

UTC UZ1085 LINEAR INTEGRATED CIRCUIT

3A ADJUSTABLE/FIXED LOW DROPOUT LINEAR REGULATOR

DESCRIPTION

The UZ1085-ADJ, UZ1085-Fixed are low dropout three-terminal regulators with 3A output current capability. These devices have been optimized for low voltage applications including VTT bus termination, where transient response and minimum input voltage are critical.

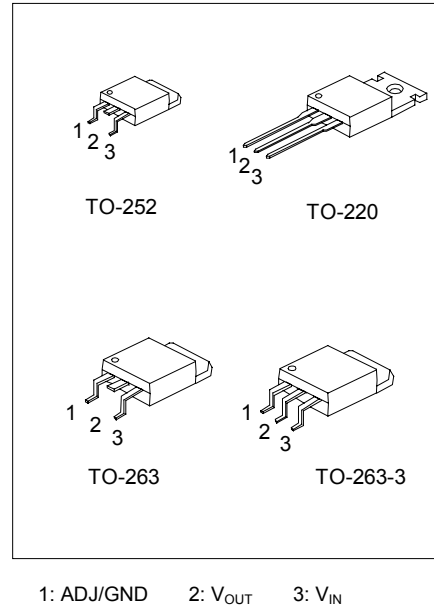
Current limit is trimmed to ensure specified output current and controlled short-circuit current. On-chip thermal limiting provides protection against any combination of overload and ambient temperature that would create excessive junction temperatures.

FEATURES

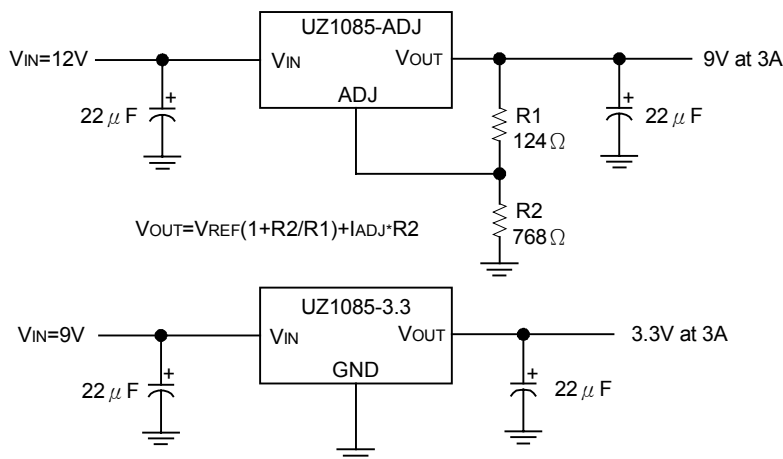
- *Fast transient response
- *Low dropout voltage at up to 3A
- *Load regulation: 0.05% typical
- *Trimmed current limit
- *On-chip thermal limiting

APPLICATIONS

- *Pentium Class GTL+bus supply
- *Low voltage logic supply
- *Post regulator for switching supply



TYPICAL APPLICATIONS



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ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATING	UNIT
Input Voltage	V_{IN}	18	V
$(V_{IN} - V_{OUT}) \cdot I_{OUT}$		See Figure 1	
Operating Junction Temperature Range	T_j	0~125	°C
Storage Temperature Range	T_{stg}	-65~150	°C
Lead Temperature(Soldering,10 sec.)	T_{lead}	300	°C

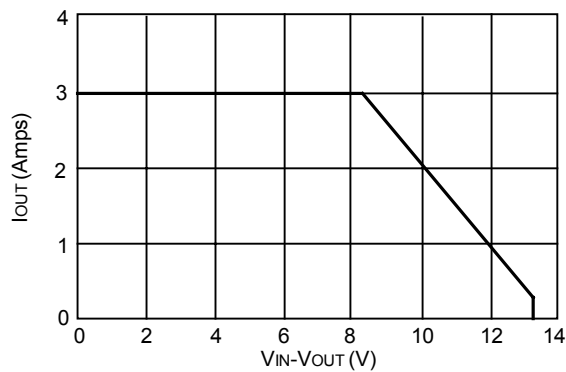


Figure 1. Absolute Maximum Safe Operating Area

UTC UZ1085-ADJ(ADJUSTABLE) ELECTRICAL CHARACTERISTICS

($T_j=25^{\circ}\text{C}$ unless otherwise specified)

PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Reference Voltage	$1.5V \leq (V_{IN} - V_{OUT}) \leq 8.25V$ $10mA \leq I_{OUT} \leq 3A$	1.225	1.25	1.275	V
Line Regulation	$(V_{OUT} + 1.5V) \leq V_{IN} \leq 12V$, $I_{OUT}=10mA$		0.005	0.2	%
Load Regulation	$(V_{IN} - V_{OUT})=3V$ $10mA \leq I_{OUT} \leq 3A$		0.05	0.5	%
Dropout Voltage	$\Delta V_{REF}\%=1\%$, $I_O=3A$		1.150	1.300	V
Current Limit	$(V_{IN}-V_{OUT})=2V$	3.1	4		A
Adjust Pin Current			35	120	μA
Adjust Pin Current Change	$1.5V \leq (V_{IN} - V_{OUT}) \leq 12V$, $10mA \leq I_{OUT} \leq 3A$		0.2	5	μA
Minimum Load Current	$1.5V \leq (V_{IN}-V_{OUT}) \leq 12V$	10			mA
Quiescent Current	$V_{IN}=5V$		4	13	mA
Ripple Rejection	$f=120Hz$, $C_{OUT}=22\mu F$ Tantalum, $(V_{IN} - V_{OUT})=3V$, $I_{OUT}=3A$	60	72		dB
Thermal Regulation	$T_A=25^{\circ}\text{C}$, 30ms pulse		0.004	0.02	%/W
Temperature Stability			0.5		%
Long-Term Stability	$T_A=125^{\circ}\text{C}$, 1000hr		0.03	1.0	%
RMS Output Noise(% of V_{OUT})	$T_A=25^{\circ}\text{C}$, $10Hz \leq f \leq 10kHz$		0.003		%
Thermal Resistance, Junction to Case (TO-220/TO-252/TO-263/TO-263-3)			3		°C/W
Thermal shutdown			150		°C

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UTC UZ1085-X.X(FIXED VOLTAGE) ELECTRICAL CHARACTERISTICS

(Operating Conditions : $4.75 \leq V_{IN} \leq 5.25$, $T_j = 25^\circ\text{C}$ unless otherwise specified)

PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	UZ1085-1.5 $3.0\text{V} \leq V_{IN} \leq 8.5\text{V}$ $10\text{mA} \leq I_{OUT} \leq 3\text{A}$	1.47	1.5	1.53	V
	UZ1085-2.5V $4.0\text{V} \leq V_{IN} \leq 9.5\text{V}$ $10\text{mA} \leq I_{OUT} \leq 3\text{A}$	2.45	2.5	2.55	
	UZ1085-3.3 $4.8\text{V} \leq V_{IN} \leq 10.3\text{V}$ $10\text{mA} \leq I_{OUT} \leq 3\text{A}$	3.234	3.3	3.366	
Line Regulation	$(V_{OUT} + 1.5\text{V}) \leq V_{IN} \leq 12\text{V}$, $I_{OUT} = 10\text{mA}$		0.005	0.2	%
Load Regulation	$(V_{IN} - V_{OUT}) = 3\text{V}$ $10\text{mA} \leq I_{OUT} \leq 3\text{A}$		0.05	0.5	%
Dropout Voltage	$\Delta V_{REF}\% = 1\%$, $I_O = 3\text{A}$		1.150	1.300	V
Current Limit	$(V_{IN} - V_{OUT}) = 2\text{V}$	3.1	4		A
Minimum Load Current	$1.5\text{V} \leq (V_{IN} - V_{OUT}) \leq 12\text{V}$	10			mA
Quiescent Current	$V_{IN} = 5\text{V}$		4	13	mA
Ripple Rejection	$f = 120\text{Hz}$, $C_{OUT} = 22\mu\text{F}$ Tantalum, $(V_{IN} - V_{OUT}) = 3\text{V}$, $I_{OUT} = 3\text{A}$	60	72		dB
Thermal Regulation	$T_A = 25^\circ\text{C}$, 30ms pulse		0.004	0.02	%/W
Temperature Stability			0.5		%
Long-Term Stability	$T_A = 125^\circ\text{C}$, 1000hr		0.03	1.0	%
RMS Output Noise(% of V_{OUT})	$T_A = 25^\circ\text{C}$, $10\text{Hz} \leq f \leq 10\text{kHz}$		0.003		%
Thermal Resistance, Junction to Case (TO-220/TO-252/TO-263/TO-263-3)			3		$^\circ\text{C/W}$
Thermal shutdown			150		$^\circ\text{C}$

TYPICAL PERFORMANCE CHARACTERIISTICS

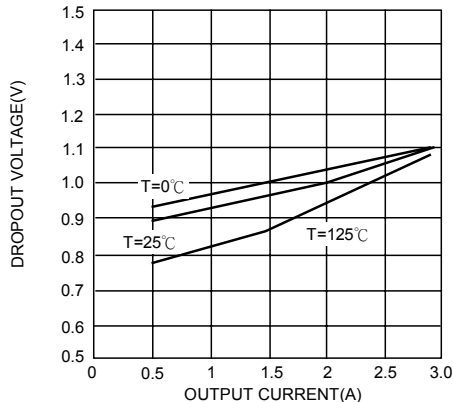


Figure 2. Dropout Voltage vs. Output Current

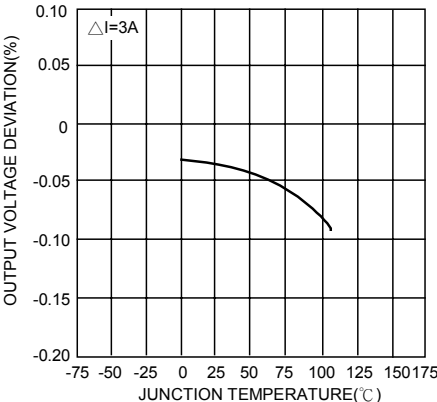


Figure 3. Load Regulation vs. Temperature

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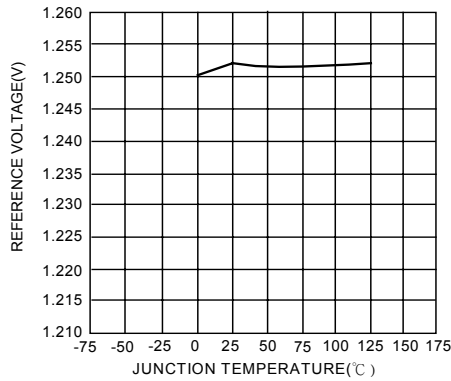


Figure 4. Reference Voltage vs. Temperature

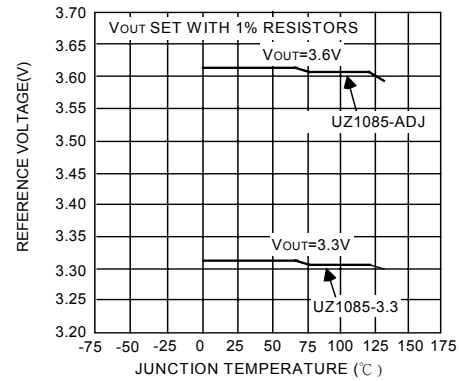


Figure 5. Output Voltage vs. Temperature

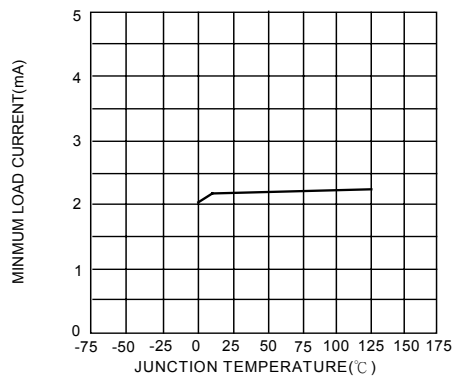


Figure 6. Minimum Load Current vs. Temperature

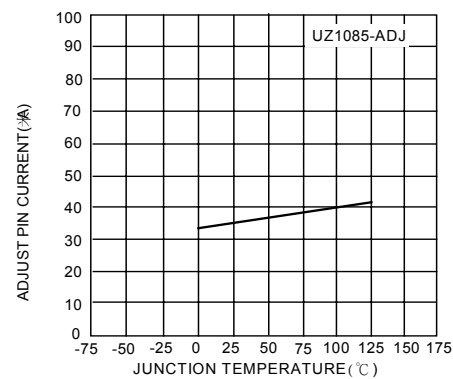


Figure 7. Adjust Pin Current vs. Temperature

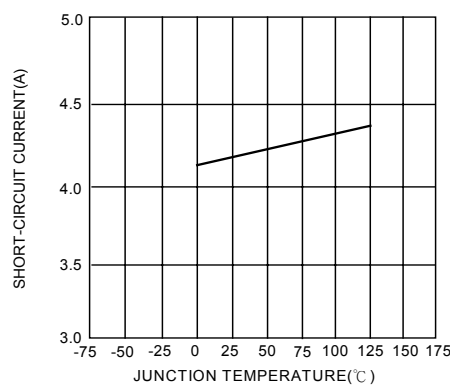


Figure 8. Short-Circuit Current vs. Temperature

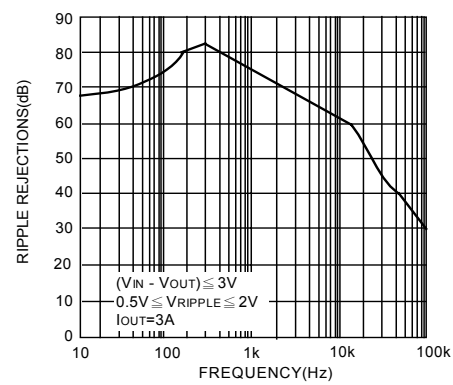


Figure 9. Ripple Rejection vs. Frequency

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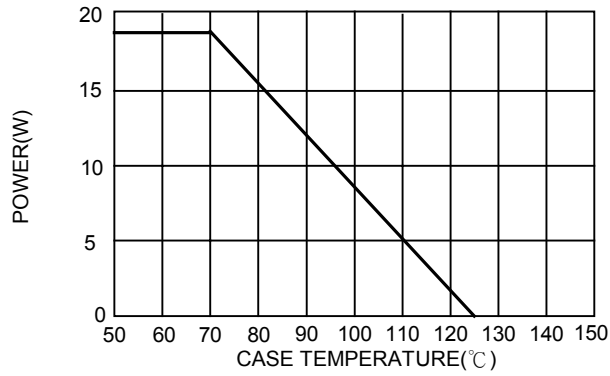


Figure 10. Maximum Power Dissipation