



R1MX55

LINEAR INTEGRATED CIRCUIT

VOLTAGE REGULATOR

■ DESCRIPTION

As the UTC linear intergrated LDO, the **R1MX55** shows a high current, high accuracy, low-dropout voltage. The feature are: low 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).

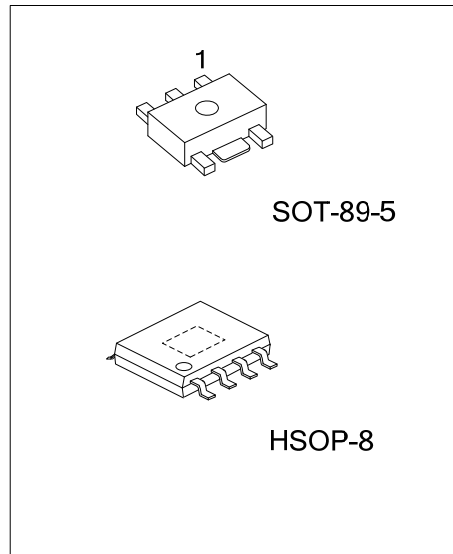
The **R1MX55** is stable with ceramic capacitors. It requires a 1μF or greater capacitor for stability.

■ FEATURES

- * Built-in ON/OFF function,
- * Over current protection function,
- * Over heat protection function
- * Adjustable DC output voltage

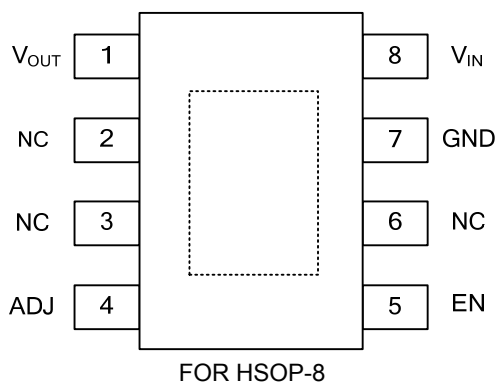
■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
R1MX55L-AB5-R	R1MX55G-AB5-R	SOT-89-5	Tape Reel
R1MX55L-SH2-R	R1MX55G-SH2-R	HSOP-8	Tape Reel
R1MX55L-SH2-T	R1MX55G-SH2-T	HSOP-8	Tube



<p>R1MX55L-AB5-R</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Lead Free</p>	<p>(1) R: Tape Reel, T: Tube</p> <p>(2) AB5: SOT-89-5, SH2: HSOP-8</p> <p>(3) G: Halogen Free, L: Lead Free</p>
--	---

■ PIN CONFIGURATION



■ PIN DESCRIPTIONS

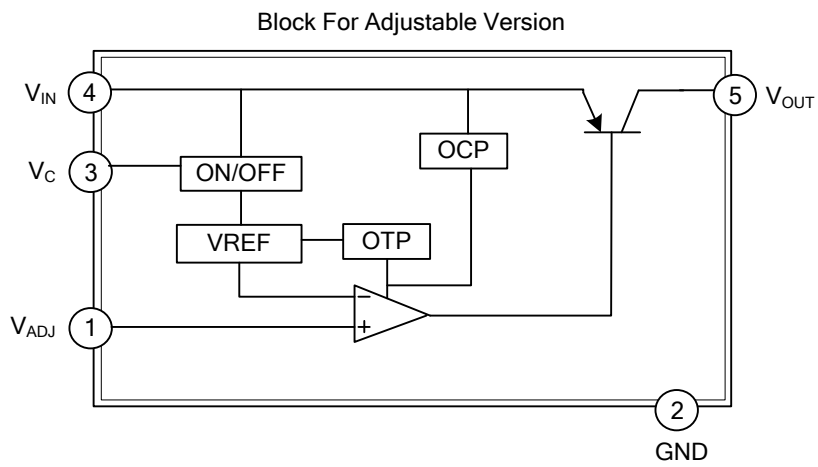
FOR SOT89-5 PACKAGE

PIN NO.	PIN NAME	FUNCTION
1	V_{ADJ}	Output voltage adjustment
2	GND	Ground
3	V_C	ON/OFF control
4	V_{IN}	DC input
5	V_{OUT}	DC output

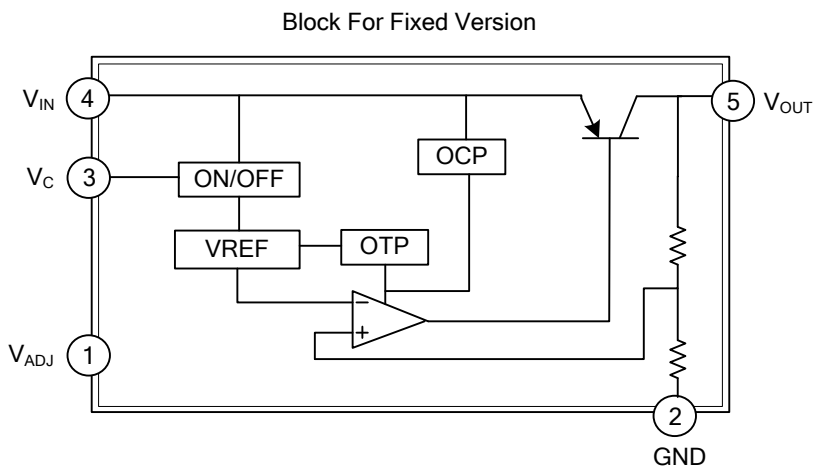
FOR HSOP-8 PACKAGE

PIN NO	PIN NAME	DESCRIPTION
1	V_{OUT}	DC output
2, 3, 6	NC	No Connection
4	ADJ	Output voltage adjustment
5	EN	Enable pin, Logic Low=Shutdown; Logic High= Enable
7	GND	Ground
8	V_{IN}	DC input

■ BLOCK DIAGRAM



For SOT-89-5



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNITS
FOR SOT-89-5			
Input Voltage (Note 2)	V_{IN}	9	V
ON/OFF Control Voltage (Note 2)	V_C	9	V
Output Adjustment pin Voltage (Note 2)	V_{ADJ}	5	V
Output Current	I_{OUT}	500	mA
Power Dissipation	P_D	900	mW
Junction Temperature	T_J	150	°C
Operating Temperature	T_{OPR}	-40 ~ +85	°C
Storage Temperature	T_{STG}	-55 ~ +150	°C
FOR HSOP-8			
Input Voltage	V_{IN}	15	V
Enable Voltage	V_C	15	V
Power Dissipation	P_D	1100	mW
Junction Temperature	T_J	+125	°C
Storage Temperature	T_{STG}	-55 ~ +150	°C

Note: 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.
2. All are open except GND and applicable terminals.

■ ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$, unless otherwise specified)

FOR SOT-89-5 ($V_{IN}=3.5\text{V}$, $V_{OUT}=2.44\text{V}$ ($R_1=R_2=100\text{K}\Omega$), $I_{OUT}=30\text{mA}$, $V_C=1.8\text{V}$)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Input Voltage	V_{IN}		2.6		9.0	V
Output Voltage	V_{OUT}		1.3		5.0	V
Load Regulation	ΔV_{OUT}	$I_{OUT}=5\sim 500\text{mA}$		10	100	mV
Line Regulation	ΔV_{OUT}	$V_{IN}=3.5\sim 8.5\text{V}$		6	20	mV
Ripple Rejection	RR			55		dB
Dropout Voltage	V_D	$I_{OUT}=500\text{mA}$			0.7	V
Reference Voltage	V_{REF}		1.196	1.22	1.244	V
Temperature Coefficient of Output Voltage	$T_C V_{OUT}$	$T_J=25\sim 75^\circ\text{C}$, $I_{OUT}=10\text{mA}$		± 0.1		mV/°C
Output Noise Voltage	$V_{NO(RMS)}$	$10\text{Hz} < f < 100\text{kHz}$		100		μV
On-State Voltage for Control	$V_{C(ON)}$	(Note)	1.8			V
On-State Current for Control	$I_{C(ON)}$	$V_C=1.8\text{V}$		20	70	μA
Off-State Voltage for Control	$V_{C(OFF)}$				0.4	V
Quiescent Current	I_Q	$I_{OUT}=0\text{A}$		0.8	1.2	mA
Output Off-State Consumption Current	I_{QS}	$V_C=0.2\text{V}$			1	μA

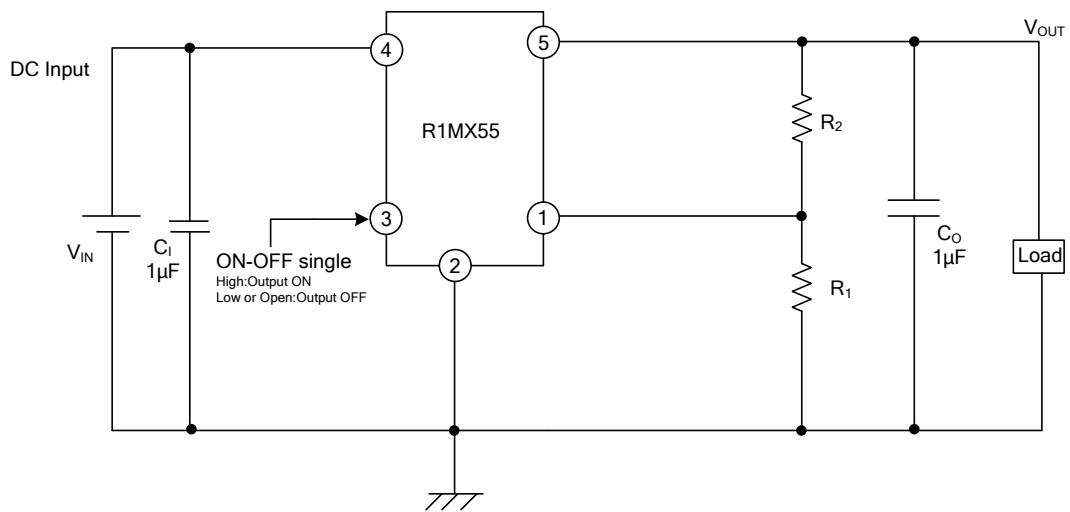
Note: In case that the control terminal (3th pin) is non-connection, output voltage should be OFF state.

■ ELECTRICAL CHARACTERISTICS(Cont.)

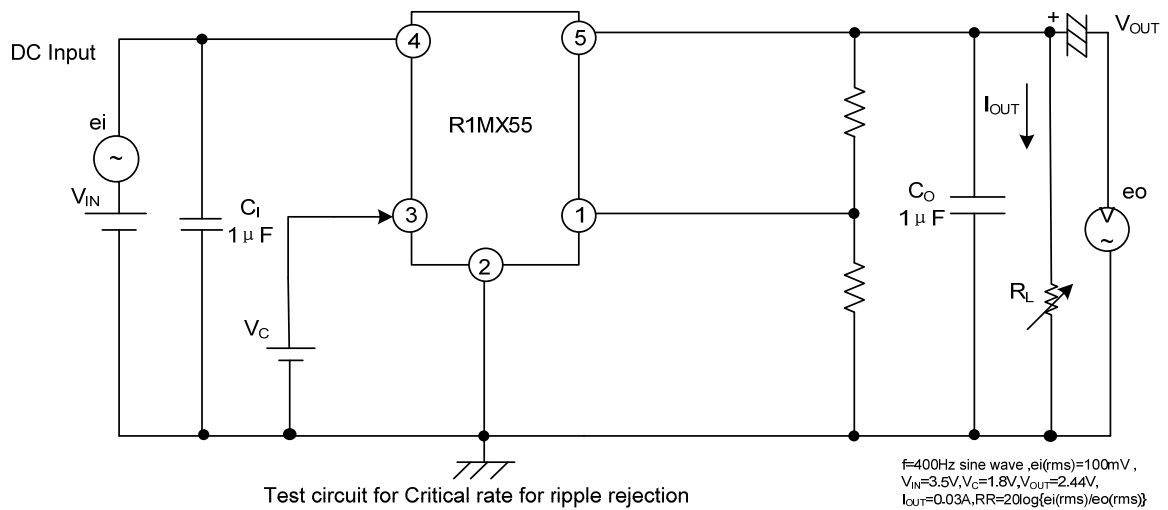
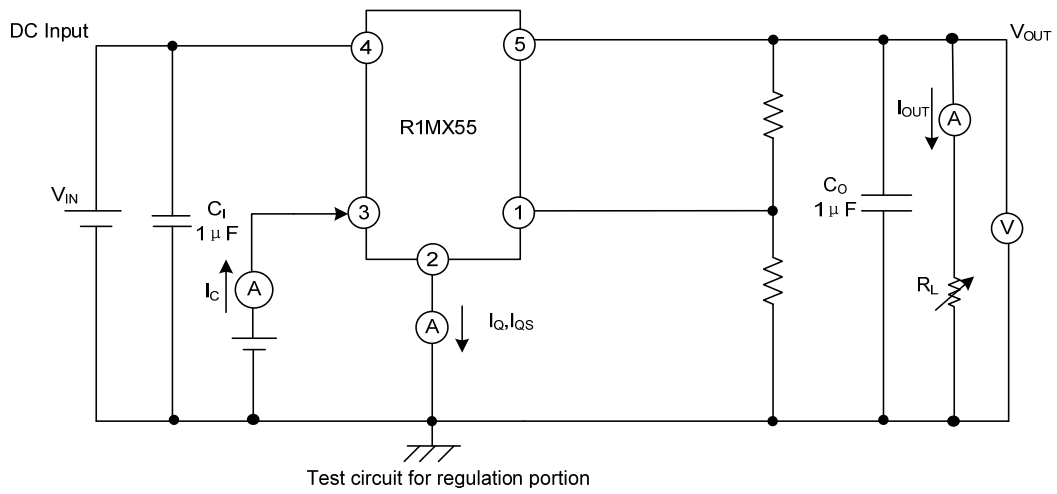
FOR HSOP-8 ($V_{IN} = V_O + 2.5V$, $V_{OUT} = 1.8V$, $V_{EN} = V_{IN}$, $T_A = 25^\circ C$, unless otherwise specified)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage	V_{IN}		2.6		15	V
Output Voltage Accuracy	V_{OUT}		-2		+2	%
Quiescent Current	I_Q	$I_{OUT} = 0.1mA$		0.85		mA
		$I_{OUT} = 50mA$		1.26		
		$I_{OUT} = 100mA$		1.67		
		$I_{OUT} = 150mA$		2.05	5	
Reference Voltage	V_{REF}		-2%	1.2	+2%	V
Line Regulation	REG_{LINE}	$V_{OUT} + 2.5V < V_{IN} < 15V, I_{OUT} = 1mA$		0.5		%
Load Regulation	REG_{LOAD}	$0.1mA < I_{OUT} < 150mA$		0.5	1	%
Dropout Voltage	V_{DROP}	$I_{OUT} = 0.1mA$		10	100	mV
		$I_{OUT} = 50mA$		40	100	
		$I_{OUT} = 100mA$		70	150	
		$I_{OUT} = 150mA$		100	200	
Maximum Output Current	$I_{O(MAX)}$	$V_{IN} = V_{OUT} + 2.5V$	250			mA
PROTECTION						
Over Temperature Shutdown	OTS			140		$^\circ C$
Over Temperature Shutdown Hysteresis				30		$^\circ C$
SHUTDOWN						
Input High Voltage	V_{EN}		2.0			V
Input Low Voltage					0.4	
Shutdown Supply Current	$I_{Q(SHDN)}$	$EN = Low, V_{IN} = 15V$		0.1	10	μA

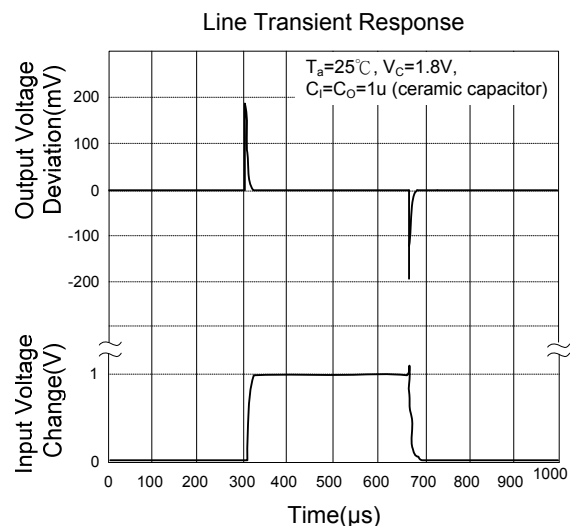
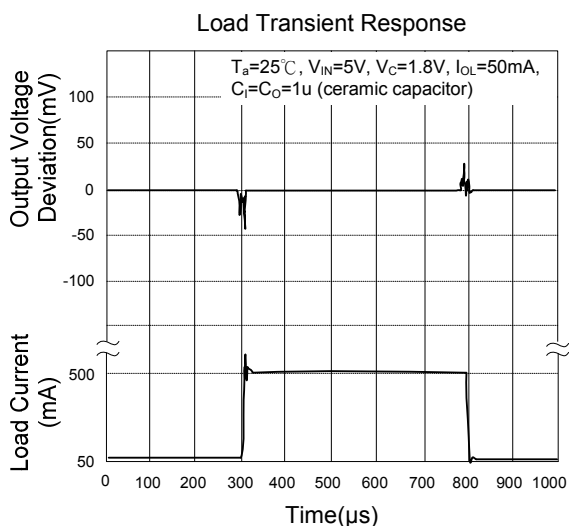
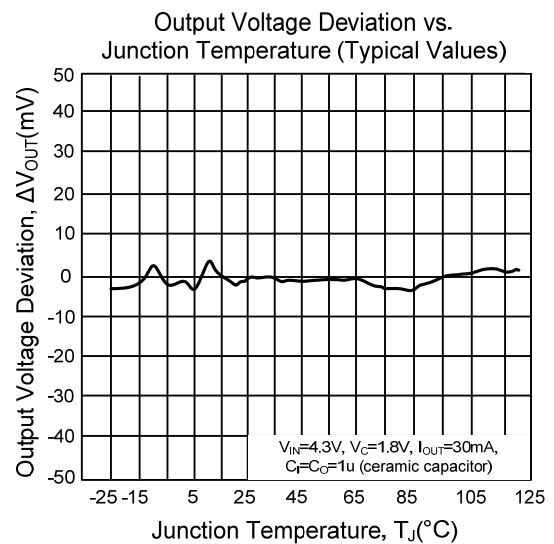
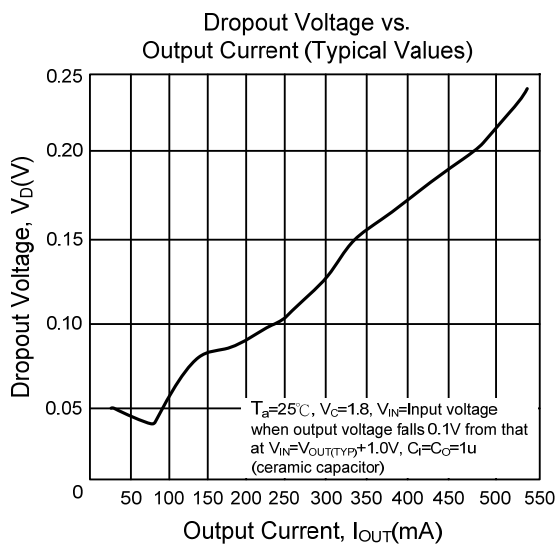
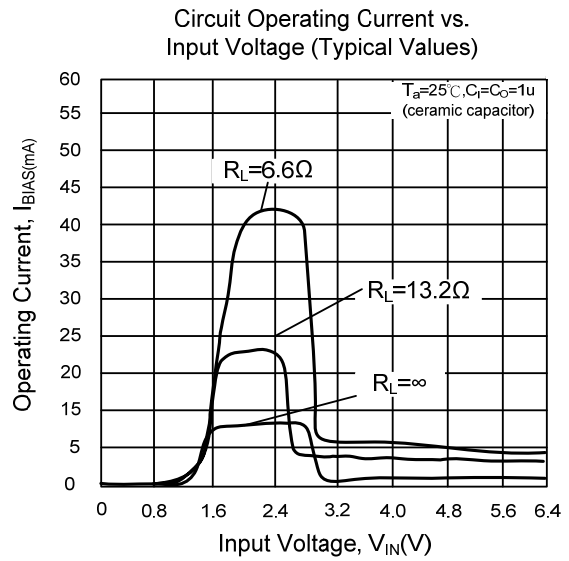
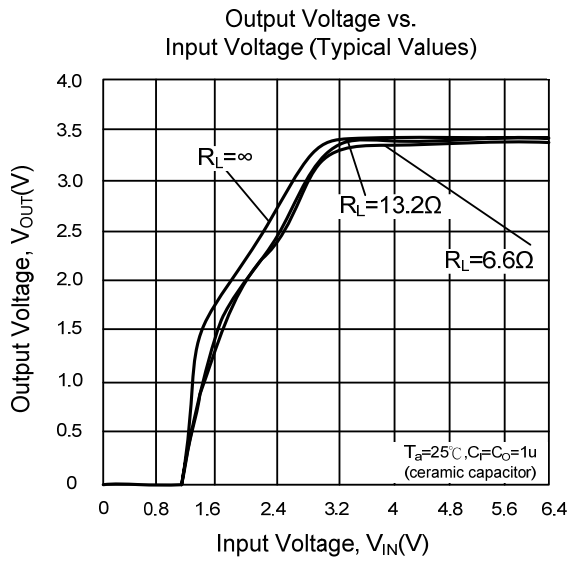
■ TYPICAL APPLICATION CIRCUIT



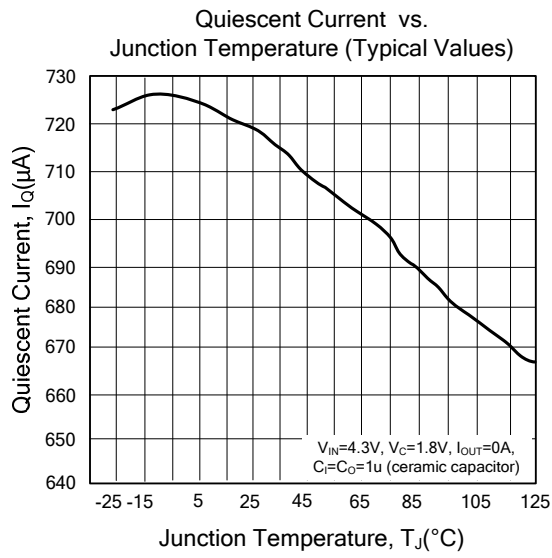
■ ELECTRICAL CHARACTERISTICS MEASURING CIRCUIT(FOR SOT-89-5)



■ TYPICAL CHARACTERISTICS(FOR SOT-89-5)



■ TYPICAL CHARACTERISTICS(Cont.)



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.