

## UR6225

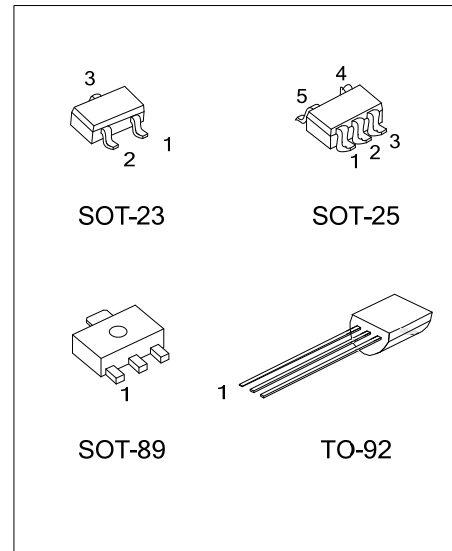
CMOS IC

### POSITIVE VOLTAGE REGULATOR

#### DESCRIPTION

The UTC **UR6225** is a positive voltage output, three-pin regulator that provides a high current even when the input/output voltage differential is small. Low power consumption and high accuracy is achieved through CMOS and laser trimming technologies.

The UTC **UR6225** consists of a high-precision voltage reference, an error amplification circuit, and a current limited output driver. Transient responses to load variations have improved in comparison to the existing series.



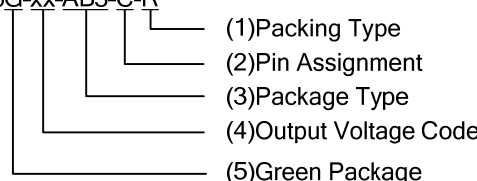
#### FEATURES

- \* Maximum Output Current: 300mA (Within Max. Power Dissipation,  $V_{OUT} = 5.0V$ )
- \* Output Voltage Range: 1.5V ~ 6.0V in 0.1V Increments (1.5V ~ 1.9V for Custom Products)
- \* Highly Accurate: Output Voltage  $\pm 2\%$  ( $\pm 1\%$  for Semi-Custom Products)
- \* Low Power Consumption: Typ. 2.0 $\mu A$  @  $V_{OUT} = 5.0V$
- \* Output Voltage Temperature Characteristics: Typ.  $\pm 100ppm/^{\circ}C$
- \* Input Stability : Typ. 0.2%/V
- \* Small Input-Output Differential:  $I_{OUT} = 100mA$  @  $V_{OUT} = 5.0V$  with a 0.12V Differential.
- \* Over Temperature Protection

#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment					Packing
Lead Free	Halogen Free		1	2	3	4	5	
UR6225L-xx-AB3-C-R	UR6225G-xx-AB3-C-R	SOT-89	G	I	O	-	-	Tape Reel
UR6225L-xx-AE3-3-R	UR6225G-xx-AE3-3-R	SOT-23	O	G	I	-	-	Tape Reel
UR6225L-xx-AF5-C-R	UR6225G-xx-AF5-C-R	SOT-25	I	G	N	N	O	Tape Reel
UR6225L-xx-AF5-F-R	UR6225G-xx-AF5-F-R	SOT-25	G	I	O	N	N	Tape Reel
UR6225L-xx-T92-C-B	UR6225G-xx-T92-C-B	TO-92	G	I	O	-	-	Tape Box
UR6225L-xx-T92-C-K	UR6225G-xx-T92-C-K	TO-92	G	I	O	-	-	Bulk
UR6225L-xx-T92-B-B	UR6225G-xx-T92-B-B	TO-92	O	G	I	-	-	Tape Box
UR6225L-xx-T92-B-K	UR6225G-xx-T92-B-K	TO-92	O	G	I	-	-	Bulk

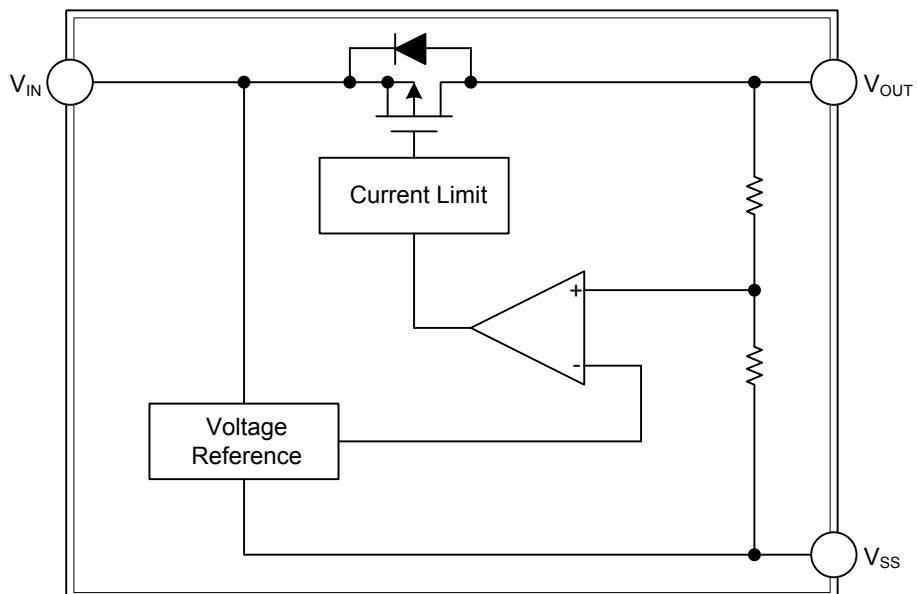
Note: Pin Assignment: I:  $V_{IN}$  O:  $V_{OUT}$  G:  $V_{SS}$  N: No Connection  
xx: Output Voltage, refer to Marking Information.

<p>UR6225G-xx-AB3-C-R</p> 	<p>(1) R:Tape Reel, K:Bulk, B:Tape Box (2) refer to Pin Assignment (3) AB3:SOT-89, AE3:SOT-23, AF5:SOT-25, T92:TO-92 (4) xx:refer to Marking Information (5) G: Halogen Free and Lead Free, L: Lead Free</p>
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## MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOT-89	15:1.5V 18:1.8V 20:2.0V	<p>Date Code ← UR6225 → Voltage Code L: Lead Free G: Halogen Free</p>
SOT-25	21:2.1V 25:2.5V 26:2.6V 27:2.7V 28:2.8V 2J:2.85V	<p>Voltage Code ← F2XX → Pin Code L: Lead Free G: Halogen Free</p>
SOT-23	30:3.0V 33:3.3V 35:3.5V 36:3.6V 38:3.8V	<p>Voltage Code ← F2XX → L: Lead Free G: Halogen Free</p>
TO-92	40:4.0V 45:4.5V 50:5.0V 60:6.0V	<p>Pin Code ← UTC UR6225 → Voltage Code Date Code ← UTC → L: Lead Free G: Halogen Free</p>

## BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	$V_{IN}$	10	V
Output Current	$I_{OUT}$	300	mA
Output Voltage	$V_{OUT}$	$V_{SS}-0.3 \sim V_{IN}+0.3$	V
Power Dissipation	SC-23/SOT-25	250	mW
	SOT-89	500	mW
	TO-92	300	mW
Junction Temperature	$T_J$	+125	$^\circ\text{C}$
Operating Temperature	$T_{OPR}$	-40 ~ +85	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-40~+125	$^\circ\text{C}$

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.

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

**UR6225-6.0V (Note1)**

PARAMETER	CIRCUIT	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	1	$V_{OUT(E)}$ (Note2)	$I_{OUT}=40\text{mA}$ , $V_{IN}=7.0\text{V}$	5.880	6.000	6.120	V
Maximum Output Current	1	$I_{OUT(MAX)}$	$V_{IN}=7.0\text{V}$ , $V_{OUT(E)}\geq 5.4\text{V}$	250			mA
Minimum Load Current		$I_{OUT(MIN)}$	$V_{IN}=V_{OUT}+1\text{V}$			50	$\mu\text{A}$
Load Stability	1	$\Delta V_{OUT}$	$V_{IN}=7.0\text{V}$ , $1\text{mA}\leq I_{OUT}\leq 100\text{mA}$		40	80	mV
Input-Output Voltage	1	$V_{DIF1}$	$I_{OUT}=100\text{mA}$		120		mV
Differential (Note3)	1	$V_{DIF2}$	$I_{OUT}=200\text{mA}$		380		mV
Supply Current	2	$I_{SS}$	$V_{IN}=7.0\text{V}$		2.0	4.5	$\mu\text{A}$
Input Stability	1	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$I_{OUT}=40\text{mA}$ $7.0\text{V}\leq V_{IN}\leq 10\text{V}$		0.2	0.3	%/V
Input Voltage		$V_{IN}$	$I_{OUT}=5\text{mA}$			10	V
Thermal Shutdown					150		$^\circ\text{C}$
Output Voltage Temperature Characteristics	1	$\frac{\Delta V_{OUT}}{\Delta T_{OPR} \times V_{OUT}}$	$I_{OUT}=40\text{mA}$ $-40^\circ\text{C}\leq T_{OPR}\leq 85^\circ\text{C}$		$\pm 100$		ppm/ $^\circ\text{C}$

**UR6225-5.0V (Note1)**

PARAMETER	CIRCUIT	SYMBOL	TEST CONDITONS	MIN	TYP	MAX	UNIT
Output Voltage	1	$V_{OUT(E)}$ (Note2)	$I_{OUT}=40\text{mA}$ , $V_{IN}=6.0\text{V}$	4.900	5.000	5.100	V
Maximum Output Current	1	$I_{OUT(MAX)}$	$V_{IN}=6.0\text{V}$ , $V_{OUT(E)}\geq 4.5\text{V}$	250			mA
Minimum Load Current		$I_{OUT(MIN)}$	$V_{IN}=V_{OUT}+1\text{V}$			50	$\mu\text{A}$
Load Stability	1	$\Delta V_{OUT}$	$V_{IN}=6.0\text{V}$ , $1\text{mA}\leq I_{OUT}\leq 100\text{mA}$		40	80	mV
Input-Output Voltage	1	$V_{DIF1}$	$I_{OUT}=100\text{mA}$		120		mV
Differential(Note3)	1	$V_{DIF2}$	$I_{OUT}=200\text{mA}$		380		mV
Supply Current	2	$I_{SS}$	$V_{IN}=6.0\text{V}$		2.0	4.5	$\mu\text{A}$
Input Stability	1	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$I_{OUT}=40\text{mA}$ $6.0\text{V}\leq V_{IN}\leq 10\text{V}$		0.2	0.3	%/V
Input Voltage		$V_{IN}$	$I_{OUT}=5\text{mA}$			10	V
Thermal Shutdown					150		$^\circ\text{C}$
Output Voltage Temperature Characteristics	1	$\frac{\Delta V_{OUT}}{\Delta T_{OPR} \times V_{OUT}}$	$I_{OUT}=40\text{mA}$ $-40^\circ\text{C}\leq T_{OPR}\leq 85^\circ\text{C}$		$\pm 100$		ppm/ $^\circ\text{C}$

■ ELECTRICAL CHARACTERISTICS(Cont.)

**UR6225-4.5V (Note1)**

PARAMETER	CIRCUIT	SYMBOL	TEST CONDITONS	MIN	TYP	MAX	UNIT
Output Voltage	1	V <sub>OUT(E)</sub> (Note2)	I <sub>OUT</sub> =40mA, V <sub>IN</sub> =5.5V	4.410	4.500	4.59	V
Maximum Output Current	1	I <sub>OUT(MAX)</sub>	V <sub>IN</sub> =5.5V, V <sub>OUT(E)</sub> ≥4.05V	200			mA
Minimum Load Current		I <sub>OUT(MIN)</sub>	V <sub>IN</sub> =V <sub>OUT</sub> +1V			50	μA
Load Stability	1	ΔV <sub>OUT</sub>	V <sub>IN</sub> =5.5V, 1mA≤I <sub>OUT</sub> ≤100mA		45	90	mV
Input-Output Voltage Differential(Note3)	1	V <sub>DIF1</sub>	I <sub>OUT</sub> =100mA		170		mV
	1	V <sub>DIF2</sub>	I <sub>OUT</sub> =200mA		400		mV
Supply Current	2	I <sub>SS</sub>	V <sub>IN</sub> =5.5V		2.0	4.5	μA
Input Stability	1	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	I <sub>OUT</sub> =40mA 5.5V≤V <sub>IN</sub> ≤10V		0.2	0.3	%/V
Input Voltage		V <sub>IN</sub>	I <sub>OUT</sub> =5mA			10	V
Thermal Shutdown					150		°C
Output Voltage Temperature Characteristics	1	$\frac{\Delta V_{OUT}}{\Delta T_{OPR} \times V_{OUT}}$	I <sub>OUT</sub> =40mA -40°C≤T <sub>OPR</sub> ≤85°C		±100		ppm/°C

**UR6225-4.0V (Note1)**

PARAMETER	CIRCUIT	SYMBOL	TEST CONDITONS	MIN	TYP	MAX	UNIT
Output Voltage	1	V <sub>OUT(E)</sub> (Note2)	I <sub>OUT</sub> =40mA, V <sub>IN</sub> =5.0V	3.920	4.000	4.080	V
Maximum Output Current	1	I <sub>OUT(MAX)</sub>	V <sub>IN</sub> =5.0V, V <sub>OUT(E)</sub> ≥3.6V	200			mA
Minimum Load Current		I <sub>OUT(MIN)</sub>	V <sub>IN</sub> =V <sub>OUT</sub> +1V			50	μA
Load Stability	1	ΔV <sub>OUT</sub>	V <sub>IN</sub> =5.0V, 1mA≤I <sub>OUT</sub> ≤100mA		45	90	mV
Input-Output Voltage Differential(Note3)	1	V <sub>DIF1</sub>	I <sub>OUT</sub> =100mA		170		mV
	1	V <sub>DIF2</sub>	I <sub>OUT</sub> =200mA		400		mV
Supply Current	2	I <sub>SS</sub>	V <sub>IN</sub> =5.0V		2.0	4.5	μA
Input Stability	1	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	I <sub>OUT</sub> =40mA 5.0V≤V <sub>IN</sub> ≤10V		0.2	0.3	%/V
Input Voltage		V <sub>IN</sub>	I <sub>OUT</sub> =5mA			10	V
Thermal Shutdown					150		°C
Output Voltage Temperature Characteristics	1	$\frac{\Delta V_{OUT}}{\Delta T_{OPR} \times V_{OUT}}$	I <sub>OUT</sub> =40mA -40°C≤T <sub>OPR</sub> ≤85°C		±100		ppm/°C

**UR6225-3.8V (Note1)**

PARAMETER	CIRCUIT	SYMBOL	TEST CONDITONS	MIN	TYP	MAX	UNIT
Output Voltage	1	V <sub>OUT(E)</sub> (Note2)	I <sub>OUT</sub> =40mA, V <sub>IN</sub> =4.8V	3.724	3.800	3.876	V
Maximum Output Current	1	I <sub>OUT(MAX)</sub>	V <sub>IN</sub> =4.8V, V <sub>OUT(E)</sub> ≥3.42V	165			mA
Minimum Load Current		I <sub>OUT(MIN)</sub>	V <sub>IN</sub> =V <sub>OUT</sub> +1V			50	μA
Load Stability	1	ΔV <sub>OUT</sub>	V <sub>IN</sub> =4.8V, 1mA≤I <sub>OUT</sub> ≤86mA		45	90	mV
Input-Output Voltage Differential(Note3)	1	V <sub>DIF1</sub>	I <sub>OUT</sub> =86mA		180		mV
	1	V <sub>DIF2</sub>	I <sub>OUT</sub> =172mA		400		mV
Supply Current	2	I <sub>SS</sub>	V <sub>IN</sub> =4.8V		2.0	4.5	μA
Input Stability	1	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	I <sub>OUT</sub> =40mA 4.8V≤V <sub>IN</sub> ≤10V		0.2	0.3	%/V
Input Voltage		V <sub>IN</sub>	I <sub>OUT</sub> =5mA			10	V
Thermal Shutdown					150		°C
Output Voltage Temperature Characteristics	1	$\frac{\Delta V_{OUT}}{\Delta T_{OPR} \times V_{OUT}}$	I <sub>OUT</sub> =40mA -40°C≤T <sub>OPR</sub> ≤85°C		±100		ppm/°C

■ ELECTRICAL CHARACTERISTICS(Cont.)

**UR6225-3.6V (Note1)**

PARAMETER	CIRCUIT	SYMBOL	TEST CONDITONS	MIN	TYP	MAX	UNIT
Output Voltage	1	V <sub>OUT(E)</sub> (Note2)	I <sub>OUT</sub> =40mA, V <sub>IN</sub> =4.6V	3.528	3.600	3.672	V
Maximum Output Current	1	I <sub>OUT(MAX)</sub>	V <sub>IN</sub> =4.6V, V <sub>OUT(E)</sub> ≥3.24V	165			mA
Minimum Load Current		I <sub>OUT(MIN)</sub>	V <sub>IN</sub> =V <sub>OUT</sub> +1V			50	μA
Load Stability	1	ΔV <sub>OUT</sub>	V <sub>IN</sub> =4.6V, 1mA≤I <sub>OUT</sub> ≤86mA		45	90	mV
Input-Output Voltage Differential(Note3)	1	V <sub>DIF1</sub>	I <sub>OUT</sub> =86mA		180		mV
	1	V <sub>DIF2</sub>	I <sub>OUT</sub> =172mA		400		mV
Supply Current	2	I <sub>SS</sub>	V <sub>IN</sub> =4.6V		2.0	4.5	μA
Input Stability	1	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	I <sub>OUT</sub> =40mA 4.6V≤V <sub>IN</sub> ≤10V		0.2	0.3	%/V
Input Voltage		V <sub>IN</sub>	I <sub>OUT</sub> =5mA			10	V
Thermal Shutdown					150		°C
Output Voltage Temperature Characteristics	1	$\frac{\Delta V_{OUT}}{\Delta T_{OPR} \times V_{OUT}}$	I <sub>OUT</sub> =40mA -40°C≤T <sub>OPR</sub> ≤85°C		±100		ppm/°C

**UR6225-3.5V (Note1)**

PARAMETER	CIRCUIT	SYMBOL	TEST CONDITONS	MIN	TYP	MAX	UNIT
Output Voltage	1	V <sub>OUT(E)</sub> (Note2)	I <sub>OUT</sub> =40mA, V <sub>IN</sub> =4.5V	3.430	3.500	3.570	V
Maximum Output Current	1	I <sub>OUT(MAX)</sub>	V <sub>IN</sub> =4.5V, V <sub>OUT(E)</sub> ≥3.15V	165			mA
Minimum Load Current		I <sub>OUT(MIN)</sub>	V <sub>IN</sub> =V <sub>OUT</sub> +1V			50	μA
Load Stability	1	ΔV <sub>OUT</sub>	V <sub>IN</sub> =4.5V, 1mA≤I <sub>OUT</sub> ≤86mA		45	90	mV
Input-Output Voltage Differential(Note3)	1	V <sub>DIF1</sub>	I <sub>OUT</sub> =86mA		180		mV
	1	V <sub>DIF2</sub>	I <sub>OUT</sub> =172mA		400		mV
Supply Current	2	I <sub>SS</sub>	V <sub>IN</sub> =4.5V		2.0	4.5	μA
Input Stability	1	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	I <sub>OUT</sub> =40mA 4.5V≤V <sub>IN</sub> ≤10V		0.2	0.3	%/V
Input Voltage		V <sub>IN</sub>	I <sub>OUT</sub> =5mA			10	V
Thermal Shutdown					150		°C
Output Voltage Temperature Characteristics	1	$\frac{\Delta V_{OUT}}{\Delta T_{OPR} \times V_{OUT}}$	I <sub>OUT</sub> =40mA -40°C≤T <sub>OPR</sub> ≤85°C		±100		ppm/°C

**UR6225-3.3V (Note1)**

PARAMETER	CIRCUIT	SYMBOL	TEST CONDITONS	MIN	TYP	MAX	UNIT
Output Voltage	1	V <sub>OUT(E)</sub> (Note2)	I <sub>OUT</sub> =40mA, V <sub>IN</sub> =4.3V	3.234	3.300	3.366	V
Maximum Output Current	1	I <sub>OUT(MAX)</sub>	V <sub>IN</sub> =4.3V, V <sub>OUT(E)</sub> ≥2.97V	165			mA
Minimum Load Current		I <sub>OUT(MIN)</sub>	V <sub>IN</sub> =V <sub>OUT</sub> +1V			50	μA
Load Stability	1	ΔV <sub>OUT</sub>	V <sub>IN</sub> =4.3V, 1mA≤I <sub>OUT</sub> ≤86mA		45	90	mV
Input-Output Voltage Differential(Note3)	1	V <sub>DIF1</sub>	I <sub>OUT</sub> =86mA		180		mV
	1	V <sub>DIF2</sub>	I <sub>OUT</sub> =172mA		400		mV
Supply Current	2	I <sub>SS</sub>	V <sub>IN</sub> =4.3V		2.0	4.5	μA
Input Stability	1	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	I <sub>OUT</sub> =40mA 4.3V≤V <sub>IN</sub> ≤10V		0.2	0.3	%/V
Input Voltage		V <sub>IN</sub>	I <sub>OUT</sub> =5mA			10	V
Thermal Shutdown					150		°C
Output Voltage Temperature Characteristics	1	$\frac{\Delta V_{OUT}}{\Delta T_{OPR} \times V_{OUT}}$	I <sub>OUT</sub> =40mA -40°C≤T <sub>OPR</sub> ≤85°C		±100		ppm/°C

■ ELECTRICAL CHARACTERISTICS(Cont.)

**UR6225-3.0V (Note1)**

PARAMETER	CIRCUIT	SYMBOL	TEST CONDITONS	MIN	TYP	MAX	UNIT
Output Voltage	1	$V_{OUT(E)}$ (Note2)	$I_{OUT}=40mA, V_{IN}=4.0V$	2.940	3.000	3.060	V
Maximum Output Current	1	$I_{OUT(MAX)}$	$V_{IN}=4.0V, V_{OUT(E)} \geq 2.7V$	150			mA
Minimum Load Current		$I_{OUT(MIN)}$	$V_{IN}=V_{OUT}+1V$			50	$\mu A$
Load Stability	1	$\Delta V_{OUT}$	$V_{IN}=4.0V, 1mA \leq I_{OUT} \leq 80mA$		45	90	mV
Input-Output Voltage Differential(Note3)	1	$V_{DIF1}$	$I_{OUT}=80mA$		180		mV
	1	$V_{DIF2}$	$I_{OUT}=160mA$		400		mV
Supply Current	2	$I_{SS}$	$V_{IN}=4.0V$		2.0	4.5	$\mu A$
Input Stability	1	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$I_{OUT}=40mA$ $4.0V \leq V_{IN} \leq 10V$		0.2	0.3	%/V
Input Voltage		$V_{IN}$	$I_{OUT}=5mA$			10	V
Thermal Shutdown					150		$^{\circ}C$
Output Voltage Temperature Characteristics	1	$\frac{\Delta V_{OUT}}{\Delta T_{OPR} \times V_{OUT}}$	$I_{OUT}=40mA$ $-40^{\circ}C \leq T_{OPR} \leq 85^{\circ}C$		$\pm 100$		ppm/ $^{\circ}C$

**UR6225-2.85V (Note1)**

PARAMETER	CIRCUIT	SYMBOL	TEST CONDITONS	MIN	TYP	MAX	UNIT
Output Voltage	1	$V_{OUT(E)}$ (Note2)	$I_{OUT}=40mA, V_{IN}=3.85V$	2.793	2.85	2.907	V
Maximum Output Current	1	$I_{OUT(MAX)}$	$V_{IN}=3.85V, V_{OUT(E)} \geq 2.565V$	150			mA
Minimum Load Current		$I_{OUT(MIN)}$	$V_{IN}=V_{OUT}+1V$			50	$\mu A$
Load Stability	1	$\Delta V_{OUT}$	$V_{IN}=3.85V, 1mA \leq I_{OUT} \leq 77mA$		45	90	mV
Input-Output Voltage Differential(Note3)	1	$V_{DIF1}$	$I_{OUT}=77mA$		180		mV
	1	$V_{DIF2}$	$I_{OUT}=154mA$		400		mV
Supply Current	2	$I_{SS}$	$V_{IN}=3.85V$		2.0	4.5	$\mu A$
Input Stability	1	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$I_{OUT}=40mA$ $3.85V \leq V_{IN} \leq 10V$		0.2	0.3	%/V
Input Voltage		$V_{IN}$	$I_{OUT}=5mA$			10	V
Thermal Shutdown					150		$^{\circ}C$
Output Voltage Temperature Characteristics	1	$\frac{\Delta V_{OUT}}{\Delta T_{OPR} \times V_{OUT}}$	$I_{OUT}=40mA$ $-40^{\circ}C \leq T_{OPR} \leq 85^{\circ}C$		$\pm 100$		ppm/ $^{\circ}C$

**UR6225-2.8V (Note1)**

PARAMETER	CIRCUIT	SYMBOL	TEST CONDITONS	MIN	TYP	MAX	UNIT
Output Voltage	1	$V_{OUT(E)}$ (Note2)	$I_{OUT}=40mA, V_{IN}=3.8V$	2.744	2.800	2.856	V
Maximum Output Current	1	$I_{OUT(MAX)}$	$V_{IN}=3.8V, V_{OUT(E)} \geq 2.52V$	150			mA
Minimum Load Current		$I_{OUT(MIN)}$	$V_{IN}=V_{OUT}+1V$			50	$\mu A$
Load Stability	1	$\Delta V_{OUT}$	$V_{IN}=3.8V, 1mA \leq I_{OUT} \leq 76mA$		45	90	mV
Input-Output Voltage Differential(Note3)	1	$V_{DIF1}$	$I_{OUT}=76mA$		180		mV
	1	$V_{DIF2}$	$I_{OUT}=152mA$		400		mV
Supply Current	2	$I_{SS}$	$V_{IN}=3.8V$		2.0	4.5	$\mu A$
Input Stability	1	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$I_{OUT}=40mA$ $3.8V \leq V_{IN} \leq 10V$		0.2	0.3	%/V
Input Voltage		$V_{IN}$	$I_{OUT}=5mA$			10	V
Thermal Shutdown					150		$^{\circ}C$
Output Voltage Temperature Characteristics	1	$\frac{\Delta V_{OUT}}{\Delta T_{OPR} \times V_{OUT}}$	$I_{OUT}=40mA$ $-40^{\circ}C \leq T_{OPR} \leq 85^{\circ}C$		$\pm 100$		ppm/ $^{\circ}C$

■ ELECTRICAL CHARACTERISTICS(Cont.)

**UR6225-2.7V (Note1)**

PARAMETER	CIRCUIT	SYMBOL	TEST CONDITONS	MIN	TYP	MAX	UNIT
Output Voltage	1	V <sub>OUT(E)</sub> (Note2)	I <sub>OUT</sub> =40mA, V <sub>IN</sub> =3.7V	2.646	2.700	2.754	V
Maximum Output Current	1	I <sub>OUT(MAX)</sub>	V <sub>IN</sub> =3.7V, V <sub>OUT(E)</sub> ≥2.43V	150			mA
Minimum Load Current		I <sub>OUT(MIN)</sub>	V <sub>IN</sub> =V <sub>OUT</sub> +1V			50	μA
Load Stability	1	ΔV <sub>OUT</sub>	V <sub>IN</sub> =3.7V, 1mA≤I <sub>OUT</sub> ≤76mA		45	90	mV
Input-Output Voltage Differential(Note3)	1	V <sub>DIF1</sub>	I <sub>OUT</sub> =76mA		180		mV
	1	V <sub>DIF2</sub>	I <sub>OUT</sub> =152mA		400		mV
Supply Current	2	I <sub>SS</sub>	V <sub>IN</sub> =3.7V		2.0	4.5	μA
Input Stability	1	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	I <sub>OUT</sub> =40mA 3.7V≤V <sub>IN</sub> ≤10V		0.2	0.3	%/V
Input Voltage		V <sub>IN</sub>	I <sub>OUT</sub> =5mA			10	V
Thermal Shutdown					150		°C
Output Voltage Temperature Characteristics	1	$\frac{\Delta V_{OUT}}{\Delta T_{OPR} \times V_{OUT}}$	I <sub>OUT</sub> =40mA -40°C≤T <sub>OPR</sub> ≤85°C		±100		ppm/ °C

**UR6225-2.6V (Note1)**

PARAMETER	CIRCUIT	SYMBOL	TEST CONDITONS	MIN	TYP	MAX	UNIT
Output Voltage	1	V <sub>OUT(E)</sub> (Note2)	I <sub>OUT</sub> =40mA, V <sub>IN</sub> =3.6V	2.548	2.600	2.652	V
Maximum Output Current	1	I <sub>OUT(MAX)</sub>	V <sub>IN</sub> =3.6V, V <sub>OUT(E)</sub> ≥2.34V	150			mA
Minimum Load Current		I <sub>OUT(MIN)</sub>	V <sub>IN</sub> =V <sub>OUT</sub> +1V			50	μA
Load Stability	1	ΔV <sub>OUT</sub>	V <sub>IN</sub> =3.6V, 1mA≤I <sub>OUT</sub> ≤72mA		45	90	mV
Input-Output Voltage Differential(Note3)	1	V <sub>DIF1</sub>	I <sub>OUT</sub> =72mA		180		mV
	1	V <sub>DIF2</sub>	I <sub>OUT</sub> =144mA		400		mV
Supply Current	2	I <sub>SS</sub>	V <sub>IN</sub> =3.6V		2.0	4.5	μA
Input Stability	1	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	I <sub>OUT</sub> =40mA 3.6V≤V <sub>IN</sub> ≤10V		0.2	0.3	%/V
Input Voltage		V <sub>IN</sub>	I <sub>OUT</sub> =5mA			10	V
Thermal Shutdown					150		°C
Output Voltage Temperature Characteristics	1	$\frac{\Delta V_{OUT}}{\Delta T_{OPR} \times V_{OUT}}$	I <sub>OUT</sub> =40mA -40°C≤T <sub>OPR</sub> ≤85°C		±100		ppm/ °C

**UR6225-2.5V (Note1)**

PARAMETER	CIRCUIT	SYMBOL	TEST CONDITONS	MIN	TYP	MAX	UNIT
Output Voltage	1	V <sub>OUT(E)</sub> (Note2)	I <sub>OUT</sub> =40mA, V <sub>IN</sub> =3.5V	2.45	2.500	2.55	V
Maximum Output Current	1	I <sub>OUT(MAX)</sub>	V <sub>IN</sub> =3.5V, V <sub>OUT(E)</sub> ≥2.25V	125			mA
Minimum Load Current		I <sub>OUT(MIN)</sub>	V <sub>IN</sub> =V <sub>OUT</sub> +1V			50	μA
Load Stability	1	ΔV <sub>OUT</sub>	V <sub>IN</sub> =3.5V, 1mA≤I <sub>OUT</sub> ≤70mA		45	90	mV
Input-Output Voltage Differential(Note3)	1	V <sub>DIF1</sub>	I <sub>OUT</sub> =70mA		180		mV
	1	V <sub>DIF2</sub>	I <sub>OUT</sub> =140mA		400		mV
Supply Current	2	I <sub>SS</sub>	V <sub>IN</sub> =3.5V		2.0	4.5	μA
Input Stability	1	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	I <sub>OUT</sub> =40mA 3.5V≤V <sub>IN</sub> ≤10V		0.2	0.3	%/V
Input Voltage		V <sub>IN</sub>	I <sub>OUT</sub> =5mA			10	V
Thermal Shutdown					150		°C
Output Voltage Temperature Characteristics	1	$\frac{\Delta V_{OUT}}{\Delta T_{OPR} \times V_{OUT}}$	I <sub>OUT</sub> =40mA -40°C≤T <sub>OPR</sub> ≤85°C		±100		ppm/ °C

■ ELECTRICAL CHARACTERISTICS(Cont.)

**UR6225-2.1V (Note1)**

PARAMETER	CIRCUIT	SYMBOL	TEST CONDITONS	MIN	TYP	MAX	UNIT
Output Voltage	1	$V_{OUT(E)}$ (Note2)	$I_{OUT}=40mA, V_{IN}=3.1V$	2.058	2.100	2.142	V
Maximum Output Current	1	$I_{OUT(MAX)}$	$V_{IN}=3.1V, V_{OUT(E)}\geq 1.89V$	125			mA
Minimum Load Current		$I_{OUT(MIN)}$	$V_{IN}=V_{OUT}+1V$			50	$\mu A$
Load Stability	1	$\Delta V_{OUT}$	$V_{IN}=3.1V, 1mA\leq I_{OUT}\leq 62mA$		45	90	mV
Input-Output Voltage Differential(Note3)	1	$V_{DIF1}$	$I_{OUT}=62mA$		180		mV
	1	$V_{DIF2}$	$I_{OUT}=124mA$		400		mV
Supply Current	2	$I_{SS}$	$V_{IN}=3.1V$		2.0	4.5	$\mu A$
Input Stability	1	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$I_{OUT}=40mA$ $3.1V\leq V_{IN}\leq 10V$		0.2	0.3	%/V
Input Voltage		$V_{IN}$	$I_{OUT}=5mA$			10	V
Thermal Shutdown					150		$^{\circ}C$
Output Voltage Temperature Characteristics	1	$\frac{\Delta V_{OUT}}{\Delta T_{OPR} \times V_{OUT}}$	$I_{OUT}=40mA$ $-40^{\circ}C\leq T_{OPR}\leq 85^{\circ}C$		$\pm 100$		ppm/ $^{\circ}C$

**UR6225-2.0V (Note1)**

PARAMETER	CIRCUIT	SYMBOL	TEST CONDITONS	MIN	TYP	MAX	UNIT
Output Voltage	1	$V_{OUT(E)}$ (Note2)	$I_{OUT}=40mA, V_{IN}=3.0V$	1.960	2.000	2.040	V
Maximum Output Current	1	$I_{OUT(MAX)}$	$V_{IN}=3.0V, V_{OUT(E)}\geq 1.8V$	100			mA
Minimum Load Current		$I_{OUT(MIN)}$	$V_{IN}=V_{OUT}+1V$			50	$\mu A$
Load Stability	1	$\Delta V_{OUT}$	$V_{IN}=3.0V, 1mA\leq I_{OUT}\leq 60mA$		45	90	mV
Input-Output Voltage Differential(Note3)	1	$V_{DIF1}$	$I_{OUT}=60mA$		180		mV
	1	$V_{DIF2}$	$I_{OUT}=120mA$		400		mV
Supply Current	2	$I_{SS}$	$V_{IN}=3.0V$		2.0	4.5	$\mu A$
Input Stability	1	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$I_{OUT}=40mA$ $3.0V\leq V_{IN}\leq 10V$		0.2	0.3	%/V
Input Voltage		$V_{IN}$	$I_{OUT}=5mA$			10	V
Thermal Shutdown					150		$^{\circ}C$
Output Voltage Temperature Characteristics	1	$\frac{\Delta V_{OUT}}{\Delta T_{OPR} \times V_{OUT}}$	$I_{OUT}=40mA$ $-40^{\circ}C\leq T_{OPR}\leq 85^{\circ}C$		$\pm 100$		ppm/ $^{\circ}C$

**UR6225-1.8V (Note1)**

PARAMETER	CIRCUIT	SYMBOL	TEST CONDITONS	MIN	TYP	MAX	UNIT
Output Voltage	1	$V_{OUT(E)}$ (Note2)	$I_{OUT}=40mA, V_{IN}=2.8V$	1.764	1.800	1.836	V
Maximum Output Current	1	$I_{OUT(MAX)}$	$V_{IN}=2.8V, V_{OUT(E)}\geq 1.62V$	100			mA
Minimum Load Current		$I_{OUT(MIN)}$	$V_{IN}=V_{OUT}+1V$			50	$\mu A$
Load Stability	1	$\Delta V_{OUT}$	$V_{IN}=2.8V, 1mA\leq I_{OUT}\leq 60mA$		45	90	mV
Input-Output Voltage Differential(Note3)	1	$V_{DIF1}$	$I_{OUT}=56mA$		400		mV
	1	$V_{DIF2}$	$I_{OUT}=112mA$		600		mV
Supply Current	2	$I_{SS}$	$V_{IN}=2.8V$		2.0	4.5	$\mu A$
Input Stability	1	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$I_{OUT}=40mA$ $2.8V\leq V_{IN}\leq 10V$		0.2	0.3	%/V
Input Voltage		$V_{IN}$	$I_{OUT}=5mA$			10	V
Thermal Shutdown					150		$^{\circ}C$
Output Voltage Temperature Characteristics	1	$\frac{\Delta V_{OUT}}{\Delta T_{OPR} \times V_{OUT}}$	$I_{OUT}=40mA$ $-40^{\circ}C\leq T_{OPR}\leq 85^{\circ}C$		$\pm 100$		ppm/ $^{\circ}C$



■ ELECTRICAL CHARACTERISTICS(Cont.)

UR6225-1.5V (Note1)

PARAMETER	CIRCUIT	SYMBOL	TEST CONDITONS	MIN	TYP	MAX	UNIT
Output Voltage	1	$V_{OUT(E)}$ (Note2)	$I_{OUT}=40mA$	1.470	1.500	1.530	V
Maximum Output Current	1	$I_{OUT(MAX)}$	$V_{IN}=2.5V, V_{OUT(E)}\geq 1.35V$	100			mA
Minimum Load Current		$I_{OUT(MIN)}$	$V_{IN}=V_{OUT}+1V$			50	$\mu A$
Load Stability	1	$\Delta V_{OUT}$	$V_{IN}=2.5V, 1mA\leq I_{OUT}\leq 60mA$		45	90	mV
Input-Output Voltage Differential(Note3)	1	$V_{DIF1}$	$I_{OUT}=56mA$		400		mV
	1	$V_{DIF2}$	$I_{OUT}=112mA$		600		mV
Supply Current	2	$I_{SS}$	$V_{IN}=2.5V$		2.0	4.5	$\mu A$
Input Stability	1	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$I_{OUT}=40mA$ $2.5V\leq V_{IN}\leq 10V$		0.2	0.3	%/V
Input Voltage		$V_{IN}$	$I_{OUT}=5mA$			10	V
Thermal Shutdown					150		$^{\circ}C$
Output Voltage Temperature Characteristics	1	$\frac{\Delta V_{OUT}}{\Delta T_{OPR} \times V_{OUT}}$	$I_{OUT}=40mA$ $-40^{\circ}C\leq T_{OPR}\leq 85^{\circ}C$		$\pm 100$		ppm/ $^{\circ}C$

Notes: 1.  $V_{OUT(T)}$ =Specified Output Voltage.

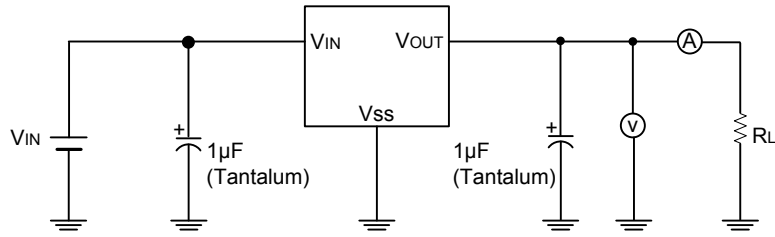
2.  $V_{OUT(E)}$ =Effective Output Voltage (i.e. the output voltage when " $V_{OUT(T)}+1.0V$ " is provided at the  $V_{IN}$  pin while maintaining a certain  $I_{OUT}$  value).

3.  $V_{DIF} = \{V_{IN1}^{(Note4)} - V_{OUT(E)}\}$

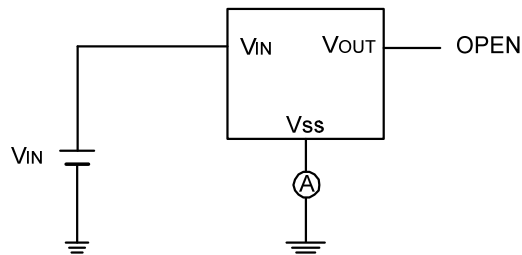
4.  $V_{IN1}$ = The input voltage at the time 98% of  $V_{OUT(E)}$  is output (input voltage has been gradually reduced).

## ■ TEST CIRCUITS

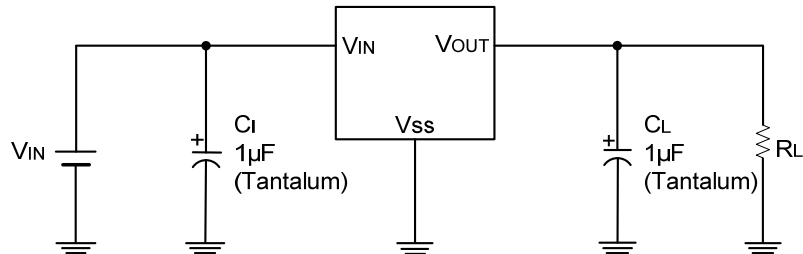
Circuit 1



Circuit 2

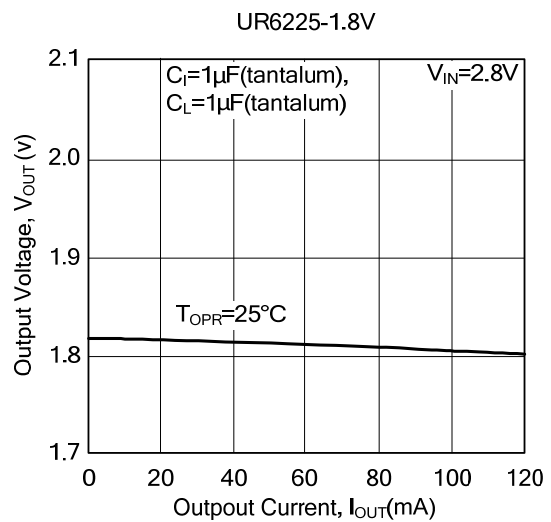
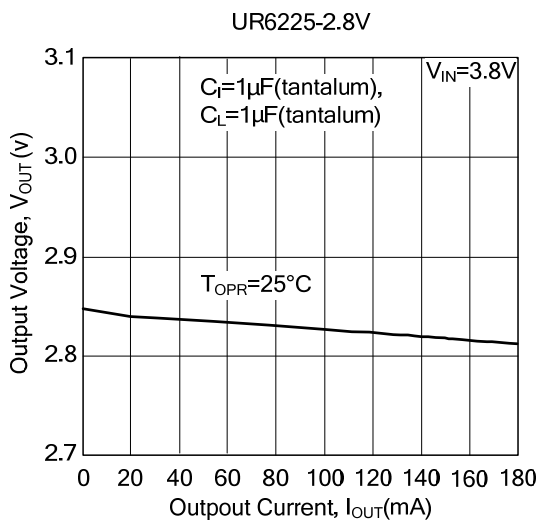
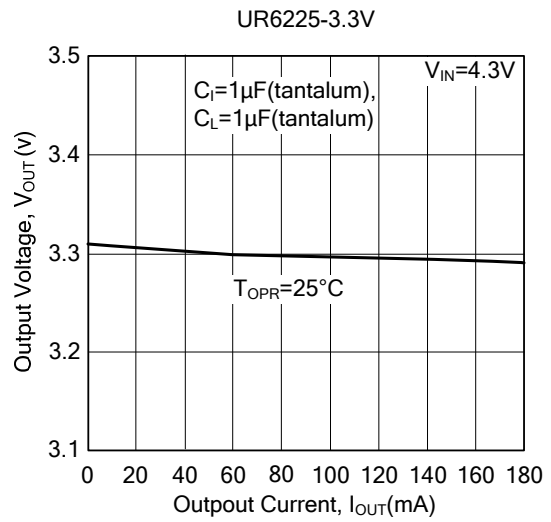
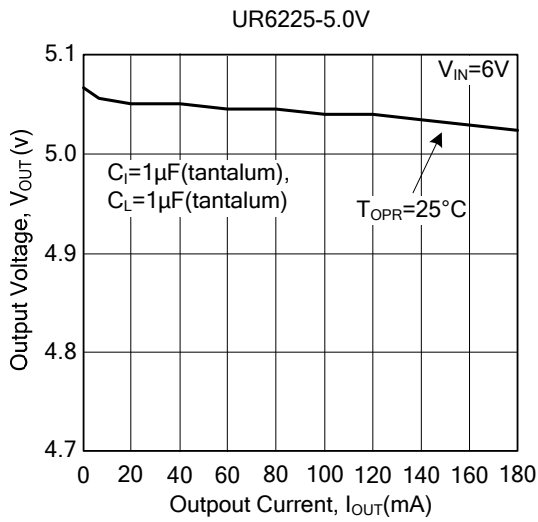


## ■ TYPICAL APPLICATION CIRCUIT

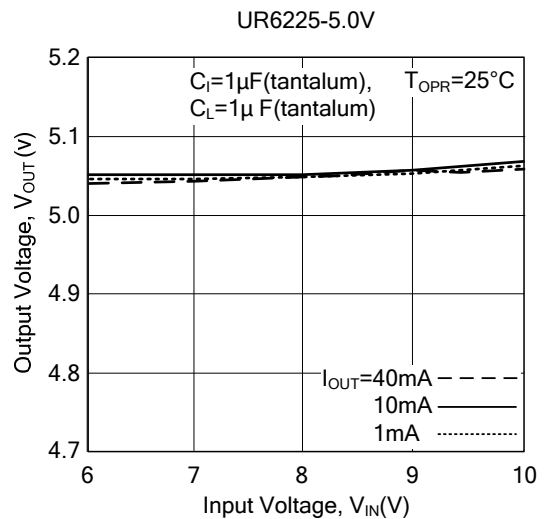
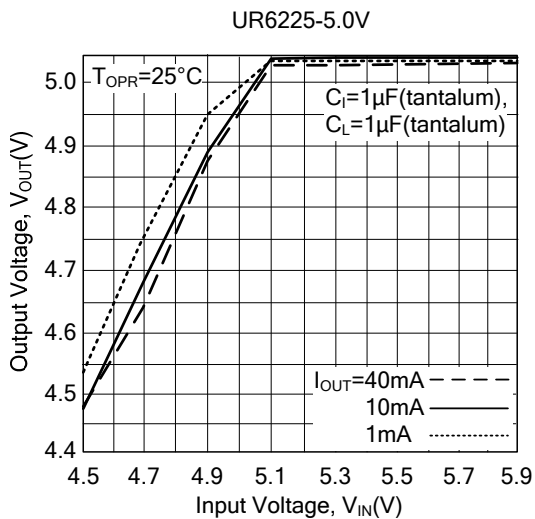


## ■ TYPICAL CHARACTERISTIC

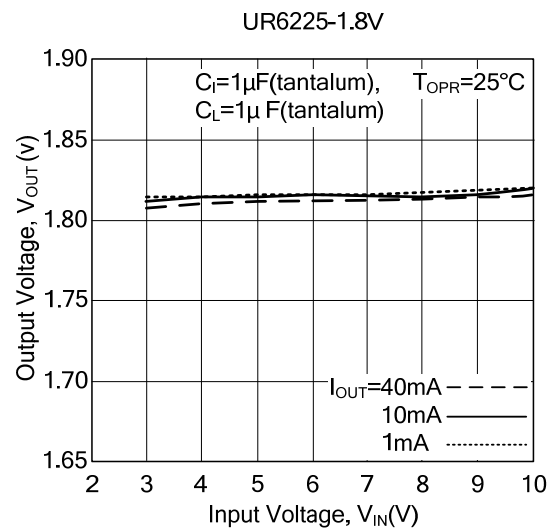
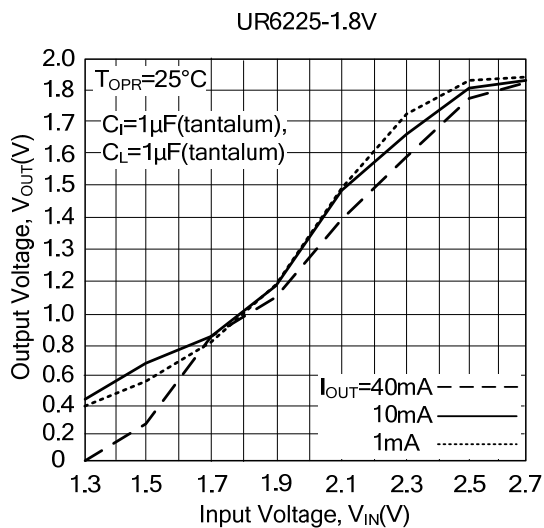
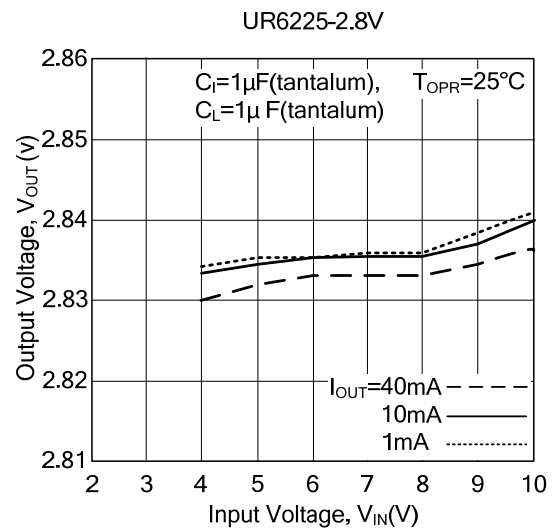
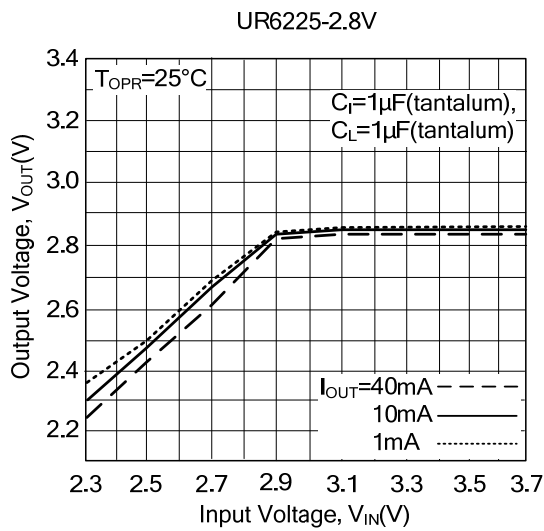
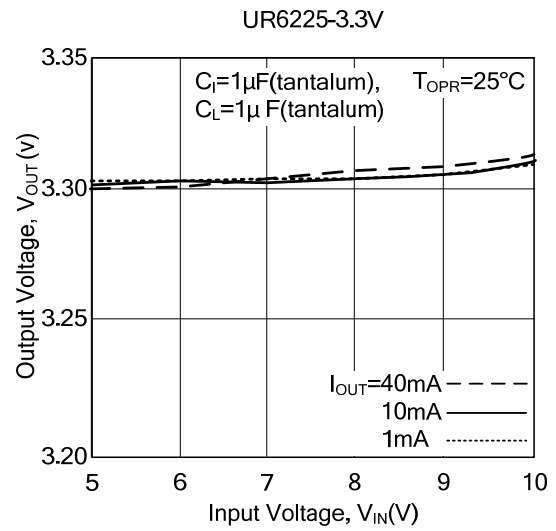
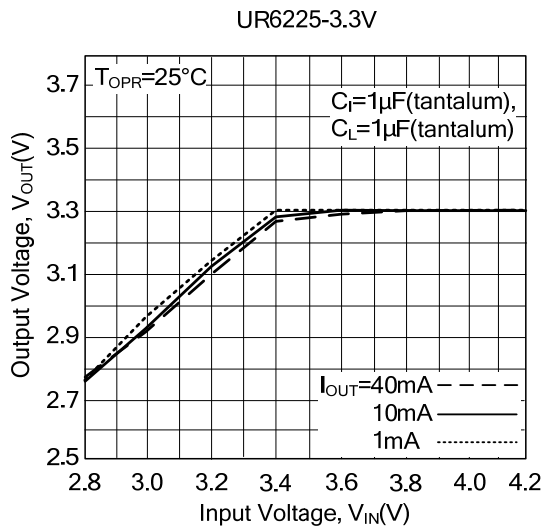
### (1) OUTPUT VOLTAGE VS. OUTPUT CURRENT



### (2) OUTPUT VOLTAGE VS. INPUT VOLTAGE

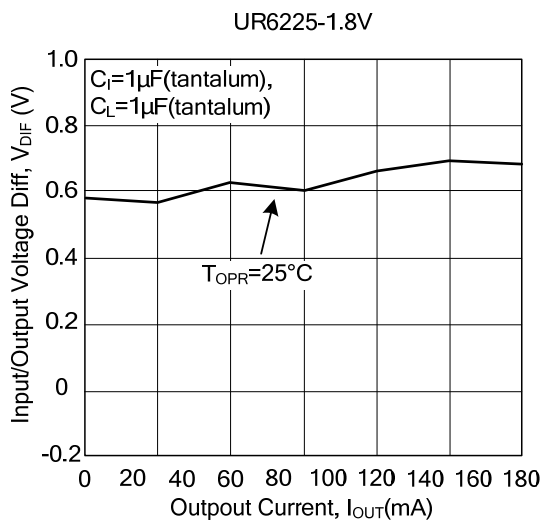
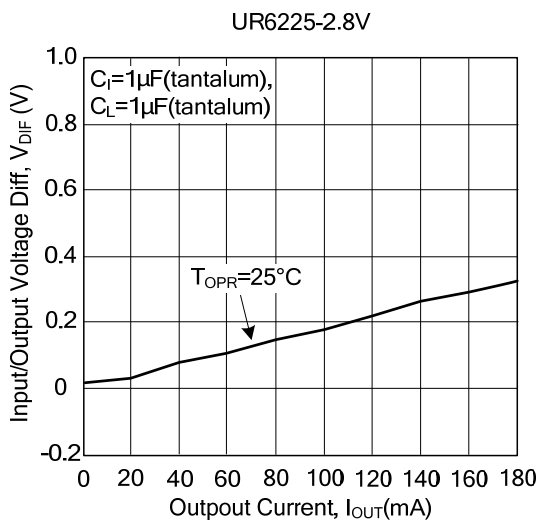
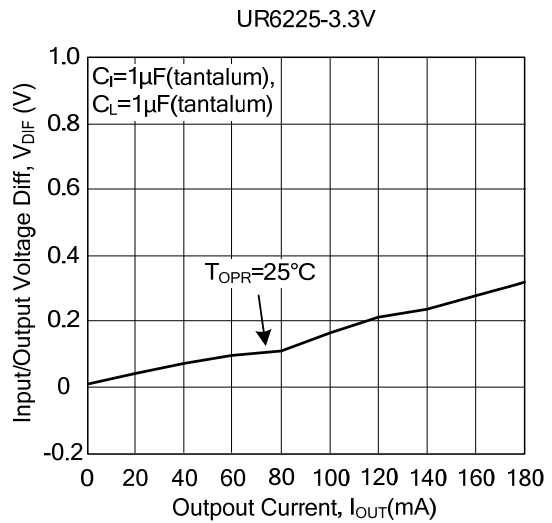
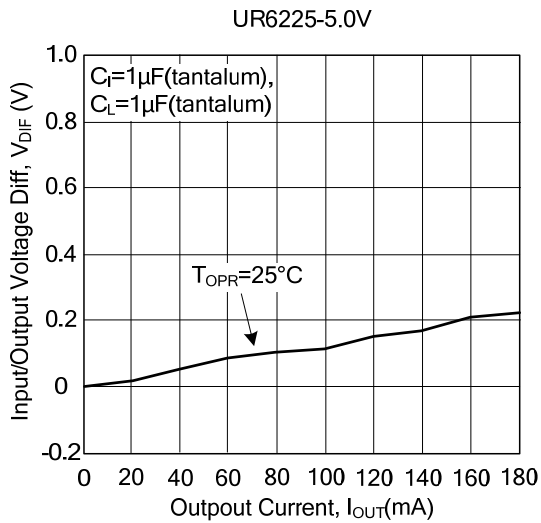


## ■ TYPICAL CHARACTERISTIC(Cont.)

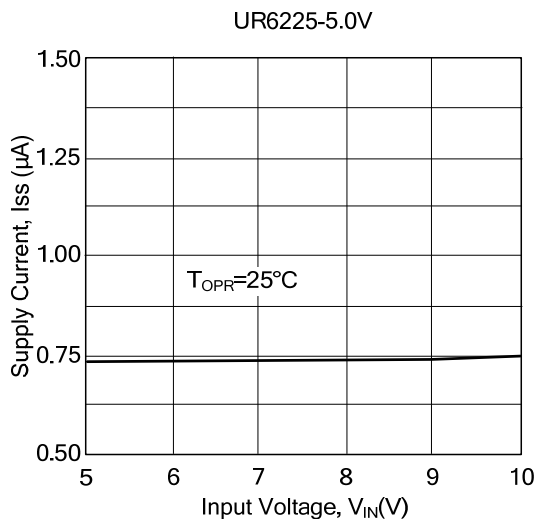
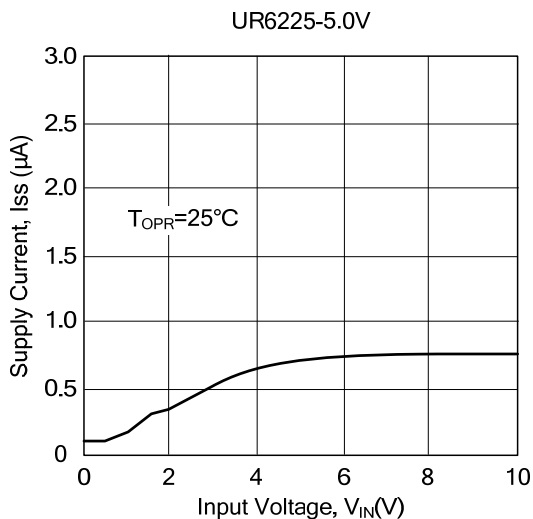


■ TYPICAL CHARACTERISTIC(Cont.)

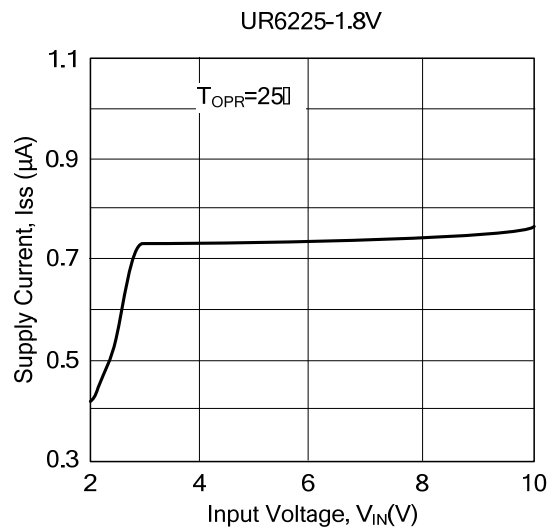
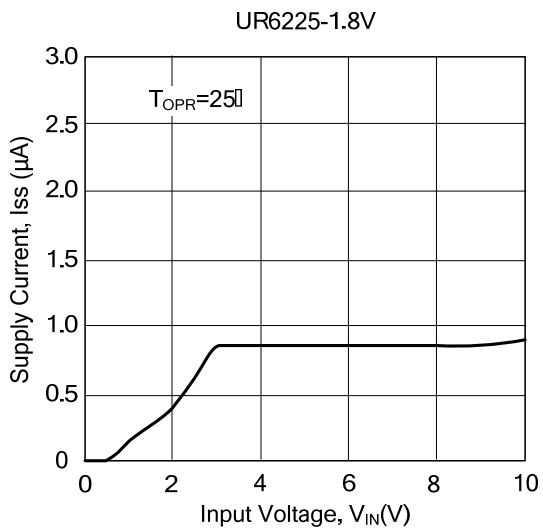
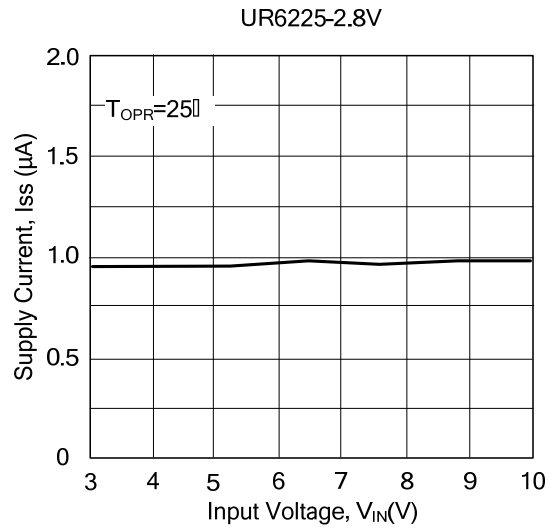
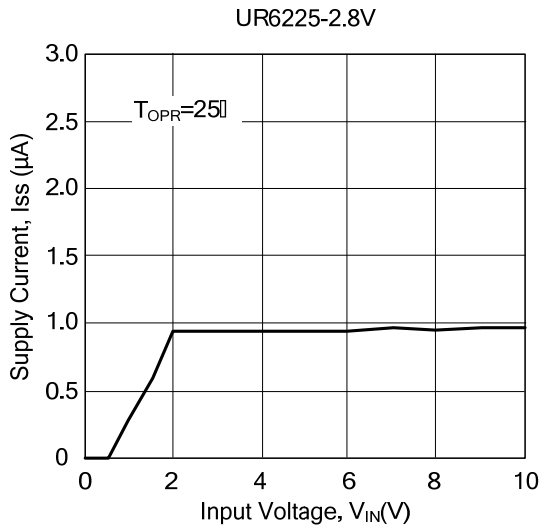
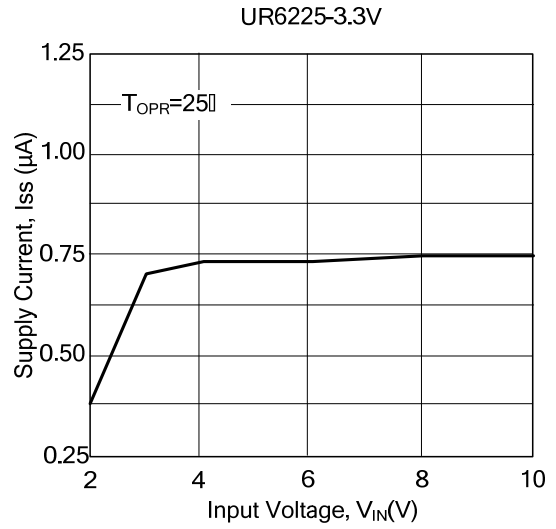
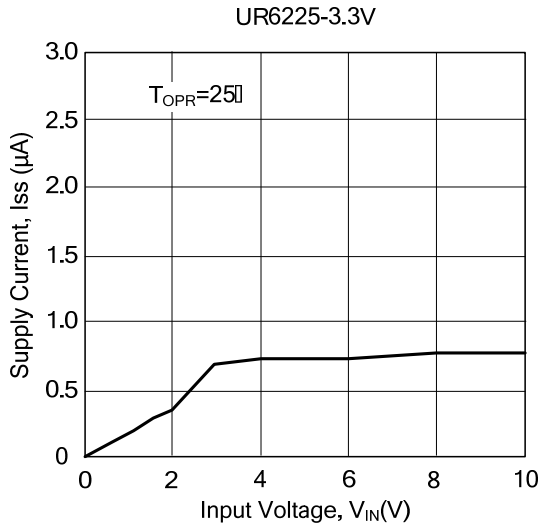
(3) INPUT/OUTPUT VOLTAGE DIFFERENTIAL VS. OUTPUT CURRENT



(4) SUPPLY CURRENT VS. INPUT VOLTAGE

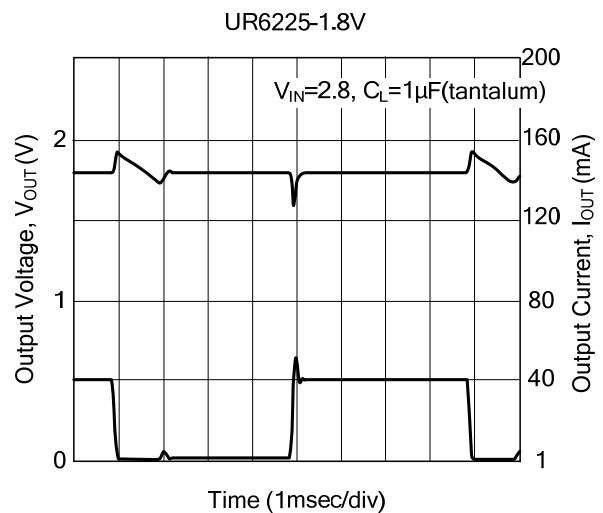
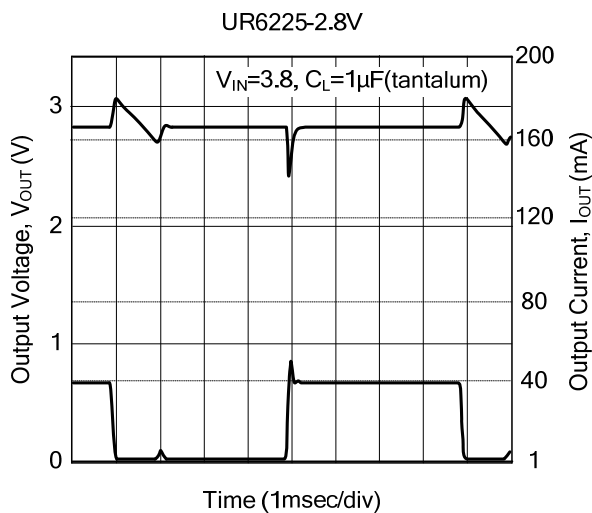
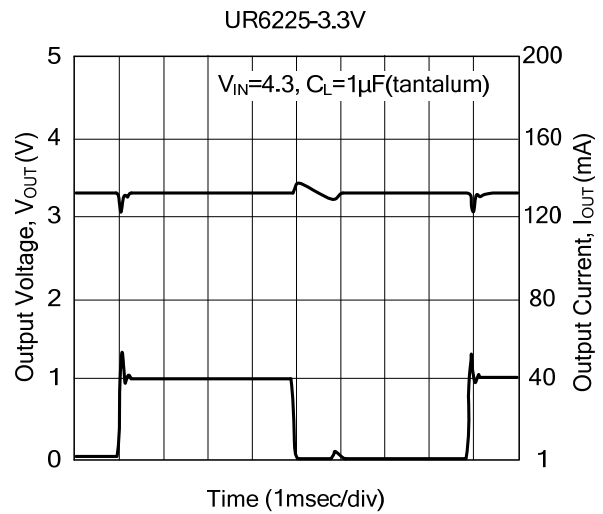
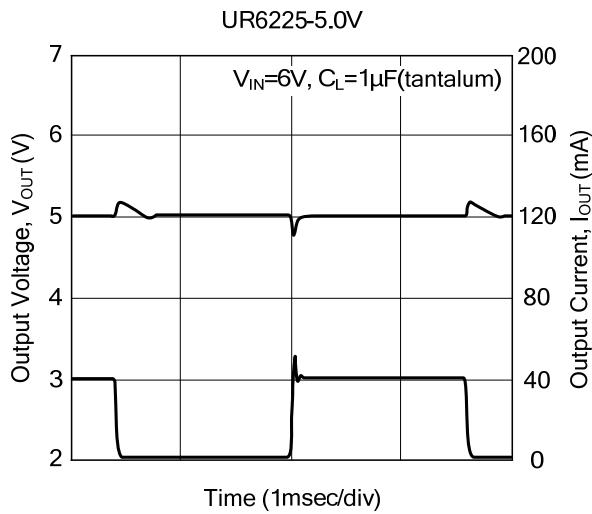


■ TYPICAL CHARACTERISTIC(Cont.)



■ TYPICAL CHARACTERISTIC(Cont.)

(5) LOAD TRANSIENT RESPONSE



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