

UTC U584/57 LINEAR INTEGRATED CIRCUIT

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

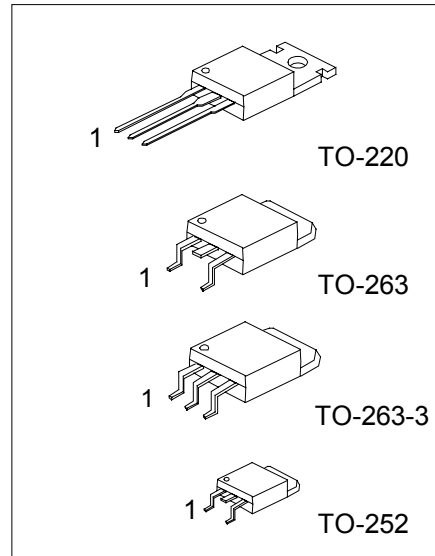
DESCRIPTION

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.

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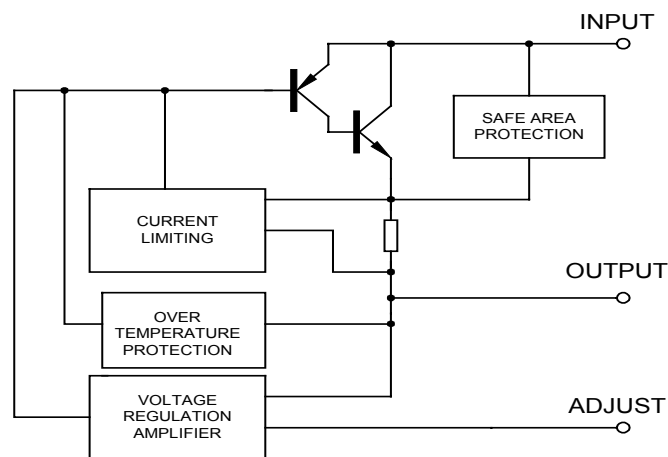
FEATURES

- *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



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QW-R102-003,E

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

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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 Tant, 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.

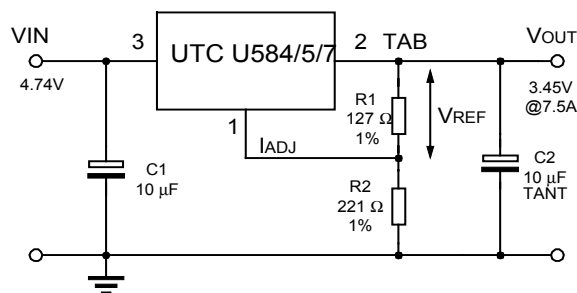
Note 1: Load and line regulation are measured at a constant junction temperature by low duty cycle pulse testing.

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: IFULLLOAD 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)

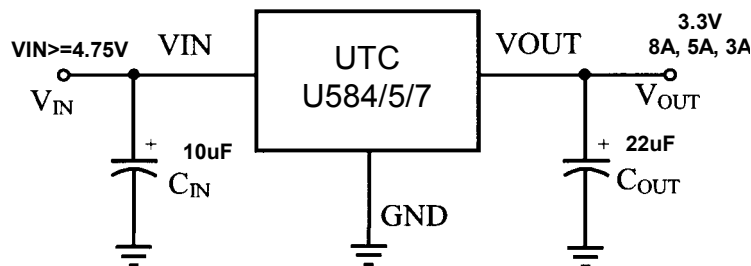
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REQUIRED FOR STABILITY

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

APPLICATION CIRCUIT (3.3V)

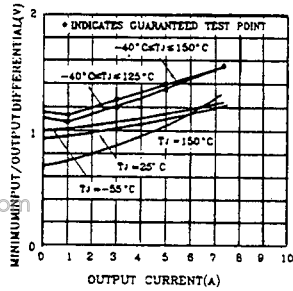


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TYPICAL PERFORMANCE CHARACTERISTICS

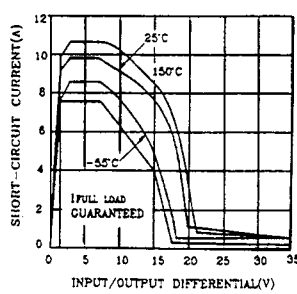
U584

Dropout Voltage



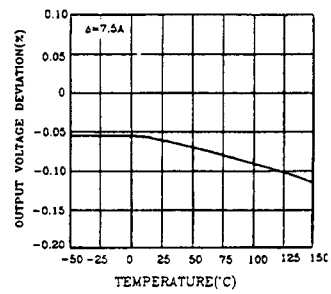
U584

Short-Circuit Current



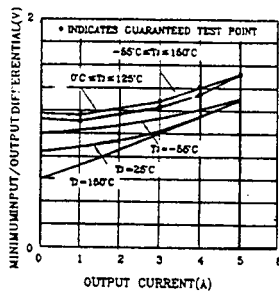
U584

Load Regulation



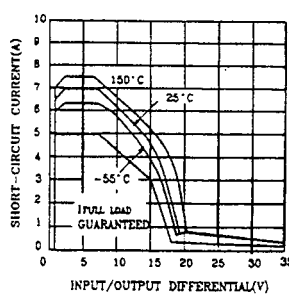
U585

Dropout Voltage



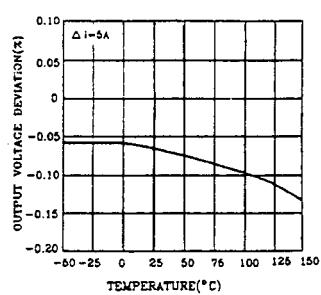
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Short-Circuit Current



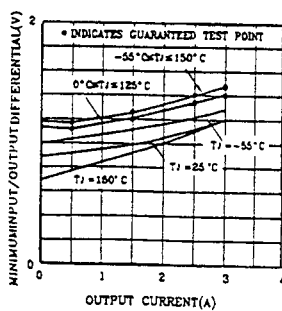
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Load Regulation



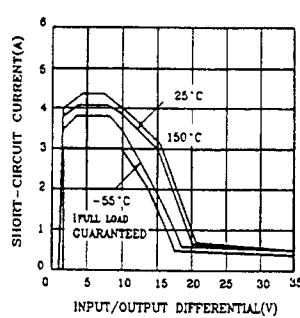
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Dropout Voltage



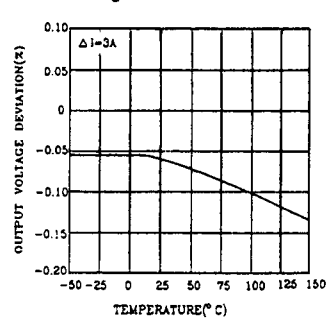
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Short-Circuit Current



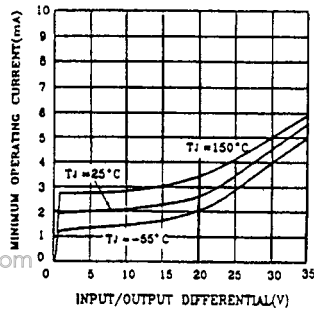
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Load Regulation

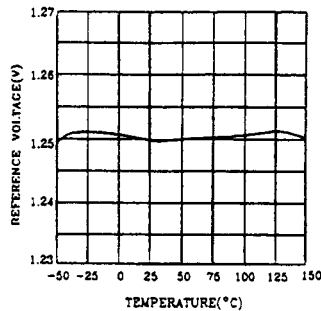


UTC U584/5/7 LINEAR INTEGRATED CIRCUIT

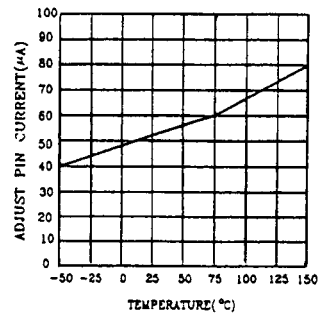
Minimum Operating Current



Temperature Stability

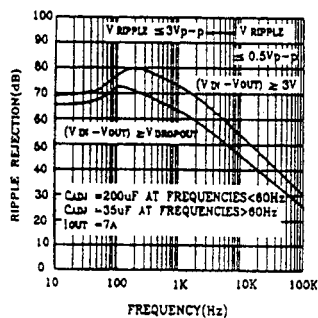


Adjust Pin Current



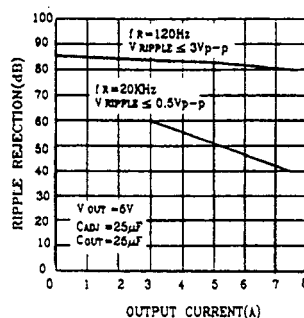
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Ripple Rejection



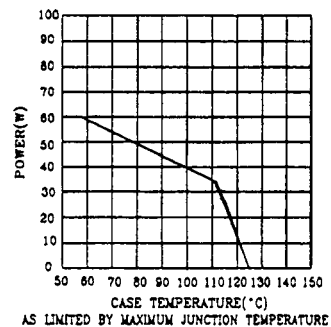
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Ripple Rejection vs Current



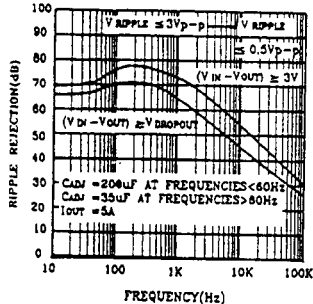
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Maximum Power Dissipation*



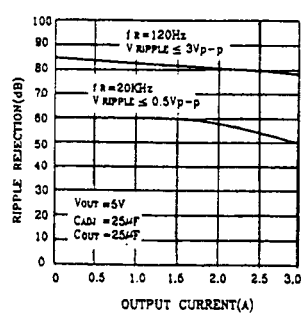
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Ripple Rejection



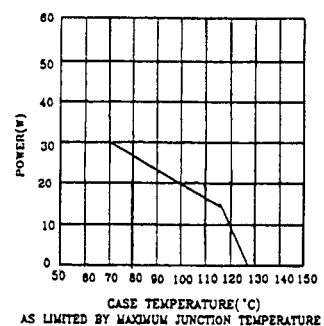
U585

Ripple Rejection vs Current



U585

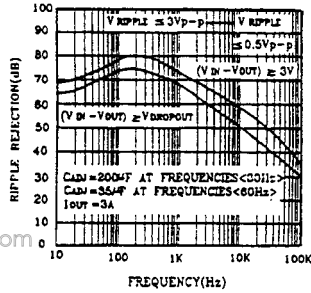
Maximum Power Dissipation



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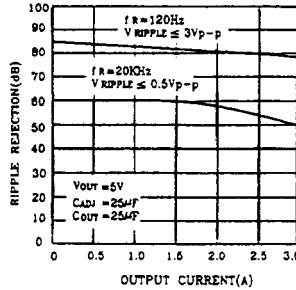
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Ripple Rejection



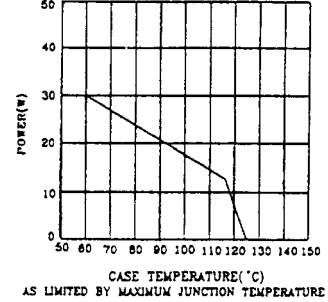
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Ripple Rejection vs Current



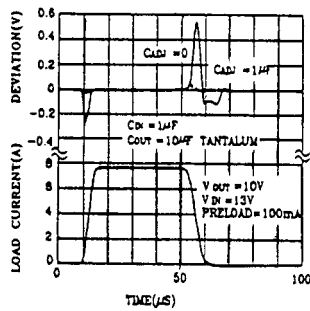
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Maximum Power Dissipation



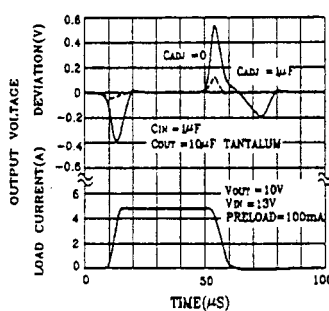
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Load Transient Response



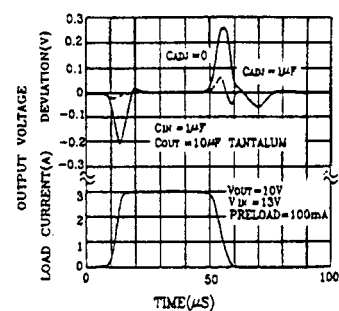
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Load Transient Response



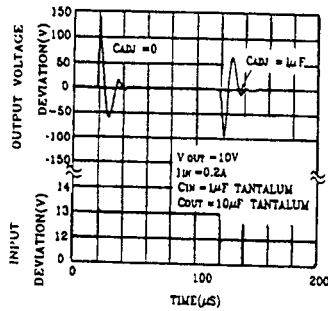
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Load Transient Response



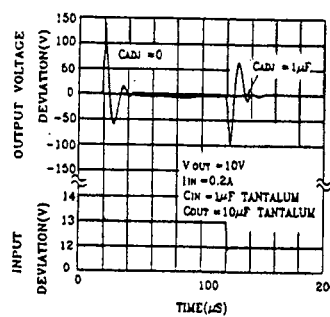
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Line Transient Response



U585

Line Transient Response



U587

Line Transient Response

