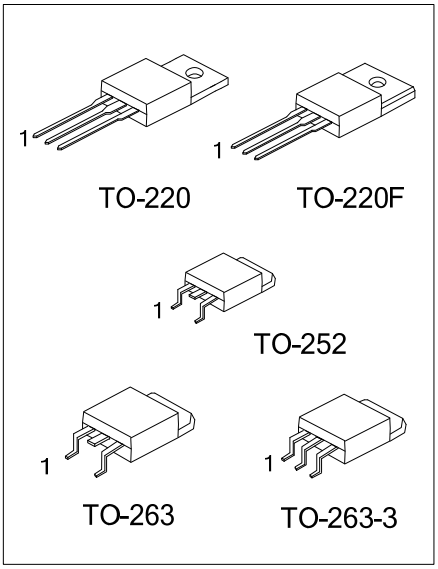
8A,5A,3A LOW DROPOUT POSITIVE REGULATORS ADJUSTABLE AND FIXED



■ DESCRIPTION

The UTC **U584/585/587** voltage regulators are monolithic integrated circuits, designed for use in applications requiring a well regulated positive output voltage with +5V input. The output voltage can be adjustable from 3.8 V down to 1.3V.

■ FEATURES

*Low dropout performance.
*Adjustable output down to 1.3V.
*Line regulation typically below 0.1%.
*Load regulation typically below 0.1%.
*Output current can be up to 8 A for UTC **U584**.
*Three-terminal adjustable or fixed 3.3V.

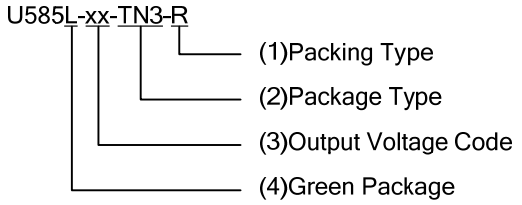
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
U584L-TA3-T	U584G-TA3-T	TO-220	A/G	O	I	Tube
U584L-TN3-R	U584G-TN3-R	TO-252	A/G	O	I	Tape Reel
U584L-TQ2-T	U584G-TQ2-T	TO-263	A/G	O	I	Tube
U584L-TQ2-R	U584G-TQ2-R	TO-263	A/G	O	I	Tape Reel
U584L-TQ3-T	U584G-TQ3-T	TO-263-3	A/G	O	I	Tube
U584L-TQ3-R	U584G-TQ3-R	TO-263-3	A/G	O	I	Tape Reel
U585L-TA3-T	U585G-TA3-T	TO-220	A/G	O	I	Tube
U585L-TN3-R	U585G-TN3-R	TO-252	A/G	O	I	Tape Reel
U585L-TQ2-T	U585G-TQ2-T	TO-263	A/G	O	I	Tube
U585L-TQ2-R	U585G-TQ2-R	TO-263	A/G	O	I	Tape Reel
U585L-TQ3-T	U585G-TQ3-T	TO-263-3	A/G	O	I	Tube
U585L-TQ3-R	U585G-TQ3-R	TO-263-3	A/G	O	I	Tape Reel
U587L-TA3-T	U587G-TA3-T	TO-220	A/G	O	I	Tube
U587L-TN3-R	U587G-TN3-R	TO-252	A/G	O	I	Tape Reel
U587L-TQ2-T	U587G-TQ2-T	TO-263	A/G	O	I	Tube
U587L-TQ2-R	U587G-TQ2-R	TO-263	A/G	O	I	Tape Reel
U587L-TQ3-T	U587G-TQ3-T	TO-263-3	A/G	O	I	Tube
U587L-TQ3-R	U587G-TQ3-R	TO-263-3	A/G	O	I	Tape Reel

■ ORDERING INFORMATION (Cont.)

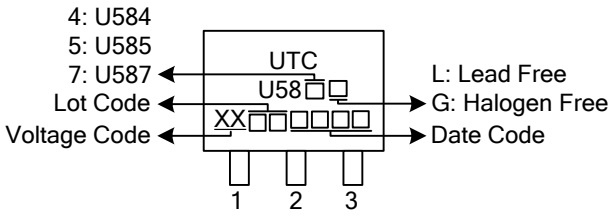
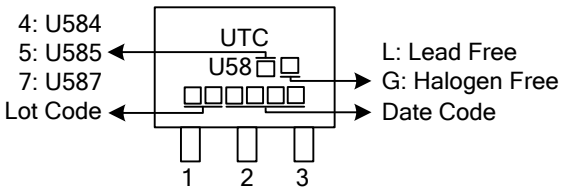
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
U584L-xx-TA3-T	U584G-xx-TA3-T	TO-220	A/G	O	I	Tube
U584L-xx-TN3-R	U584G-xx-TN3-R	TO-252	A/G	O	I	Tape Reel
U584L-xx-TQ2-T	U584G-xx-TQ2-T	TO-263	A/G	O	I	Tube
U584L-xx-TQ2-R	U584G-xx-TQ2-R	TO-263	A/G	O	I	Tape Reel
U584L-xx-TQ3-T	U584G-xx-TQ3-T	TO-263-3	A/G	O	I	Tube
U584L-xx-TQ3-R	U584G-xx-TQ3-R	TO-263-3	A/G	O	I	Tape Reel
U585L-xx-TA3-T	U585G-xx-TA3-T	TO-220	A/G	O	I	Tube
U585L-xx-TN3-R	U585G-xx-TN3-R	TO-252	A/G	O	I	Tape Reel
U585L-xx-TQ2-T	U585G-xx-TQ2-T	TO-263	A/G	O	I	Tube
U585L-xx-TQ2-R	U585G-xx-TQ2-R	TO-263	A/G	O	I	Tape Reel
U585L-xx-TQ3-T	U585G-xx-TQ3-T	TO-263-3	A/G	O	I	Tube
U585L-xx-TQ3-R	U585G-xx-TQ3-R	TO-263-3	A/G	O	I	Tape Reel
U587L-xx-TA3-T	U587G-xx-TA3-T	TO-220	A/G	O	I	Tube
U587L-xx-TN3-R	U587G-xx-TN3-R	TO-252	A/G	O	I	Tape Reel
U587L-xx-TQ2-T	U587G-xx-TQ2-T	TO-263	A/G	O	I	Tube
U587L-xx-TQ2-R	U587G-xx-TQ2-R	TO-263	A/G	O	I	Tape Reel
U587L-xx-TQ3-T	U587G-xx-TQ3-T	TO-263-3	A/G	O	I	Tube
U587L-xx-TQ3-R	U587G-xx-TQ3-R	TO-263-3	A/G	O	I	Tape Reel

Notes: 1. xx: Output voltage, refer to Marking Information.
2. A: ADJ, G: GND, O: V_{OUT}, I: V_{IN}

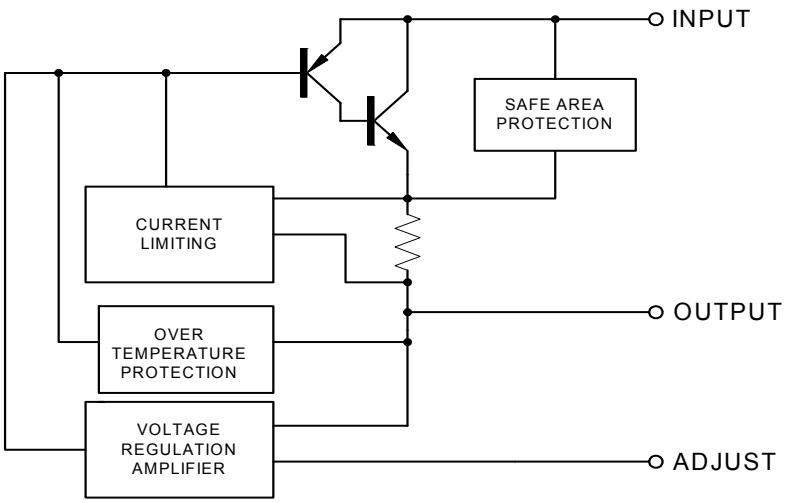


(1) R: Tape Reel, T: Tube
(2) TA3: TO-220, TN3: TO-252, TQ2: TO-263
TQ3: TO-263-3
(3) xx: refer to Marking Information
(4) L: Lead Free, G: Halogen Free and Lead Free

■ MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
TO-220 TO-252 TO-263 TO-263-3	33 :3.3V	
TO-220 TO-252 TO-263 TO-263-3	-	

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS

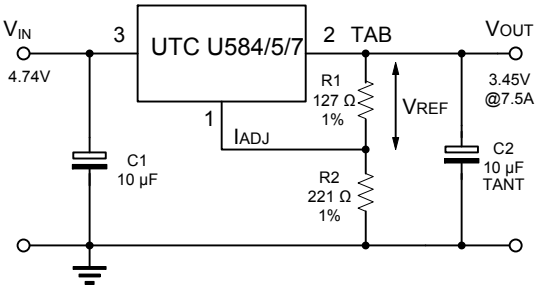
PARAMETER	SYMBOL	VALUE	UNIT
Input Voltage	V_{IN}	7	V
Power Dissipation	P_D	Internally Limited	W
Operating Junction Temperature Range	T_J	0 ~ 125	°C
Storage Temperature	T_{STG}	-65 ~ 150	°C
Lead Temperature (Soldering 10 Sec.)	T_{LEAD}	300	°C

■ ELECTRICAL CHARACTERISTICS

PARAMETER		TEST CONDITIONS			MIN	TYP	MAX	UNIT
Reference Voltage	U584	$1.3V \le (V_{IN}-V_{OUT}) \le 3V$, $10mA \le I_{OUT} \le 8A$		*	1.225	1.25	1.275	V
	U585	$1.3V \le (V_{IN}-V_{OUT}) \le 3V$, $10mA \le I_{OUT} \le 3A$						
	U587	$1.3V \le (V_{IN}-V_{OUT}) \le 3V$, $10mA \le I_{OUT} \le 5A$						
Output Voltage	U584-3.3	$4.75V \le V_{IN} \le 6.5V$, $10mA \le I_{OUT} \le 8A$			3.234	3.300	3.366	V
	U585-3.3	$4.75V \le V_{IN} \le 7V$, $10mA \le I_{OUT} \le 5A$						
	U587-3.3	$4.75V \le V_{IN} \le 7V$, $10mA \le I_{OUT} \le 3A$						
Line Regulation (Note 1.2)	U584/5/7	$2.75V \le V_{IN} \le 7V$, $I_{OUT}=10mA$				0.1	0.2	%
	U584/5/7-3.3	$4.75V \le V_{IN} \le 7V$, $I_{OUT}=0mA$						
Load Regulation (Note 1, 2, 3)	U584/5/7	$V_{IN}-V_{OUT}=2.5V$.T_J =25°C, $10mA \le I_{OUT} <= I_{FULLLOAD}$		*		0.2	1.0	%
	U584/5/7-3.3	V_{IN}=5V, T_J =25°C, $0mA \le I_{OUT} \le I_{FULLLOAD}$						
Dropout Voltage		ΔV_{REF}=1%, $I_{OUT}= I_{FULLLOAD}$	$T_J \le 25°C$			1.2	1.3	V
			$T_J \le 25°C$			1.2	1.35	V
Current Limit (Note 3)	U584	$V_{IN}-V_{OUT}$=3V		*	8.0	8.5		A
	U585	$V_{IN}-V_{OUT}$=3V			5.0	5.5		A
	U587	$V_{IN}-V_{OUT}$=3V			3.0	3.6		A
Adjust Pin Current						55	120	μA
Adjust Pin Current Change (Note 3)		$1.5V \le (V_{IN}-V_{OUT}) \le 3V$, $10mA \le I_{OUT} \le I_{FULLLOAD}$				0.2	5	mA
Minimum Load Current		$1.5V \le (V_{IN}-V_{OUT}) \le 3V$		*		2	10	mA
Quiescent Circuit Current		$V_{IN} \le 5V$		*		8	13	mA
Ripple Rejection		f=120Hz, C_{OUT}=25μATant, $V_{IN}-V_{OUT}$ =2.5V , $I_{OUT}= I_{FULLLOAD}$			60	72		dB
Temperature Stability						0.5		%
Long-Term Stability		T_A=25°C, 1000Hrs				0.03	1.0	%
RMS Output Noise (% of V_{OUT})		T_A=125°C, 10Hz ≤ f ≤ 10kHz				0.03		%
Thermal Resistance Junction to Case	U584						1.6	°C /W
	U587						3.0	°C /W
Thermal Resistance Junction to Ambient, θ_{JA}	U585						60	°C /W
Thermal Resistance Junction to T_{AB}, θ_{JT}	U585						2.7	°C /W

Notes: 1. The * denotes specifications which apply over the specified operating temperature range.
2. Load and line regulation are measured at a constant junction temperature by low duty cycle pulse testing.
3. Line and load regulation are guaranteed up to the maximum power dissipation (15W for the UTC **U584**, 10W for the UTC **U585**). Power dissipation is determined by input / output differential and the output current. Guaranteed maximum output power will not be available over the full input-output voltage range.
4. $I_{FULLLOAD}$ is defined as the maximum value of output load current as a function of input-to-output voltage. Output current can be different for different input-to-output voltage.

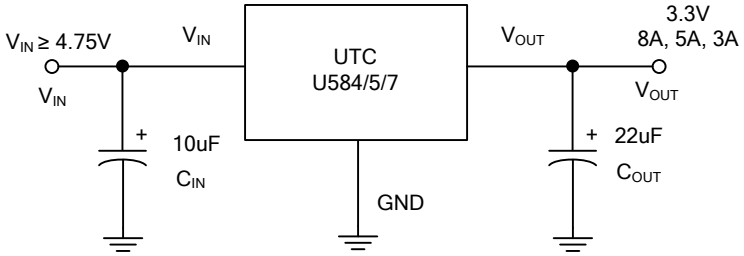
■ APPLICATION CIRCUIT (ADJUSTABLE)



REQUIRED FOR STABILITY

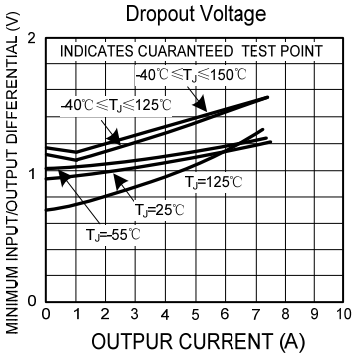
$V_{OUT}=V_{REF}\times(1+R2/R1)+I_{ADJ}\times R2$

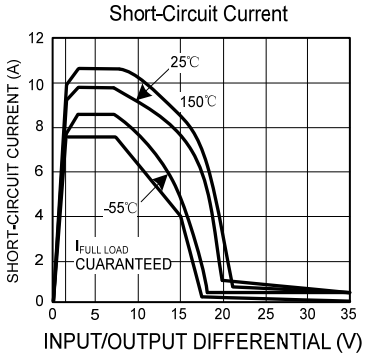
■ APPLICATION CIRCUIT (3.3V)

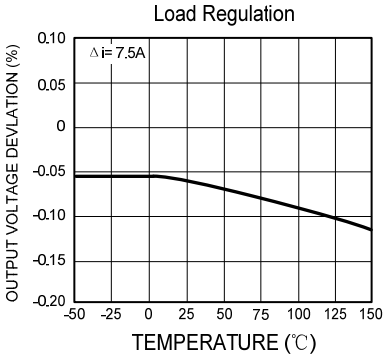


■ TYPICAL PERFORMANCE CHARACTERISTICS

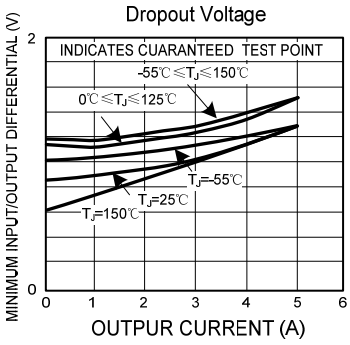
U584

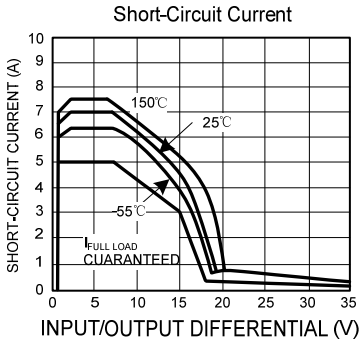


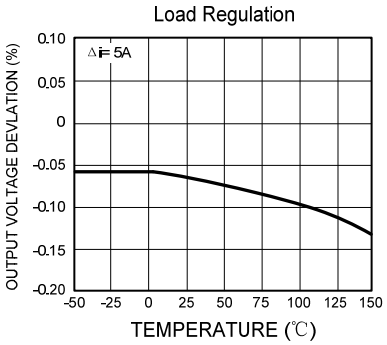




U585







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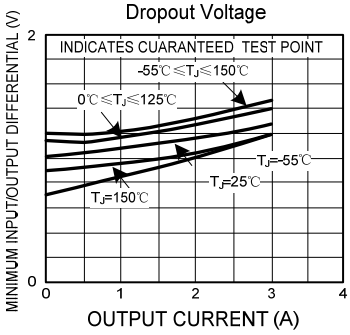
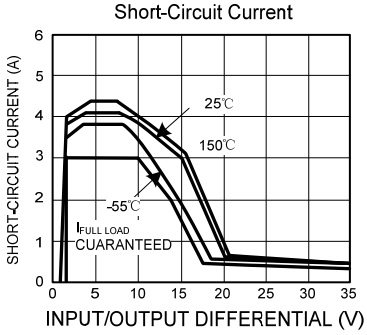
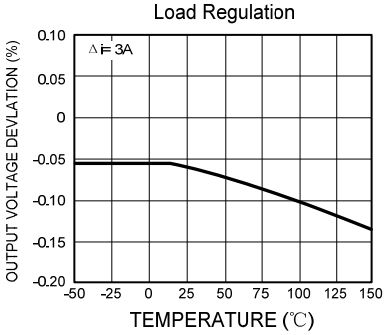
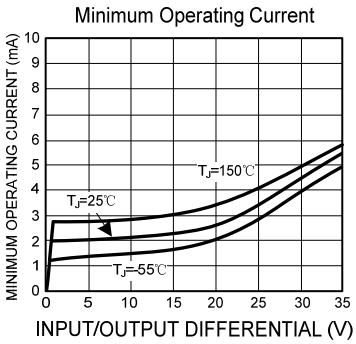
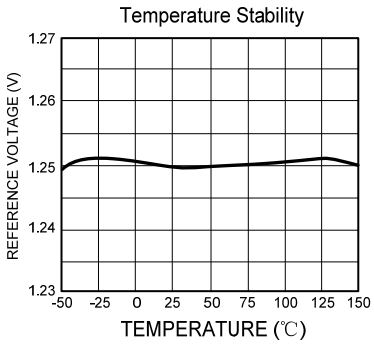
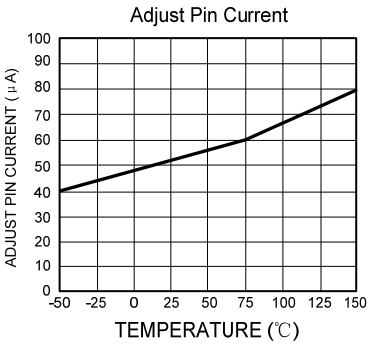








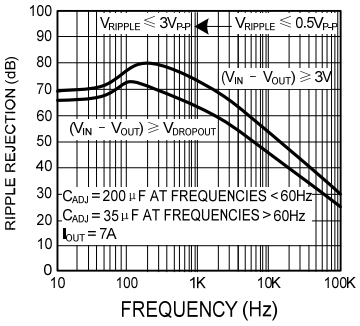




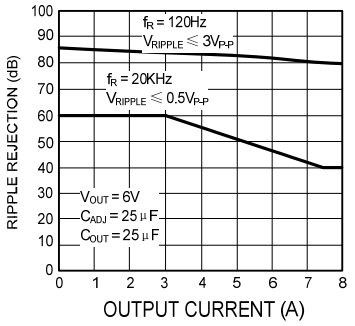
■ TYPICAL PERFORMANCE CHARACTERISTICS (Cont.)

U584

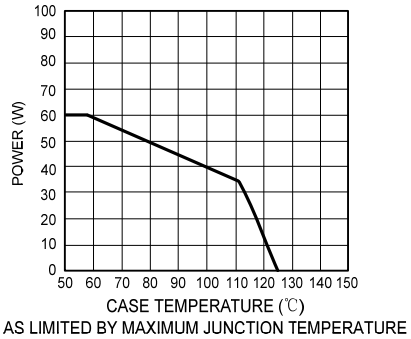
Ripple Rejection



Ripple Rejection vs Current

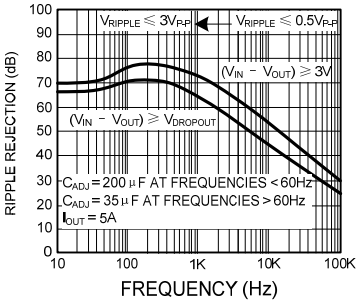


Maximum Power Dissipation

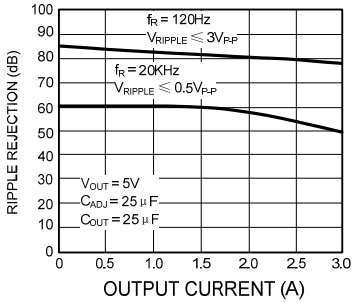


U585

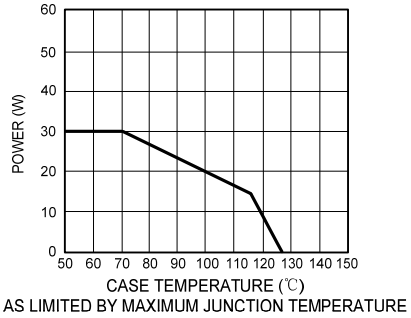
Ripple Rejection



Ripple Rejection vs Current

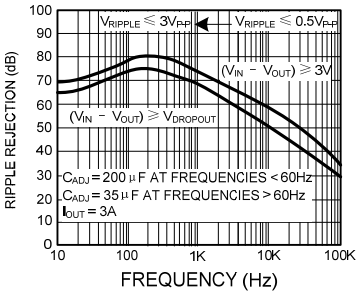


Maximum Power Dissipation

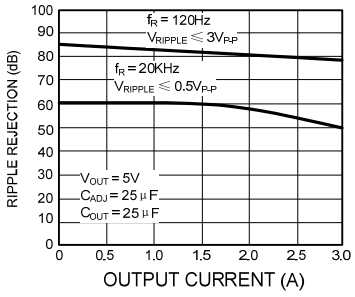


U587

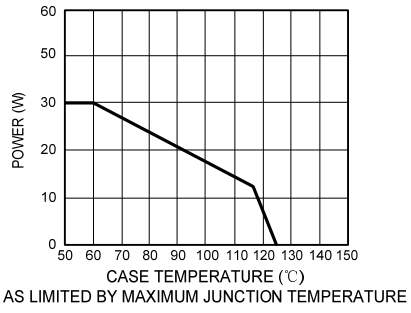
Ripple Rejection



Ripple Rejection vs Current

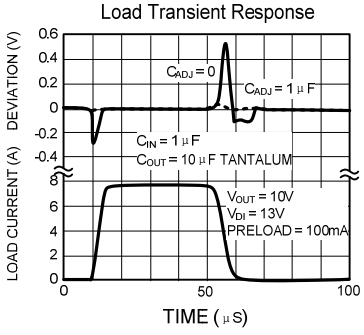


Maximum Power Dissipation



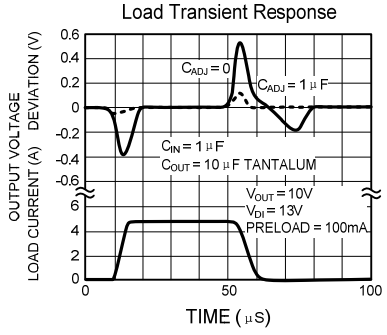
U584

Load Transient Response



U585

Load Transient Response



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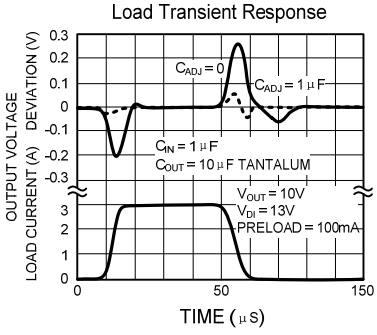
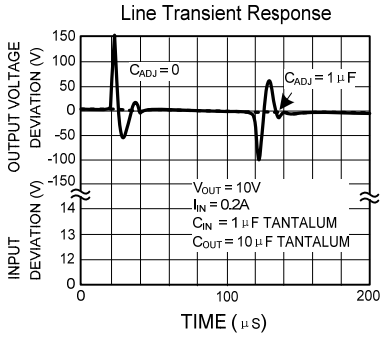
Load Transient Response



■ TYPICAL PERFORMANCE CHARACTERISTICS (Cont.)

U584



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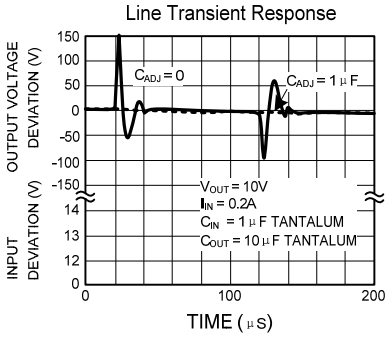

U587