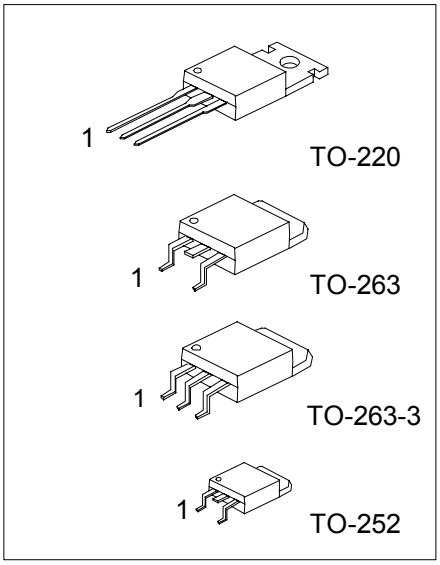
UTC U584/5/7 LINEAR INTEGRATED CIRCUIT

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



1: ADJ/GND 2: OUTPUT 3: INPUT

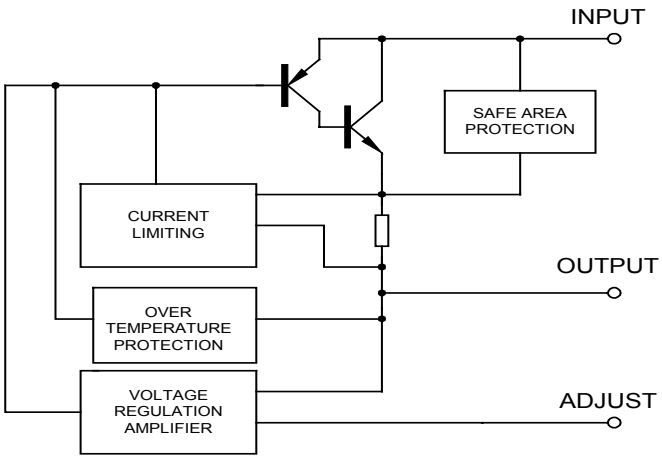
DESCRIPTION

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.

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 to 125	°C
Storage Temperature	T_{STG}	-65 to 150	°C
Lead Temperature (Soldering 10 Sec.)	T_{LEAD}	300	°C

ELECTRICAL CHARACTERISTICS

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

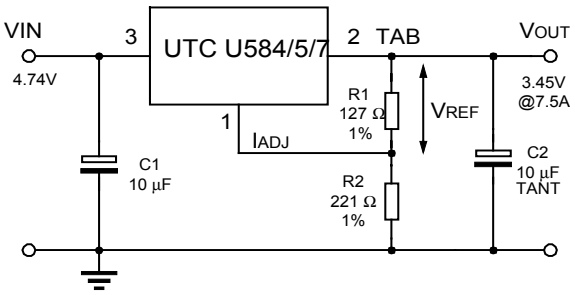
The * denotes specifications which apply over the specified operating temperature range.

Note 1: Load and line regulation are measured at a constant junction temperature by low duty cycle pulse testing.

Note 2: 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.

Note 3: $I_{FULLLOAD}$ 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.

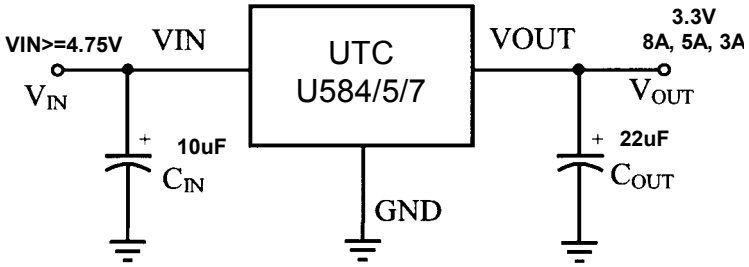
APPLICATION CIRCUIT (ADJUSTABLE)



REQUIRED FOR STABILITY

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

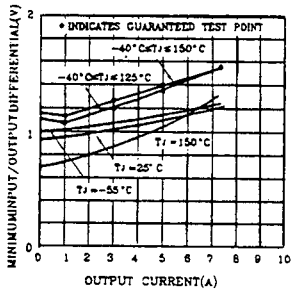
APPLICATION CIRCUIT (3.3V)



TYPICAL PERFORMANCE CHARACTERISTICS

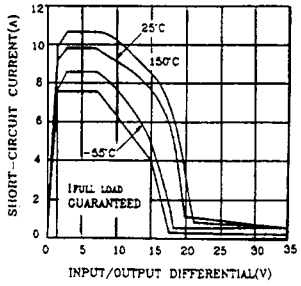
U584

Dropout Voltage



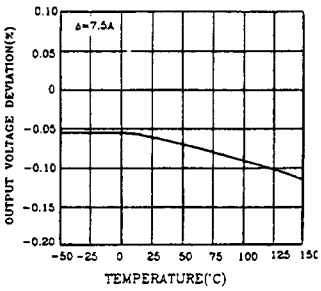
U584

Short-Circut Current



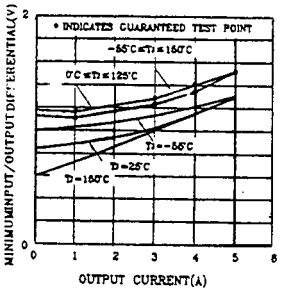
U584

Load Regulation



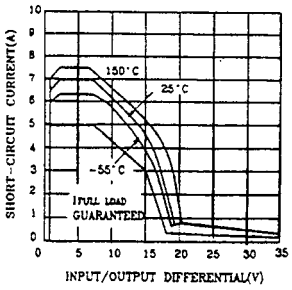
U585

Dropout Voltage



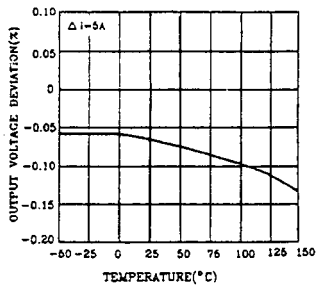
U585

Short-Circut Current



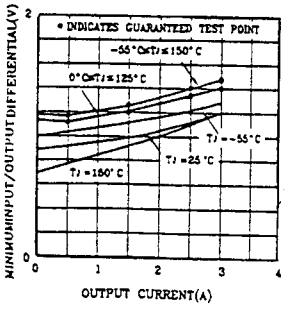
U585

Load Regulation



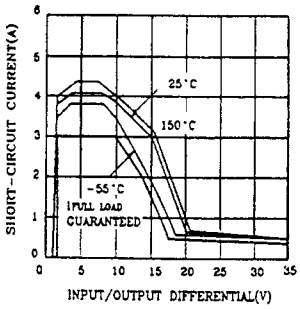
U587

Dropout Voltage



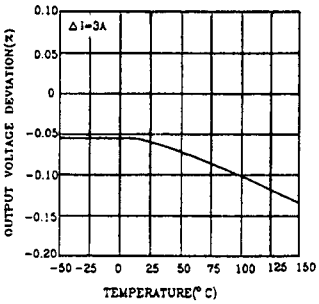
U587

Short-Circut Current

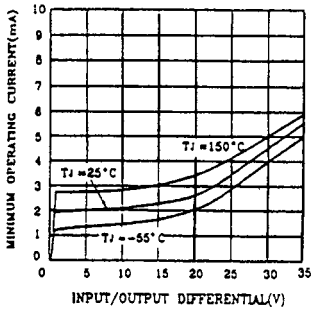


U587

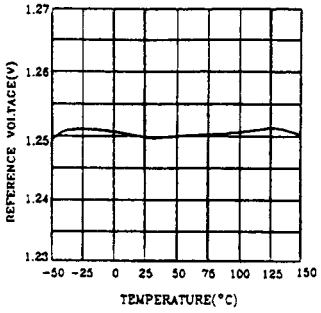
Load Regulation



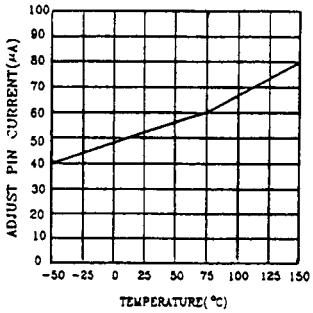
Minimum Operating Current



Temperature Stability

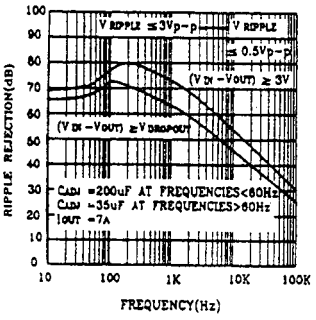


Adjust Pin Current



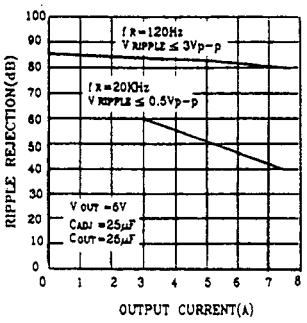
U584

Ripple Rejection



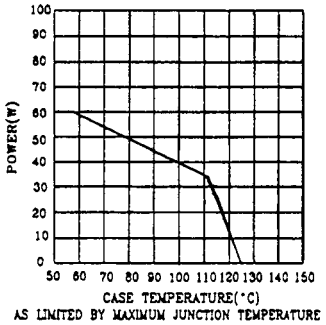
U584

Ripple Rejection vs Current



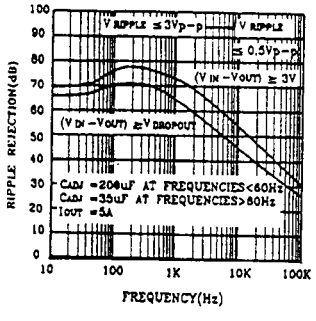
U584

Maximum Power Dissipation*



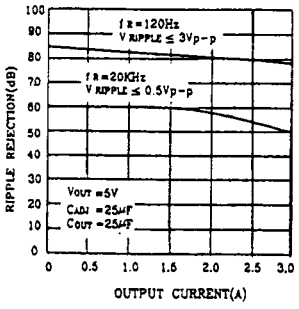
U585

Ripple Rejection



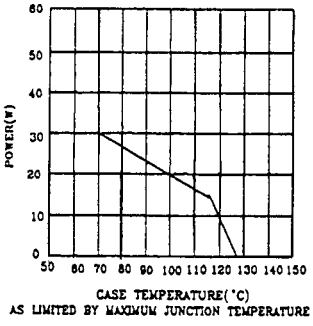
U585

Ripple Rejection vs Current



U585

Maximum Power Dissipation



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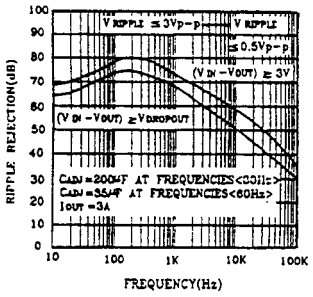
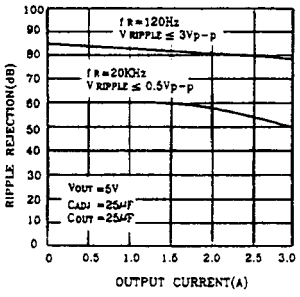
Ripple Rejection



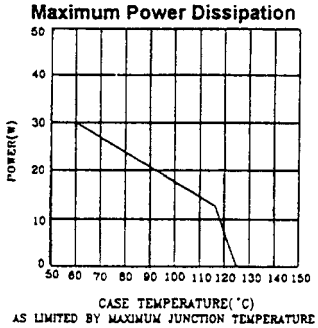
U587

Ripple Rejuction vs Current



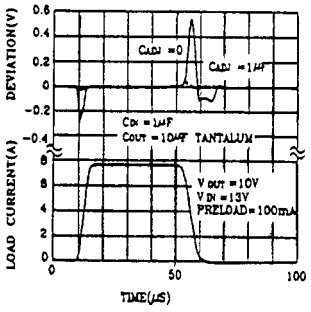
U587

Maximum Power Dissipation



U584

Load Transient Response



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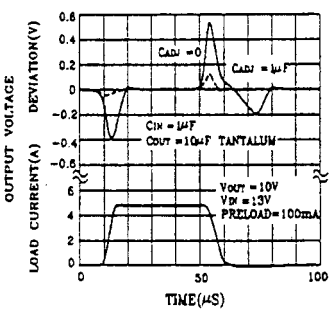
Load Transient Response



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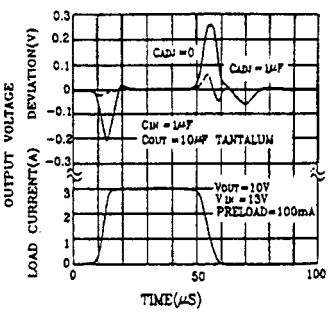
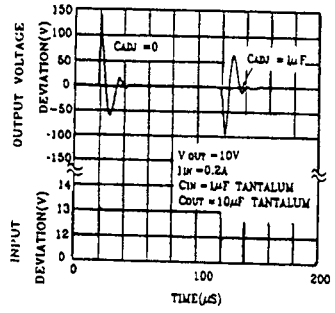
Load Transient Response



U584

Line Transient Response



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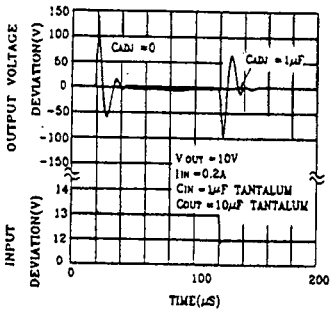
Line Transient Response



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Line Transient Response