

# UTCLR1116/A LINEAR INTEGRATED CIRCUIT

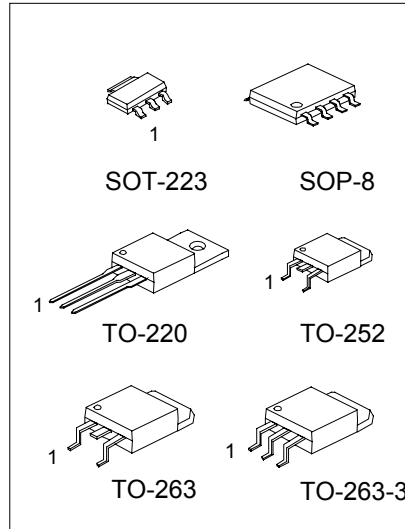
## LOW DROP FIXED AND ADJUSTABLE POSITIVE VOLTAGE REGULATORS

### DESCRIPTION

The UTC LR1116/A is a LOW DROP Voltage Regulator able to provide up to 0.8/1.0A of Output Current, available also for adjustable version (Vref=1.25V). Output consists of pnp power transistor. So that dropout voltage can be extremely low.

### FEATURES

- \* Low dropout voltage (0.6V max.)
- \* 2.85V device are suitable for SCSI-2 active termination
- \* Output current up to 0.8/1.0A
- \* Fixed output voltage of: 1.5V, 1.8V, 2.5V, 2.85V, 3.0V, 3.3V, , 5.0V
- \* Adjustable version availability (Vref=1.25V)
- \* Internal current and thermal limit
- \* Available in  $\pm 1\%$ (at 25°C) and 2% in all temperature range



SOP-8 1: GND; 2,3,6,7: Vout; 4: Vin; 5,8: NC

\*Pb-free plating product number: LR1116L/LR1116AL

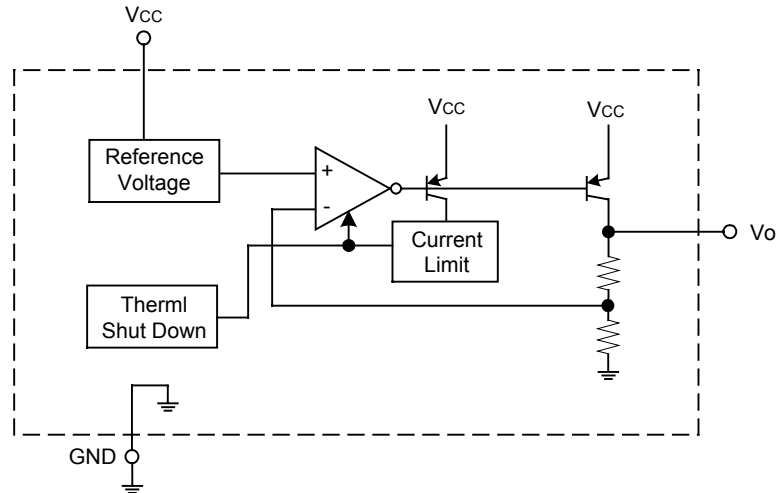
### MARKING INFORMATION

PACKAGE	VOLTAGE CODE	PIN CODE	PIN 1	PIN 2	PIN 3	MARKING
SOT-223	15: 1.5V	A	GND	OUT	IN	
	18: 1.8V	B	OUT	GND	IN	
	25: 2.5V	C	GND	IN	OUT	
	28: 2.85V	D	IN	GND	OUT	
	30: 3.0V					
TO-220 TO-252 TO-263 TO-263-3	33: 3.3V					
	50: 5.0V	A	GND	OUT	IN	
	AD: ADJ	B	OUT	GND	IN	
		C	GND	IN	OUT	
		D	IN	GND	OUT	

Note: The current code "A" means output current up to 1.0A, while without "A" means output current up to 0.8A.

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## BLOCK DIAGRAM



## ABSOLUTE MAXIMUM RATINGS

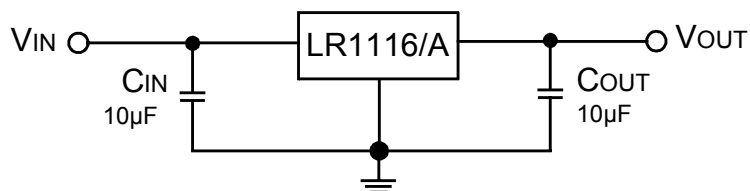
PARAMETER	SYMBOL	RATINGS	UNIT
DC Input Voltage	V <sub>IN</sub>	15	V
Storage temperature	T <sub>stg</sub>	-65 ~ +150	°C
Operating Junction Temperature	T <sub>op</sub>	-40 ~ +150	°C

Note: Absolute Maximum Ratings are those value beyond which damage to the device may occur. Functional operation under there condition is not implied. Over the above suggested Max Power Dissipation a Short Circuit could definitively damage the device.

## THERMAL DATA

PARAMETER	SYMBOL	VALUE	UNIT
Thermal Resistance Junction-case	$\theta_{JC}$	15	°C/W
SOT-223		20	°C/W
SOP-8		8	°C/W
TO-252		4	°C/W
TO-220		4	°C/W
TO-263		4	°C/W

## APPLICATION CIRCUIT



# UTCLR1116/A LINEAR INTEGRATED CIRCUIT

## UTC LR1116/A- $V_o < 3.0V$ ELECTRICAL CHARACTERISTICS

(refer to the test circuits,  $T_j = -40 \sim 150^\circ C$ ,  $C_o = 10\mu F$  unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	$V_o$	$V_{in} = V_o + 1.5V$ , $I_o = 10mA$ , $T_j = 25^\circ C$	$V_o \times 0.99$ $V_o \times 0.98$	$V_o$	$V_o \times 1.01$ $V_o \times 1.02$	V
Output Voltage	$V_o$	$I_o = 0$ to 800/1000mA $V_{in} = (V_o + 1V) \sim 15V$	$V_o \times 0.98$	$V_o$	$V_o \times 1.02$	V
Line Regulation	$\Delta V_o$	$V_{in} = (V_o + 1V) \sim 15V$ , $I_o = 0mA$		0.1	0.6	%
Load Regulation	$\Delta V_o$	$V_{in} = (V_o + 1V) \sim 15V$ $I_o = 0$ to 800/1000mA		0.2	1	%
Temperature stability	$\Delta V_o$			0.5		%
Long Term Stability	$\Delta V_o$	1000 hrs, $T_j = 125^\circ C$		0.3		%
Operating Input Voltage	$V_{in}$	$I_o = 100mA$			15	V
Quiescent Current	$I_d$	$V_{in} \leq 10V$		5	10	mA
Output Current	$I_o$	$V_{in} = V_o + 4.5V$ , $T_j = 25^\circ C$	800	950	1200	mA
Output Noise Voltage	eN	B=10Hz to 10KHz, $T_j = 25^\circ C$		100		$\mu V$
Supply Voltage Rejection	SVR	$I_o = 40mA$ , $f = 120Hz$ , $T_j = 25^\circ C$ $V_{in} = V_o + 2.5V$ , $V_{ripple} = 1V_{pp}$	60	75		dB
Dropout Voltage	$V_d$	$I_o = 100mA$			0.4	V
		$I_o = 500mA$			0.6	V
		$I_o = 800mA$			0.8	V
		$I_o = 1000mA$			0.9	V
Thermal Regulation		$T_a = 25^\circ C$ , 30ms Pulse		0.01	0.10	%/W

## UTC LR1116/A- $V_o \geq 3.0V$ ELECTRICAL CHARACTERISTICS

(refer to the test circuits,  $T_j = -40 \sim 150^\circ C$ ,  $C_o = 10\mu F$  unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	$V_o$	$V_{in} = V_o + 1.5V$ , $I_o = 10mA$ , $T_j = 25^\circ C$	$V_o \times 0.99$	$V_o$	$V_o \times 1.01$	V
Output Voltage	$V_o$	$I_o = 0$ to 800/1000mA $V_{in} = (V_o + 1V) \sim 15V$	$V_o \times 0.98$	$V_o$	$V_o \times 1.02$	V
Line Regulation	$\Delta V_o$	$V_{in} = (V_o + 1V) \sim 15V$ , $I_o = 0mA$		0.1	0.6	%
Load Regulation	$\Delta V_o$	$V_{in} = (V_o + 1V) \sim 15V$ $I_o = 0$ to 800/1000mA		0.2	1	%
Temperature stability	$\Delta V_o$			0.5		%
Long Term Stability	$\Delta V_o$	1000 hrs, $T_j = 125^\circ C$		0.3		%
Operating Input Voltage	$V_{in}$	$I_o = 100mA$			15	V
Quiescent Current	$I_d$	$V_{in} \leq 10V$		5	10	mA
Output Current	$I_o$	$V_{in} = V_o + 4.5V$ , $T_j = 25^\circ C$	800	950	1200	mA
Output Noise Voltage	eN	B=10Hz to 10KHz, $T_j = 25^\circ C$		100		$\mu V$
Supply Voltage Rejection	SVR	$I_o = 40mA$ , $f = 120Hz$ , $T_j = 25^\circ C$ $V_{in} = V_o + 2.5V$ , $V_{ripple} = 1V_{pp}$	60	75		dB
Dropout Voltage	$V_d$	$I_o = 100mA$			0.3	V
		$I_o = 500mA$			0.4	V
		$I_o = 800mA$			0.6	V
		$I_o = 1000mA$			0.7	V
Thermal Regulation		$T_a = 25^\circ C$ , 30ms Pulse		0.01	0.10	%/W

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## UTC LR1116/A-ADJUSTABLE ELECTRICAL CHARACTERISTICS

(refer to the test circuits,  $T_j = -40 \sim 125^\circ\text{C}$ ,  $C_o = 10\mu\text{F}$  unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Reference Voltage	Vref	Vin-VO=1.5V, Io=10mA, Tj=25°C	1.238	1.25	1.262	V
Reference Voltage	Vref	Io=10 to 800/1000mA, Vin-VO=1V to 10V	1.225		1.275	V
Line Regulation	$\Delta V_o$	Vin-VO=1V to 13.75V, Io=10mA		0.1	0.6	%
Load Regulation	$\Delta V_o$	Vin-VO=1V, Io=10 to 800/1000mA		0.2	1	%
Temperature stability	$\Delta V_o$			0.50		%
Long Term Stability	$\Delta V_o$	1000 hrs, Tj=125°C		0.3		%
Operating Input Voltage	Vin				15	V
Adjustment Pin Current	Iadj	Vin≤15V		60	120	μA
Adjustment Pin Current Change	$\Delta I_{adj}$	Vin-VO=1V to 10V, Io=10 to 800/1000mA		1	5	μA
Minimum Load Current	Io(min)	Vin=15V		2	5	mA
Output Current	Io	Vin-VO=4.5V, Tj=25°C	800	950	1200	mA
Output Noise (%Vo)	eN	B=10Hz to 10KHz, Tj=25°C		0.003		%
Supply Voltage Rejection	SVR	Io=40mA, f=120Hz, Tj=25°C, Vin-VO=2.5V, Vripple=1Vpp	60	75		dB
Dropout Voltage	Vd	Io= 100mA			0.4	V
		Io= 500mA			0.6	V
		Io= 800mA			0.8	V
		Io=1000mA			0.9	V
Thermal Regulation		Ta=25°C, 30ms Pulse		0.01	0.10	%/W

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## TYPICAL CHARACTERISTICS

Fig.1 Reference Voltage vs. Temperature

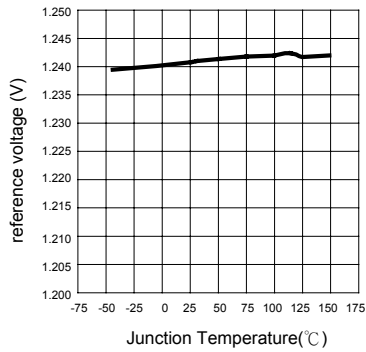


Fig.2 Output Voltage vs. Temperature

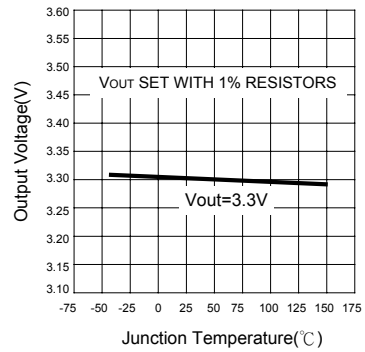
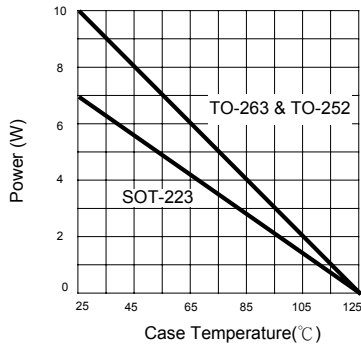


Fig.3 Maximum Power Dissipation



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