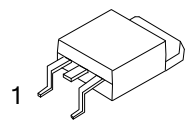
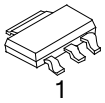
3A ADJUSTABLE/FIXED LOW DROPOUT LINEAR REGULATOR



TO-252



SOT-223

■ DESCRIPTION

The UTC **UZ2085** series are low dropout three-terminal regulators with 3A output current capability. These devices have been optimized for low voltage applications including VTT bus termination in which 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 limitation provides protection against any combination of overload and ambient temperature that would create excessive junction temperature.

■ FEATURES

* Fast transient response
* Low dropout voltage at up to 3A
* Load regulation: 0.05% typical
* Trimmed current limit
* On-chip thermal limiting
* Ultra low current consumption (0.35mA typ.)
* Ultra low Adjustment Current (7μA typ.)
* Ultra low minimum Load (0.3mA typ.)
* Stable with low ESR ceramic output capacitor (MLCC)

■ ORDERING INFORMATION

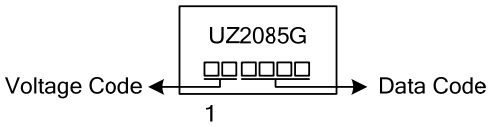
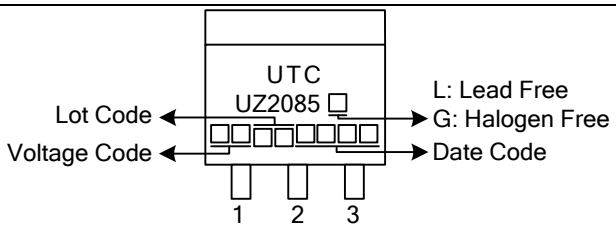
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
-	UZ2085G-xx-AA3-R	SOT-223	A/G	O	I	Tape Reel
UZ2085L-xx-TN3-R	UZ2085G-xx-TN3-R	TO-252	A/G	O	I	Tape Reel

Note: 1. xx: Output Voltage, refer to Marking Information.
2. A: ADJ (for adjustable regulator), G: GND (for fixed regulator), O: V_{OUT}, I: V_{IN}

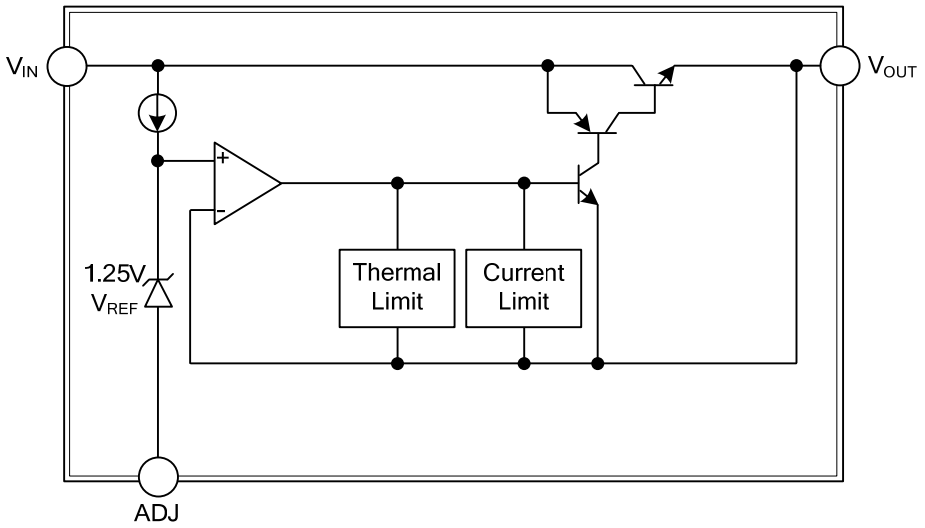
UZ2085G-xx-AA3-R (1) Packing Type (2) Package Type (3)Output Voltage Code (4) Green Package	(1) R: Tape Reel (2) AA3: SOT-223, TN3: TO-252 (3) xx: Refer to Marking Information (4) G: Halogen Free and Lead Free, L: Lead Free

Copyright © 2016 Unisonic Technologies Co., Ltd

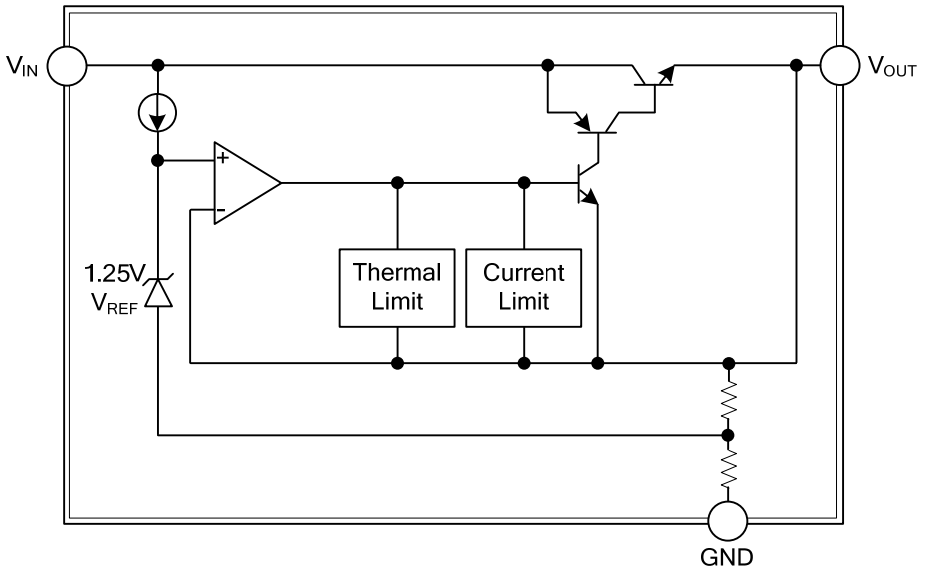
■ MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOT-223	50:5.0V AD:ADJ	
TO-252		

■ BLOCK DIAGRAM



For Adjustable Voltage



For Fixed Voltage

■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V_{IN}	18	V
Power Dissipation	P_D	Internally Limited	W
Junction Temperature	T_J	+150	°C
Operating Temperature	T_{OPR}	-20 ~ +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 Ambient	SOT-223	θ_{JA}	170	°C/W
	TO-252		118	°C/W
Junction to Case	SOT-223	θ_{JC}	20	°C/W
	TO-252		12	°C/W

■ ELECTRICAL CHARACTERISTICS (T_A=25°C, C_{OUT}=22μF, unless otherwise specified.)

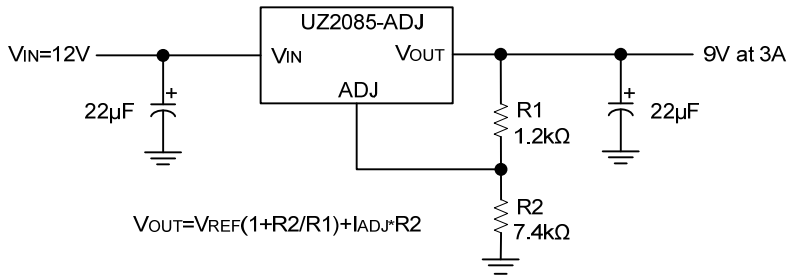
For UZ2085-ADJ (Adjustable)

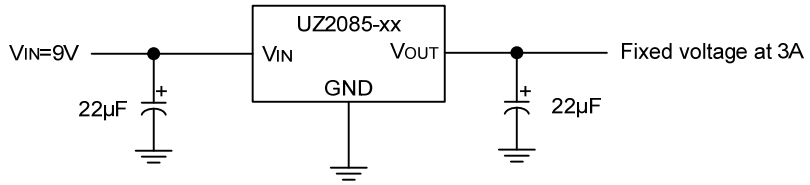
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Reference Voltage	V_{REF}	1.5V≤(V_{IN} - V_{OUT}) ≤8.25V 10mA≤I_{OUT}≤3A	1.225	1.25	1.275	V
Line Regulation	ΔV_{OUT}	(V_{OUT} +1.5V)≤ V_{IN} ≤12V, I_{OUT}=10mA		0.005	0.2	%
Load Regulation	ΔV_{OUT}	(V_{IN} -V_{OUT})=3V, 10mA ≤ I_{OUT} ≤3A		0.05	0.5	%
Dropout Voltage	V_D	ΔV_{REF}%=1%, I_{OUT}=3A		1.2	1.40	V
Current Limit	I_{LIMIT}	(V_{IN}-V_{OUT})=2V	3.1	5.8		A
Adjust Pin Current	I_{ADJ}			7	10	μA
Adjust Pin Current Change	ΔI_{ADJ}	(V_{OUT} +1.5V)≤V_{IN}≤12V, 10mA ≤ I_{OUT} ≤3A		0.3	2	μA
Minimum Load Current	$I_{O(MIN)}$	(V_{OUT} +1.5V) ≤ V_{IN} ≤ 12V		0.3	1	mA
Ripple Rejection	RR	f=120Hz,Tantalum,(V_{IN}-V_{OUT})=3V I_{OUT}=3A	75			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, 1000hr		0.03	1.0	%
Output Noise(% of V_{OUT})	e_N	T_A =25°C,10Hz ≤ f ≤10kHz		0.003		%
Thermal Shutdown				150		°C

For UZ2085-xx (Fixed Voltage)

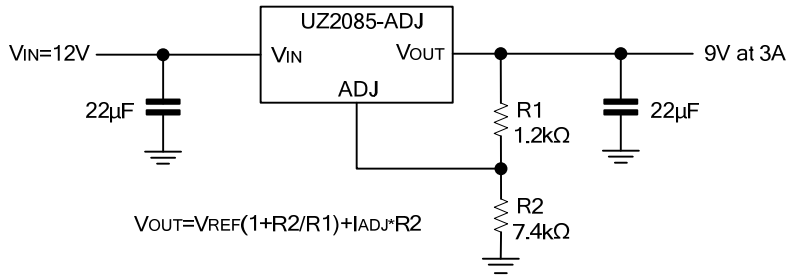
PARAMETER		SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	UZ2085-50	V_{OUT}	6.5V≤ V_{IN} ≤12V, 10mA≤ I_{OUT} ≤3A	4.9	5.0	5.1	V
Line Regulation		ΔV_{OUT}	(V_{OUT} +1.5V)≤V_{IN} ≤12V, I_{OUT}=10mA		0.005	0.2	%
Load Regulation		ΔV_{OUT}	(V_{IN} -V_{OUT})=3V, 10Ma ≤ I_{OUT} ≤ 3A		0.05	0.5	%
Dropout Voltage		V_D	ΔV_{REF}%=1%, I_{OUT}=3A		1.2	1.40	V
Current Limit		I_{LIMIT}	(V_{IN}-V_{OUT})=2V	3.1	5.8		A
Minimum Load Current		$I_{O(MIN)}$	(V_{OUT} +1.5V) ≤ V_{IN} ≤12V			1	mA
Quiescent Current		I_Q	V_{IN}=12V		0.35	0.5	mA
Ripple Rejection		RR	f=120Hz, Tantalum,(V_{IN} -V_{OUT})=3V,I_{OUT}=3A	75			dB
Thermal Regulation			T_A=25°C,30ms pulse		0.004	0.02	%/W
Temperature Stability		ΔV_{OUT}	T_A=125°C, 1000hr		0.5		%
Long-Term Stability		ΔV_{OUT}			0.03	1.0	%
Output Noise(% of V_{OUT})		e_N	T_A=25°C,10Hz ≤ f ≤ 10kHz		0.003		%
Thermal shutdown					150		°C

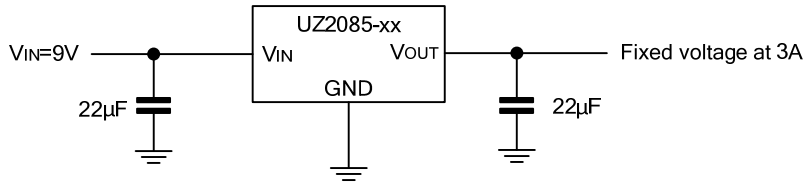
■ TYPICAL APPLICATION CIRCUIT





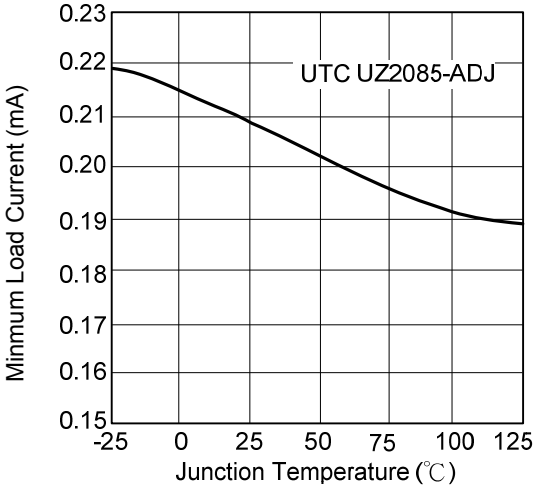
The UTC **UZ2085** also supports MLCC.



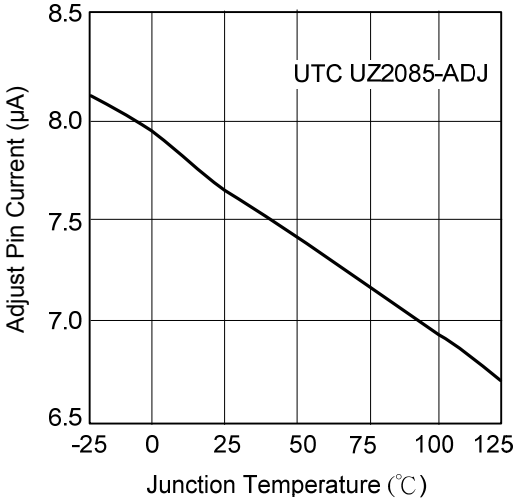


■ TYPICAL CHARACTERISTICS

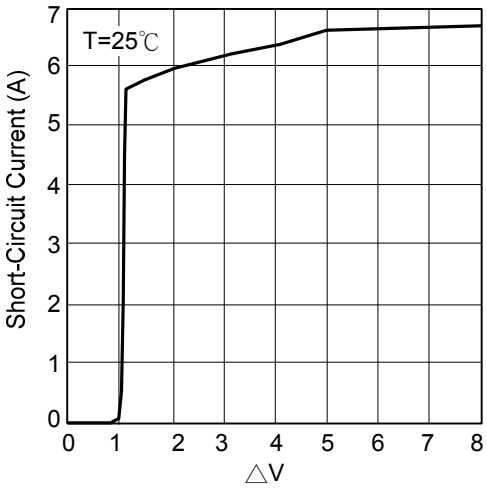
Minimum Load Current vs. Temperature



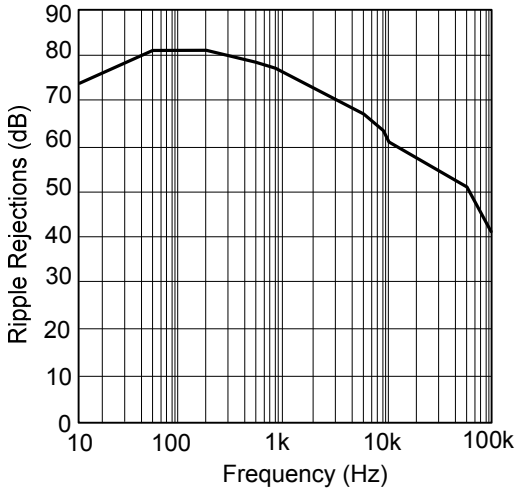
Adjust Pin Current vs. Temperature



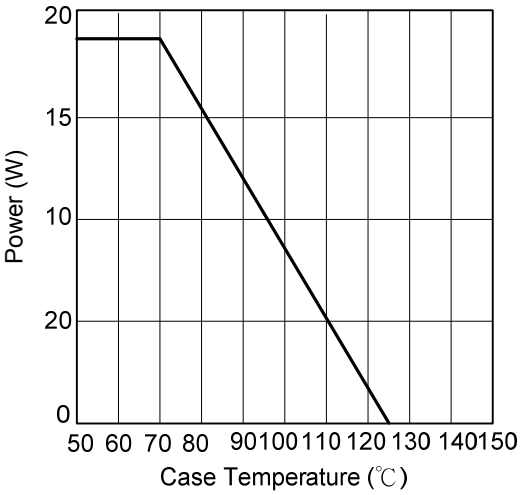
Short-Circuit Current vs. △V



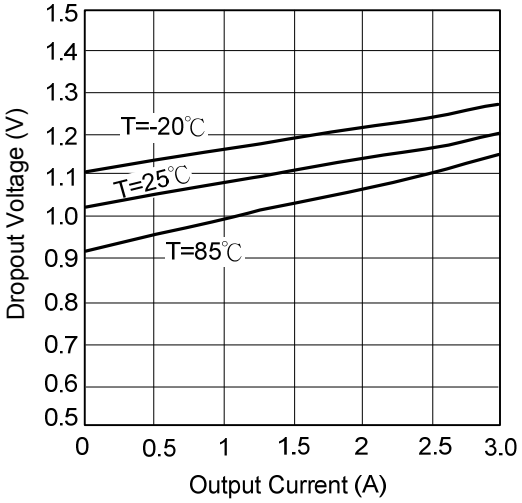
Ripple Rejection vs. Frequency



Maximum Power Dissipation

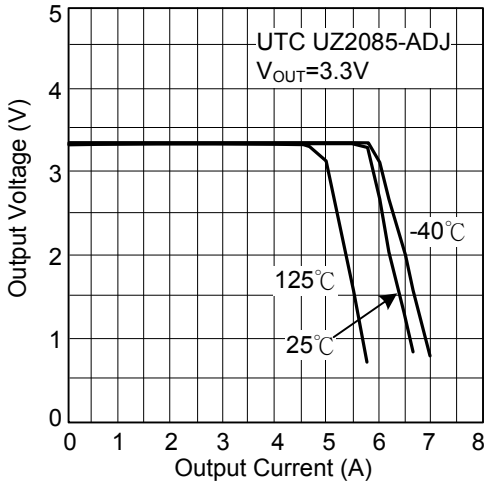


Dropout Voltage vs.Output Current

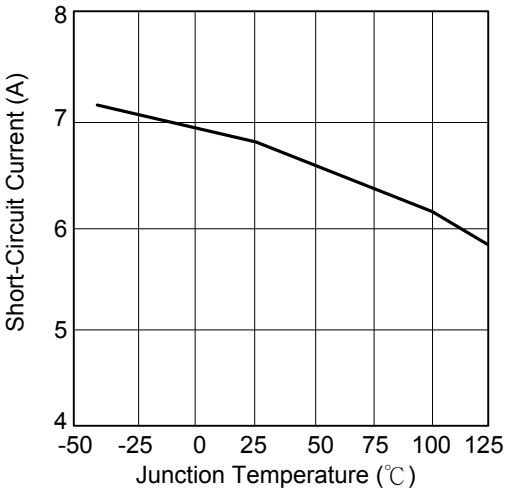


■ TYPICAL CHARACTERISTICS(Cont.)

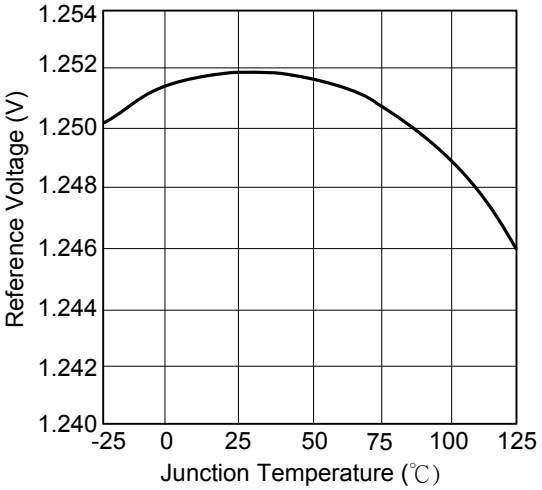
Output Voltage vs. Output Current



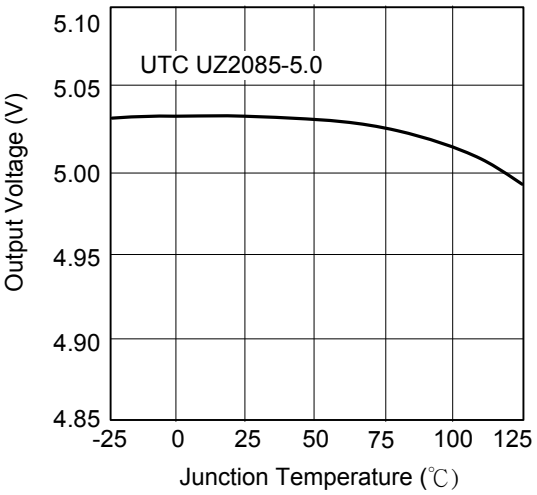
Short-Circuit Current vs. Temperature



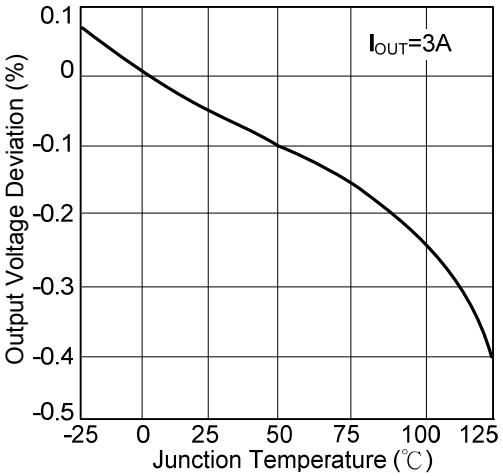
Reference Voltage vs. Temperature



Output Voltage vs. Temperature



Load Regulation vs. Temperature



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.