

**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 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.

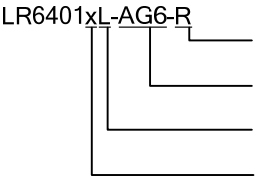
■ FEATURES

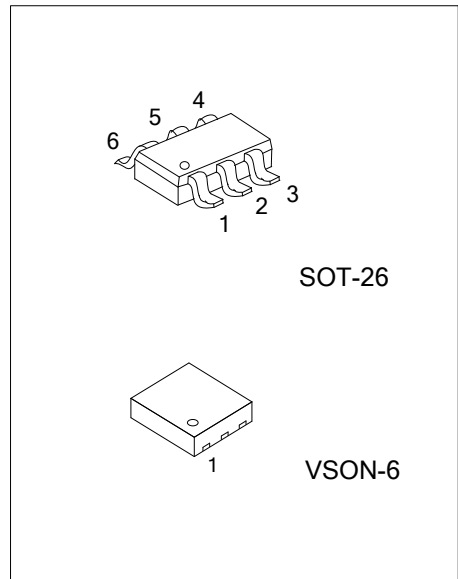
- * $V_D=150\text{mV}$ @100mA (Typ.), $V_{OUT} \geq 2.8\text{V}$
- * Range of Operating Voltage: 2.5V ~ 6.0V
- * Range of Output Voltage Range: 1.2V ~ 4.0V
- * Range of Output Current: 300mA / Channel
- * Low Power Consumption: 30 μA (Typ.) for Each Channel
- * Standby Current: 0.1 μA (Typ.)
- * Accurate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

■ ORDERING INFORMATION

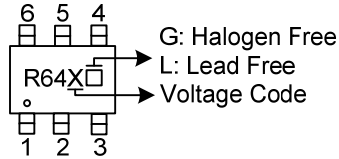
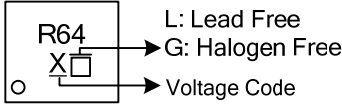
Ordering Number		Package	Packing
Lead Free	Halogen Free		
LR6401xL-AG6-R	LR6401xG-AG6-R	SOT-26	Tape Reel
LR6401xL- VB06-2018-R	LR6401xG- VB06-2018-R	VSON-6	Tape Reel

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

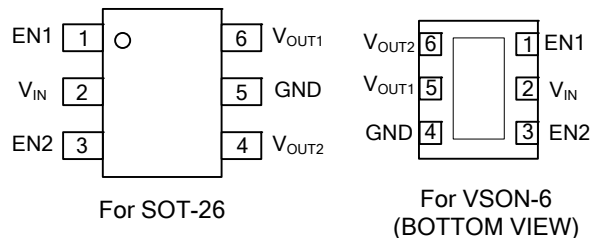
	(1) Packing Type	(1) R: Tape Reel
	(2) Package Type	(2) AG6: SOT-26, VB06-2018: VSON-6
	(3) Lead Free	(3) G: Halogen Free, L: Lead Free
	(4) Output Voltage Code	(4) x: Refer to Marking Information



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	A B C D E	
VSON-6	3.3V + 2.8V 2.85V + 2.85V 1.2V + 2.8V 1.5V + 2.8V 1.2V + 1.8V	F H M N P	

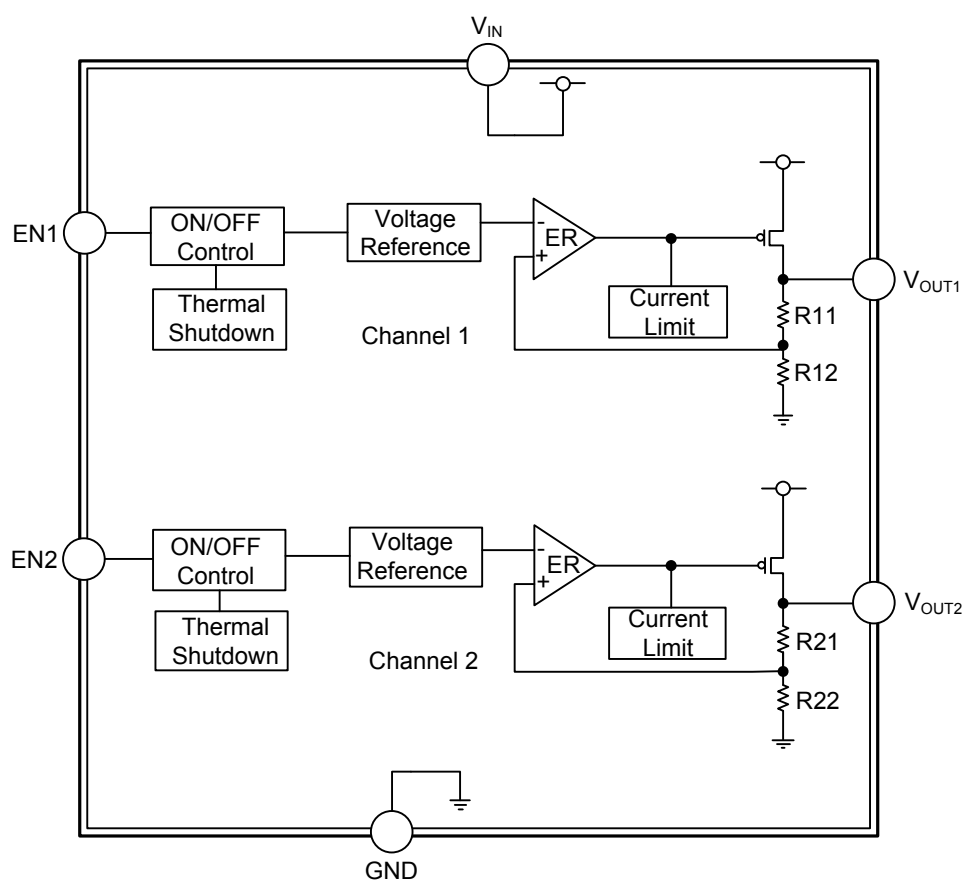
PIN CONFIGURATION



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}	$V_{SS}-0.3 \sim V_{IN}+0.3$	V
Output Voltage		V_{OUT}	$V_{SS}-0.3 \sim V_{IN}+0.3$	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 ($T_A = 25^\circ\text{C}$, unless otherwise specified.) (Note 3)

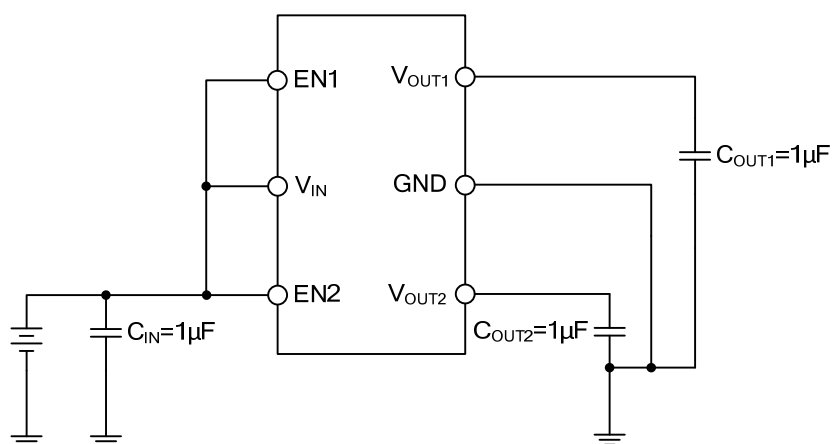
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Input Voltage		V _{IN}		2.5		6.0	V	
Output Voltage		V _{OUT}	V _{IN} =V _{OUT} +1.0V, I _{OUT} =30mA	V _{OUT} ×0.98	V _{OUT}	V _{OUT} ×1.02	V	
Line Regulation		$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	V _{OUT} +1.0V≤V _{IN} ≤6.0V I _{OUT} =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	V _{OUT} =1.2V		310	350	mV
				V _{OUT} >1.2V		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 _C V _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".

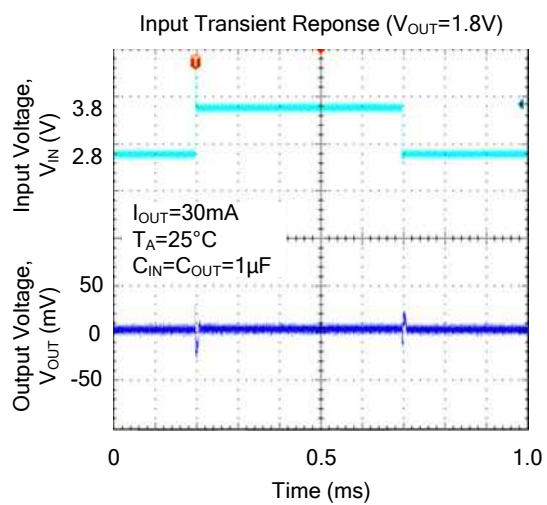
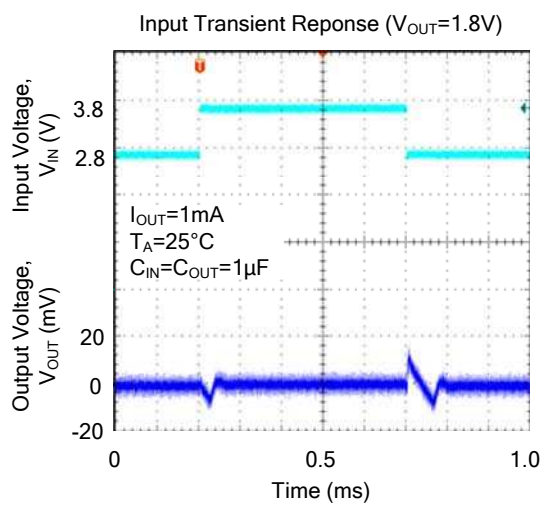
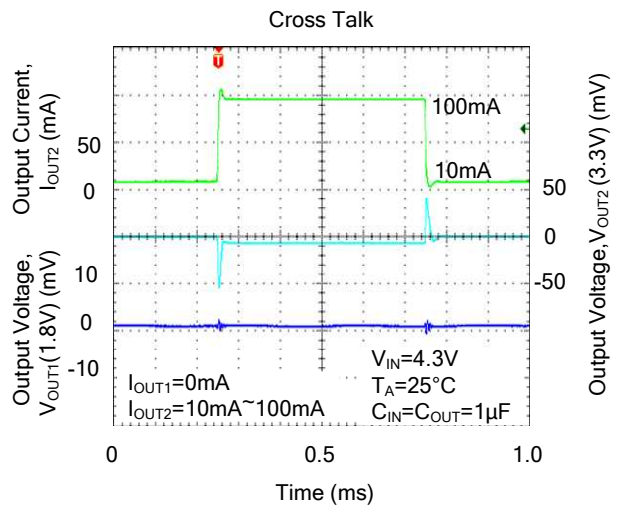
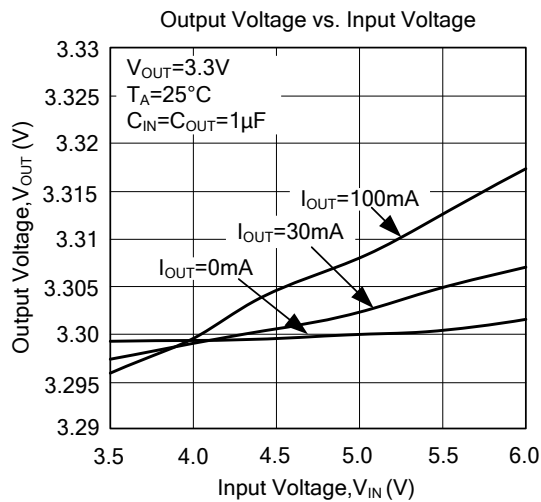
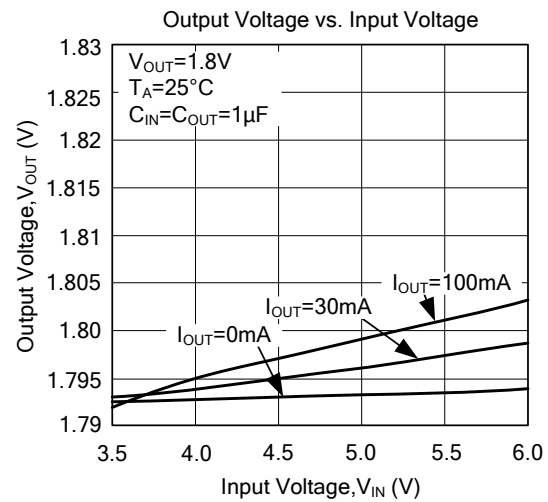
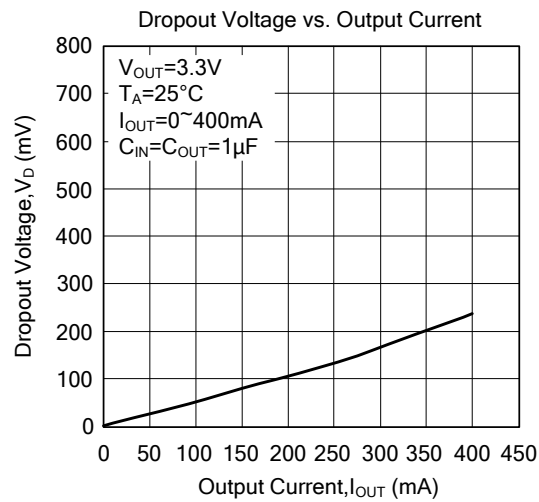
2. EN pin input voltage must be always less than or equal to input voltage.

3. The minimum operating V_{IN} Value is equal to $[V_{OUT}(\text{NOM}) + V_{DROPOUT}]$ or 2.5V, just the greater.

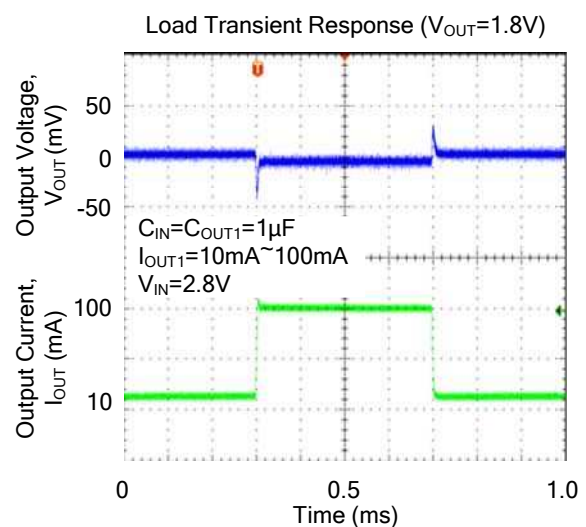
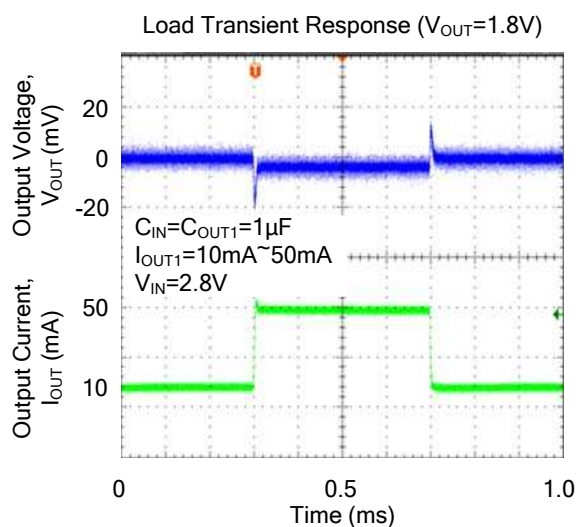
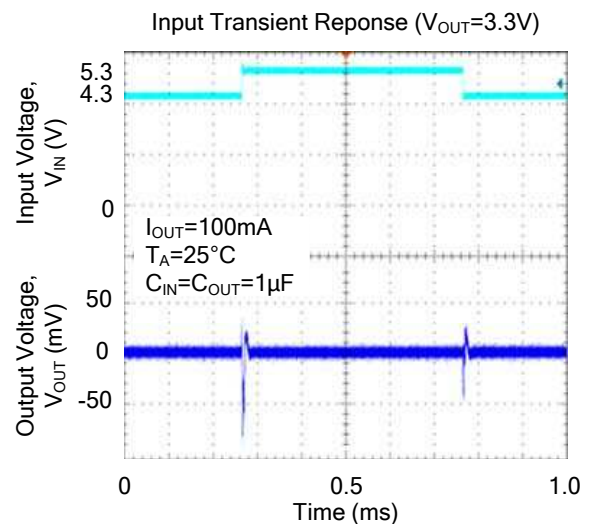
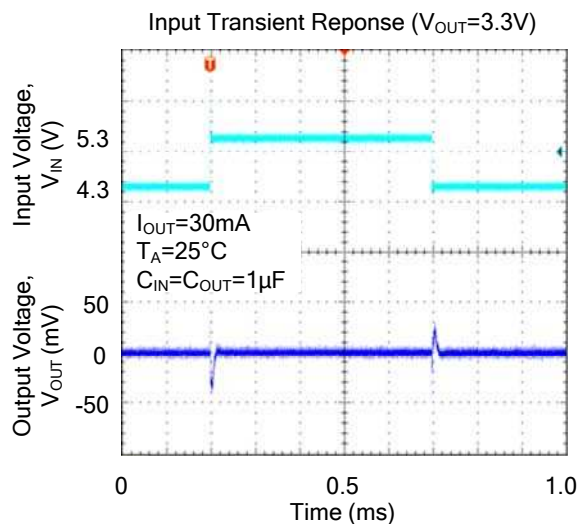
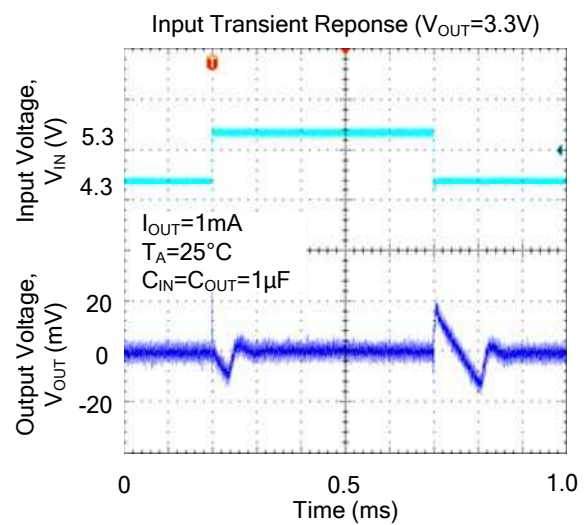
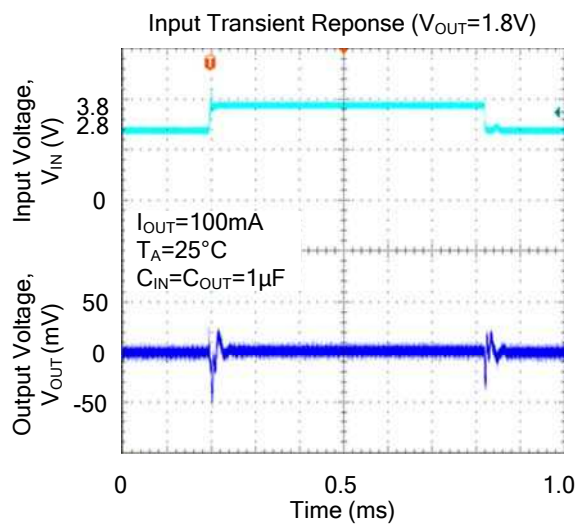
■ TYPICAL APPLICATION CIRCUIT



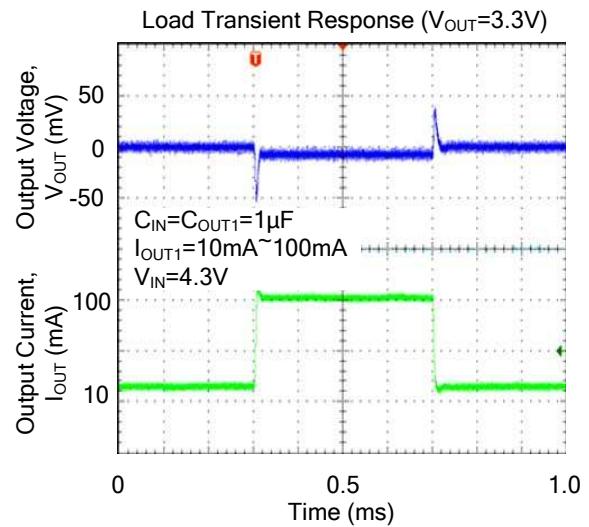
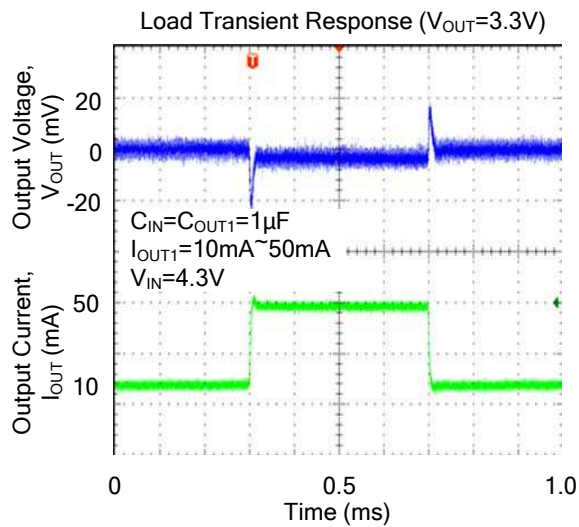
TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



■ TYPICAL CHARACTERISTICS(Cont.)



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