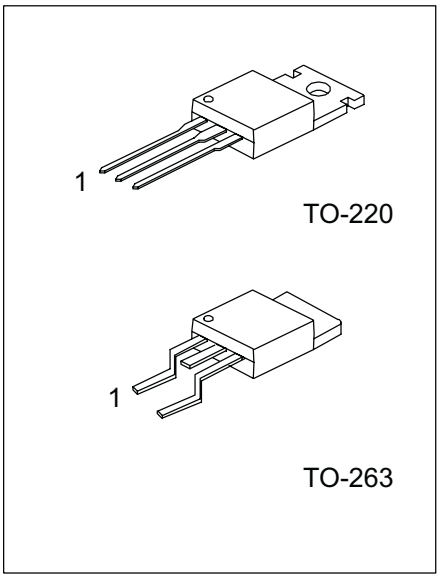
U584/5/7 LINEAR INTEGRATED CIRCUIT

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



1: COMMON 2: OUTPUT 3: INPUT

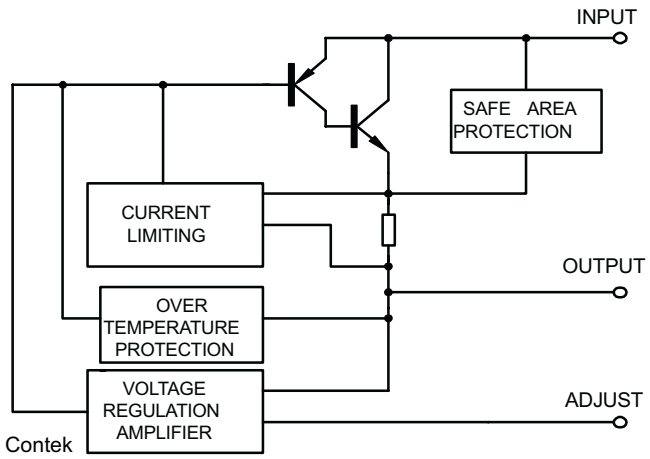
DESCRIPTION

The Contek 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 Contek U584.

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	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Reference Voltage	U584	1.3V<=(V_{IN}-V_{OUT})<=3V, 10mA<=I_{OUT}<=8A	*	1.225 (-2%)	1.25	1.275 (+2%)	V
	U585	1.3V<=(V_{IN}-V_{OUT})<=3V, 10mA<=I_{OUT}<=5A ,					
	U587	1.3V<=(V_{IN}-V_{OUT})<=3V, 10mA<=I_{OUT}<=3A					
Line Regulation (Note 1.2)	U584/5/7	2.75V<=V_{IN}<=7V,I_{OUT}= $I_{FULLLOAD}$			0.1	0.2	%
Load Regulation (Note 1, 2, 3)	U584/5/7	V_{IN}-V_{OUT}=1.3V.Tj=25 C, 10mA<=I_{OUT}<=$I_{FULLLOAD}$	*		0.2	1.0	%
Dropout Voltage	U584/5/7	VREF=1%,I_{OUT}= $I_{FULLLOAD}$					
		Tj>=25 C			1.2	1.3	V
		Tj<=25 C			1.2	1.35	V
Current Limit (Note 3)	U584	V_{IN}-V_{OUT} =1.3 V	*	8.0	8.5		A
	U585	V_{IN}-V_{OUT} =1.3 V		5.0	5.5		A
	U587	V_{IN}-V_{OUT} =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_{IN}-V_{OUT}) <=3 V, 10mA<=I_{OUT}<=$I_{FULLLOAD}$			0.2	5	mA
Minimum Load Current	U584/5/7	1.5V<=(V_{IN}-V_{OUT}) <=3V,	*		2	10	mA
Quiescent Circuit Current	U584/5/7	V_{IN}<=5V	*		8	13	mA
Ripple Rejection	U584/5/7	f=120Hz,C_{OUT}=25μATant, V_{IN}-V_{OUT} =1.3 V , 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					1.6	C /W
	U585/7					3.0	C /W

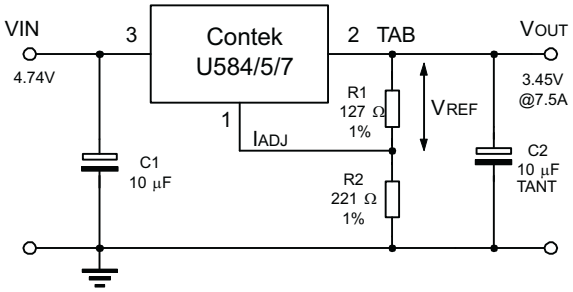
The * denotes specifications which apply over the specified operating temperature range.

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

Note 2: Line and load regulation are guaranteed up to the maximum power dissipation(15W for the Contek U584, 10W for the Contek 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

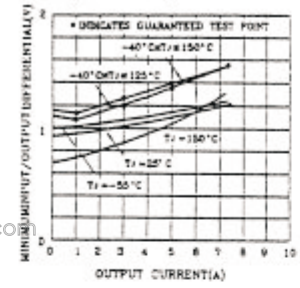


REQUIRED FOR STABILITY

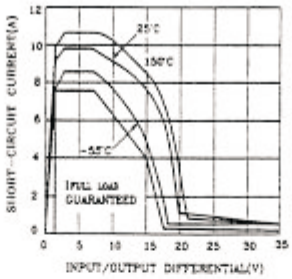
$V_{OUT} = V_{REF} * (1 + R2/R1) + I_{ADJ} * R2$

TYPICAL PERFORMANCE CHARACTERISTICS

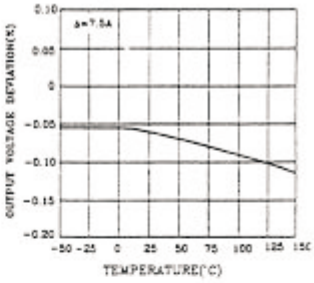
Dropout Voltage



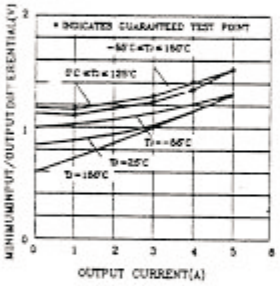
Short-Circut Current



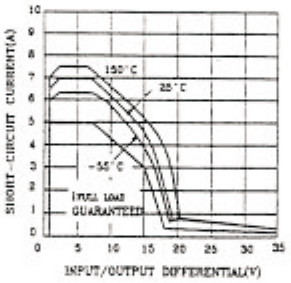
Load Regulation



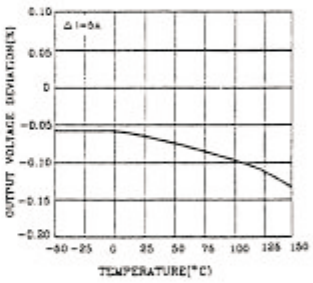
Dropout Voltage



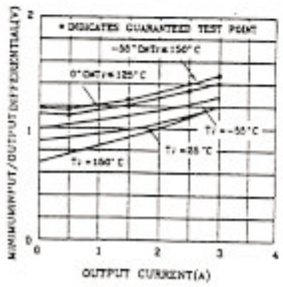
Short-Circut Current



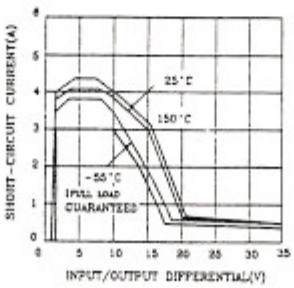
Load Regulation



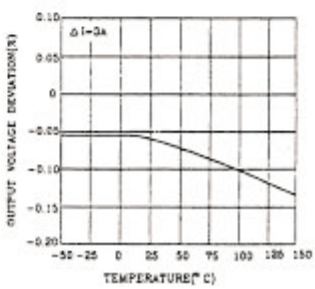
Dropout Voltage



Short-Circut Current

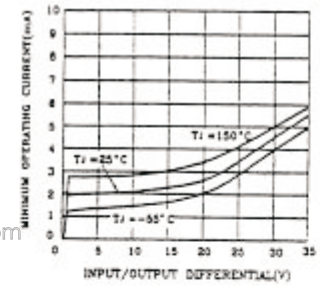


Load Regulation

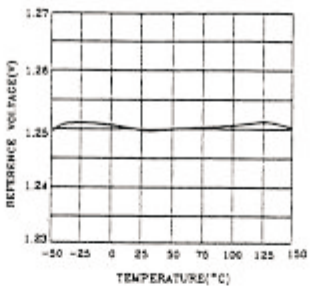


TYPICAL PERFORMANCE CHARACTERISTICS

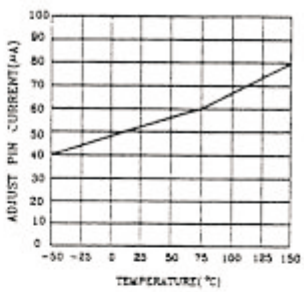
Minimum Operating Current



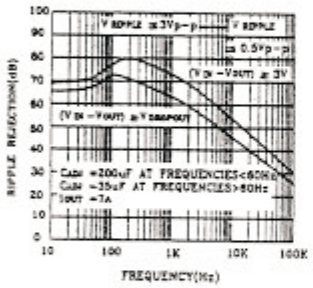
Temperature Stability



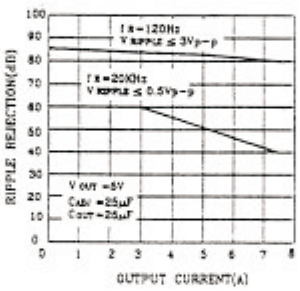
Adjust Pin Current



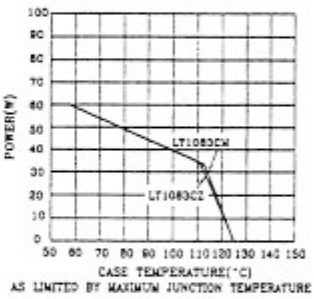
Ripple Rejection



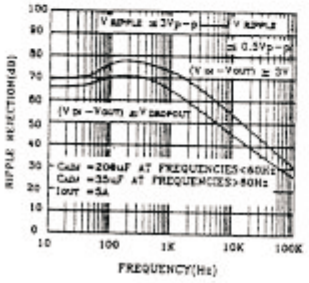
Ripple Rejection vs Current



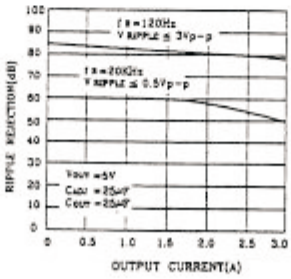
Maximum Power Dissipation*



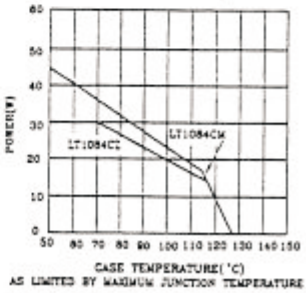
Ripple Rejection



Ripple Rejection vs Current

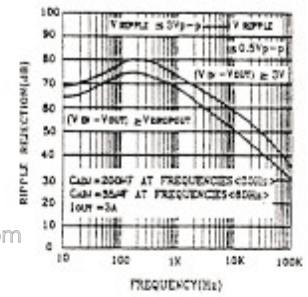


Maximum Power Dissipation

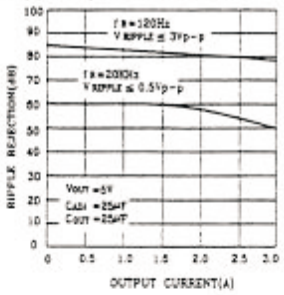


TYPICAL PERFORMANCE CHARACTERISTICS

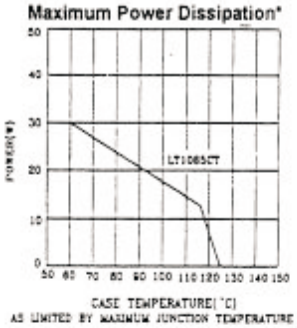
Ripple Rejection



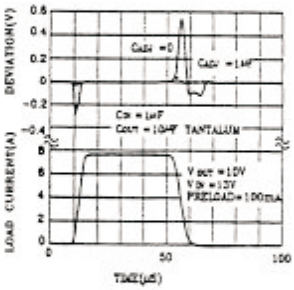
Ripple Rejuction vs Current



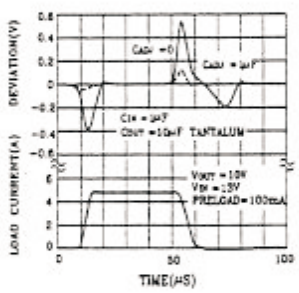
Maximum Power Dissipation*



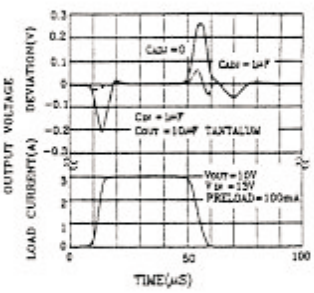
Load Transient Response



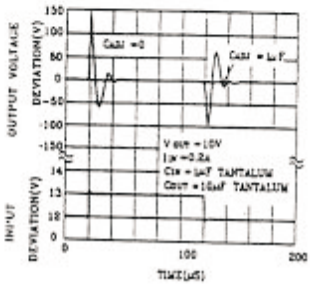
Load Transient Response



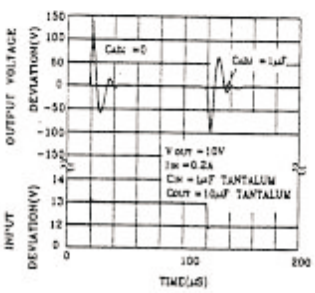
Load Transient Response



Line Transient Response



Line Transient Response



Line Transient Response