



UZ1086

LINEAR INTEGRATED CIRCUIT

1.5A ADJUSTABLE/FIXED LOW DROPOUT LINEAR REGULATOR

DESCRIPTION

The UTC **UZ1086** and **UZ1086**-1.8V, 2.5V, 2.85V, 3.3V and 5V are low dropout three-terminal regulators with 1.5A output current capability. These devices have been optimized for low voltage where transient response and minimum input voltage are critical. The 2.85V version is designed specifically to be used in Active Terminators for SCSI bus.

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 temperatures that would create excessive junction temperatures.

Unlike PNP type regulators where up to 10% of the output current is wasted as quiescent current, the quiescent current of the **UZ1086** flows into the load, increasing efficiency.

FEATURES

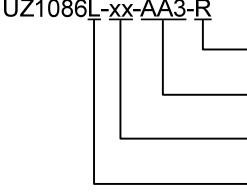
- *Low dropout voltage
- *Load regulation: 0.05% typical
- *Trimmed current limit
- *On-chip thermal limiting
- *Three-terminal adjustable or fixed 1.8V, 2.5V, 2.85V, 3.3V, 5V

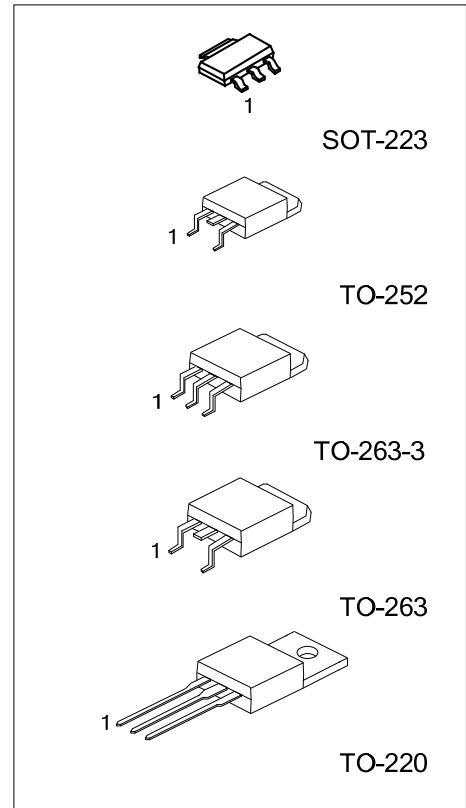
ORDERING INFORMATION

Ordering Number			Package	Pin Assignment			Packing
Normal	Lead Free	Halogen-Free		1	2	3	
UZ1086-xx-AA3-R	UZ1086L-xx-AA3-R	UZ1086G-xx-AA3-R	SOT-223	A/G	O	I	Tape Reel
UZ1086-xx-TA3-T	UZ1086L-xx-TA3-T	UZ1086G-xx-TA3-T	TO-220	A/G	O	I	Tube
UZ1086-xx-TN3-R	UZ1086L-xx-TN3-R	UZ1086G-xx-TN3-R	TO-252	A/G	O	I	Tape Reel
UZ1086-xx-TQ2-R	UZ1086L-xx-TQ2-R	UZ1086G-xx-TQ2-R	TO-263	A/G	O	I	Tape Reel
UZ1086-xx-TQ2-T	UZ1086L-xx-TQ2-T	UZ1086G-xx-TQ2-T	TO-263	A/G	O	I	Tube
UZ1086-xx-TQ3-R	UZ1086L-xx-TQ3-R	UZ1086G-xx-TQ3-R	TO-263-3	A/G	O	I	Tape Reel
UZ1086-xx-TQ3-T	UZ1086L-xx-TQ3-T	UZ1086G-xx-TQ3-T	TO-263-3	A/G	O	I	Tube

Note: 1. xx: Output Voltage, refer to Marking Information.

2. A: ADJ (for adjustable regulator), G: GND (for fixed regulator)

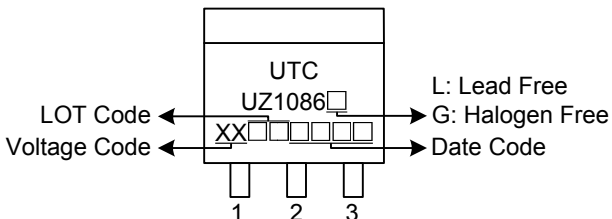
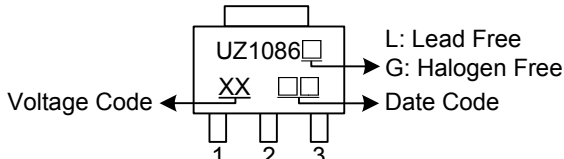
	(1) R: Tape Reel, T: Tube
	(2) AA3: SOT-223, TA3: TO-220, TN3: TO-252, TQ2: TO-263, TQ3: TO-263-3
	(3) xx: refer to Marking Information
	(4) G: Halogen Free, L: Lead Free, Blank: Pb/Sn



Lead-free: UZ1086L-xx

Halogen-free: UZ1086G-xx

MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
TO-220 TO-252 TO-263 TO-263-3	18 : 1.8V 25 : 2.5V 2J : 2.85V 33 : 3.3V 50 : 5.0V AD : ADJ	 Diagram of TO-220 package marking: The package is labeled with 'UTC' and 'UZ1086'. Below the part number, there are four characters: 'XX' followed by three empty boxes. Arrows point from these characters to labels: 'LOT Code' for the first 'X', 'Voltage Code' for the second 'X', 'L: Lead Free' for the first empty box, 'G: Halogen Free' for the second empty box, and 'Date Code' for the third empty box. The package has three pins labeled 1, 2, and 3.
SOT-223		 Diagram of SOT-223 package marking: The package is labeled with 'UZ1086'. Below the part number, there are four characters: 'XX' followed by two empty boxes. Arrows point from these characters to labels: 'Voltage Code' for the first 'X', 'L: Lead Free' for the first empty box, 'G: Halogen Free' for the second empty box, and 'Date Code' for the third empty box. The package has three pins labeled 1, 2, and 3.

■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V_{IN}	7.5	V
Junction Temperature	T_J	+125	°C
Operating Temperature	T_{OPR}	-40 ~ +85	°C
Storage Temperature	T_{STG}	-40 ~ +150	°C

Note: 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.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Case	TO-252	12	°C/W
	TO-220	4	°C/W
	TO-263	4	°C/W
	SOT-223	15	°C/W

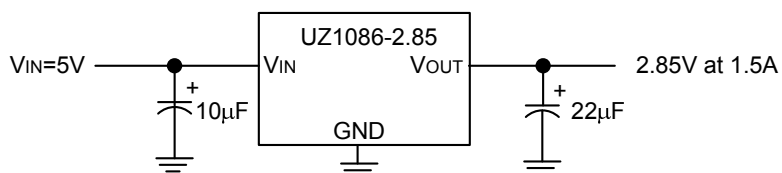
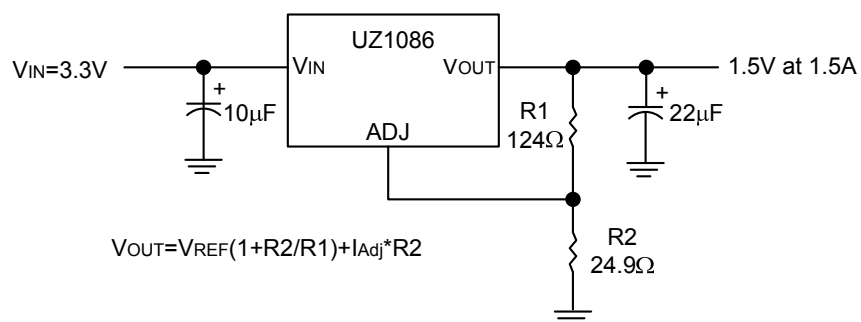
■ ELECTRICAL CHARACTERISTICS ($V_{IN} \leq 7V$, $T_J = 25^\circ C$, unless otherwise specified.)

PARAMETER		SYMBOL		TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT	
Reference Voltage		V _{REF}	*	1.5V≤ (V _{IN} -V _{OUT}) ≤5.75V 10mA≤I _{OUT} ≤1A	1.225	1.25	1.275	V	
Output Voltage	UZ1086-1.8	V _{OUT}	*	10mA≤I _{OUT} ≤1A	3.3V≤V _{IN} ≤7V	1.764	1.80	1.836	V
	UZ1086-2.5		*		4V≤V _{IN} ≤7V	2.450	2.50	2.550	V
	UZ1086-2.85		*		4.35V≤V _{IN} ≤7V	2.793	2.85	2.907	V
	UZ1086-3.3		*		4.8V≤V _{IN} ≤7V	3.234	3.30	3.366	V
	UZ1086-5.0				6.5V≤V _{IN} ≤7V	4.900	5.00	5.100	V
Line Regulation (Note1,2)		ΔV _{OUT}	*	(V _{OUT} +1.5V) ≤V _{IN} ≤7V,I _{OUT} =10mA		0.005	0.2	%	
Load Regulation (Note1,2)		ΔV _{OUT}	*	V _{IN} -V _{OUT} =2V, 10mA≤I _{OUT} ≤1A		0.05	0.5	%	
Dropout Voltage		V _D	*	I _{OUT} =1.5A		1.30	1.50	V	
Current Limit		I _{LIMIT}	*	V _{IN} -V _{OUT} =2V	1.6	2		A	
Adjust Pin Current		I _{adj}	*			35	120	μA	
Adjust Pin Current Change		ΔI _{adj}	*	1.5V≤ (V _{IN} - V _{OUT}) ≤5.75V, 10mA≤I _{OUT} ≤1A		0.2	5	μA	
Minimum Load Current		I _{o(min)}	*	1.5V≤ (V _{IN} -V _{OUT}) ≤5.75V			10	mA	
Quiescent Current		I _Q	*	V _{IN} =V _{OUT} +1.25V		4	13	mA	
Ripple Rejection		RR		f=120Hz, C _{OUT} =22μF, Tantalum V _{IN} -V _{OUT} =3V, I _{OUT} =1.5A	60	72		dB	
Thermal Regulation				T _a =25°C, 30ms pulse		0.004	0.02	%/W	
Temperature Stability		ΔV _{OUT}	*			0.5		%	
Long-Term Stability		ΔV _{OUT}		T _a =125°C, 1000hrs		0.03	1.0	%	
RMS Output Noise		V _{OUT}		T _a =25°C, 10Hz≤f≤10kHz		0.003		%	
Thermal shutdown				Junction Temperature		155		°C	
Thermal Shutdown Hysteresis						10		°C	

Note:

- * stand for specifications which apply over the designed operating temperature range.
- 1. See thermal regulation specifications for changes in output voltage due to heating effects. Load and line regulation are measured at a constant junction temperature by low duty cycle pulse testing.
- 2. Line and load regulation are guaranteed up to the maximum power dissipation. 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.

■ TYPICAL APPLICATION CIRCUIT



TYPICAL CHARACTERISTICS

Figure 1. Dropout Voltage vs. Output Current

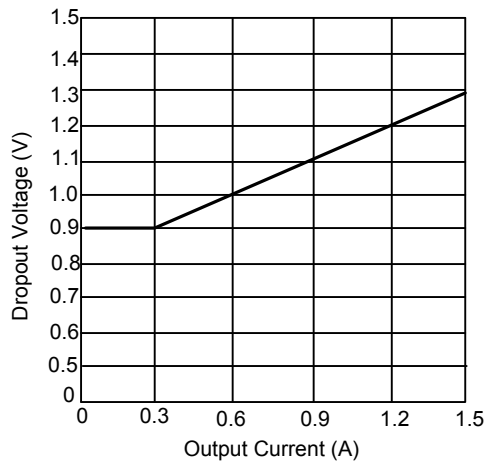


Figure 2. Load Regulation vs. Temperature

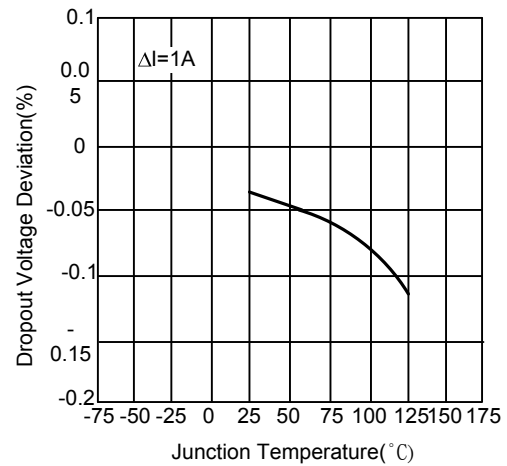


Figure 3. Reference Voltage vs. Temperature

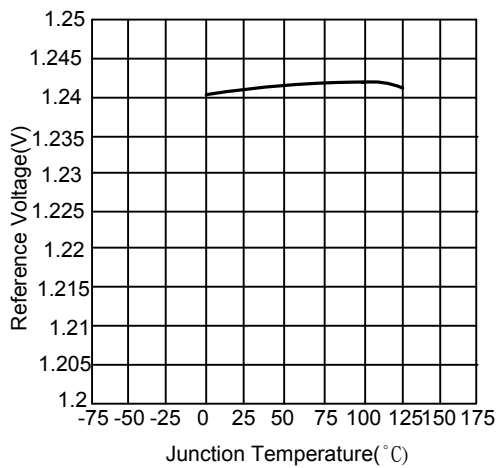


Figure 4. Output Voltage vs. Temperature

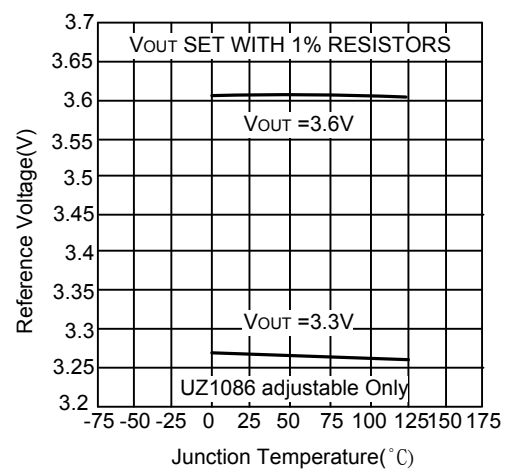


Figure 5. Minimum Load Current vs. Temperature

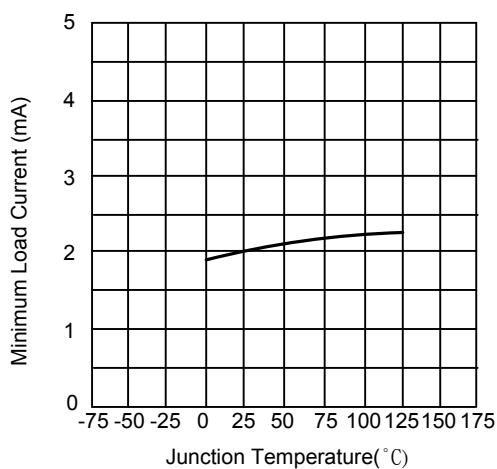
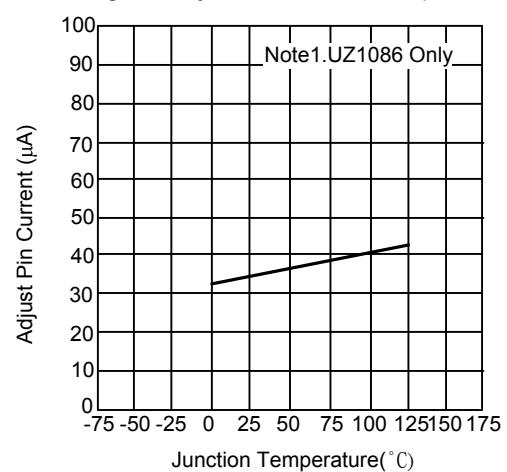
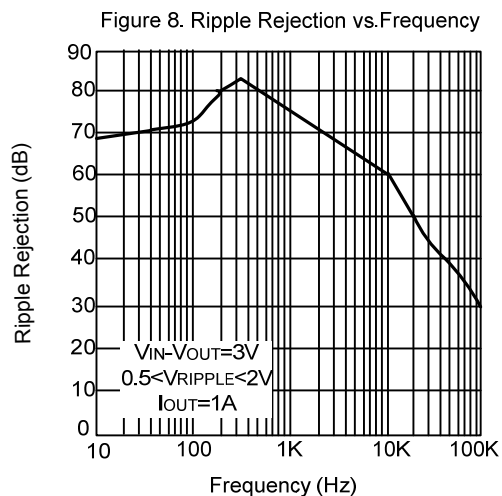
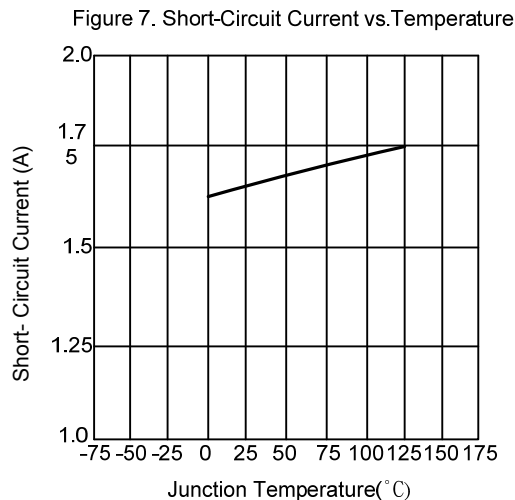


Figure 6. Adjust Pin Current vs. Temperature



■ TYPICAL CHARACTERISTICS(Cont.)



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