

# UTC U584/57 LINEAR INTEGRATED CIRCUIT

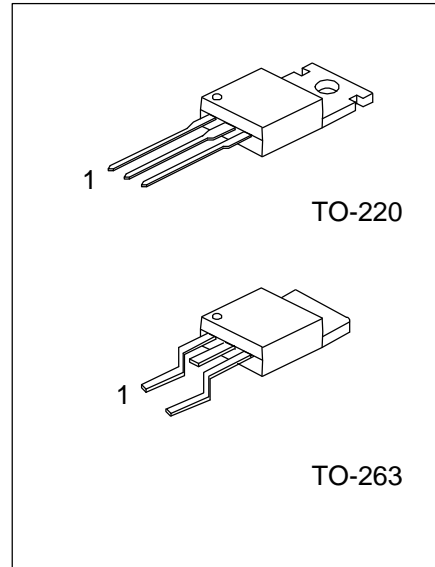
## 3~8 AMP 5V TO 3.3V VOLTAGE CONVERSION REGULATOR

### 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.

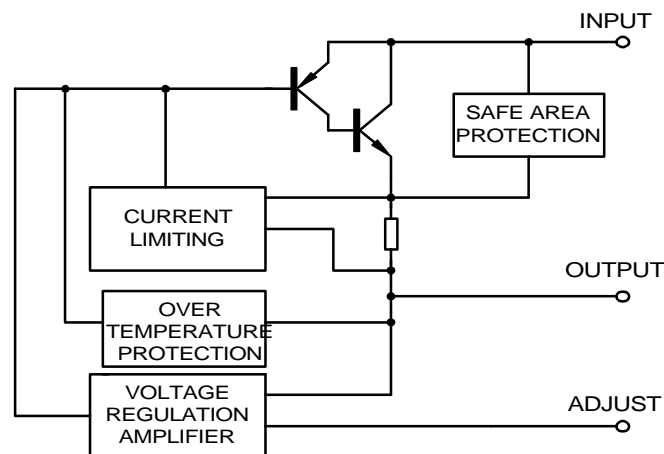
### FEATURES

- \*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.



1: COMMON 2: OUTPUT 3: INPUT

### BLOCK DIAGRAM



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## ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNIT
Input Voltage	V <sub>IN</sub>	7	V
Power Dissipation	P <sub>D</sub>	Internally Limited	W
Operating Junction Temperature Range	T <sub>J</sub>	0 to 125	°C
Storage Temperature	T <sub>STG</sub>	-65 to 150	°C
Lead Temperature (Soldering 10 Sec.)	T <sub>LEAD</sub>	300	°C

## ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Reference Voltage	U584	1.3V<=(V <sub>IN</sub> -V <sub>OUT</sub> )<=3V, 10mA<=I <sub>OUT</sub> <=8A	* 1.225 (-2%)	1.25	1.275 (+2%)	V
	U585	1.3V<=(V <sub>IN</sub> -V <sub>OUT</sub> )<=3V, 10mA<=I <sub>OUT</sub> <=5A				
	U587	1.3V<=(V <sub>IN</sub> -V <sub>OUT</sub> )<=3V, 10mA<=I <sub>OUT</sub> <=3A				
Line Regulation (Note 1.2)	U584/5/7	2.75V<=V <sub>IN</sub> <=7V, I <sub>OUT</sub> = I <sub>FULLLOAD</sub>		0.1	0.2	%
Load Regulation (Note 1, 2, 3)	U584/5/7	V <sub>IN</sub> -V <sub>OUT</sub> =1.3V, T <sub>J</sub> =25°C, 10mA<=I <sub>OUT</sub> <=I <sub>FULLLOAD</sub>	*	0.2	1.0	%
Dropout Voltage	U584/5/7	V <sub>REF</sub> =1%, I <sub>OUT</sub> = I <sub>FULLLOAD</sub> T <sub>J</sub> >=25°C T <sub>J</sub> <=25°C		1.2	1.3	V
				1.2	1.35	V
Current Limit (Note 3)	U584	V <sub>IN</sub> -V <sub>OUT</sub> =1.3 V	* 8.0	8.5		A
	U585	V <sub>IN</sub> -V <sub>OUT</sub> =1.3 V	* 5.0	5.5		A
	U587	V <sub>IN</sub> -V <sub>OUT</sub> =1.3 V	* 3.0	3.6		A
Adjust Pin Current	U584/5/7			55	120	μA
Adjust Pin Current Change (Note 3)	U584/5/7	1.5V<=(V <sub>IN</sub> -V <sub>OUT</sub> ) <=3 V, 10mA<=I <sub>OUT</sub> <=I <sub>FULLLOAD</sub>		0.2	5	mA
Minimum Load Current	U584/5/7	1.5V<=(V <sub>IN</sub> -V <sub>OUT</sub> ) <=3V,	*	2	10	mA
Quiescent Circuit Current	U584/5/7	V <sub>IN</sub> <=5V	*	8	13	mA
Ripple Rejection	U584/5/7	f=120Hz, C <sub>OUT</sub> =25μA <sub>Tant</sub> , V <sub>IN</sub> -V <sub>OUT</sub> =1.3 V, I <sub>OUT</sub> = I <sub>FULLLOAD</sub>	60	72		dB
Temperature Stability				0.5		%
Long-Term Stability		T <sub>A</sub> =25°C, 1000Hrs		0.03	1.0	%
RMS Output Noise (% of V <sub>OUT</sub> )		T <sub>A</sub> =125°C, 10Hz<=f<=10kHz		0.03		%
Thermal Resistance Junction to Case	U584				1.6	°C /W
	U585/7				3.0	°C /W

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

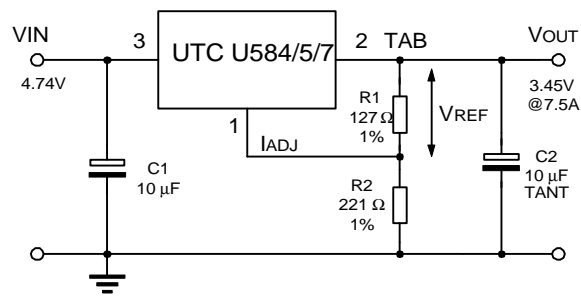
Note 1: Load and line regulation are measured at a constant junction temperature by low duty cycle pulse testing.

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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

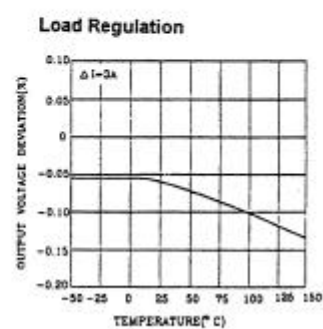
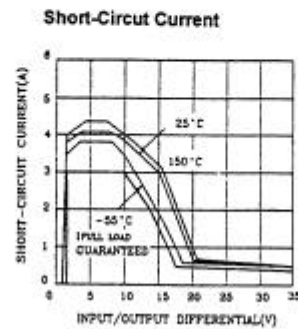
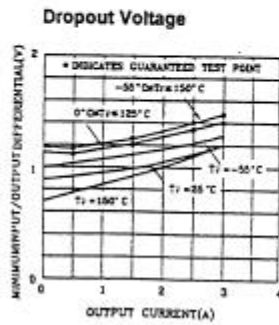
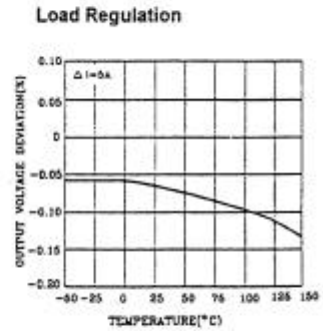
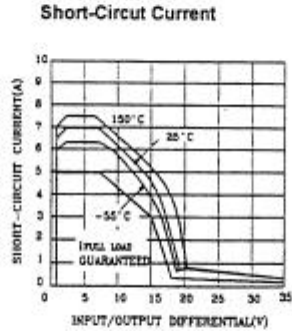
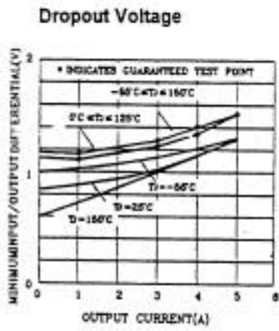
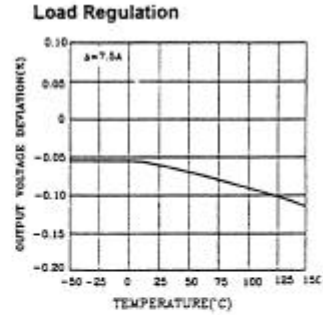
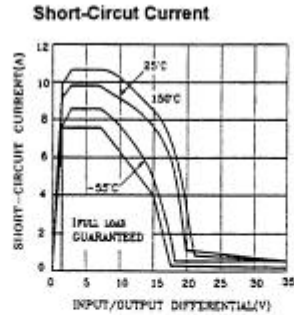
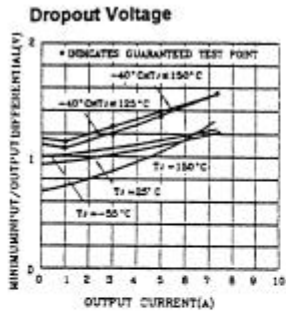


REQUIRED FOR STABILITY

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

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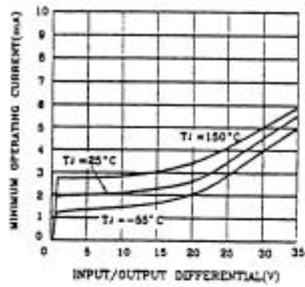
## TYPICAL PERFORMANCE CHARACTERISTICS



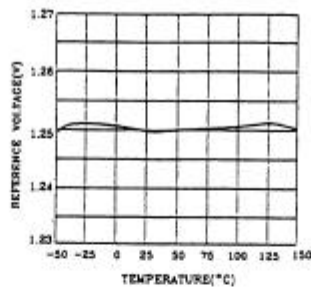
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## TYPICAL PERFORMANCE CHARACTERISTICS

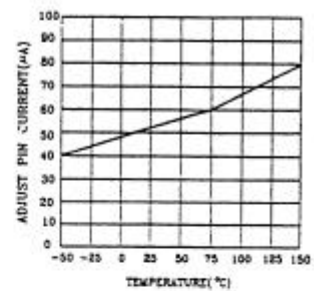
Minimum Operating Current



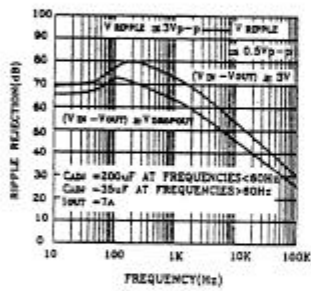
Temperature Stability



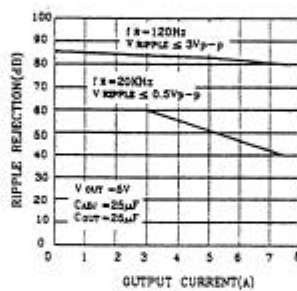
Adjust Pin Current



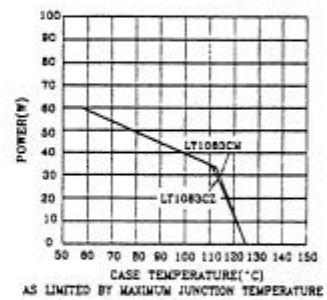
Ripple Rejection



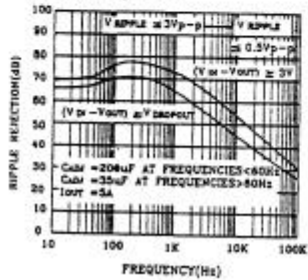
Ripple Rejection vs Current



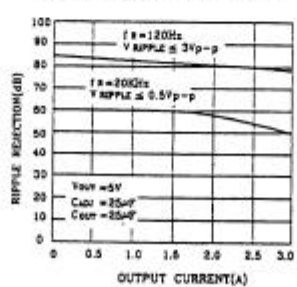
Maximum Power Dissipation\*



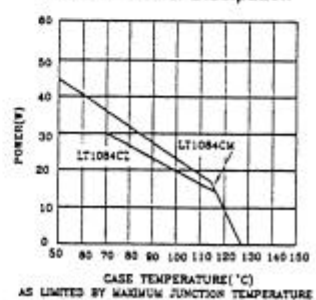
Ripple Rejection



Ripple Rejection vs Current



Maximum Power Dissipation



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## TYPICAL PERFORMANCE CHARACTERISTICS

