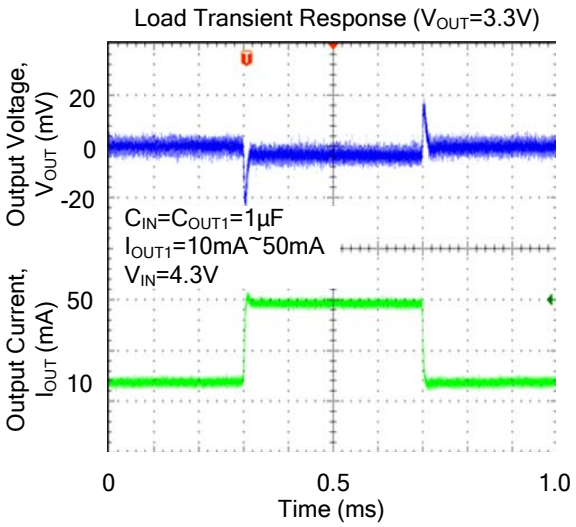
Load Transient Response (V_{OUT}=1.8V)

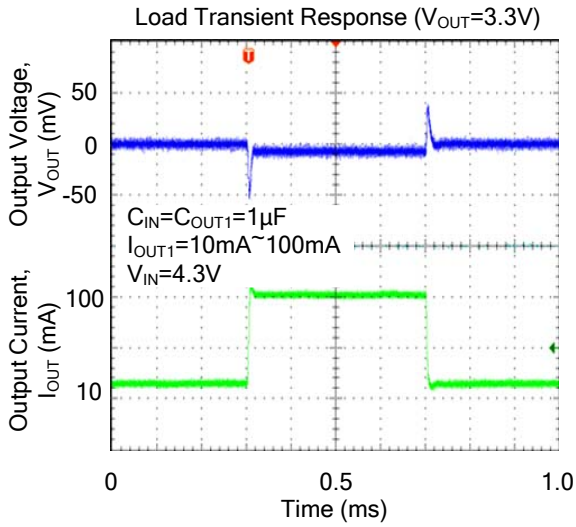


Load Transient Response (V_{OUT}=1.8V)



■ TYPICAL CHARACTERISTICS(Cont.)





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