

2.85 TO 12 VOLT FIXED POSITIVE LOCAL VOLTAGE REGULATOR

ISSUE 2 - APRIL 1997

**ZSR
SERIES**

DEVICE DESCRIPTION

The ZSR Series three terminal fixed positive voltage regulators feature internal circuit current limit and thermal shutdown making the devices difficult to destroy. The circuit design allows creation of any custom voltage in the range 2.85 to 12 volts. The devices are available in a small outline surface mount package, ideal for applications where space saving is important, as well as through hole TO92 style packaging. The devices are suited to local voltage regulation applications, where problems could be encountered with distributed single source regulation, as well as more general voltage regulation applications.

The ZSR Series show performance characteristics superior to other local voltage regulators. The initial output voltage is maintained to within 2.5% with a quiescent current of typically 350µA. Output voltage change, with input voltage and load current, is much lower than competitive devices. The ZSR devices are completely stable with no external components.

FEATURES

- Small outline SO8 and SOT223 package
- TO92 package
- 2.85 to 12 Volt
- Output current up to 200mA
- Tight initial tolerance
- Low quiescent current
- -55 to 125°C temperature range
- No external components
- Internal thermal shutdown
- Internal short circuit current limit

VOLTAGE RANGE

ZSR285	2.85V
ZSR300	3.0V
ZSR330	3.3V
ZSR400	4.0V
ZSR485	4.85V
ZSR500	5.0V
ZSR520	5.2V
ZSR570	5.7V
ZSR600	6.0V
ZSR700	7.0V
ZSR800	8.0V
ZSR850	8.5V
ZSR900	9.0V
ZSR1000	10.0V
ZSR1200	12.0V

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ABSOLUTE MAXIMUM RATING

Input voltage	20V
Output Current(I_o)	200mA
Operating Temperature	-55 to 125°C
Storage Temperature	-65 to 150°C

Power Dissipation ($T_{amb}=25^{\circ}\text{C}$)

SOT223	2W(Note 3)
TO92	600mW
S08	780mW(Note 3)

ELECTRICAL CHARACTERISTICS

Notes:

1. The maximum operating input voltage and output current of the device will be governed by the maximum power dissipation of the selected package. Maximum package power dissipation is specified at 25 °C and must be linearly derated to zero at $T_{amb}=125^{\circ}\text{C}$.
2. The following data represents pulse test conditions with junction temperatures as indicated at the initiation of the test. Continuous operation of the devices with the stated conditions might exceed the power dissipation limits of the chosen package.

3. Maximum power dissipation, for the SOT223 and S08 packages, is calculated assuming that the device is mounted on a PCB measuring 2 inches square.

4. The shut down feature of the device operates if its temperature exceeds its design limit as might occur during external faults, short circuits etc. If the regulator is supplied from an inductive source then a large voltage transient, on the regulator input, can result should the shut down circuit operate. It is advised that a capacitor (1 μF or greater) should be applied across the regulator input to ensure that the maximum voltage rating of the device is not exceeded under shutdown conditions.

ZSR285 TEST CONDITIONS (Unless otherwise stated): $T_j=25^{\circ}\text{C}$, $I_o=100\text{mA}$, $V_{in}=6.85\text{V}$

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNITS
V_o	Output Voltage		2.78	2.85	2.92	V
		$I_o=1$ to 200mA τ	2.736		2.964	V
		$V_{in}=4.85$ to 20V $I_o=1$ to 100mA τ	2.736		2.964	V
ΔV_o	Line Regulation	$V_{in}=4.85$ to 20V		10	40	mV
ΔV_o	Load Regulation	$I_o=1$ to 200mA		5	25	mV
		$I_o=1$ to 100mA		2		mV
I_q	Quiescent Current	τ		350	600	μA
ΔI_q	Quiescent Current Change	$I_o=1$ to 200mA $V_{in}=4.85$ to 20V			100 100	μA μA
V_n	Output Noise Voltage	f=10Hz to 10kHz		75		$\mu\text{V rms}$
$\Delta V_{in}/\Delta V_o$	Ripple Rejection	$V_{in}=5.85$ to 18V f=120Hz	48	62		dB
V_{in}	Input Voltage Required To Maintain Regulation		4.85	4.55		V
$\Delta V_o/\Delta T$	Average Temperature Coefficient of V_o	$I_o=5.0\text{mA}$ τ		0.1		mV/ $^{\circ}\text{C}$

$\tau=T_j=-55$ to 125°C

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ZSR300 TEST CONDITIONS (Unless otherwise stated): $T_j=25^{\circ}\text{C}$, $I_O=100\text{mA}$, $V_{in}=7\text{V}$

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNITS
V_O	Output Voltage		2.92	3.0	3.08	V
		$I_O=1$ to 200mA τ	2.88		3.12	V
		$V_{in}=5$ to 20V $I_O=1$ to 100mA τ	2.88		3.12	V
ΔV_O	Line Regulation	$V_{in}=5$ to 20V		10	40	mV
ΔV_O	Load Regulation	$I_O=1$ to 200mA $I_O=1$ to 100mA		5 2	25	mV mV
I_q	Quiescent Current	τ		350	600	μA
ΔI_q	Quiescent Current Change	$I_O=1$ to 200mA $V_{in}=5$ to 20V			100 100	μA μA
V_n	Output Noise Voltage	$f=10\text{Hz}$ to 10kHz		75		$\mu\text{V rms}$
$\Delta V_{in}/\Delta V_O$	Ripple Rejection	$V_{in}=6$ to 18V $f=120\text{Hz}$	48	62		dB
V_{in}	Input Voltage Required To Maintain Regulation		5	4.7		V
$\Delta V_O/\Delta T$	Average Temperature Coefficient of V_O	$I_O=5.0\text{mA}$ τ		0.1		$\text{mV}/^{\circ}\text{C}$

ZSR330 TEST CONDITIONS (Unless otherwise stated): $T_j=25^{\circ}\text{C}$, $I_O=100\text{mA}$, $V_{in}=7.3\text{V}$

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNITS
V_O	Output Voltage		3.218	3.3	3.382	V
		$I_O=1$ to 200mA τ	3.168		3.432	V
		$V_{in}=5.3$ to 20V $I_O=1$ to 100mA τ	3.168		3.432	V
ΔV_O	Line Regulation	$V_{in}=5.3$ to 20V		7.5	30	mV
ΔV_O	Load Regulation	$I_O=1$ to 200mA $I_O=1$ to 100mA		5 2	25	mV mV
I_q	Quiescent Current	τ		350	600	μA
ΔI_q	Quiescent Current Change	$I_O=1$ to 200mA $V_{in}=5.3$ to 20V			100 100	μA μA
V_n	Output Noise Voltage	$f=10\text{Hz}$ to 10kHz		50		$\mu\text{V rms}$
$\Delta V_{in}/\Delta V_O$	Ripple Rejection	$V_{in}=6.3$ to 18V $f=120\text{Hz}$	50	64		dB
V_{in}	Input Voltage Required To Maintain Regulation		5.3	5		V
$\Delta V_O/\Delta T$	Average Temperature Coefficient of V_O	$I_O=5.0\text{mA}$ τ		0.1		$\text{mV}/^{\circ}\text{C}$

$\tau = T_j = -55$ to 125°C

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ZSR400 TEST CONDITIONS (Unless otherwise stated): $T_j=25^{\circ}\text{C}$, $I_O=100\text{mA}$, $V_{in}=8\text{V}$

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNITS
V_O	Output Voltage		3.9	4.0	4.1	V
		$I_O=1$ to 200mA τ	3.84		4.16	V
		$V_{in}=6$ to 20V $I_O=1$ to 100mA τ	3.84		4.16	V
ΔV_O	Line Regulation	$V_{in}=6$ to 20V		10	40	mV
ΔV_O	Load Regulation	$I_O=1$ to 200mA $I_O=1$ to 100mA		5 2	25	mV mV
I_q	Quiescent Current	τ		350	600	μA
ΔI_q	Quiescent Current Change	$I_O=1$ to 200mA $V_{in}=6$ to 20V			100 100	μA μA
V_n	Output Noise Voltage	$f=10\text{Hz}$ to 10kHz		75		$\mu\text{V rms}$
$\Delta V_{in}/\Delta V_O$	Ripple Rejection	$V_{in}=7$ to 18V $f=120\text{Hz}$	48	62		dB
V_{in}	Input Voltage Required To Maintain Regulation		6	5.3		V
$\Delta V_O/\Delta T$	Average Temperature Coefficient of V_O	$I_O=5.0\text{mA}$ τ		0.1		$\text{mV}/^{\circ}\text{C}$

ZSR485 TEST CONDITIONS (Unless otherwise stated): $T_j=25^{\circ}\text{C}$, $I_O=100\text{mA}$, $V_{in}=8.85\text{V}$

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNITS
V_O	Output Voltage		4.729	4.85	4.971	V
		$I_O=1$ to 200mA τ	4.656		5.044	V
		$V_{in}=6.8$ to 20V $I_O=1$ to 100mA τ	4.656		5.044	V
ΔV_O	Line Regulation	$V_{in}=6.85$ to 20V		10	40	mV
ΔV_O	Load Regulation	$I_O=1$ to 200mA $I_O=1$ to 100mA		5 2	25	mV mV
I_q	Quiescent Current	τ		350	600	μA
ΔI_q	Quiescent Current Change	$I_O=1$ to 200mA $V_{in}=6.85$ to 20V			100 100	μA μA
V_n	Output Noise Voltage	$f=10\text{Hz}$ to 10kHz		50		$\mu\text{V rms}$
$\Delta V_{in}/\Delta V_O$	Ripple Rejection	$V_{in}=7.85$ to 18V $f=120\text{Hz}$	50	64		dB
V_{in}	Input Voltage Required To Maintain Regulation		6.85	6.55		V
$\Delta V_O/\Delta T$	Average Temperature Coefficient of V_O	$I_O=5.0\text{mA}$ τ		0.1		$\text{mV}/^{\circ}\text{C}$

$\tau = T_j = -55$ to 125°C

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ZSR500 TEST CONDITIONS (Unless otherwise stated): $T_j=25^{\circ}\text{C}$, $I_O=100\text{mA}$, $V_{in}=9\text{V}$

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNITS
V_O	Output Voltage		4.875	5	5.125	V
		$I_O=1$ to 200mA τ	4.8		5.2	V
		$V_{in}=7$ to 20V $I_O=1$ to 100mA τ	4.8		5.2	V
ΔV_O	Line Regulation	$V_{in}=7$ to 20V		10	40	mV
ΔV_O	Load Regulation	$I_O=1$ to 200mA $I_O=1$ to 100mA		5 2	25	mV mV
I_q	Quiescent Current	τ		350	600	μA
ΔI_q	Quiescent Current Change	$I_O=1$ to 200mA $V_{in}=7$ to 20V			100 100	μA μA
V_n	Output Noise Voltage	$f=10\text{Hz}$ to 10kHz		75		$\mu\text{V rms}$
$\Delta V_{in}/\Delta V_O$	Ripple Rejection	$V_{in}=8$ to 18V $f=120\text{Hz}$	48	62		dB
V_{in}	Input Voltage Required To Maintain Regulation		7	6.7		V
$\Delta V_O/\Delta T$	Average Temperature Coefficient of V_O	$I_O=5.0\text{mA}$ τ		0.1		$\text{mV}/^{\circ}\text{C}$

ZSR520 TEST CONDITIONS (Unless otherwise stated): $T_j=25^{\circ}\text{C}$, $I_O=100\text{mA}$, $V_{in}=9.2\text{V}$

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNITS
V_O	Output Voltage		5.070	5.2	5.330	V
		$I_O=1$ to 200mA τ	4.99		5.41	V
		$V_{in}=7.2$ to 20V $I_O=1$ to 100mA τ	4.99		5.41	V
ΔV_O	Line Regulation	$V_{in}=7.2$ to 20V		10	40	mV
ΔV_O	Load Regulation	$I_O=1$ to 200mA $I_O=1$ to 100mA		5 2	25	mV mV
I_q	Quiescent Current	τ		350	600	μA
ΔI_q	Quiescent Current Change	$I_O=1$ to 200mA $V_{in}=7.2$ to 20V			100 100	μA μA
V_n	Output Noise Voltage	$f=10\text{Hz}$ to 10kHz		75		$\mu\text{V rms}$
$\Delta V_{in}/\Delta V_O$	Ripple Rejection	$V_{in}=8.2$ to 18V $f=120\text{Hz}$	48	62		dB
V_{in}	Input Voltage Required To Maintain Regulation		7.2	6.9		V
$\Delta V_O/\Delta T$	Average Temperature Coefficient of V_O	$I_O=5.0\text{mA}$ τ		0.1		$\text{mV}/^{\circ}\text{C}$

$\tau = T_j = -55$ to 125°C

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ZSR570 TEST CONDITIONS (Unless otherwise stated): $T_j=25^{\circ}\text{C}$, $I_O=100\text{mA}$, $V_{in}=9.7\text{V}$

SYMBOL	PARAMETER	CONDITIONS	MIN.	Typ.	MAX.	UNITS
V_O	Output Voltage		5.557	5.7	5.843	V
		$I_O=1$ to 200mA τ	5.47		5.93	V
		$V_{in}=7.7$ to 20V $I_O=1$ to 100mA τ	5.47		5.93	V
ΔV_O	Line Regulation	$V_{in}=7.7$ to 20V		10	40	mV
ΔV_O	Load Regulation	$I_O=1$ to 200mA		7	30	mV
		$I_O=1$ to 100mA		2.5		mV
I_q	Quiescent Current	τ		350	600	μA
ΔI_q	Quiescent Current Change	$I_O=1$ to 200mA			100	μA
		$V_{in}=7.7$ to 20V			100	μA
V_n	Output Noise Voltage	$f=10\text{Hz}$ to 10kHz		90		$\mu\text{V rms}$
$\Delta V_{in}/\Delta V_O$	Ripple Rejection	$V_{in}=8.7$ to 18V $f=120\text{Hz}$	48	62		dB
V_{in}	Input Voltage Required To Maintain Regulation		7.7	7.4		V
$\Delta V_O/\Delta T$	Average Temperature Coefficient of V_O	$I_O=5.0\text{mA}$ τ		0.15		$\text{mV}/^{\circ}\text{C}$

ZSR600 TEST CONDITIONS (Unless otherwise stated): $T_j=25^{\circ}\text{C}$, $I_O=100\text{mA}$, $V_{in}=10\text{V}$

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNITS
V_O	Output Voltage		5.85	6	6.15	V
		$I_O=1$ to 200mA τ	5.76		6.24	V
		$V_{in}=8$ to 20V $I_O=1$ to 100mA τ	5.76		6.24	V
ΔV_O	Line Regulation	$V_{in}=8$ to 20V		10	40	mV
ΔV_O	Load Regulation	$I_O=1$ to 200mA		7	30	mV
		$I_O=1$ to 100mA		2.5		mV
I_q	Quiescent Current	τ		350	600	μA
ΔI_q	Quiescent Current Change	$I_O=1$ to 200mA			100	μA
		$V_{in}=8$ to 20V			100	μA
V_n	Output Noise Voltage	$f=10\text{Hz}$ to 10kHz		90		$\mu\text{V rms}$
$\Delta V_{in}/\Delta V_O$	Ripple Rejection	$V_{in}=9$ to 18V $f=120\text{Hz}$	48	62		dB
V_{in}	Input Voltage Required To Maintain Regulation		8	7.7		V
$\Delta V_O/\Delta T$	Average Temperature Coefficient of V_O	$I_O=5.0\text{mA}$ τ		0.15		$\text{mV}/^{\circ}\text{C}$

$\tau = T_j = -55$ to 125°C

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ZSR700 TEST CONDITIONS (Unless otherwise stated): $T_j=25^{\circ}\text{C}$, $I_O=100\text{mA}$, $V_{in}=11\text{V}$

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNITS
V_O	Output Voltage		6.825	7	7.175	V
		$I_O=1$ to 200mA τ	6.72		7.28	V
		$V_{in}=9$ to 20V $I_O=1$ to 100mA τ	6.72		7.28	V
ΔV_O	Line Regulation	$V_{in}=9$ to 20V		10	40	mV
ΔV_O	Load Regulation	$I_O=1$ to 200mA $I_O=1$ to 100mA		5 2	25	mV mV
I_q	Quiescent Current	τ		350	600	μA
ΔI_q	Quiescent Current Change	$I_O=1$ to 200mA $V_{in}=9$ to 20V			100 100	μA μA
V_n	Output Noise Voltage	$f=10\text{Hz}$ to 10kHz		75		$\mu\text{V rms}$
$\Delta V_{in}/\Delta V_O$	Ripple Rejection	$V_{in}=10$ to 18V $f=120\text{Hz}$	48	62		dB
V_{in}	Input Voltage Required To Maintain Regulation		9	8.7		V
$\Delta V_O/\Delta T$	Average Temperature Coefficient of V_O	$I_O=5.0\text{mA}$ τ		0.1		$\text{mV}/^{\circ}\text{C}$

ZSR800 TEST CONDITIONS (Unless otherwise stated): $T_j=25^{\circ}\text{C}$, $I_O=100\text{mA}$, $V_{in}=12\text{V}$

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNITS
V_O	Output Voltage		7.8	8	8.2	V
		$I_O=1$ to 200mA τ	7.68		8.32	V
		$V_{in}=10$ to 20V $I_O=1$ to 100mA τ	7.68		8.32	V
ΔV_O	Line Regulation	$V_{in}=10$ to 20V		11	40	mV
ΔV_O	Load Regulation	$I_O=1$ to 200mA $I_O=1$ to 100mA		8 3	30	mV mV
I_q	Quiescent Current	τ		350	600	μA
ΔI_q	Quiescent Current Change	$I_O=1$ to 200mA $V_{in}=10$ to 20V			100 100	μA μA
V_n	Output Noise Voltage	$f=10\text{Hz}$ to 10kHz		115		$\mu\text{V rms}$
$\Delta V_{in}/\Delta V_O$	Ripple Rejection	$V_{in}=11$ to 18V $f=120\text{Hz}$	44	60		dB
V_{in}	Input Voltage Required To Maintain Regulation		10	9.7		V
$\Delta V_O/\Delta T$	Average Temperature Coefficient of V_O	$I_O=5.0\text{mA}$ τ		0.25		$\text{mV}/^{\circ}\text{C}$

$\tau = T_j = -55$ to 125°C

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ZSR850 TEST CONDITIONS (Unless otherwise stated): $T_j=25^{\circ}\text{C}$, $I_O=100\text{mA}$, $V_{in}=12.5\text{V}$

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNITS
V_O	Output Voltage		8.288	8.5	8.712	V
		$I_O=1$ to 200mA τ	8.16		8.84	V
		$V_{in}=10$ to 20V $I_O=1$ to 100mA τ	8.16		8.84	V
ΔV_O	Line Regulation	$V_{in}=10.5$ to 20V		11	40	mV
ΔV_O	Load Regulation	$I_O=1$ to 200mA $I_O=1$ to 100mA		8 3	30	mV mV
I_q	Quiescent Current	τ		350	600	μA
ΔI_q	Quiescent Current Change	$I_O=1$ to 200mA $V_{in}=10.5$ to 20V			100 100	μA μA
V_n	Output Noise Voltage	$f=10\text{Hz}$ to 10kHz		115		$\mu\text{V rms}$
$\Delta V_{in}/\Delta V_O$	Ripple Rejection	$V_{in}=11.5$ to 18V $f=120\text{Hz}$	44	60		dB
V_{in}	Input Voltage Required To Maintain Regulation		10.5	10.2		V
$\Delta V_O/\Delta T$	Average Temperature Coefficient of V_O	$I_O=5.0\text{mA}$ τ		0.25		$\text{mV}/^{\circ}\text{C}$

ZSR900 TEST CONDITIONS (Unless otherwise stated): $T_j=25^{\circ}\text{C}$, $I_O=100\text{mA}$, $V_{in}=13\text{V}$

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNITS
V_O	Output Voltage		8.775	9.0	9.225	V
		$I_O=1$ to 200mA τ	8.64		9.36	V
		$V_{in}=11$ to 20V $I_O=1$ to 100mA τ	8.64		9.36	V
ΔV_O	Line Regulation	$V_{in}=11$ to 20V		12	40	mV
ΔV_O	Load Regulation	$I_O=1$ to 200mA $I_O=1$ to 100mA		9 3	30	mV mV
I_q	Quiescent Current	τ		350	600	μA
ΔI_q	Quiescent Current Change	$I_O=1$ to 200mA $V_{in}=11$ to 20V			100 100	μA μA
V_n	Output Noise Voltage	$f=10\text{Hz}$ to 10kHz		150		$\mu\text{V rms}$
$\Delta V_{in}/\Delta V_O$	Ripple Rejection	$V_{in}=12$ to 18V $f=120\text{Hz}$	43	57		dB
V_{in}	Input Voltage Required To Maintain Regulation		11	10.7		V
$\Delta V_O/\Delta T$	Average Temperature Coefficient of V_O	$I_O=5.0\text{mA}$ τ		0.25		$\text{mV}/^{\circ}\text{C}$

$\tau = T_j = -55$ to 125°C

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ZSR1000 TEST CONDITIONS (Unless otherwise stated): $T_j=25^{\circ}\text{C}$, $I_O=100\text{mA}$, $V_{in}=14\text{V}$

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNITS
V_O	Output Voltage		9.75	10	10.25	V
		$I_O=1$ to 200mA τ	9.6		10.4	V
		$V_{in}=12$ to 20V $I_O=1$ to 100mA τ	9.6		10.4	V
ΔV_O	Line Regulation	$V_{in}=12$ to 20V		12	40	mV
ΔV_O	Load Regulation	$I_O=1$ to 200mA $I_O=1$ to 100mA		9 3	30	mV mV
I_q	Quiescent Current	τ		350	600	μA
ΔI_q	Quiescent Current Change	$I_O=1$ to 200mA $V_{in}=12$ to 20V			100 100	μA μA
V_n	Output Noise Voltage	$f=10\text{Hz}$ to 10kHz		150		$\mu\text{V rms}$
$\Delta V_{in}/\Delta V_O$	Ripple Rejection	$V_{in}=13$ to 18V $f=120\text{Hz}$	43	57		dB
V_{in}	Input Voltage Required To Maintain Regulation		12	11.7		V
$\Delta V_O/\Delta T$	Average Temperature Coefficient of V_O	$I_O=5.0\text{mA}$ τ		0.25		mV/ $^{\circ}\text{C}$

ZSR1200 TEST CONDITIONS (Unless otherwise stated): $T_j=25^{\circ}\text{C}$, $I_O=100\text{mA}$, $V_{in}=16\text{V}$

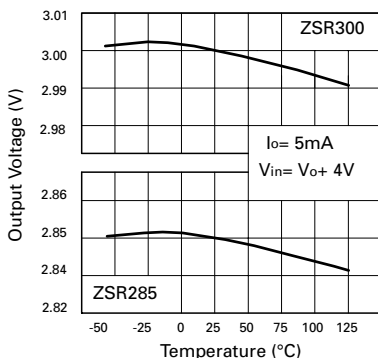
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNITS
V_O	Output Voltage		11.7	12	12.3	V
		$I_O=1$ to 200mA τ	11.52		12.48	V
		$V_{in}=14$ to 20V $I_O=1$ to 100mA τ	11.52		12.48	V
ΔV_O	Line Regulation	$V_{in}=14$ to 20V		12	40	mV
ΔV_O	Load Regulation	$I_O=1$ to 200mA $I_O=1$ to 100mA		9 3	30	mV mV
I_q	Quiescent Current	τ		350	600	μA
ΔI_q	Quiescent Current Change	$I_O=1$ to 200mA $V_{in}=14$ to 20V			100 100	μA μA
V_n	Output Noise Voltage	$f=10\text{Hz}$ to 10kHz		150		$\mu\text{V rms}$
$\Delta V_{in}/\Delta V_O$	Ripple Rejection	$V_{in}=15$ to 18V $f=120\text{Hz}$	43	57		dB
V_{in}	Input Voltage Required To Maintain Regulation		14	13.7		V
$\Delta V_O/\Delta T$	Average Temperature Coefficient of V_O	$I_O=5.0\text{mA}$ τ		0.25		mV/ $^{\circ}\text{C}$

$\tau = T_j = -55$ to 125°C

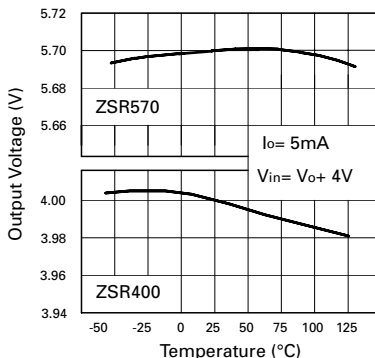
ZSR285 ZSR300
ZSR400 ZSR570
ZSR900

**ZSR
 SERIES**

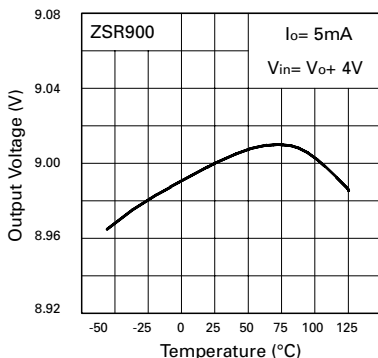
TYPICAL CHARACTERISTICS



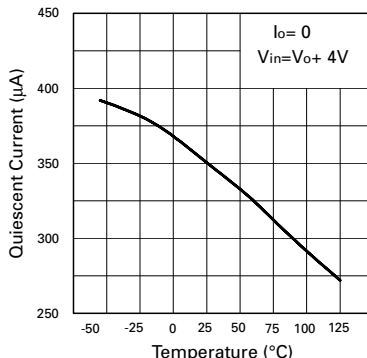
Output Voltage Temperature Coefficient



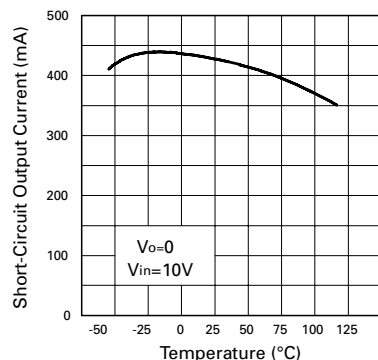
Output Voltage Temperature Coefficient



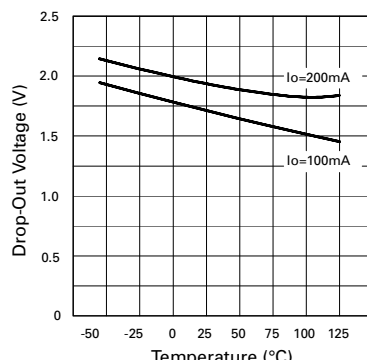
Output Voltage Temperature Coefficient



Quiescent Current v Temperature



Peak Output Current v Temperature

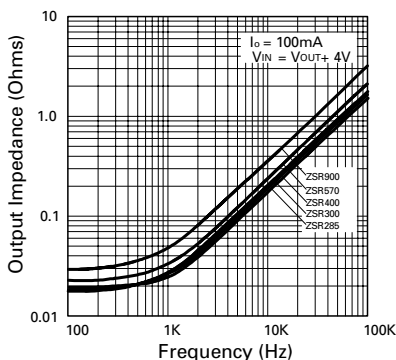


Drop-Out Voltage v Temperature

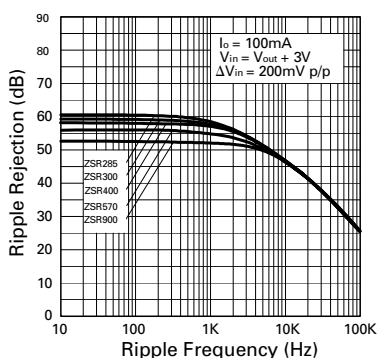
ZSR SERIES

TYPICAL CHARACTERISTICS

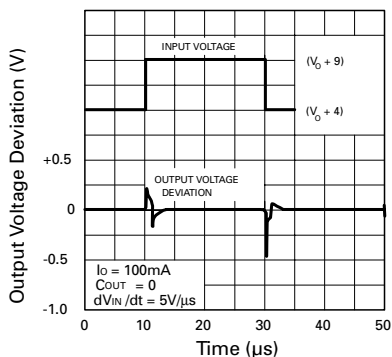
ZSR285	ZSR300
ZSR400	ZSR570
ZSR900	



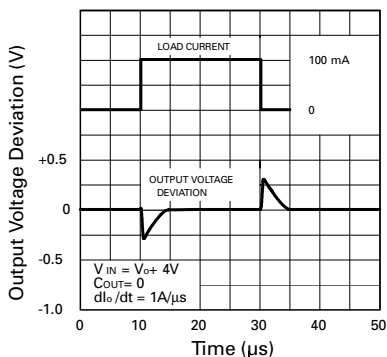
Output Impedance v Frequency



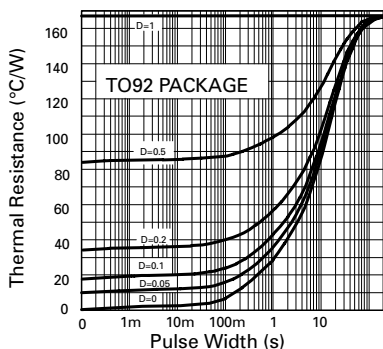
Ripple Rejection v Ripple Frequency



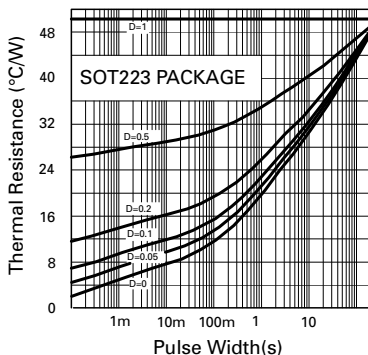
Line Transient Response



Load Transient Response



Thermal Resistance v Pulse Width

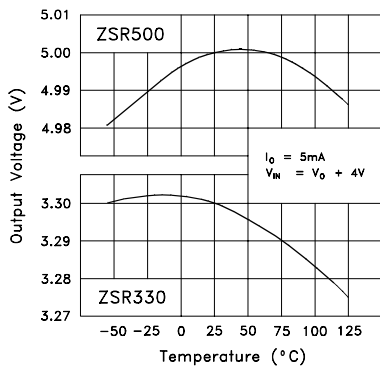


Thermal Resistance v Pulse Width

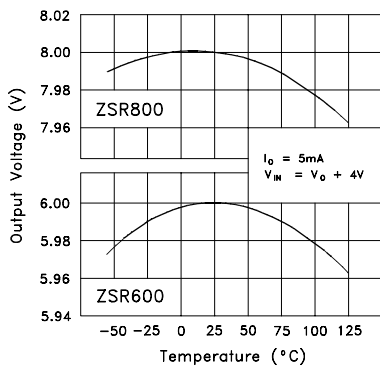
ZSR330 ZSR500
ZSR600 ZSR800
ZSR1000

**ZSR
SERIES**

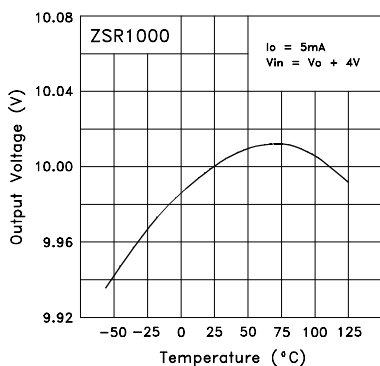
TYPICAL CHARACTERISTICS



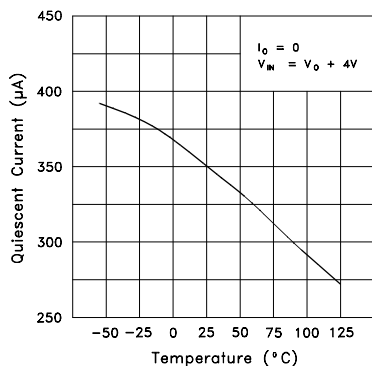
Output Voltage Temperature Coefficient



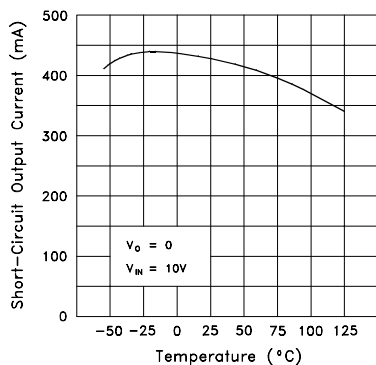
Output Voltage Temperature Coefficient



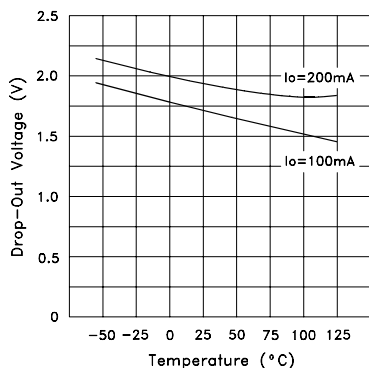
Output Voltage Temperature Coefficient



Quiescent Current vs. Temperature



Peak Output Current vs. Temperature

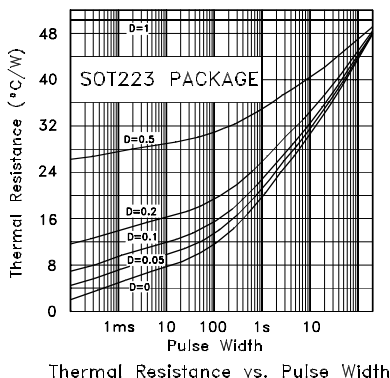
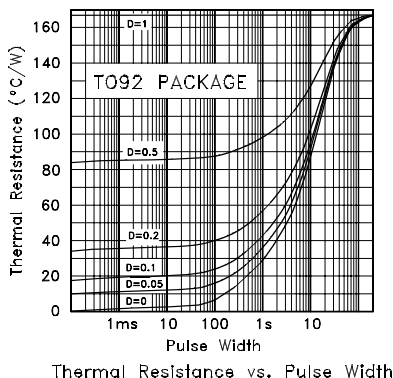
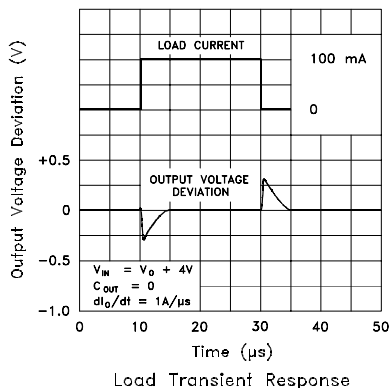
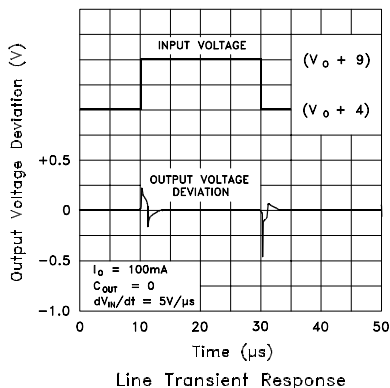
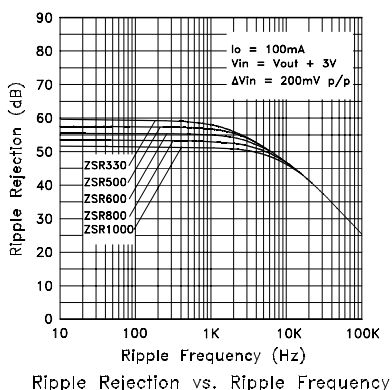
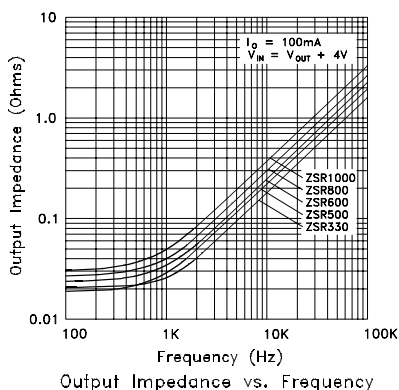


Drop-Out Voltage vs. Temperature

ZSR SERIES

ZSR330 ZSR500
ZSR600 ZSR800
ZSR1000

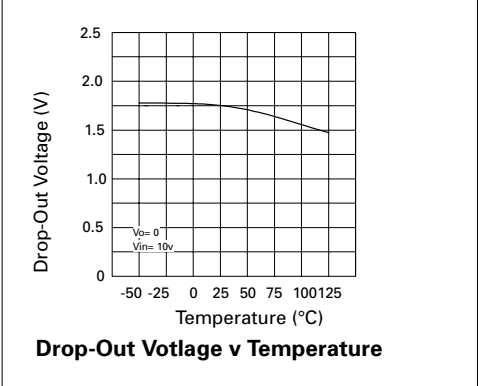
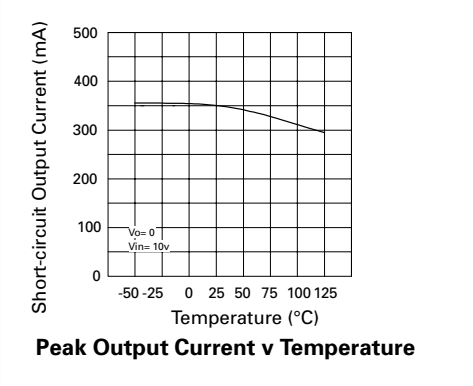
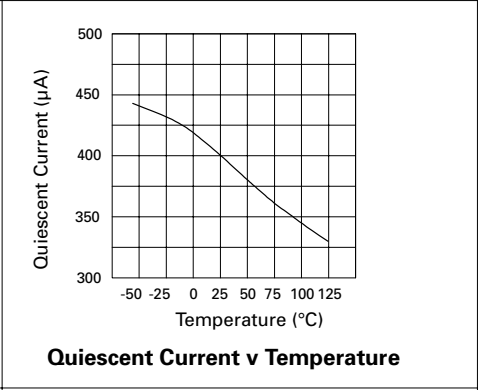
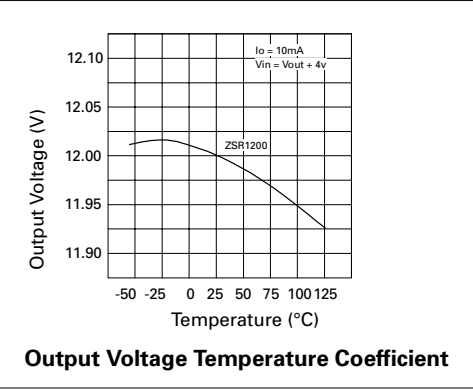
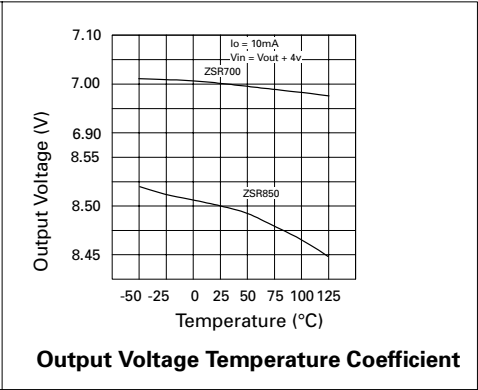
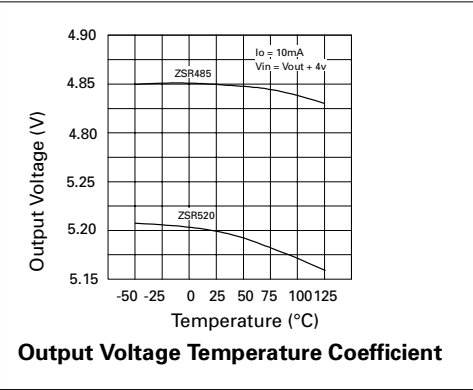
TYPICAL CHARACTERISTICS



ZSR485 ZSR520
ZSR700 ZSR850
ZSR1200

ZSR
SERIES

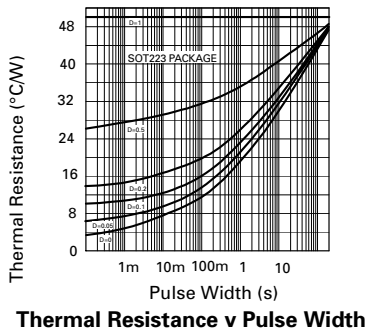
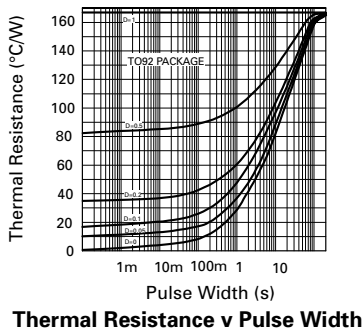
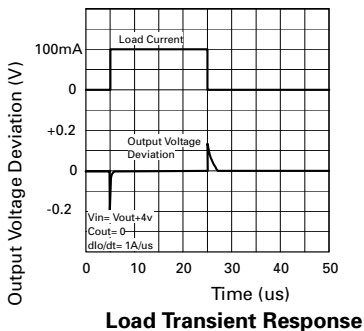
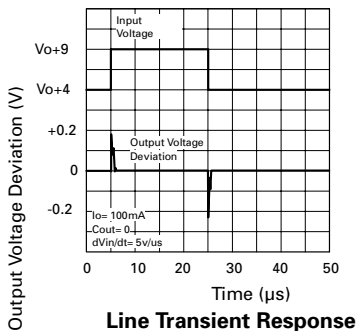
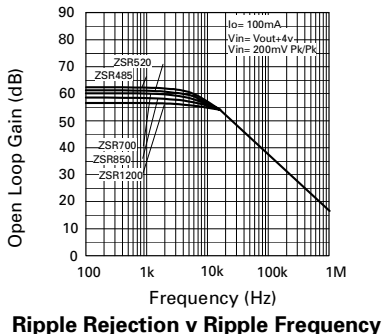
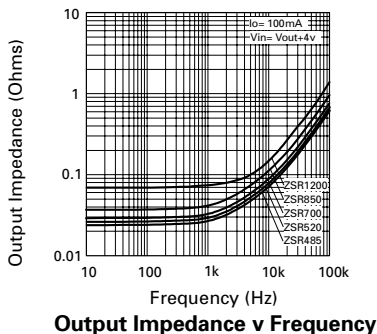
TYPICAL CHARACTERISTICS



ZSR SERIES

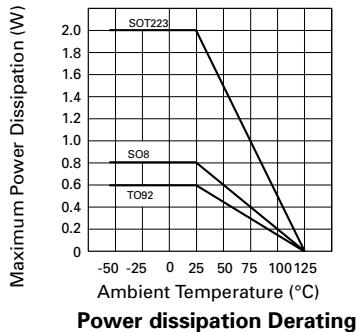
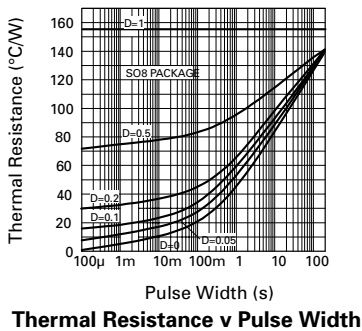
ZSR485 ZSR520
ZSR700 ZSR850
ZSR1200

TYPICAL CHARACTERISTICS



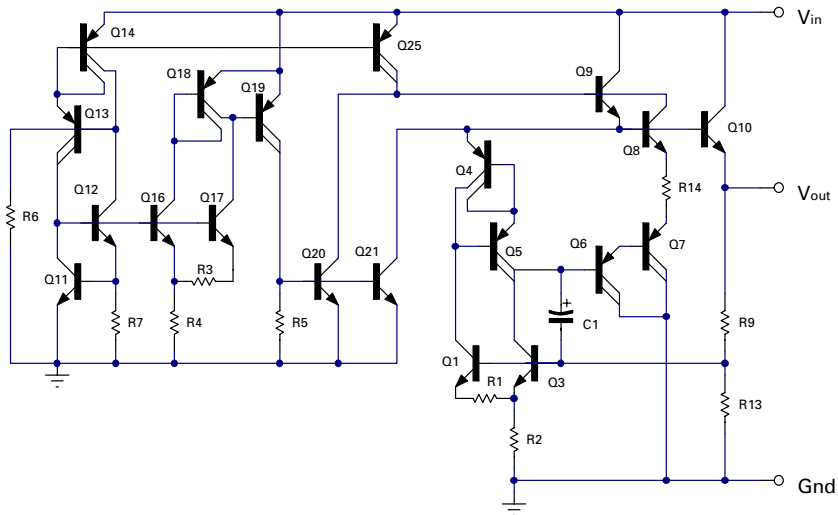
ZSR SERIES

TYPICAL CHARACTERISTICS



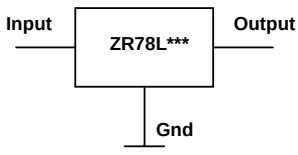
ZSR SERIES

SCHEMATIC DIAGRAM

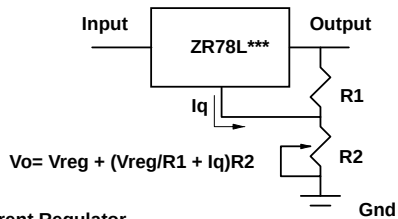


APPLICATIONS

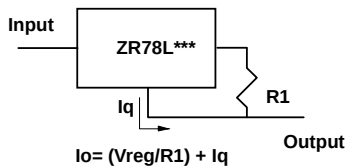
Fixed Output Regulator



Adjustable Output Regulator

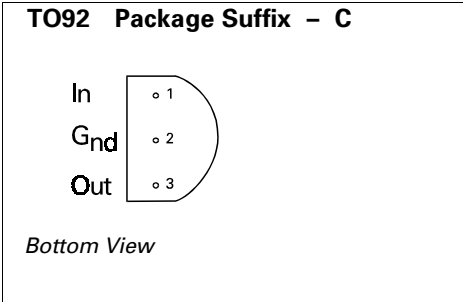
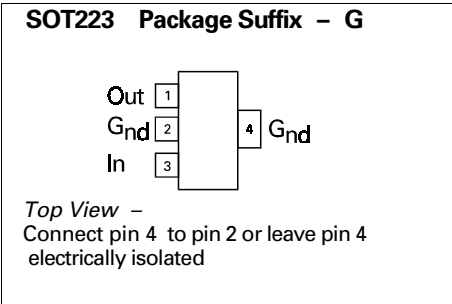
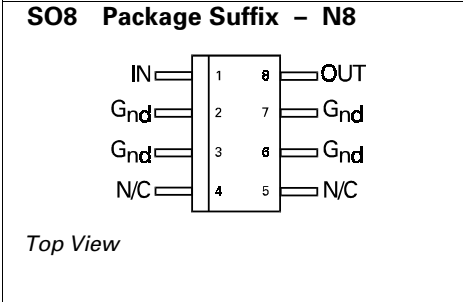


Current Regulator



ZSR SERIES

CONNECTION DIAGRAMS



OPTIONS

Voltage	Voltage Option ▲	TO92	SOT223	SO8
2.85V	285	✓	✓	✓
3.0V	300	✓	✓	✓
3.3V	330	✓	✓	✓
4.0V	400	✓	✓	✓
4.85V	485	✓	✓	✓
5.0V	500	✓	✓	✓
5.2V	520	✓	✓	✓
5.7V	570	✓	✓	✓
6.0V	600	✓	✓	✓
7.0V	700	✓	✓	✓
8.0V	800	✓	✓	✓
8.5V	850	✓	✓	✓
9.0V	900	✓	✓	✓
10.0V	1000	✓	✓	✓
12.0V	1200	✓	✓	✓

ORDERING INFORMATION

Part No	Package	Partmark
ZSR ▲ C	TO92	ZSR ▲
ZSR ▲ G	SOT223	ZSR ▲
ZSR ▲ N8	SO8	ZSR ▲

▲ Voltage Option

eg 3V device in TO92 package
part number ZSR300C
part marked ZSR300 *

eg 12V device in SOT223 package
part number ZSR1200G
part marked ZSR1200 *

eg 5V device in SO8 package
part number ZSR500N8
part marked ZSR500 *

*** NOTE: Exception. ZSR1000 part mark is ZSR100 for all package options**