

UTC U584/5/7 LINEAR INTEGRATED CIRCUIT

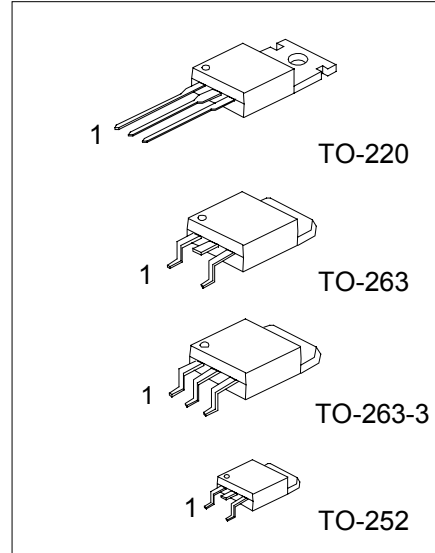
8A,5A,3A LOW DROPOUT POSITIVE REGULATORS ADJUSTABLE AND FIXED

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.

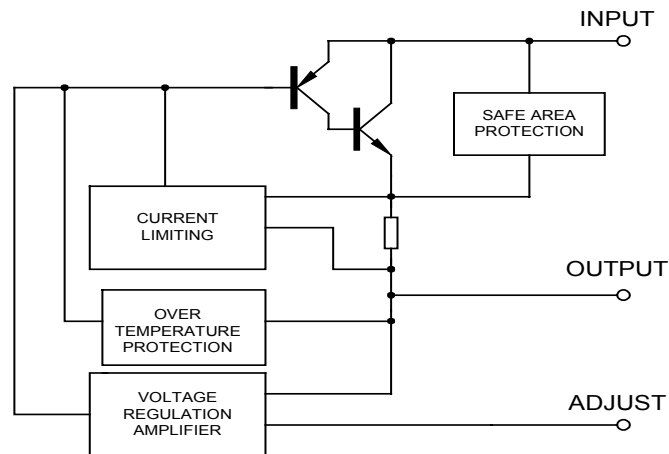
FEATURES

- *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.



1: ADJ/GND 2: OUTPUT 3: INPUT

BLOCK DIAGRAM



UTC U584/5/7 LINEAR INTEGRATED CIRCUIT

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, T _J =25°C, 10mA≤I _{OUT} ≤I _{FULLLOAD} V _{IN} =5V, T _J =25°C, 0mA≤I _{OUT} ≤I _{FULLLOAD}	*	0.2	1.0	%
Dropout Voltage	ΔV _{REF} =1%, I _{OUT} = I _{FULLLOAD} T _J ≥25°C T _J ≤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} =25μA, T _{ant} , 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 U587				1.6 3.0	°C /W
Thermal Resistance Junction to Ambient, θ _{JA} U585				60	°C /W
Thermal Resistance Junction to Board, θ _{JT} U585				2.7	°C /W

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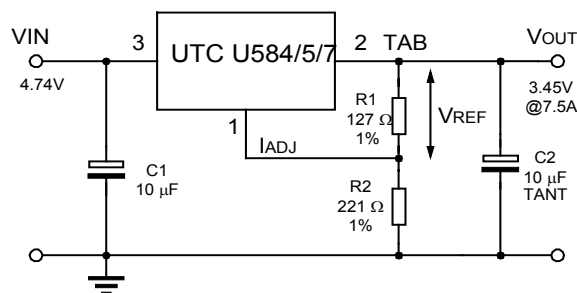
The * denotes specifications which apply over the specified operating temperature range.

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.

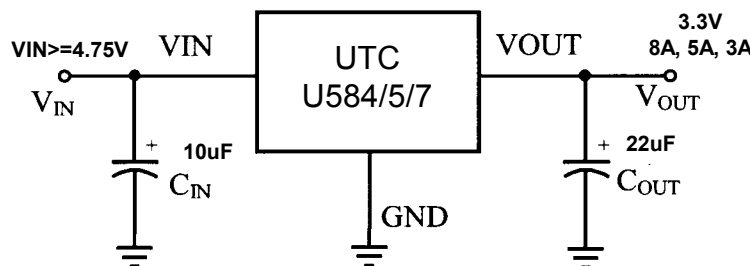
APPLICATION CIRCUIT (ADJUSTABLE)



REQUIRED FOR STABILITY

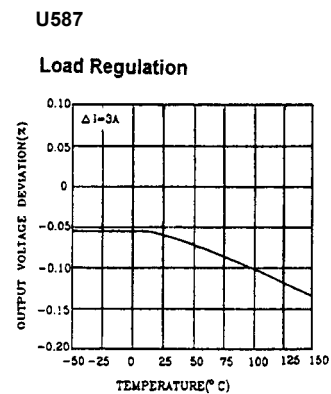
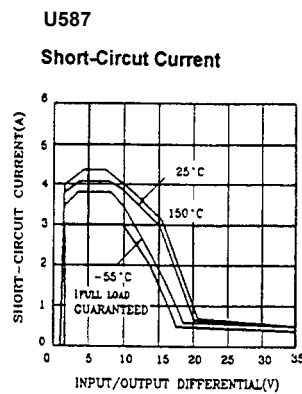
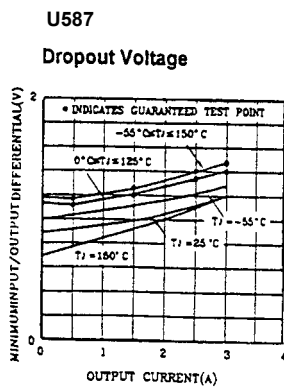
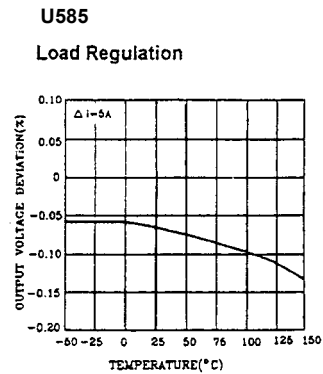
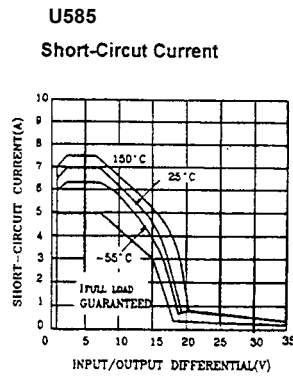
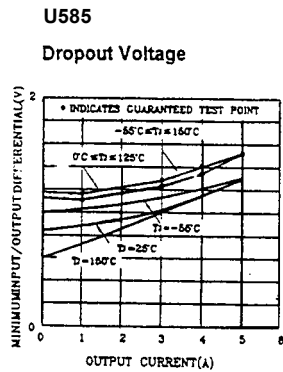
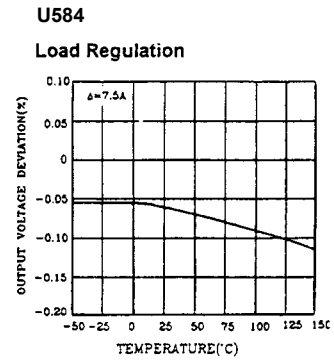
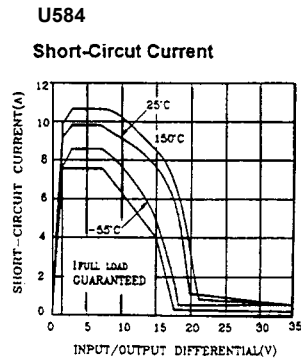
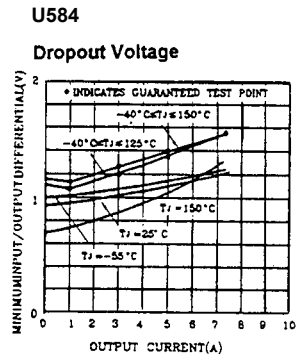
$$V_{OUT} = V_{REF} \cdot (1 + R_2/R_1) + I_{ADJ} \cdot R_2$$

APPLICATION CIRCUIT (3.3V)



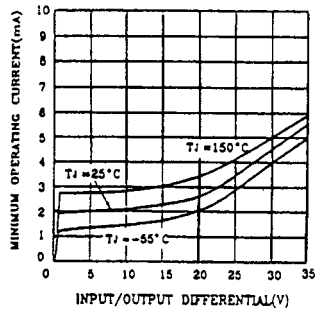
UTC U584/57 LINEAR INTEGRATED CIRCUIT

TYPICAL PERFORMANCE CHARACTERISTICS

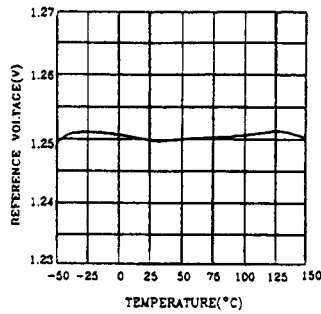


UTC U584/5/7 LINEAR INTEGRATED CIRCUIT

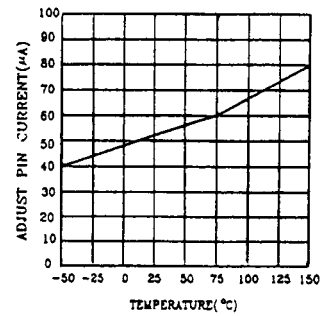
Minimum Operating Current



Temperature Stability

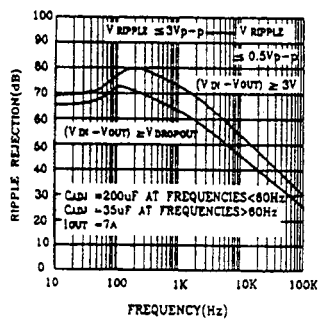


Adjust Pin Current



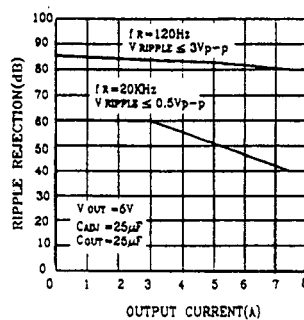
U584

Ripple Rejection



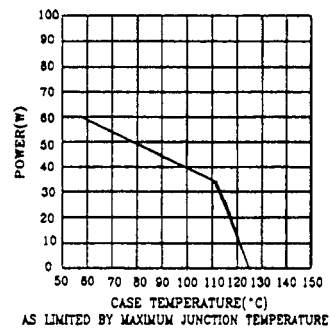
U584

Ripple Rejection vs Current



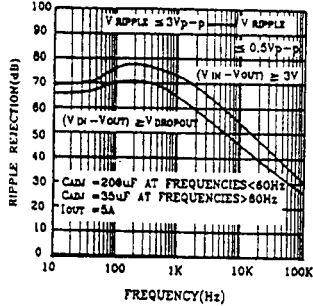
U584

Maximum Power Dissipation*



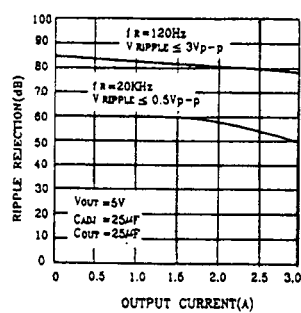
U585

Ripple Rejection



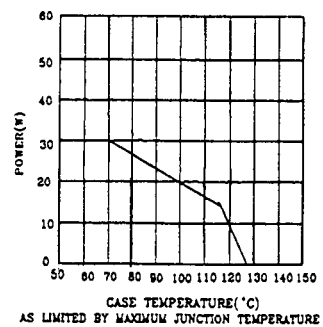
U585

Ripple Rejection vs Current

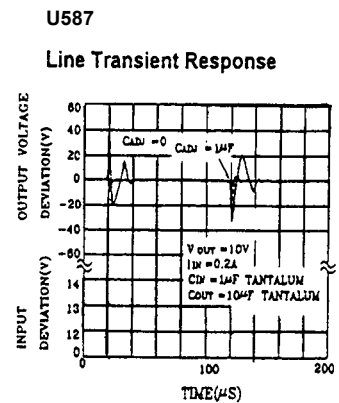
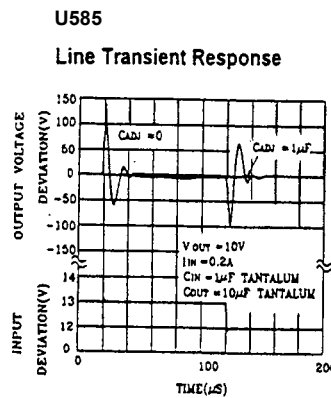
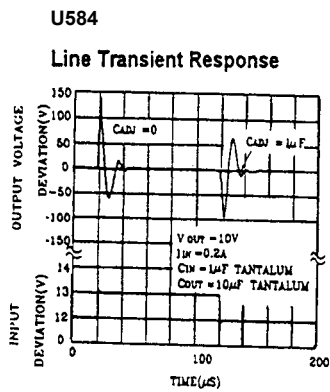
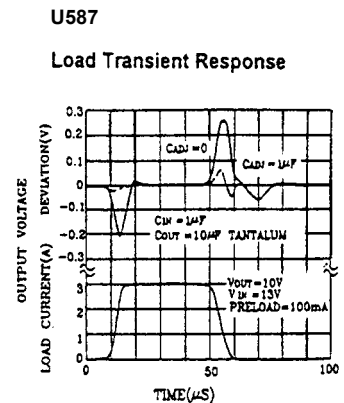
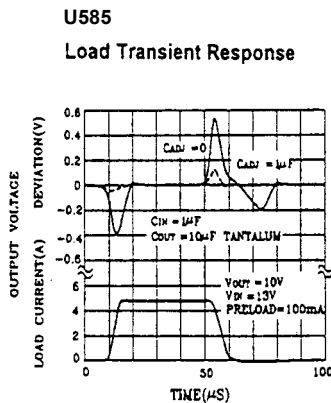
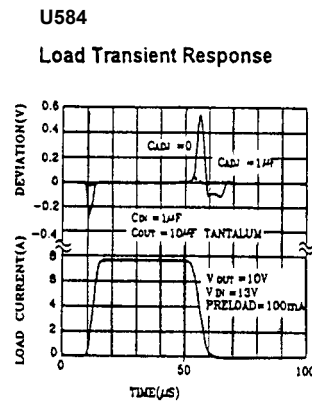
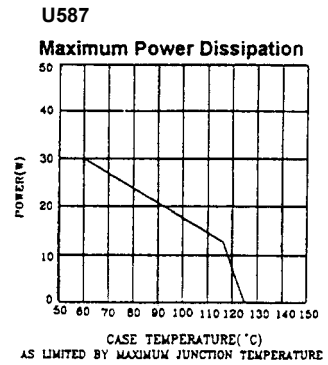
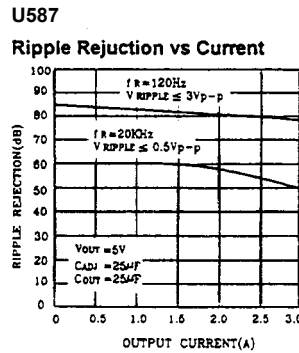
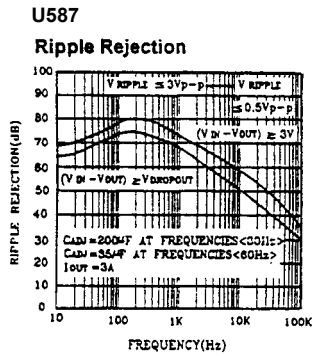


U585

Maximum Power Dissipation



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