

# ZSR SERIES

## 3.0 to 12 volt fixed positive local voltage regulator

### Description

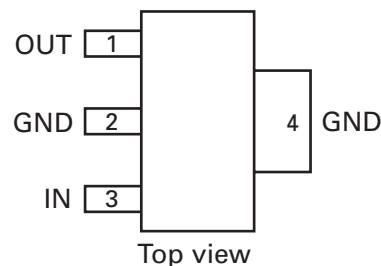
The ZSR Series three terminal fixed positive voltage regulators feature internal circuit current limit and thermal shutdown making the devices difficult to destroy. The devices are available in a high power surface mount package, ideal for applications where space saving is important. The devices are 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 350 $\mu$ A. 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

- Output current up to 200mA
- Tight initial tolerance of 2.5%
- Low 600 $\mu$ A quiescent current
- -55 to 125 $^{\circ}$ C temperature range
- No external components
- Internal thermal shutdown
- Internal short circuit current limit
- High power SOT223 package

### SOT223 Package suffix - G



Top view –  
Connect pin 4 to pin 2 or leave pin 4 electrically isolated

### SOT223 ordering information

Order reference	Voltage	Part marking	Status	Reel size (inches)	Tape width (mm)	Quantity per reel
ZSR300GTA	3.0V	ZSR300	Active	7	12	1000
ZSR330GTA	3.3V	ZSR330	Active	7	12	1000
ZSR500GTA	5.0V	ZSR500	Active	7	12	1000
ZSR800GTA	8.0V	ZSR800	Active	7	12	1000
ZSR1000GTA	10.0V	ZSR100	Active	7	12	1000
ZSR1200GTA	12.0V	ZSR1200	Active	7	12	1000

# ZSR SERIES

## 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

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

## Recommended operating conditions

Parameter	Products	Min	Max	Units
$V_{in}$ Input Voltage	ZSR300	5	20	V
	ZSR330	5.3	20	V
	ZSR500	7	20	V
	ZSR800	10	20	V
	ZSR1000	12	20	V
	ZSR1200	14	20	V

## Notes:

- 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  $T_{amb}=125^{\circ}\text{C}$ .
- 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.
- 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 $\mu\text{F}$  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.

# ZSR SERIES

## Electrical characteristics

**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 $200\text{mA}^{(\tau)}$	2.88		3.12	V
		$V_{in}=5$ to $20\text{V}$ $I_O=1$ to $100\text{mA}^{(\tau)}$	2.88		3.12	V
$\Delta V_O$	Line regulation	$V_{in}=5$ to $20\text{V}$		10	40	mV
$\Delta V_O$	Load regulation	$I_O=1$ to $200\text{mA}$		5	25	mV
		$I_O=1$ to $100\text{mA}$		2		mV
$I_g$	Quiescent current	$(\tau)$		350	600	$\mu\text{A}$
$\Delta I_g$	Quiescent current change	$I_O=1$ to $200\text{mA}$			100	$\mu\text{A}$
		$V_{in}=1$ to $20\text{V}$			100	$\mu\text{A}$
$V_n$	Output noise voltage	$f=10\text{Hz}$ to $10\text{Hz}$		75		$\mu\text{V rms}$
$\Delta V_{in}/\Delta V_O$	Ripple rejection	$V_{in}=1$ to $20\text{V}$ $f=120\text{Hz}$	48	62		dB
$V_{in}$	Input voltage required to maintain regulation			4.7		V
$\Delta V_O/\Delta T$	Average temperature coefficient of $V_O$	$I_O=5.0\text{mA}^{(\tau)}$		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 $200\text{mA}^{(\tau)}$	3.168		3.432	V
		$V_{in}=5.3$ to $20\text{V}$ $I_O=1$ to $100\text{mA}^{(\tau)}$	3.168		3.432	V
$\Delta V_O$	Line regulation	$V_{in}=5.3$ to $20\text{V}$		7.5	30	mV
$\Delta V_O$	Load regulation	$I_O=1$ to $200\text{mA}$		5	25	mV
		$I_O=1$ to $100\text{mA}$		2		mV
$I_g$	Quiescent current	$(\tau)$		350	600	$\mu\text{A}$
$\Delta I_g$	Quiescent current change	$I_O=1$ to $200\text{mA}$			100	$\mu\text{A}$
		$V_{in}=5.3$ to $20\text{V}$			100	$\mu\text{A}$
$V_n$	Output noise voltage	$f=10\text{Hz}$ to $10\text{Hz}$		50		$\mu\text{V rms}$
$\Delta V_{in}/\Delta V_O$	Ripple rejection	$V_{in}=6.3$ to $18\text{V}$ $f=120\text{Hz}$	50	64		dB
$V_{in}$	Input voltage required to maintain regulation			5		V
$\Delta V_O/\Delta T$	Average temperature coefficient of $V_O$	$I_O=5.0\text{mA}^{(\tau)}$		0.1		$\text{mV}/^{\circ}\text{C}$

### NOTES:

$(\tau)T_j=-55$  to  $125^{\circ}\text{C}$

# ZSR SERIES

**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	5.126	V
		$I_O=1$ to $200\text{mA}^{(\tau)}$	4.8		5.2	V
		$V_{in}=7$ to $20\text{V}$ $I_O=1$ to $100\text{mA}^{(\tau)}$	4.8		5.2	V
$\Delta V_O$	Line regulation	$V_{in}=7$ to $20\text{V}$		10	40	mV
$\Delta V_O$	Load regulation	$I_O=1$ to $200\text{mA}$		5	25	mV
		$I_O=1$ to $100\text{mA}$		2		mV
$I_g$	Quiescent current	$(\tau)$		350	600	$\mu\text{A}$
$\Delta I_g$	Quiescent current change	$I_O=1$ to $200\text{mA}$			100	$\mu\text{A}$
		$V_{in}=7$ to $20\text{V}$			100	$\mu\text{A}$
$V_n$	Output noise voltage	$f=10\text{Hz}$ to $10\text{Hz}$		75		$\mu\text{V rms}$
$\Delta V_{in}/\Delta V_O$	Ripple rejection	$V_{in}=8$ to $18\text{V}$ $f=120\text{Hz}$	48	62		dB
$V_{in}$	Input voltage required to maintain regulation		7	6.7		V
$\Delta V_O/\Delta T$	Average temperature coefficient of $V_O$	$I_O=5.0\text{mA}^{(\tau)}$		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	8.25	V
		$I_O=1$ to $200\text{mA}^{(\tau)}$	7.68		8.32	V
		$V_{in}=10$ to $20\text{V}$ $I_O=1$ to $100\text{mA}^{(\tau)}$	7.68		8.32	V
$\Delta V_O$	Line regulation	$V_{in}=10$ to $20\text{V}$		11	40	mV
$\Delta V_O$	Load regulation	$I_O=1$ to $200\text{mA}$		8	30	mV
		$I_O=1$ to $100\text{mA}$		3		mV
$I_g$	Quiescent current	$(\tau)$		350	600	$\mu\text{A}$
$\Delta I_g$	Quiescent current change	$I_O=1$ to $200\text{mA}$			100	$\mu\text{A}$
		$V_{in}=10$ to $20\text{V}$			100	$\mu\text{A}$
$V_n$	Output noise voltage	$f=10\text{Hz}$ to $10\text{Hz}$		115		$\mu\text{V rms}$
$\Delta V_{in}/\Delta V_O$	Ripple rejection	$V_{in}=11$ to $18\text{V}$ $f=120\text{Hz}$	44	60		dB
$V_{in}$	Input voltage required to maintain regulation			9.7		V
$\Delta V_O/\Delta T$	Average temperature coefficient of $V_O$	$I_O=5.0\text{mA}^{(\tau)}$		0.25		$\text{mV}/^{\circ}\text{C}$

**NOTES:**

$(\tau) T_j=-55$  to  $125^{\circ}\text{C}$

# ZSR SERIES

**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 $200\text{mA}^{(\tau)}$	9.6		10.4	V
		$V_{in}=12$ to $20\text{V}$ $I_O=1$ to $100\text{mA}^{(\tau)}$	9.6		10.4	V
$\Delta V_O$	Line regulation	$V_{in}=12$ to $20\text{V}$		12	40	mV
$\Delta V_O$	Load regulation	$I_O=1$ to $200\text{mA}$		9	30	mV
		$I_O=1$ to $100\text{mA}$		3		mV
$I_g$	Quiescent current	$(\tau)$		350	600	$\mu\text{A}$
$\Delta I_g$	Quiescent current change	$I_O=1$ to $200\text{mA}$			100	$\mu\text{A}$
		$V_{in}=12$ to $20\text{V}$			100	$\mu\text{A}$
$V_n$	Output noise voltage	$f=10\text{Hz}$ to $10\text{Hz}$		150		$\mu\text{V rms}$
$\Delta V_{in}/\Delta V_O$	Ripple rejection	$V_{in}=13$ to $18\text{V}$ $f=120\text{Hz}$	43	57		dB
$V_{in}$	Input voltage required to maintain regulation			11.7		V
$\Delta V_O/\Delta T$	Average temperature coefficient of $V_O$	$I_O=5.0\text{mA}^{(\tau)}$		0.25		$\text{mV}/^\circ\text{C}$

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

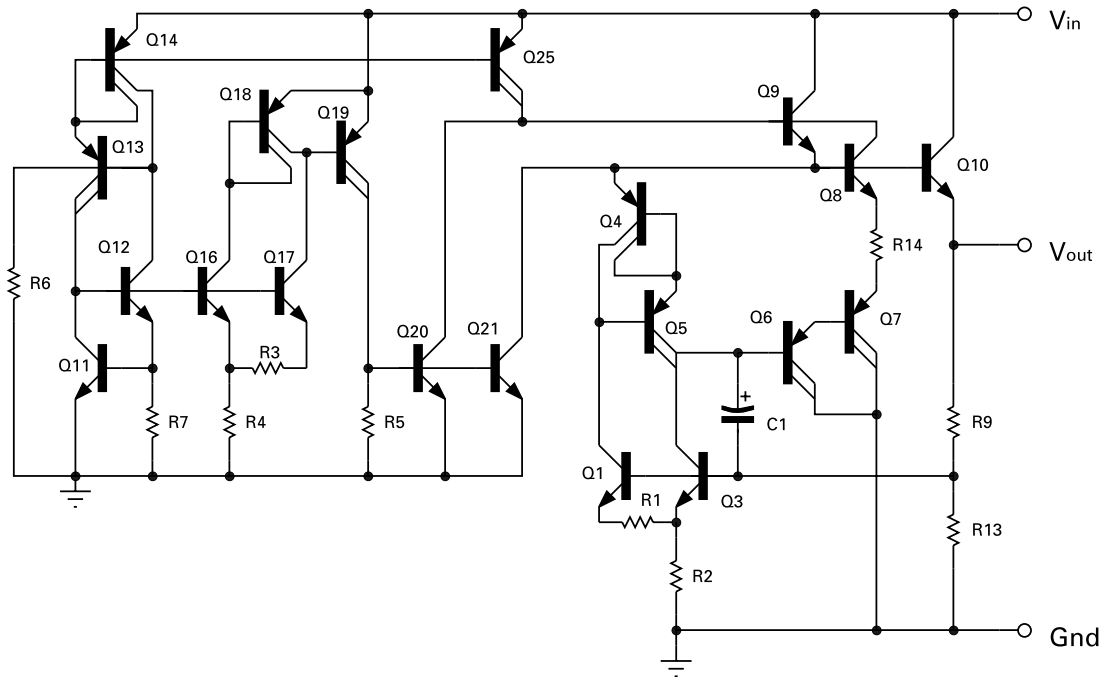
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
$V_O$	Output Voltage		11.7	12	12.3	V
		$I_O=1$ to $200\text{mA}^{(\tau)}$	11.52		12.48	V
		$V_{in}=14$ to $20\text{V}$ $I_O=1$ to $100\text{mA}^{(\tau)}$	11.52		12.48	V
$\Delta V_O$	Line regulation	$V_{in}=14$ to $20\text{V}$		12	40	mV
$\Delta V_O$	Load regulation	$I_O=1$ to $200\text{mA}$		9	30	mV
		$I_O=1$ to $100\text{mA}$		3		mV
$I_g$	Quiescent current	$(\tau)$		350	600	$\mu\text{A}$
$\Delta I_g$	Quiescent current change	$I_O=1$ to $200\text{mA}$			100	$\mu\text{A}$
		$V_{in}=14$ to $20\text{V}$			100	$\mu\text{A}$
$V_n$	Output noise voltage	$f=10\text{Hz}$ to $10\text{Hz}$		150		$\mu\text{V rms}$
$\Delta V_{in}/\Delta V_O$	Ripple rejection	$V_{in}=15$ to $18\text{V}$ $f=120\text{Hz}$	43	57		dB
$V_{in}$	Input voltage required to maintain regulation			13.7		V
$\Delta V_O/\Delta T$	Average temperature coefficient of $V_O$	$I_O=5.0\text{mA}^{(\tau)}$		0.25		$\text{mV}/^\circ\text{C}$

**NOTES:**

$(\tau) T_j = -55$  to  $125^\circ\text{C}$

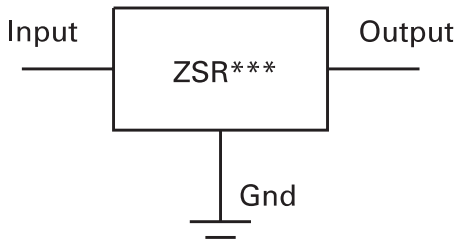
# ZSR SERIES

## Schematic diagram

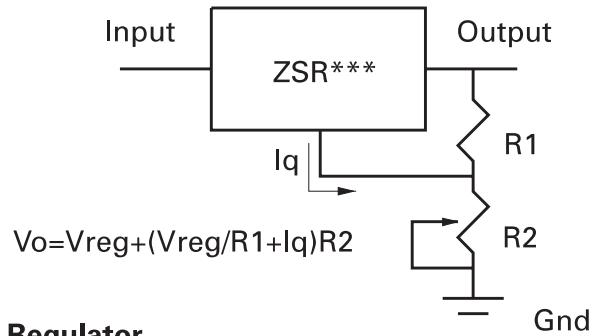


## Applications

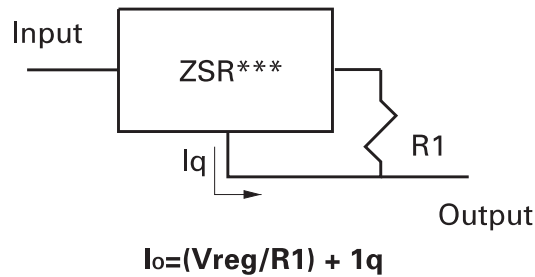
### Fixed Output Regulator



### Adjustable Output Regulator

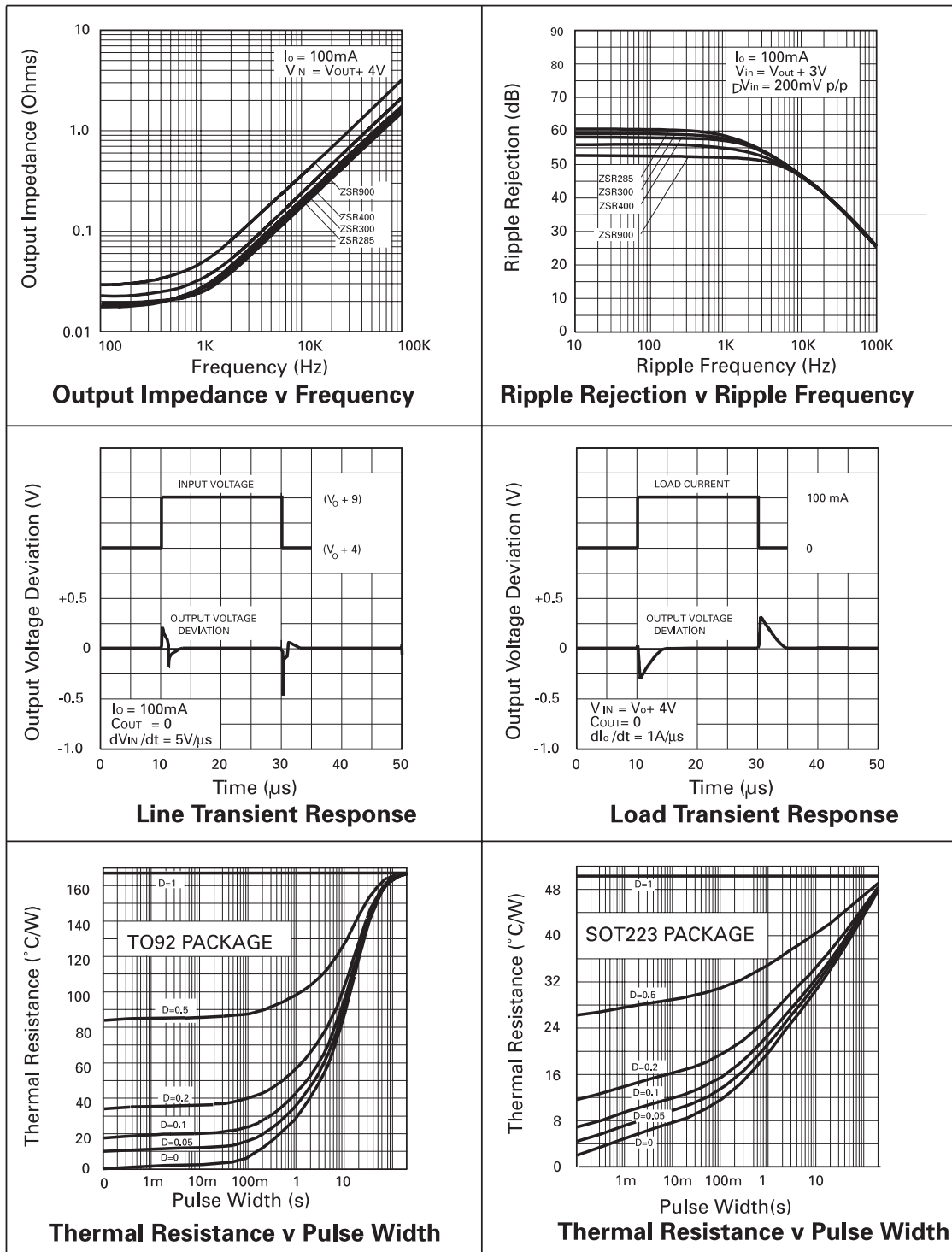


### Current Regulator

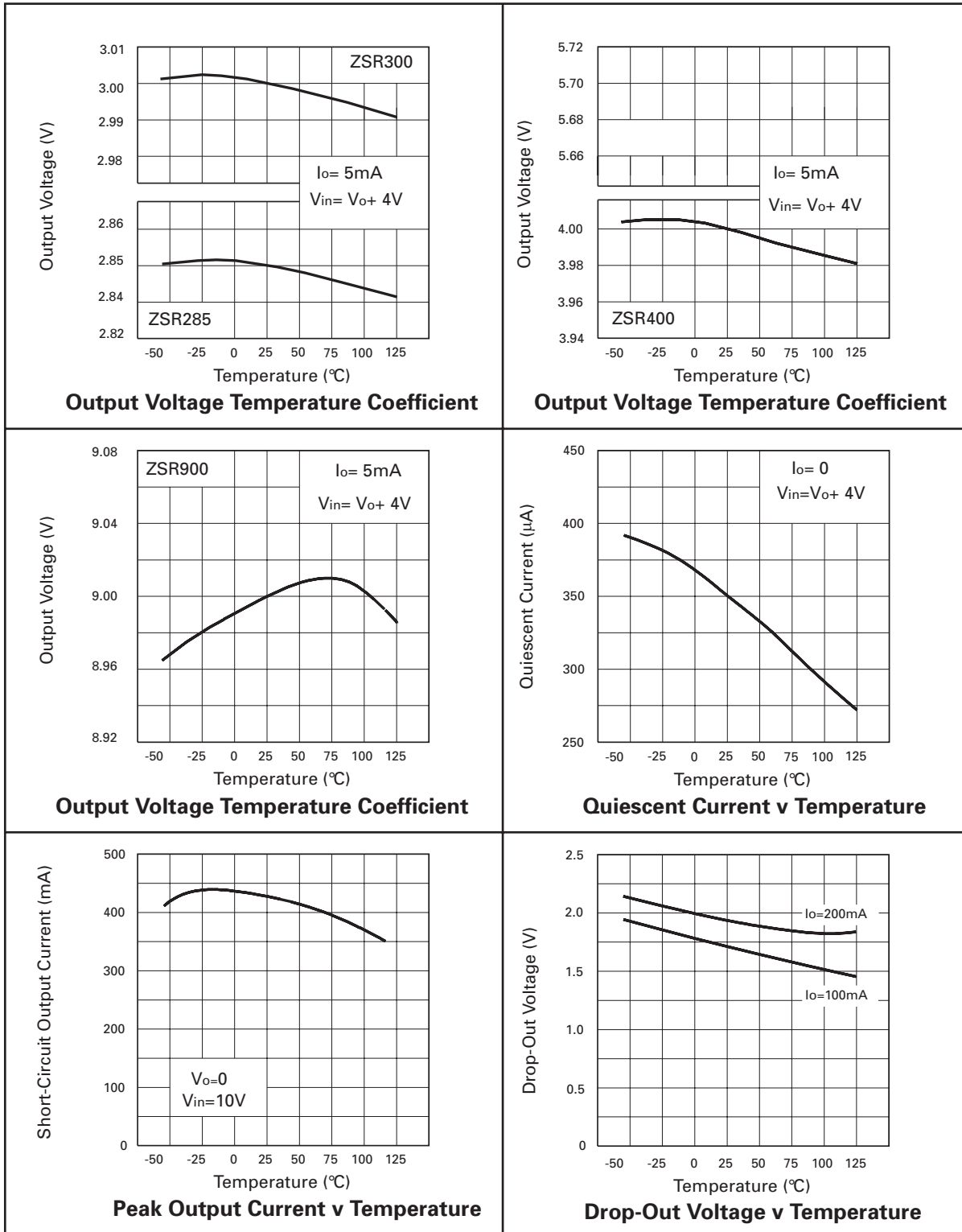


# ZSR SERIES

## Typical characteristics



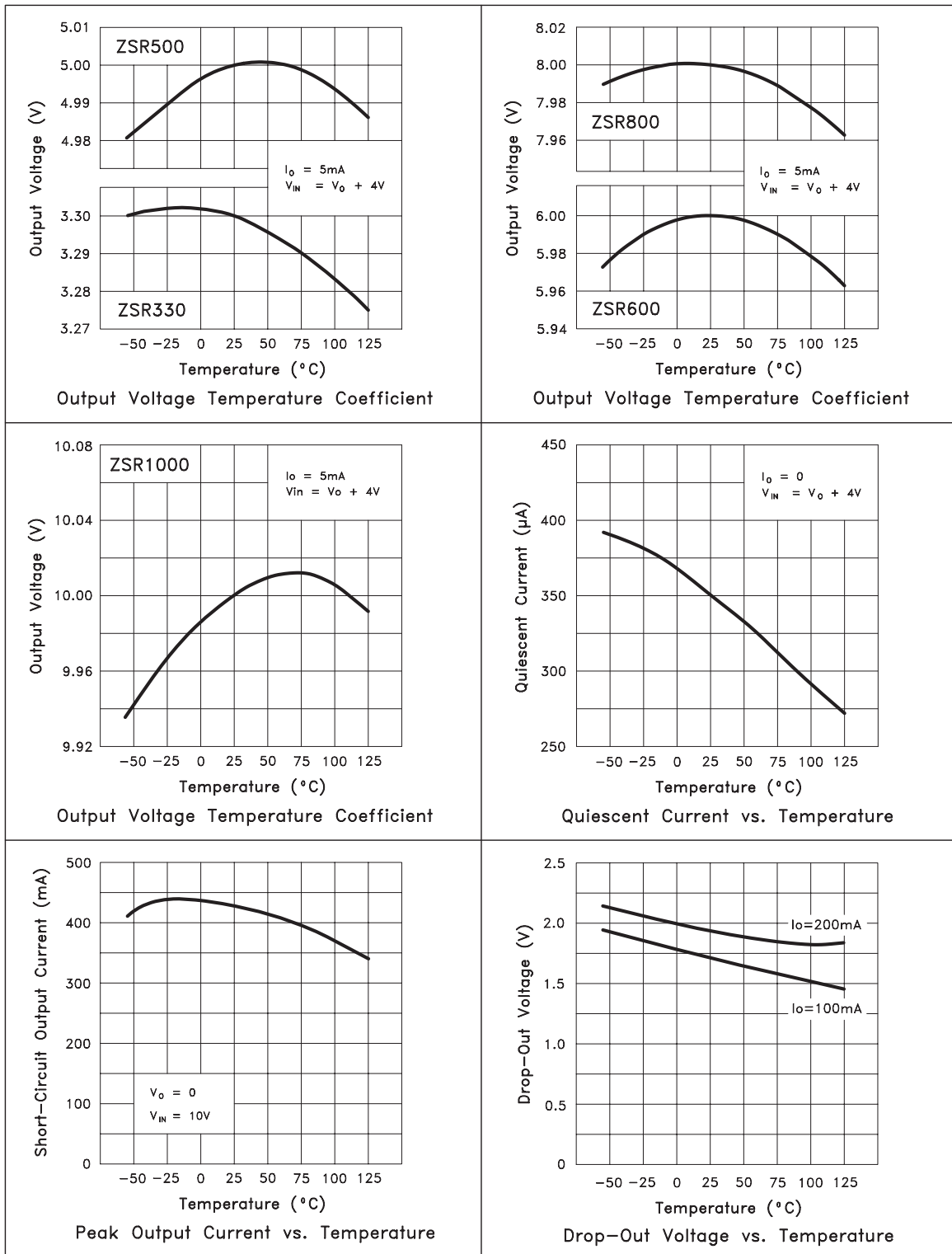
## Typical characteristics





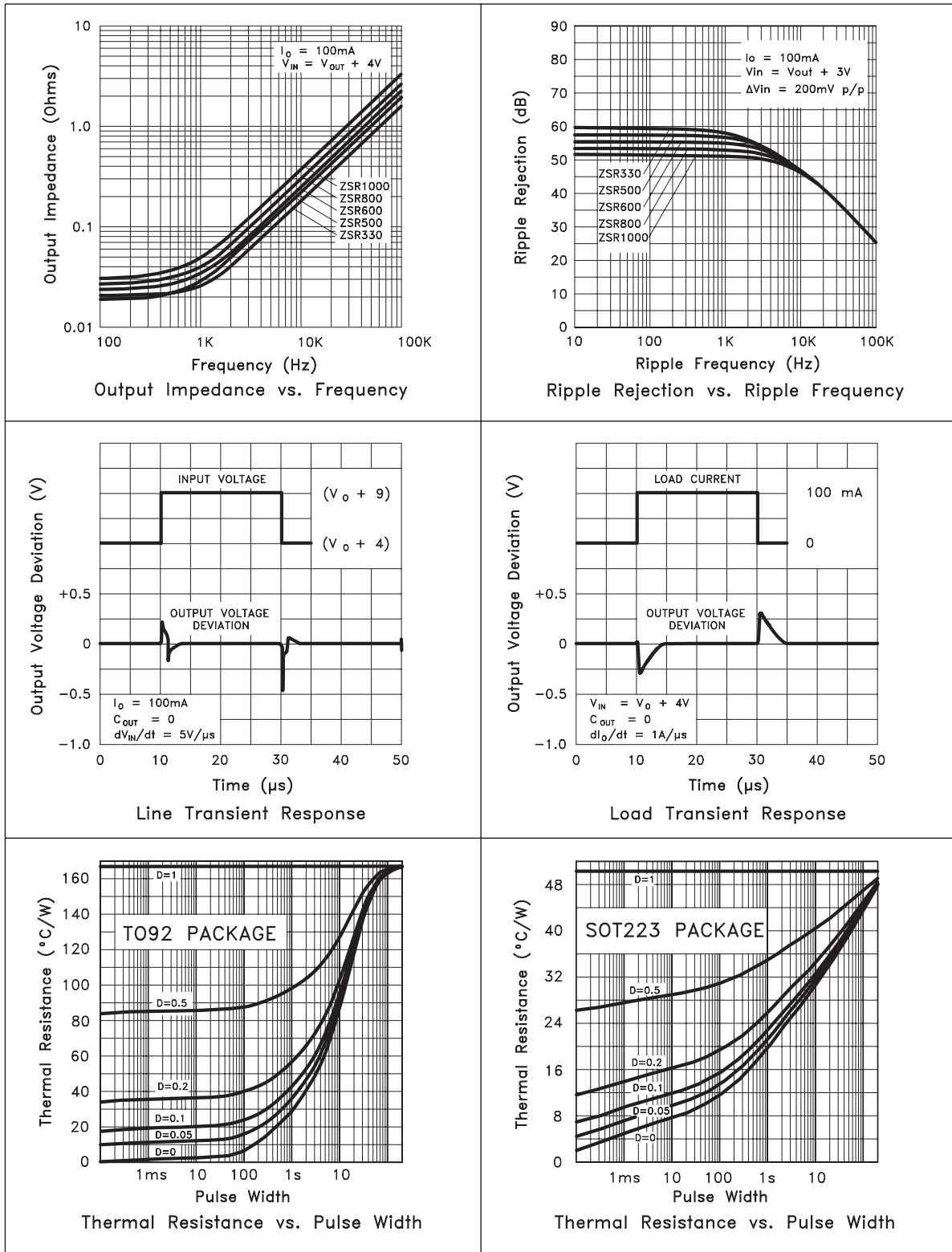
# ZSR SERIES

## Typical characteristics



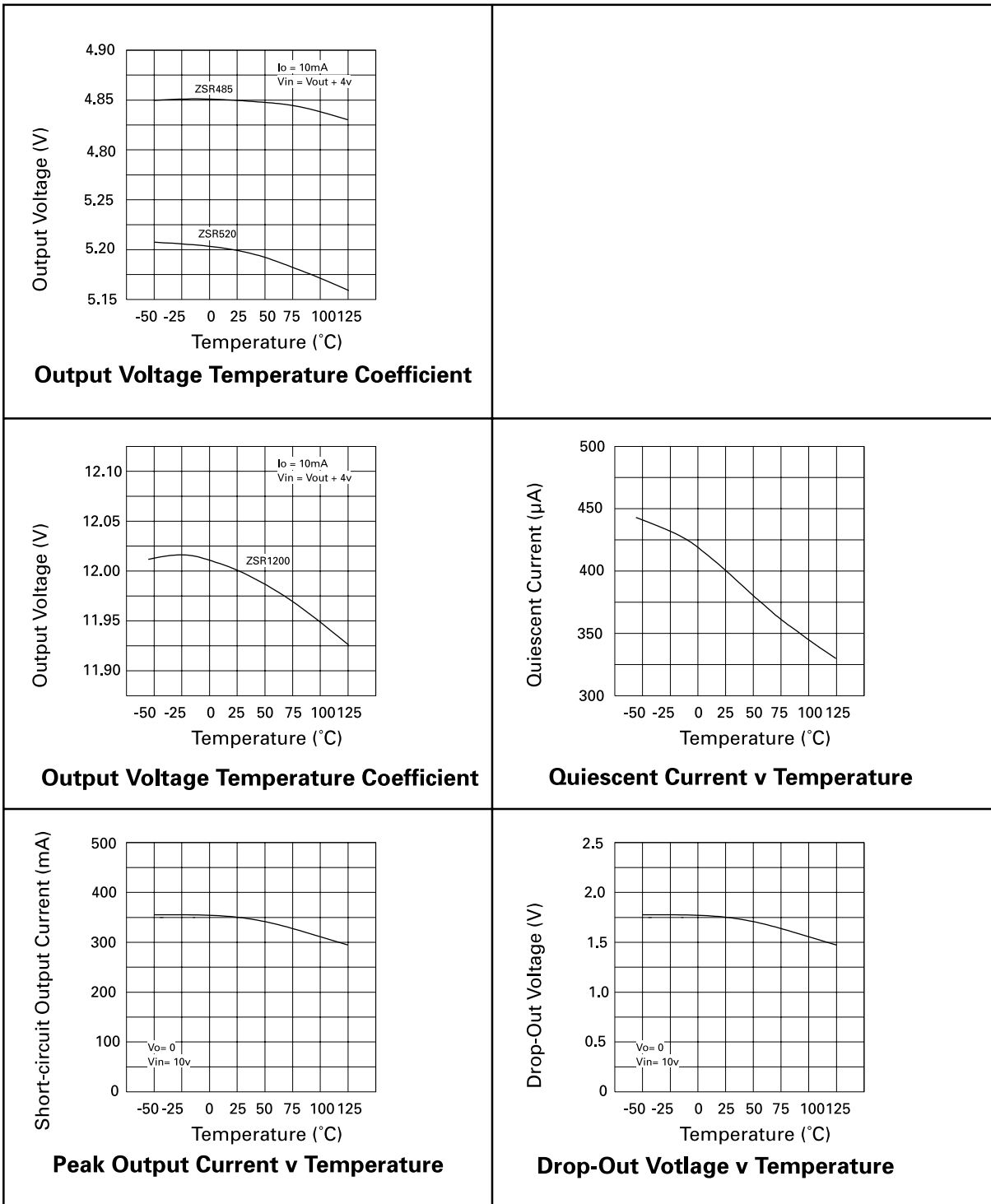
# ZSR SERIES

## Typical characteristics



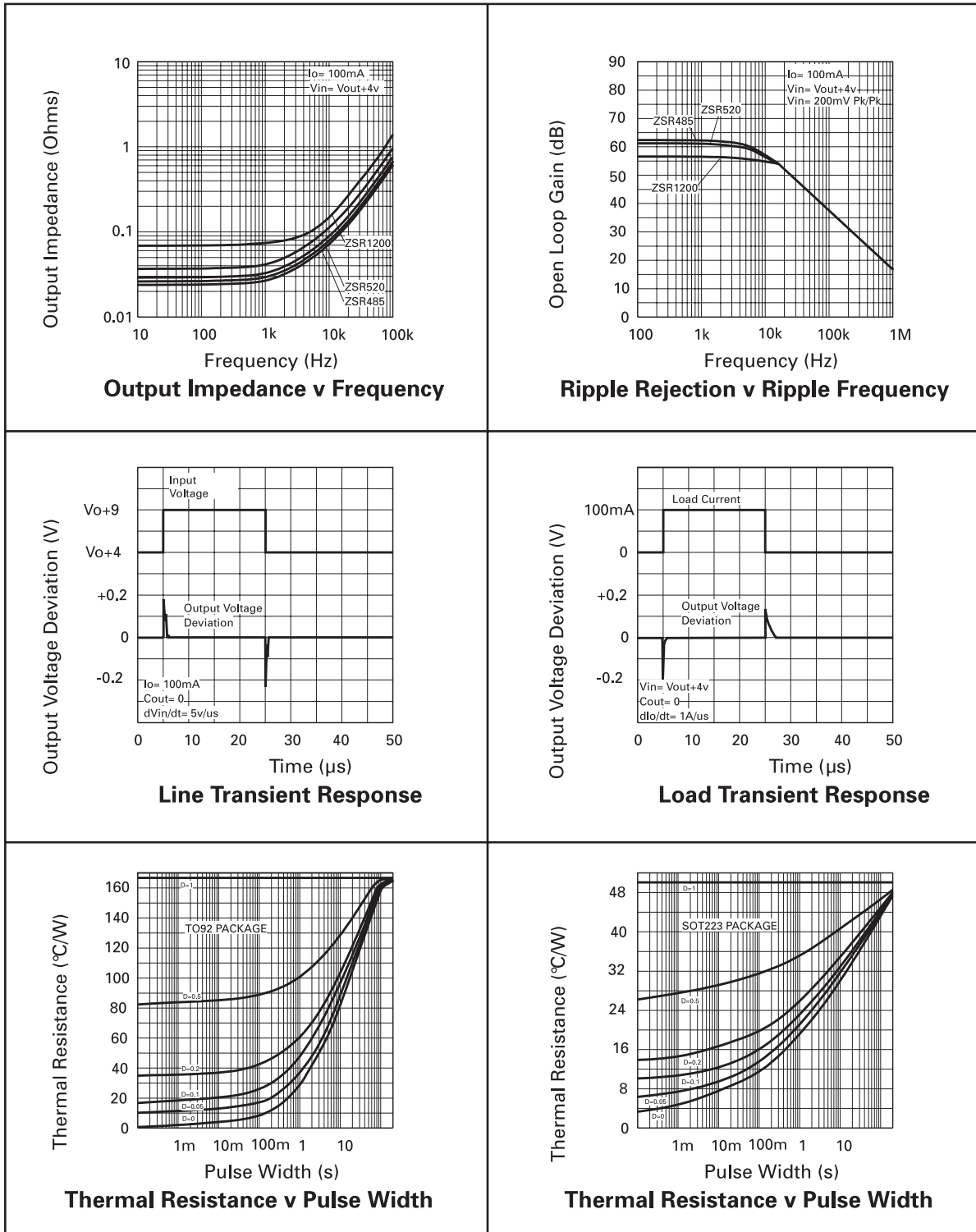
# ZSR SERIES

## Typical characteristics



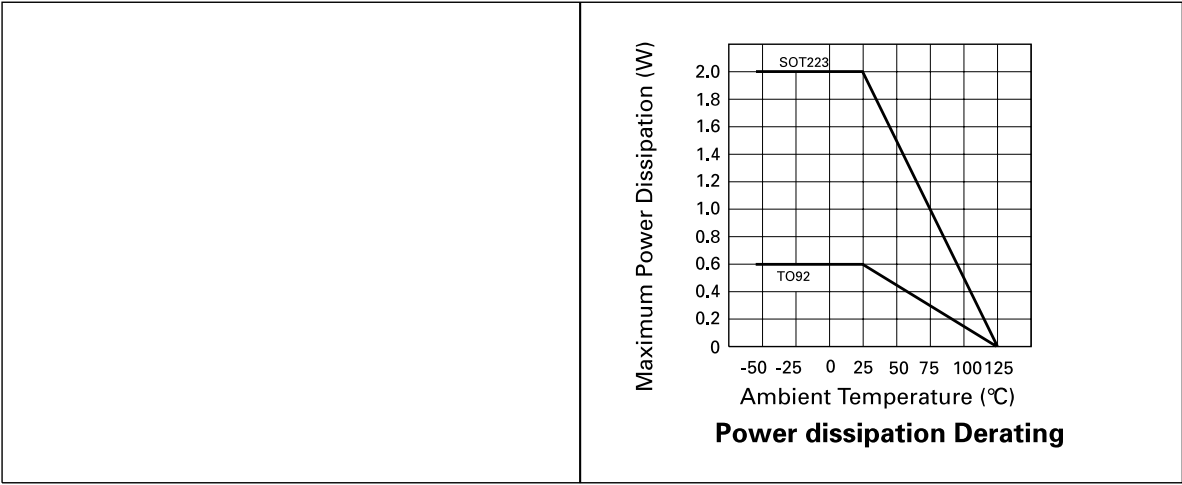
# ZSR SERIES

## Typical characteristics



# ZSR SERIES

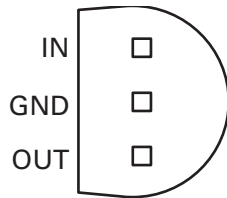
## Typical characteristics



# ZSR SERIES

## Obsolete Variants

### T092 Package suffix - C



Underside view

### SOT223 Order information

Orderable	Voltage	Part marking	Status	Reel size (inches)	Tape width (mm)	Quantity per reel
ZSR285GTA	2.85V	ZSR285	Obsolete	7	12	1000
ZSR400GTA	4.0V	ZSR400	Obsolete	7	12	1000
ZSR485GTA	4.85V	ZSR485	Obsolete	7	12	1000
ZSR520GTA	5.2V	ZSR520	Obsolete	7	12	1000
ZSR600GTA	6.0V	ZSR600	Obsolete	7	12	1000
ZSR900GTA	9.0V	ZSR900	Obsolete	7	12	1000

### T092 Order information

Part Number	Voltage	Part marking	Status	Orderable
ZSR285	2.85V	ZSR285	Obsolete	ZSR285C*
ZSR300	3.0V	ZSR300	Obsolete	ZSR300C*
ZSR330	3.3V	ZSR330	Obsolete	ZSR330C*
ZSR400	4.0V	ZSR400	Obsolete	ZSR400C*
ZSR485	4.85V	ZSR485	Obsolete	ZSR485C*
ZSR500	5.0V	ZSR500	Obsolete	ZSR500C*
ZSR520	5.2V	ZSR520	Obsolete	ZSR520C*
ZSR600	6.0V	ZSR600	Obsolete	ZSR600C*
ZSR800	8.0V	ZSR800	Obsolete	ZSR800C*
ZSR900	9.0V	ZSR900	Obsolete	ZSR900C*
ZSR1000	10.0V	ZSR100	Obsolete	ZSR1000C*
ZSR1200	12.0V	ZSR1200	Obsolete	ZSR1200C*

#### NOTES:

\* T092 was supplied in the following reel options:

- |   |              |
|---|--------------|
| loose in boxes of 4000                      | suffix: L    |
| taped and wound on a reel of 1500           | suffix: STOB |
| taped and folded in concertina form of 1500 | suffix: STZ  |

# ZSR SERIES

## ZSR285 test conditions

=6.85V

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
$V_O$	Output Voltage		2.78	2.85	2.92	V
		$I_O=1$ to 200mA <sup>( )</sup>	2.735		2.964	V
		$V_{in}=4.85$ to 20V $I_O=1$ to 100mA <sup>( )</sup>	2.736		2.964	V
$V_O$	Line regulation	$V_{in}=4.85$ to 20V		10	40	mV
$V_O$	Load regulation	$I_O=1$ to 200mA		5	25	mV
		$I_O=1$ to 100mA		2		mV
$I_g$	Quiescent current	( )		350	600	A
$I_g$	Quiescent current change	$I_O=1$ to 200mA			100	A
		$V_{in}=4.85$ to 20V			100	A
$V_n$	Output noise voltage	$f=10$ Hz to 10Hz		75		V rms
$V_{in}/V_O$	Ripple rejection	$V_{in}=5.85$ to 218V $f=120$ Hz	48	62		dB
$V_{in}$	Input voltage required to maintain regulation		4.85	4.55		V
$V_O/T$	Average temperature coefficient of $V_O$	$I_O=5.0$ mA <sup>( )</sup>		0.1		mV/°C

## 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 <sup>( )</sup>	3.84		4.16	V
		$V_{in}=6$ to 20V $I_O=1$ to 100mA <sup>( )</sup>	3.84		4.16	V
$V_O$	Line regulation	$V_{in}=6$ to 20V		10	40	mV
$V_O$	Load regulation	$I_O=1$ to 200mA		5	25	mV
		$I_O=1$ to 100mA		2		mV
$I_g$	Quiescent current	( )		350	600	A
$I_g$	Quiescent current change	$I_O=1$ to 200mA			100	A
		$V_{in}=6$ to 20V			100	A
$V_n$	Output noise voltage	$f=10$ Hz to 10Hz		75		V rms
$V_{in}/V_O$	Ripple rejection	$V_{in}=7$ to 218V $f=120$ Hz	48	62		dB
$V_{in}$	Input voltage required to maintain regulation		6	5.3		V

### NOTES:

( )  $T_j=-55$  to  $125^\circ\text{C}$

## ZSR SERIES

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

$V_O$	Output Voltage		4.792	4.85	4.971	V
		$I_O=1$ to $200\text{mA}^{( )}$	4.656		5.044	V
		$V_{in}=6.8$ to $20\text{V}$ $I_O=1$ to $100\text{mA}^{( )}$	4.656		5.044	V
$V_O$	Line regulation	$V_{in}=6.85$ to $20\text{V}$		10	40	mV
$V_O$	Load regulation	$I_O=1$ to $200\text{mA}$ $I_O=1$ to $100\text{mA}$		5 2	25	mV mV
$I_g$	Quiescent current	( )		350	600	A
$I_g$	Quiescent current change	$I_O=1$ to $200\text{mA}$ $V_{in}=6.85$ to $20\text{V}$			100 100	A A
$V_n$	Output noise voltage	$f=10\text{Hz}$ to $10\text{Hz}$		50		V rms
$V_{in}/V_O$	Ripple rejection	$V_{in}=7.85$ to $18\text{V}$ $f=120\text{Hz}$	50	64		dB
$V_{in}$	Input voltage required to maintain regulation		6.85	6.55		V
$V_O/T$	Average temperature coefficient of $V_O$	$I_O=5.0\text{mA}^{( )}$		0.1		mV/ $^\circ\text{C}$

**ZSR520 test conditions** (Unless otherwise stated):  $T_j=25^\circ\text{C}$ ,  $I_O=100\text{mA}$ ,  $V_{in}=100\text{mV}$

$V_O$	Output Voltage		5.070	5.2	5.330	V
		$I_O=1$ to $200\text{mA}^{( )}$	4.99		5.41	V
		$V_{in}=7.2$ to $20\text{V}$ $I_O=1$ to $100\text{mA}^{( )}$	4.99		5.41	V
$V_O$	Line regulation	$V_{in}=7.2$ to $20\text{V}$		10	40	mV
$V_O$	Load regulation	$I_O=1$ to $200\text{mA}$ $I_O=1$ to $100\text{mA}$		5 2	25	mV mV
$I_g$	Quiescent current	( )		350	600	A
$I_g$	Quiescent current change	$I_O=1$ to $200\text{mA}$ $V_{in}=7.2$ to $20\text{V}$			100 100	A A
$V_n$	Output noise voltage	$f=10\text{Hz}$ to $10\text{Hz}$		75		V rms
$V_{in}/V_O$	Ripple rejection	$V_{in}=8.2$ to $18\text{V}$ $f=120\text{Hz}$	48	62		dB
$V_{in}$	Input voltage required to maintain regulation		7.2	6.9		V
$V_O/T$	Average temperature coefficient of $V_O$	$I_O=5.0\text{mA}^{( )}$		0.1		mV/ $^\circ\text{C}$

( )  $T_j=-55$  to  $125^\circ\text{C}$



# ZSR SERIES

**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 $200\text{mA}^{(\tau)}$	5.76		6.24	V
		$V_{in}=8$ to $20\text{V}$ $I_O=1$ to $100\text{mA}^{(\tau)}$	5.76		6.24	V
$\Delta V_O$	Line regulation	$V_{in}=8$ to $20\text{V}$		10	40	mV
$\Delta V_O$	Load regulation	$I_O=1$ to $200\text{mA}$		7	30	mV
		$I_O=1$ to $100\text{mA}$		2.5		mV
$I_g$	Quiescent current	$(\tau)$		350	600	$\mu\text{A}$
$\Delta I_g$	Quiescent current change	$I_O=1$ to $200\text{mA}$			100	$\mu\text{A}$
		$V_{in}=8$ to $20\text{V}$			100	$\mu\text{A}$
$V_n$	Output noise voltage	$f=10\text{Hz}$ to $10\text{Hz}$		90		$\mu\text{V rms}$
$\Delta V_{in}/\Delta V_O$	Ripple rejection	$V_{in}=9$ to $18\text{V}$ $f=120\text{Hz}$	48	62		dB
$V_{in}$	Input voltage required to maintain regulation		8	7.7		V
$\Delta V_O/\Delta T$	Average temperature coefficient of $V_O$	$I_O=5.0\text{mA}^{(\tau)}$		0.15		$\text{mV}/^\circ\text{C}$

**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 $200\text{mA}^{(\tau)}$	8.64		9.36	V
		$V_{in}=11$ to $20\text{V}$ $I_O=1$ to $100\text{mA}^{(\tau)}$	8.64		9.36	V
$\Delta V_O$	Line regulation	$V_{in}=11$ to $20\text{V}$		12	40	mV
$\Delta V_O$	Load regulation	$I_O=1$ to $200\text{mA}$		9	30	mV
		$I_O=1$ to $100\text{mA}$		3		mV
$I_g$	Quiescent current	$(\tau)$		350	600	$\mu\text{A}$
$\Delta I_g$	Quiescent current change	$I_O=1$ to $200\text{mA}$			100	$\mu\text{A}$
		$V_{in}=11$ to $20\text{V}$			100	$\mu\text{A}$
$V_n$	Output noise voltage	$f=10\text{Hz}$ to $10\text{Hz}$		150		$\mu\text{V rms}$
$\Delta V_{in}/\Delta V_O$	Ripple rejection	$V_{in}=12$ to $18\text{V}$ $f=120\text{Hz}$	43	57		dB
$V_{in}$	Input voltage required to maintain regulation		11	10.7		V
$\Delta V_O/\Delta T$	Average temperature coefficient of $V_O$	$I_O=5.0\text{mA}^{(\tau)}$		0.25		$\text{mV}/^\circ\text{C}$

**NOTES:**

$(\tau) T_j=-55$  to  $125^\circ\text{C}$

# ZSR SERIES

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or

2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labelling can be reasonably expected to result in significant injury to the user.

B. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or to affect its safety or effectiveness.

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### ESD (Electrostatic discharge)

Semiconductor devices are susceptible to damage by ESD. Suitable precautions should be taken when handling and transporting devices. The possible damage to devices depends on the circumstances of the handling and transporting, and the nature of the device. The extent of damage can vary from immediate functional or parametric malfunction to degradation of function or performance in use over time. Devices suspected of being affected should be replaced.

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Zetex Semiconductors is committed to environmental excellence in all aspects of its operations which includes meeting or exceeding regulatory requirements with respect to the use of hazardous substances. Numerous successful programs have been implemented to reduce the use of hazardous substances and/or emissions.

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"Preview"	Future device intended for production at some point. Samples may be available
"Active"	Product status recommended for new designs
"Last time buy (LTB)"	Device will be discontinued and last time buy period and delivery is in effect
"Not recommended for new designs"	Device is still in production to support existing designs and production
"Obsolete"	Production has been discontinued

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### Datasheet status key:

"Draft version"	This term denotes a very early datasheet version and contains highly provisional information, which may change in any manner without notice.
"Provisional version"	This term denotes a pre-release datasheet. It provides a clear indication of anticipated performance. However, changes to the test conditions and specifications may occur, at any time and without notice.
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