



M29150A/B

LINEAR INTEGRATED CIRCUIT

1.5A, VERY LOW DROP VOLTAGE REGULATORS

DESCRIPTION

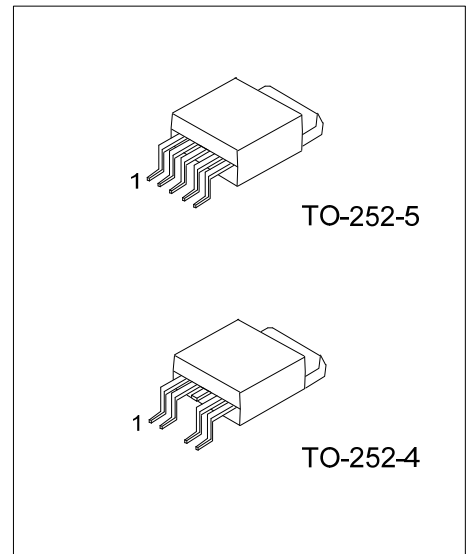
As the UTC linear integrated LDO, the UTC **M29150A/B** shows a high current, high accuracy, low-dropout voltage. The features are: 400mV dropout voltage, very low ground current. Cause the series have been designed for high current loads, so they are also used in lower current, extremely low dropout-critical systems (in which their tiny dropout voltage and ground current values are important attributes).

FEATURES

- * Very low dropout voltage : typ. 0.4@ $I_{OUT}=1.5A$
- * Output current guaranteed 1.5A
- * Fixed and adjustable output voltage
- * Thermal limit and Internal current
- * Logic controlled electronic shutdown available
- * Over voltage protection

ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
M29150AL-xx-TN4-R	M29150AG-xx-TN4-R	TO-252-4	Tape Reel
M29150BL-xx-TN4-R	M29150BG-xx-TN4-R	TO-252-4	Tape Reel
M29150AL-xx-TN5-R	M29150AG-xx-TN5-R	TO-252-5	Tape Reel
M29150BL-xx-TN5-R	M29150BG-xx-TN5-R	TO-252-5	Tape Reel

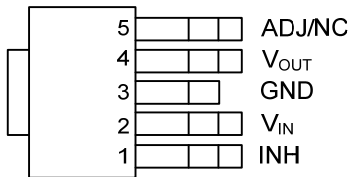


<p>M29150XL-xx-TN4-R</p> <ul style="list-style-type: none"> (1) Packing Type (2) Package Type (3) Output Voltage Code (4) Lead Plating (5) Over Voltage Protection 	<ul style="list-style-type: none"> (1) R: Tape Reel (2) TN4: TO-252-4, TN5: TO-252-5 (3) xx: Refer to Marking Information (4) G: Halogen Free, L: Lead Free (5) X: Refer to Marking Information
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MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
TO-252-4	50 :5.0V	<p>The diagram shows a 5-pin package with the following markings: UTC, M29150X, OVP Code, Voltage Code, L, G, LOT Code, and Date Code. The pins are numbered 1 to 5 from left to right.</p>
TO-252-5	AD :ADJ	

PIN CONFIGURATION

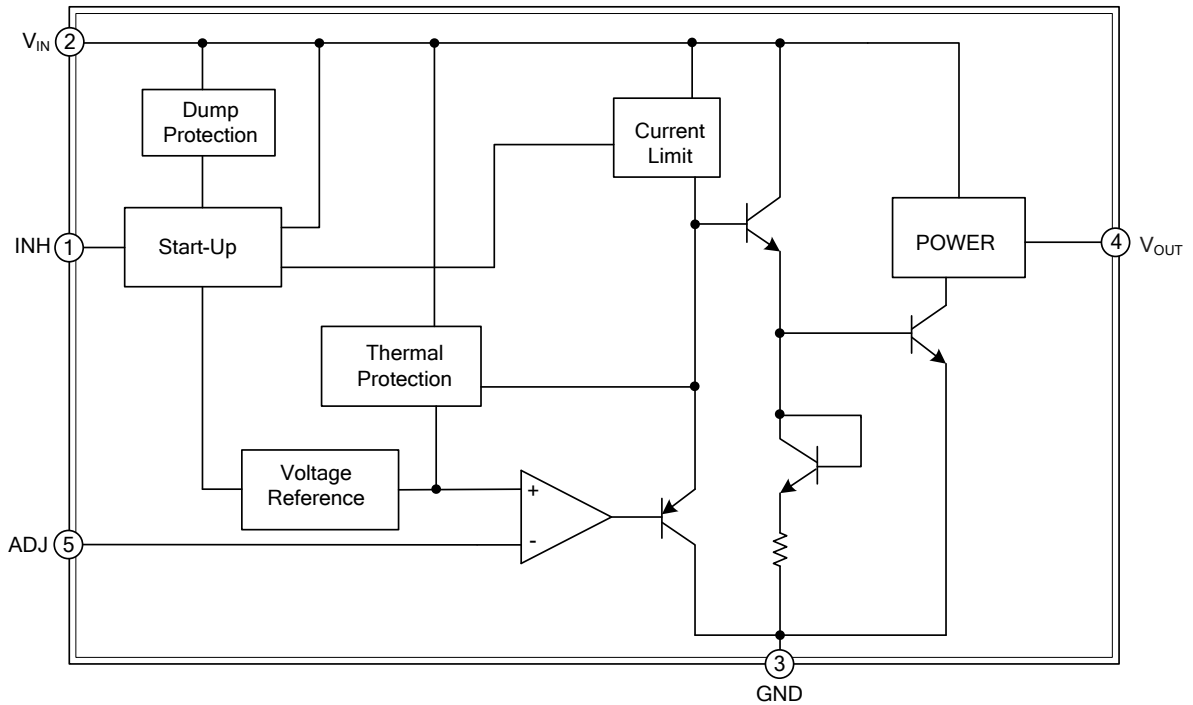


PIN DESCRIPTIONS

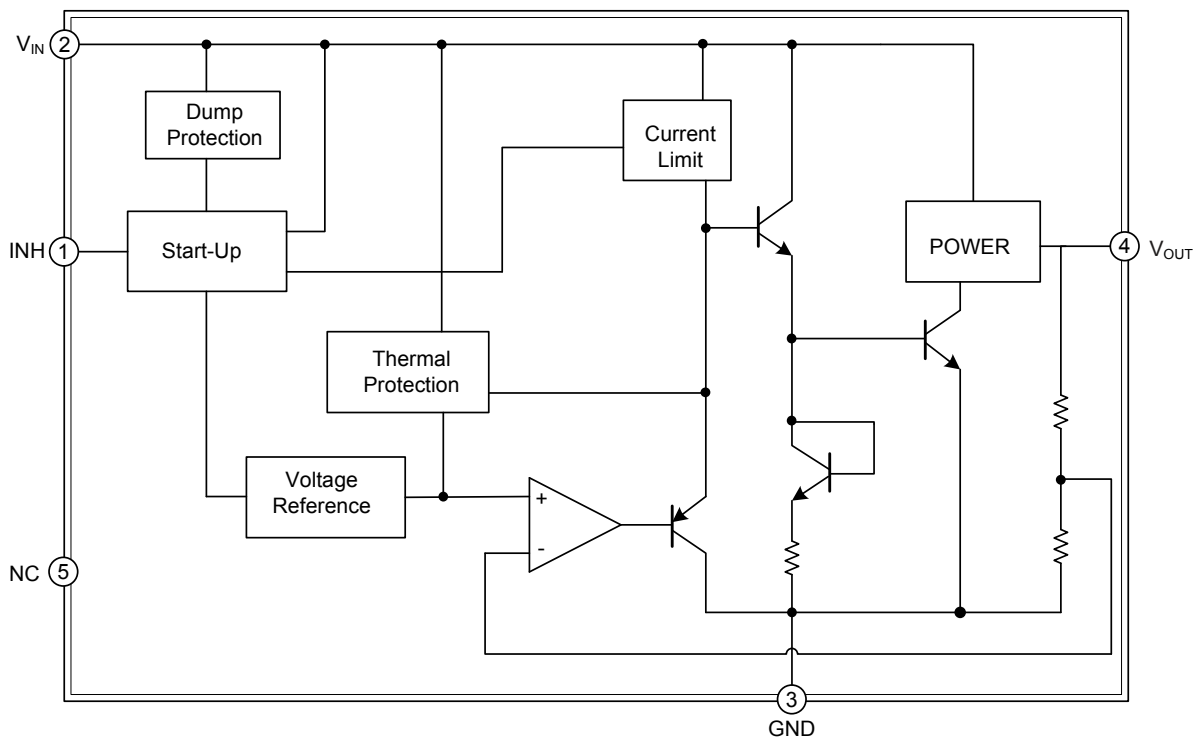
PIN NO.	PIN NAME	PIN FUNCTION
1	INH	Inhibit Function Input
2	V_{IN}	Input voltage
3	GND	GND
4	V_{OUT}	Output Voltage
5	ADJ/NC	Adjustable Version Input /Not connected for fixed version

■ BLOCK DIAGRAM

Adjustable Version



Fixed Version



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNITS
DC Input Voltage	V_{IN}	30	V
DC Output Voltage	V_{OUT}	-0.3 ~ +20	V
Inhibit Input Voltage	V_{INH}	-0.3 ~ +20	V
Over Voltage Protection	M29150A	14	V
	M29150B	35	V
Output current	I_{OUT}	Internally Limited	mA
Power Dissipation	P_D	Internally Limited	mW
Junction Temperature	T_J	+150	°C
Operating Temperature	T_{OPR}	-40 ~ +125	°C
Storage Temperature	T_{STG}	-55 ~ +150	°C

Notes: 1. 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	θ_{JA}	100	°C/W
Junction to Case	θ_{JC}	8	°C/W

■ ELECTRICAL CHARACTERISTICS

($I_{OUT}=10mA$, $T_J=25^\circ C$, $V_{INH}=2V$ (Note 2), $C_I=0.33\mu F$, $C_O=10\mu F$, unless otherwise specified)

M29150-5.0V ($V_{IN}=7.0V$)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=6V\sim 10.5V$, $I_{OUT}=10mA\sim 1.5A$ M29150A	4.9	5.0	5.1	V
		$V_{IN}=6V\sim 10.5V$, $I_{OUT}=10mA\sim 1.5A$ $V_{IN}=30V$, $I_{OUT}=10mA\sim 100mA$ M29150B	4.95	5.0	5.05	V
Load Regulation	$\frac{\Delta V_{OUT}}{V_{OUT}}$	$I_{OUT}=10mA\sim 1.5A$		0.2	1.0	%
Line Regulation	$\frac{\Delta V_{OUT}}{V_{OUT}}$	$V_{IN}=6V\sim 13V$ M29150A		0.06	0.5	%
		$V_{IN}=6V\sim 30V$ M29150B				
Supply Voltage Rejection	SVR	$f=120Hz$, $V_{IN}=7\pm 1V$, $I_{OUT}=0.75A$ (Note 1)	49	64		dB
Dropout Voltage	V_D	$I_{OUT}=250mA$, $T_J=-40\sim 125^\circ C$ (Note 3)		0.1		V
		$I_{OUT}=0.75A$, $T_J=-40\sim 125^\circ C$ (Note 3)		0.2		V
		$I_{OUT}=1.5A$, $T_J=-40\sim 125^\circ C$ (Note 3)		0.4	0.7	V
Quiescent Current	I_Q	$I_{OUT}=0.75A$, $T_J=-40\sim 125^\circ C$		15	40	mA
		$I_{OUT}=1.5A$, $T_J=-40\sim 125^\circ C$		30	80	mA
		$V_{IN}=13V$, $V_{INH}=GND$, $T_J=-40\sim 125^\circ C$ M29150A		0.13	0.18	mA
		$V_{IN}=30V$, $V_{INH}=GND$, $T_J=-40\sim 125^\circ C$ M29150B				
Short Circuit Current	I_{SC}	$V_{IN}-V_{OUT}=5.5V$		2.2		A
Control Input Logic Low	V_{IL}	OFF MODE (Note 2), $T_J=-40\sim 125^\circ C$			0.8	V
Control Input Logic High	V_{IH}	ON MODE (Note 2), $T_J=-40\sim 125^\circ C$	2			V
Control Input Current	I_{INH}	$V_{INH}=13V$, $T_J=-40\sim 125^\circ C$		5	10	μA
Output Noise Voltage	eN	$B_p=10Hz\sim 100KHz$, $I_{OUT}=100mA$		200		μV_{RMS}
Thermal Shutdown	T_{SHDN}			150		°C

■ ELECTRICAL CHARACTERISTICS(Cont.)

M29150-ADJ (V_{IN}=3.23V)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Minimum Operating Input Voltage	V _{IN}	I _{OUT} =10mA~1.5A, T _J =-40~125°C	2.5			V
Load Regulation	ΔV _{OUT}	I _{OUT} =10mA~1.5A		0.2	1.0	%
Line Regulation	ΔV _{OUT}	V _{IN} =2.5V~13V, I _{OUT} =10mA	M29150A	0.06	0.5	%
		V _{IN} =2.5V~30V, I _{OUT} =10mA	M29150B			
Reference Voltage	V _{REF}	I _{OUT} =10mA~1.5A, V _{IN} =2.5~4.5V T _J =-40~125°C (Note 4)	-1%	1.23	+1%	V
			-2%		+2%	
Supply Voltage Rejection	SVR	f=120Hz, V _{IN} =3.23±1V, I _{OUT} =0.75A (Note 1)	45	75		dB
Quiescent Current	I _Q	I _{OUT} =0.75A, T _J =-40~125°C		15	40	mA
		I _{OUT} =1.5A, T _J =-40~125°C		30	80	mA
		V _{IN} =13V, V _{INH} =GND, T _J =-40~125°C	M29150A	0.13	0.18	mA
		V _{IN} =30V, V _{INH} =GND, T _J =-40~125°C	M29150B			
Adjust Pin Current	I _{ADJ}	T _J =-40~125°C (Note 1)			1	μA
Short Circuit Current	I _{SC}	V _{IN} -V _{OUT} =5.5V		2.2		A
Control Input Logic Low	V _{IL}	OFF MODE (Note 2), T _J =-40~125°C			0.8	V
Control Input Logic High	V _{IH}	ON MODE (Note 2), T _J =-40~125°C	2			V
Control Input Current	I _{INH}	V _{INH} =13V, T _J =-40~125°C		5	10	μA
Output Noise Voltage	eN	B _P =10Hz ~100KHz, I _{OUT} =100mA		50		μV _{RMS}
Thermal Shutdown	T _{SHDN}			150		°C

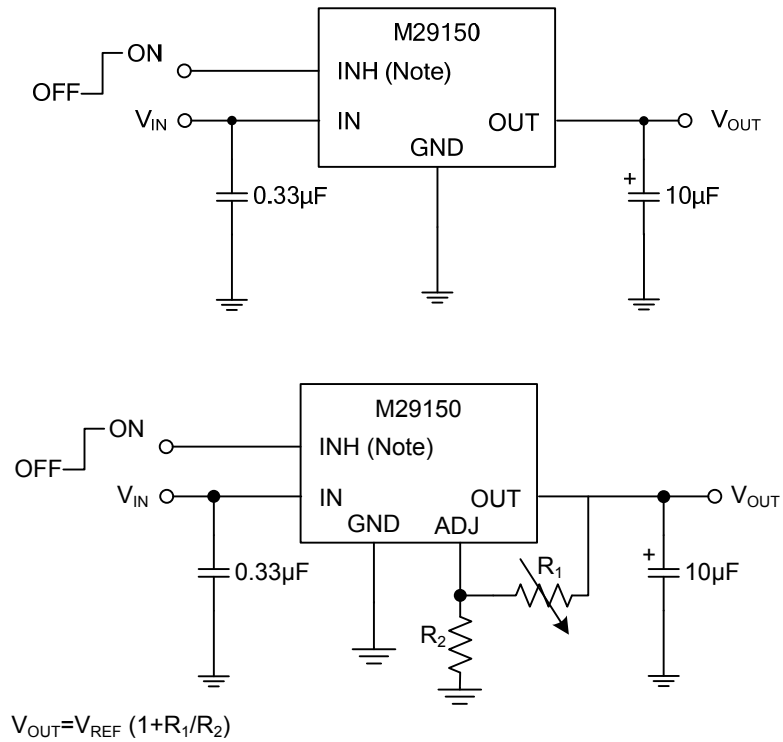
Note: 1. Guaranteed by design.

2. Only for version with Inhibit function.

3. Dropout voltage is defined as the input-to-output differential when the output voltage drops to 99% of its nominal value with V_{OUT} +1V applied to V_{IN}.

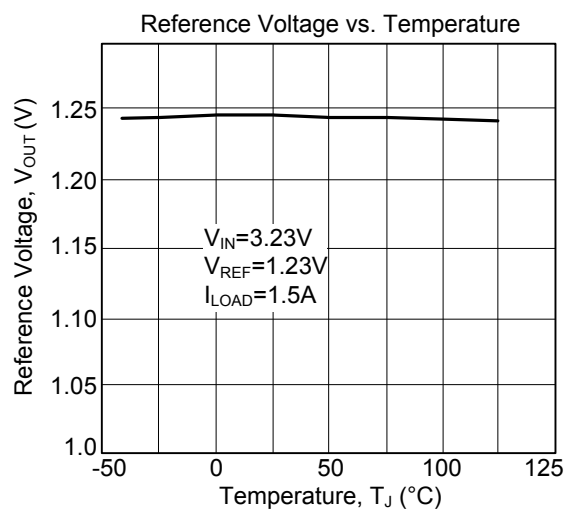
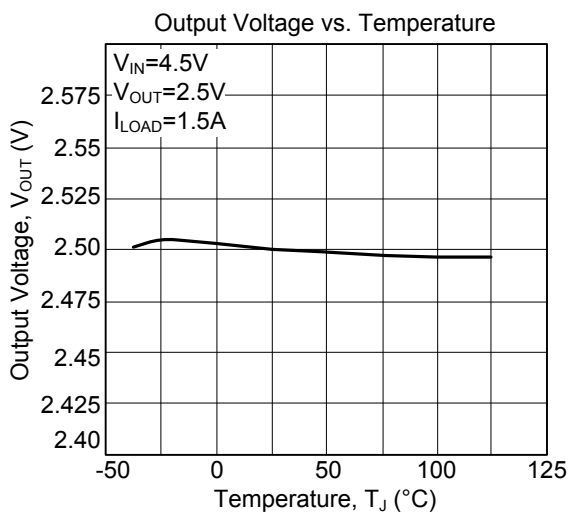
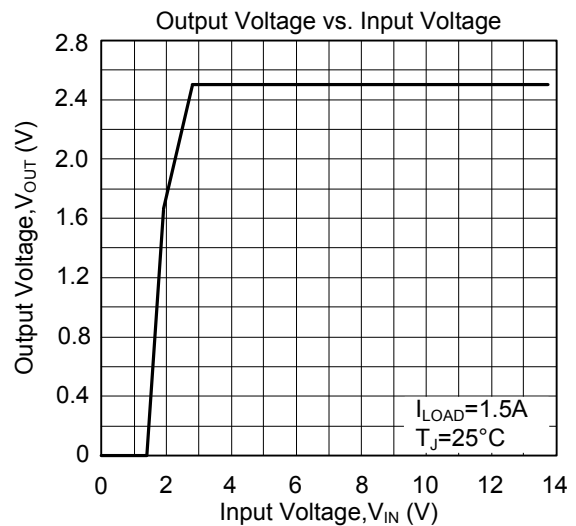
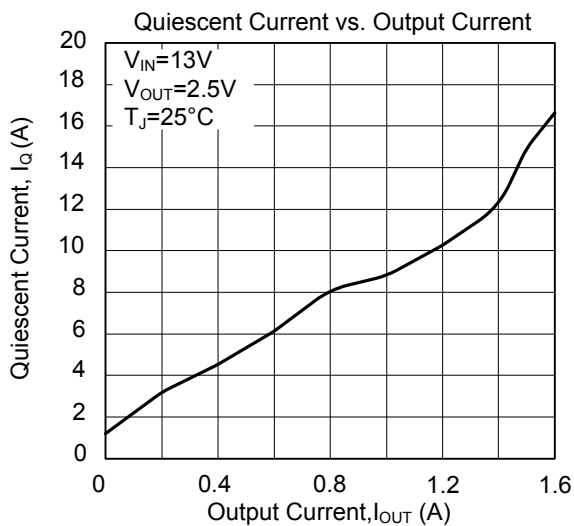
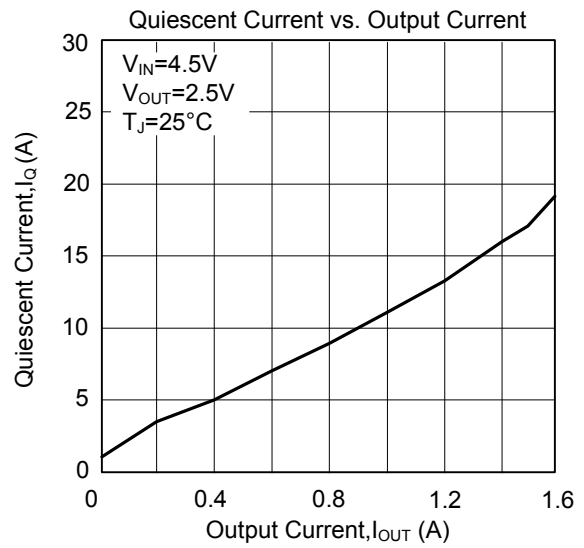
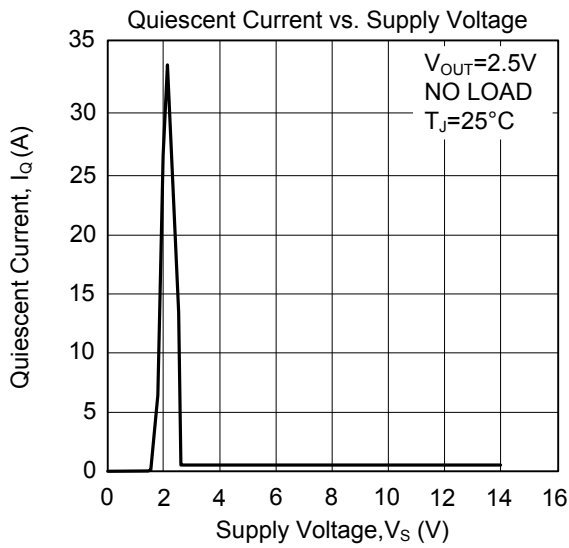
4. Reference voltage is measured between output and GND pin, with ADJ PIN tied to V_{OUT}

■ TYPICAL APPLICATION CIRCUITS

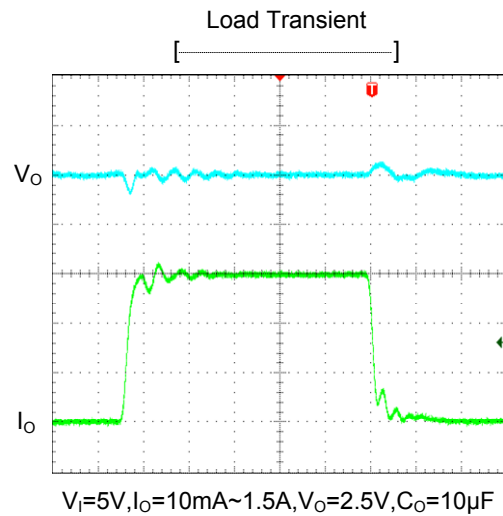
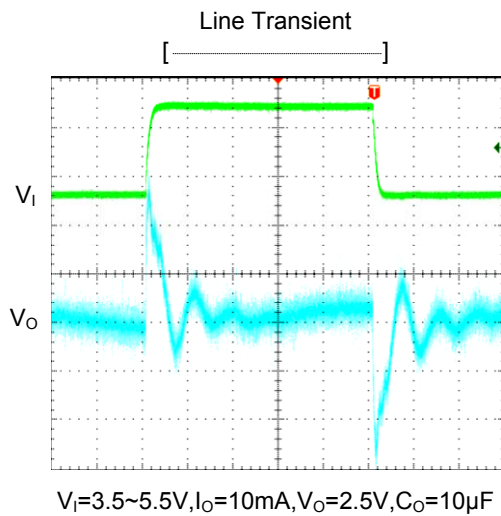
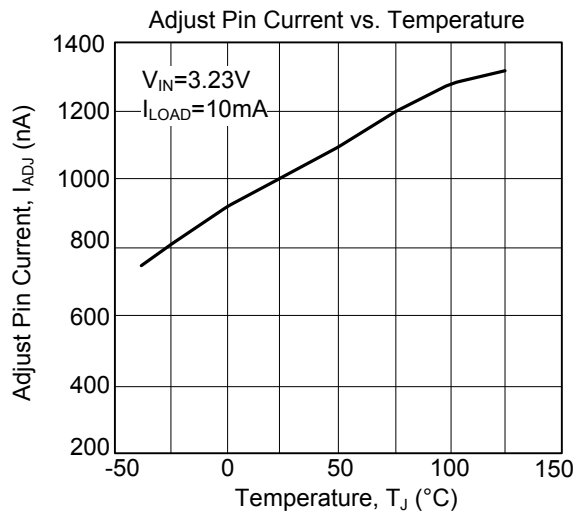
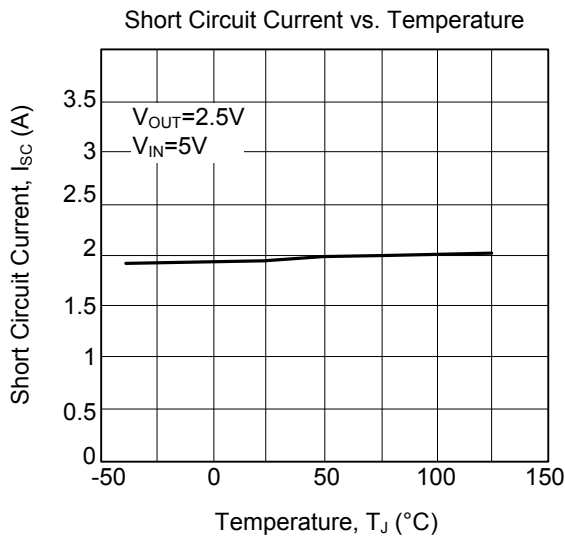
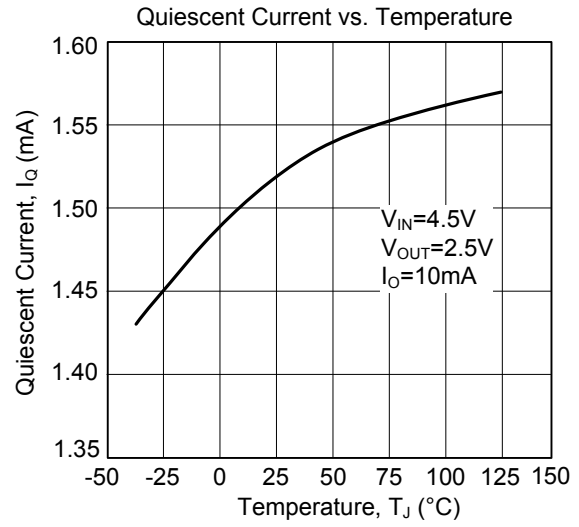
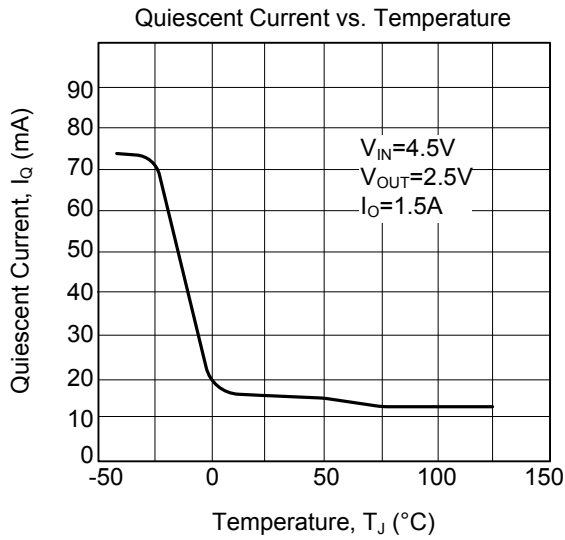


Note: Only for version with inhibit function.

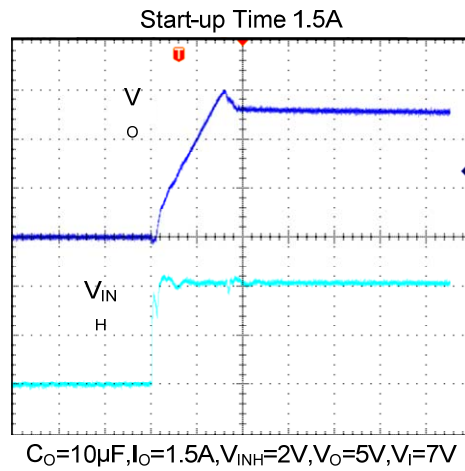
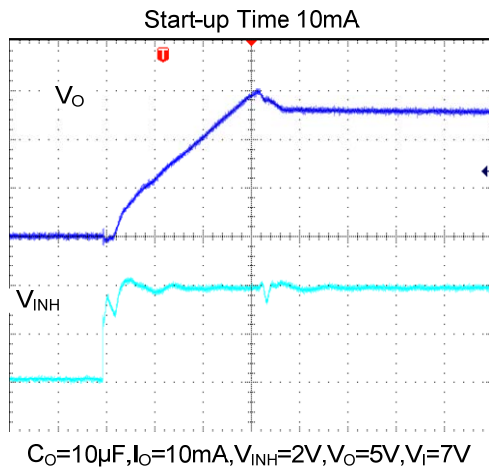
TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



■ TYPICAL CHARACTERISTICS(Cont.)



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