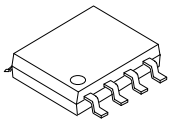
UR6516B Preliminary ***CMOS IC***

2A SINK & SOURCE ADJUSTABLE LINEAR BUS TERMINATOR



SOP-8

■ DESCRIPTION

The UTC **UR6516B** is a low cost linear regulator providing a desired output voltage or termination voltage for various applications by converting voltage supplies ranging from 1V ~ 6.0V. The desired output voltage could be programmable by two external voltage divider resistors.

The UTC **UR6516B** can source or sink up to 2A of current while regulating an output voltage to within 2% (DDR-I), 3% (DDR-II) or less.

The UTC **UR6516B** can be used in applications, such as PCI/AGP graphics, game/play station, set top box, mother board.

■ FEATURES

* Ideal for DDR-I ,DDR-II
* Output Voltage could Drop Down to 0.6V
* Source and Sink up to 2A, Without an External Heat Sink
* Integrated Power MOSFETs
* Output Voltage Varies though Adjusting External Resistors
* I_{CCQ} is Lower than 500uA at V_{CCA}
* Thermal Shutdown Protection, Current Limit Protection, and Short Circuit Protection Circuits Included
* Shutdown for Standby or Suspend Mode Operation
* Requiring Minimum External Components

■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
UR6516BL-S08-T	UR6516BG-S08-T	SOP-8	Tube
UR6516BL-S08-R	UR6516BG-S08-R	SOP-8	Tape Reel

UR6516BL-S08-T

(1)Packing Type

(2)Package Type

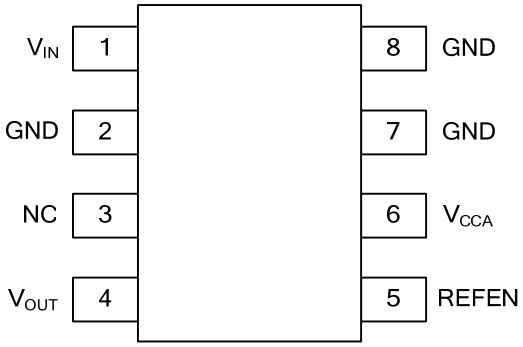
(3)Halogen Free

(1) T: Tube, R: Tape Reel

(2) S08: SOP-8

(3) L: Lead Free, G: Halogen Free

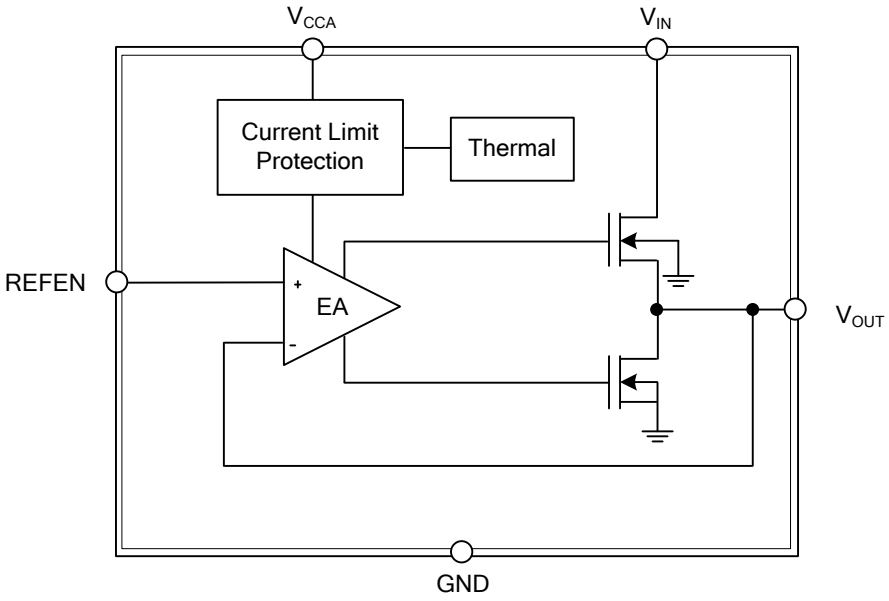
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO	PIN NAME	DESCRIPTION
1	V_{IN}	Input Power
2,7,8	GND	Ground
3	NC	No Connection
4	V_{OUT}	Output Voltage
5	REFEN	Reference Voltage Input and Chip Enable
6	V_{CCA}	Voltage Supply for Internal Circuits

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
V_{IN}, V_{CCA}	V_{IN}, V_{CCA}	7	V
Output RMS Current, Source or Sink		2	A
Storage Temperature	T_{STG}	-65~125	°C

Notes: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ OPERRATING RATING

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Power	V_{IN}		1	2.5/1.8/1.5	6	V
Output Voltage	V_{OUT}				V_{CCA}-1.9	V
Reference Voltage Input and Chip Enable	REFEN				V_{CCA}-1.9	V
Voltage Supply for Internal Circuits	V_{CCA}				6	V

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Case	θ_{JC}	60	°C/W

■ ELECTRICAL CHARACTERISTICS

(T_A=25°C; V_{IN}=+2.5V and V_{CCA}=+3.3V, V_{REFEN}=1.25V, unless otherwise specified) (Note 1)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Offset Voltage (Note 2)	V_{OS}	I_{OUT}=0A	-20		20	mV
Operating Current at V_{IN}	I_{OP}	No Load, C_{OUT}=200uF			1	mA
Load Regulation (DDR I/II)	$\lvert \Delta V_{LOAD} \rvert$	I_L: 0A -> 2A		0.8/1.2	2/3	%
		I_L: 0A -> -2A		0.8/1.2	2/3	%
Dropout Voltage	$V_{DROPOUT}$	V_{CCA}>V_{OUT}+1.9V, I_{OUT}=2A		0.3	0.4	V
		V_{CCA}>V_{OUT}+1.9V, I_{OUT}=1.5A		0.2	0.25	V
Quiescent Current at V_{CCA}	I_{CCQ}	At Room Temp.		190	230	µA
Current in Shutdown Mode	I_{SHDN}	V_{REFEN}<0.2V, R_L= 10 Ohm		90	110	µA
Input Voltage Range (Note 3)	V_{IN}	No Load	1	2.5/1.8	6	V
Input Voltage Range (Note 3)	V_{CCA}	R_L= 10 Ohm	3.15	3.3	6	V
Short Circuit Protection						
Current Limit	I_{LIMIT}			5		A
Short Current	I_{SC},V_{IN}	Sinking	2			A
Short Current	I_{SC},G_{ND}	Sourcing	2			A
Over Thermal Protection						
Thermal Shutdown Temperature	THSD	3.15V<=V_{CCA}<=6V	125	150	155	°C
Thermal Shutdown Hysteresis			25	30	35	°C
REFEN Function						
REFEN Threshold		V_{REFEN} < V_{IN} V_{REFEN} < V_{CCA} – 1.9V	0.4	0.5	0.6	V

Notes:
1. Maximum ratings are stress ratings only and functional device operation is not implied. Limits are guaranteed by 100% testing, sampling, or correlation with worst case test conditions
2. V_{OS} = V_{REFEN} – V_{OUT}
3. Keep V_{CCA} >= V_{IN} and V_{CCA} >= V_{REFEN} + 1.9V on operation power on and power off sequences
4. Guaranteed by design, not 100% test

■ FUNCTIONAL DESCRIPTION

The UTC **UR6516B** is a low cost linear regulator, which can sink and source 2A of current without an external heat sink.

The UTC **UR6516B** incorporates power MOSFETs that are capable of sourcing and sinking 2A of current while keeping perfect voltage regulation. By using the external feedback, the output voltage can be regulated within 3% or less. Separate voltage supply inputs have been added to fit applications with various power supplies for the databus and power buses.

OUTPUTS

The VOUT pins (output voltage pins) are connected to the databus, address, or clock lines via an external inductor. The output voltage varies depending on the input voltage.

INPUTS

The output voltage is determined by the input voltage. The desired output voltage could be programmable by two external voltage divider resistors.

The VIN pin is suggested to connect to VDDQ of memory module for better tracking with memory VDDQ.

OTHER SUPPLY VOLTAGES

VCCA provide the voltage supply to the logic section and internal error amplifiers of UTC **UR6516B**.

■ TYPICAL APPLICATION CIRCUIT