

OBJECTIVE SPECIFICATION

NE/SE5551/2/3/4/5-N,T

DESCRIPTION

The NE/SE5551, 2, 3, 4, 5 are dual polarity tracking regulators designed to produce balanced or unbalanced output voltages from 5 to 20 volts with up to 300 mA output current. Similar in specifications to the 78MXX and 79MXX fixed regulators, the 5551 series can be continuously adjusted, balanced or unbalanced. Standard fixed voltages available are  $\pm 5$ ,  $\pm 6$ ,  $\pm 12$ ,  $\pm 15$ , and  $\pm 5$ ,  $-12$  volts. Employing current limiting and thermal shutdown protection, these dual polarity regulators are ideal for local on-card regulation.

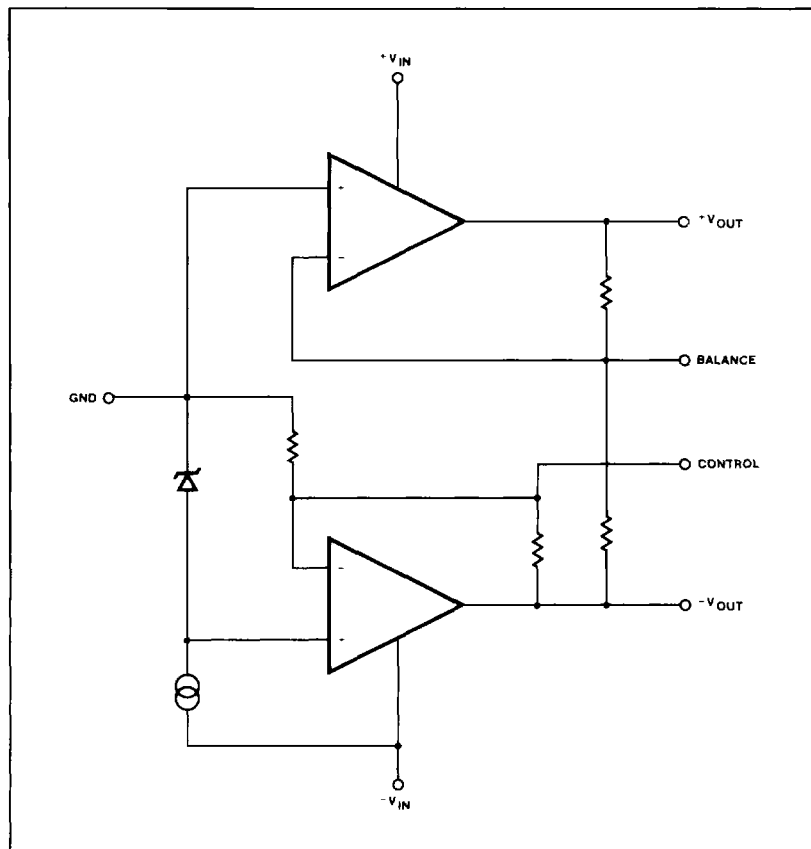
FEATURES

- Output current to 300mA
- Internally current limited
- Thermal overload protected
- Input voltage to  $\pm 32V$
- Output balance 1% typ.
- External balance control
- Continuously adjustable from 5 to 20 volts, balanced or unbalanced
- No external components required
- Short circuit current 400mA
- Heat sink available for increased power dissipation

ABSOLUTE MAXIMUM RATINGS

PARAMETER	RATING	UNIT
$V_{IN}$ input voltage	$\pm 32$	V
$T_{SG}$ storage temperature	-65 to +150	$^{\circ}C$
$T_J$ operating junction temperature NE5551,2,3,4,5	0 to +125	$^{\circ}C$
SE5551,2,3,4,5	-55 to +150	$^{\circ}C$
Lead temperature 10 sec.	300	$^{\circ}C$

BLOCK DIAGRAM



PIN CONFIGURATIONS

**N PACKAGE**

**ORDER PART NUMBERS**

VOLTAGE	PART NO.
$\pm 5V$	SE/NE5551N
$\pm 6V$	SE/NE5552N
$\pm 12V$	SE/NE5553N
$\pm 15V$	SE/NE5554N
$\pm 5, -12V$	SE/NE5555N

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**T PACKAGE**

**ORDER PART NUMBERS**

VOLTAGE	PART NO.
$\pm 5V$	SE/NE5551T
$\pm 6V$	SE/NE5552T
$\pm 12V$	SE/NE5553T
$\pm 15V$	SE/NE5554T
$\pm 5, -12V$	SE/NE5555T

Power dissipation (without heat sink)  
 T Package 2.0W  
 N Package 2.0W  
 New power package pending for over 8W dissipation.



OBJECTIVE SPECIFICATION

NE/SE5551/2/3/4/5-N,T

**DC ELECTRICAL CHARACTERISTICS**  $V_{IN} = \pm 20V$ ,  $I_L = 100mA$ ,  $T_J = 25^\circ C$ ,  
 $C_{IN} = C_{OUT} = 0.1\mu F$  unless otherwise specified.

PARAMETER	TEST CONDITIONS	SE5551			NE5551			UNIT
		Min	Typ	Max	Min	Typ	Max	
$V_{OUT}$ Output voltage		+4.8 -5.2	+5 +5	+5.2 -4.8	+4.8 -5.2	+5 -5	+5.2 -4.8	V
Line regulation Load regulation	$\pm 20 \leq V_{IN} \leq \pm 30V$ $1mA \leq I_{Load} \leq 50mA$ $1mA \leq I_{Load} \leq 200mA$		100 5 15	150 15 50		100 5 15	300 25 100	mV mV mV
$V_{OUT}$ Output voltage	$1mA \leq I_L \leq 100mA$ $\pm 20V \leq V_{IN} \leq \pm 30V$ over temp.1	+4.7 -5.3	+5 -5	+5.3 -4.7	+4.7 -5.3	+5 -5	+5.3 -4.7	V V
$I_{Q+}$ Positive quiescent current $I_{Q-}$ Negative quiescent current	$I_{Load} = 0$ $I_{Load} = 0$		1.70 5.6	3.5 8.5		1.70 5.6	3.5 8.5	mA mA
$V_{BAL}$ Input/output differential voltage Output voltage balance Output noise voltage	100Hz to 10kHz		7 .2 55			7 .2 55		V V $\mu VRMS$
$I_{Peak}$ Peak output current Temperature stability of output voltage			400 1			400 1		mA mV/°C

**DC ELECTRICAL CHARACTERISTICS** (Cont'd)

PARAMETER	TEST CONDITIONS	SE5552			NE5552			UNIT
		Min	Typ	Max	Min	Typ	Max	
$V_{OUT}$ Output voltage		+5.75 -6.25	+6 -6	+6.25 -5.75	+5.75 -6.25	+6 -6	+6.25 -5.75	V
Line regulation Load regulation	$\pm 20 \leq V_{IN} \leq \pm 30V$ $1mA \leq I_{Load} \leq 50mA$ $1mA \leq I_{Load} \leq 200mA$		100 5 15	150 15 50		100 5 15	300 25 100	mV mV mV
$V_{OUT}$ Output voltage	$1mA \leq I_L \leq 100mA$ $\pm 20V \leq V_{IN} \leq \pm 30V$ over temp.1	+5.7 -6.3	+6 -6	+6.3 -5.7	+5.7 -6.3	+6 -6	+6.3 -5.7	V V
$I_{Q+}$ Positive quiescent current $I_{Q-}$ Negative quiescent current	$I_{Load} = 0$ $I_{Load} = 0$		1.70 5.6	3.5 8.5		1.70 5.60	3.5 8.5	mA mA
$V_{BAL}$ Input/output differential voltage Output voltage balance Output noise voltage	100Hz to 10kHz		6 .2 55			6 .2 55		V V $\mu Vrms$
$I_{Peak}$ Peak output current Temperature stability of output voltage			400 1			400 1		mA mV/°C

**DC ELECTRICAL CHARACTERISTICS** (Cont'd)

PARAMETER	TEST CONDITIONS	SE5553			NE5553			UNIT
		Min	Typ	Max	Min	Typ	Max	
$V_{OUT}$ Output voltage		+11.5 -12.5	+12 -12	+12.5 -11.5	+11.5 -12.5	+12 -12	+12.5 -11.5	V
Line regulation Load regulation	$\pm 20 \leq V_{IN} \leq \pm 30V$ $1mA \leq I_{Load} \leq 50mA$ $1mA \leq I_{Load} \leq 200mA$		100 10 30	150 25 100		100 10 30	300 50 200	mV mV mV
$V_{OUT}$ Output voltage	$1mA \leq I_L \leq 100mA$ $\pm 20V \leq V_{IN} \leq \pm 30V$ over temp.1	+11.4 -12.6	+12 -12	+12.6 -11.4	+11.4 -12.6	+12 -12	+12.6 -11.4	V V
$I_{Q+}$ Positive quiescent current $I_{Q-}$ Negative quiescent current	$I_{Load} = 0$ $I_{Load} = 0$		1.70 5.60	3.5 8.5		1.70 5.60	3.5 8.5	mA mA
$V_{BAL}$ Input/output differential voltage Output voltage balance Output noise voltage	100Hz to 10kHz		2.5 .2 55			2.5 .2 55		V V $\mu Vrms$
$I_{Peak}$ Peak output current Temperature stability of output voltage			400 1			400 1		mA mV/°C

**DC ELECTRICAL CHARACTERISTICS** (Cont'd)  $V_{IN} = \pm 20V$ ,  $I_L = 100mA$ ,  $T_J = 25^\circ C$ ,  
 $C_{IN} = C_{OUT} = 0.1\mu F$  unless otherwise specified.

PARAMETER	TEST CONDITIONS	SE5554			NE5554			UNIT
		Min	Typ	Max	Min	Typ	Max	
$V_{OUT}$ Output voltage		+14.4 -15.6	+15 -15	+15.6 -14.4	+14.4 -15.6	+15 -15	+15.6 -14.4	V
Line regulation Load regulation	$\pm 20 \leq V_{IN} \leq \pm 30V$ $1mA \leq I_{Load} \leq 50mA$ $1mA \leq I_{Load} \leq 200mA$		100 10 30	150 25 100		100 10 30	300 50 200	mV mV mV
$V_{OUT}$ Output voltage	$1mA \leq I_L \leq 100mA$ $\pm 20V \leq V_{IN} \leq \pm 30V$ over temp.1	+14.25 -15.75	+15 -15	+15.75 -14.25	+14.25 -15.75	+15 -15	+15.75 -14.25	V V
$I_{Q+}$ $I_{Q-}$	Positive quiescent current Negative quiescent current		$I_{Load} = 0$ $I_{Load} = 0$	1.70 5.60	3.5 8.5	1.70 5.60	3.5 8.5	mA mA
$V_{BAL}$	Input/output differential voltage Output voltage balance Output noise voltage		100Hz to 10kHz	2.5 .2 55		2.5 .2 55		V V $\mu V_{rms}$
$I_{Peak}$	Peak output current Temperature stability of output voltage			400 1		400 1		mA mV/°C

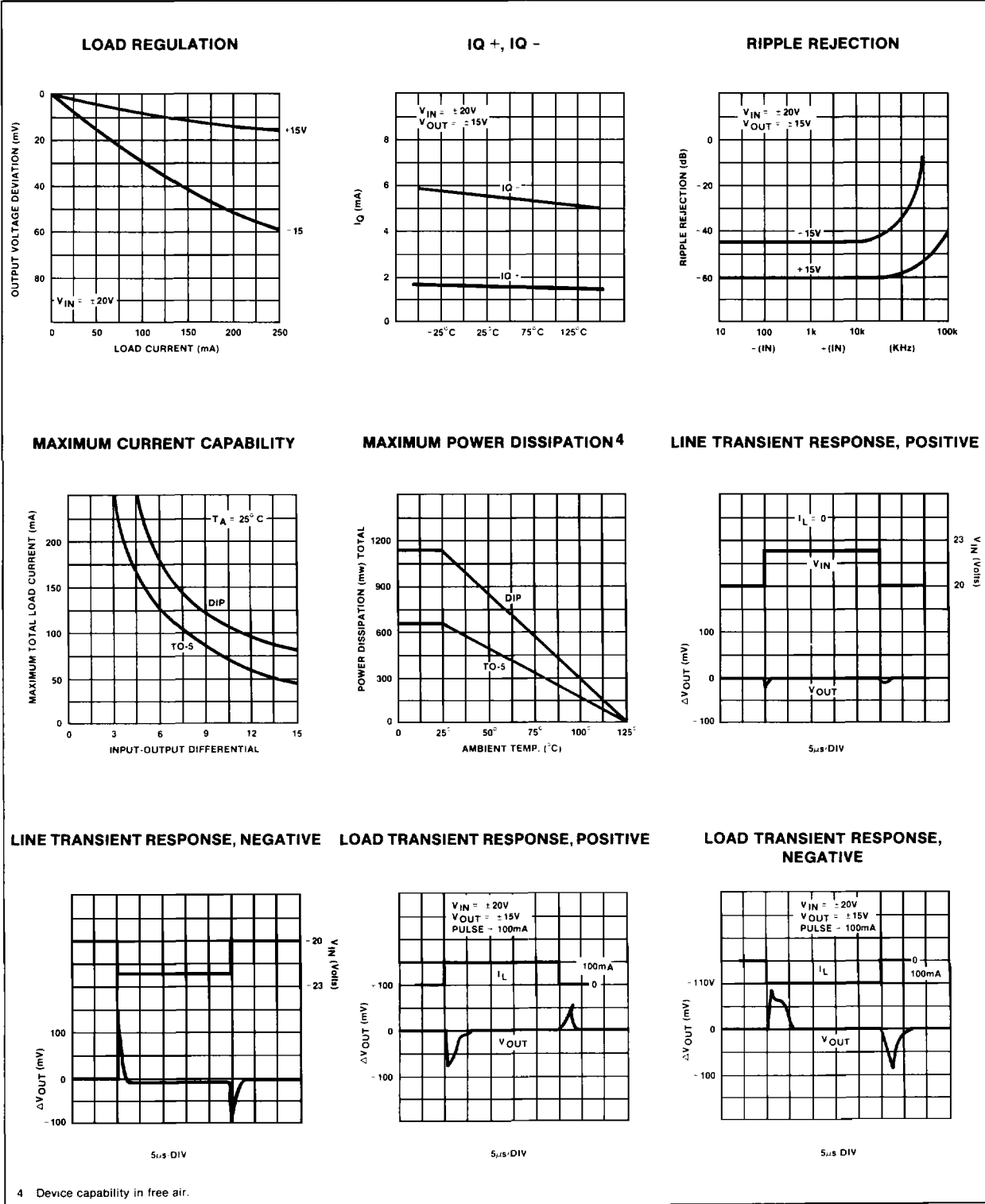
**DC ELECTRICAL CHARACTERISTICS** (Cont'd)

PARAMETER	TEST CONDITIONS	SE5555			NE5555			UNIT
		Min	Typ	Max	Min	Typ	Max	
$V_{OUT}$ Output voltage		+4.8 -12.5	+5 -12	+5.2 -11.5	+4.8 -12.5	+5 -12	+5.2 -11.5	V
Line regulation Load regulation	$\pm 20 \leq V_{IN} \leq \pm 30V$ $1mA \leq I_{Load} \leq 50mA$ $1mA \leq I_{Load} \leq 200mA$		100 10 30	150 25 100		100 10 30	300 50 200	mV mV mV
$V_{OUT}$ Output voltage	$1mA \leq I_L \leq 100mA$ $\pm 20V \leq V_{IN} \leq \pm 30V$ over temp.1	+4.7 -12.6	+5 -12	+5.3 -11.4	+4.7 -12.6	+5 -12	+5.3 -11.4	V V
$I_{Q+}$ $I_{Q-}$	Positive quiescent current Negative quiescent current		$I_{Load} = 0$ $I_{Load} = 0$	1.70 5.60	3.5 8.5	1.70 5.60	3.5 8.5	mA mA
$V_{BAL}$	Input/output differential voltage Output voltage balance Output noise voltage		100Hz to 10kHz	2.5 .2 55		2.5 .2 55		V V $\mu V_{rms}$
$I_{Peak}$	Peak output current Temperature stability of output voltage			400 1		400 1		mA mV/°C

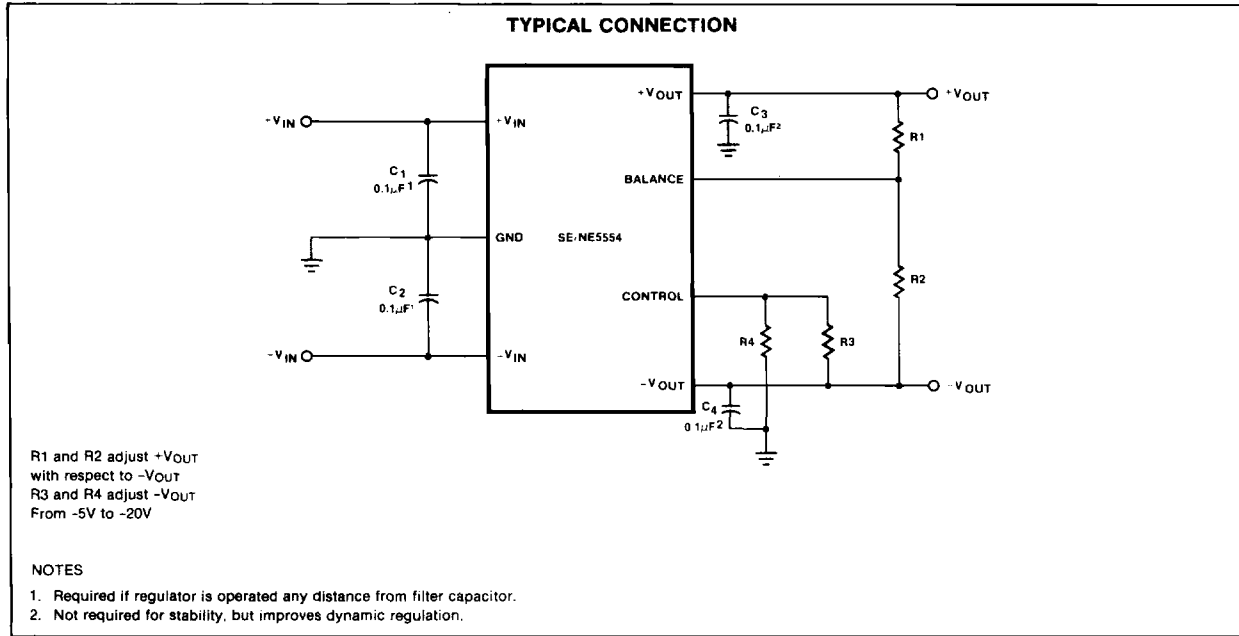
NOTES

- Junction temperature range  
 SE prefix  $-55^\circ C < T_J < 150^\circ C$   
 NE prefix  $0^\circ C < T_J < 125^\circ C$
- $C_{IN}$  needed only when isolated from filter capacitors  
 $C_{OUT}$  needed only if dynamic regulation is to be improved
- Thermal resistance, DIP  
 $\theta_{JA} = 95^\circ C/W$   $\theta_{JC} = 35^\circ C/W$ , TO-5  
 $\theta_{JA} = 150^\circ C/W$   $\theta_{JC} = 25^\circ C/W$

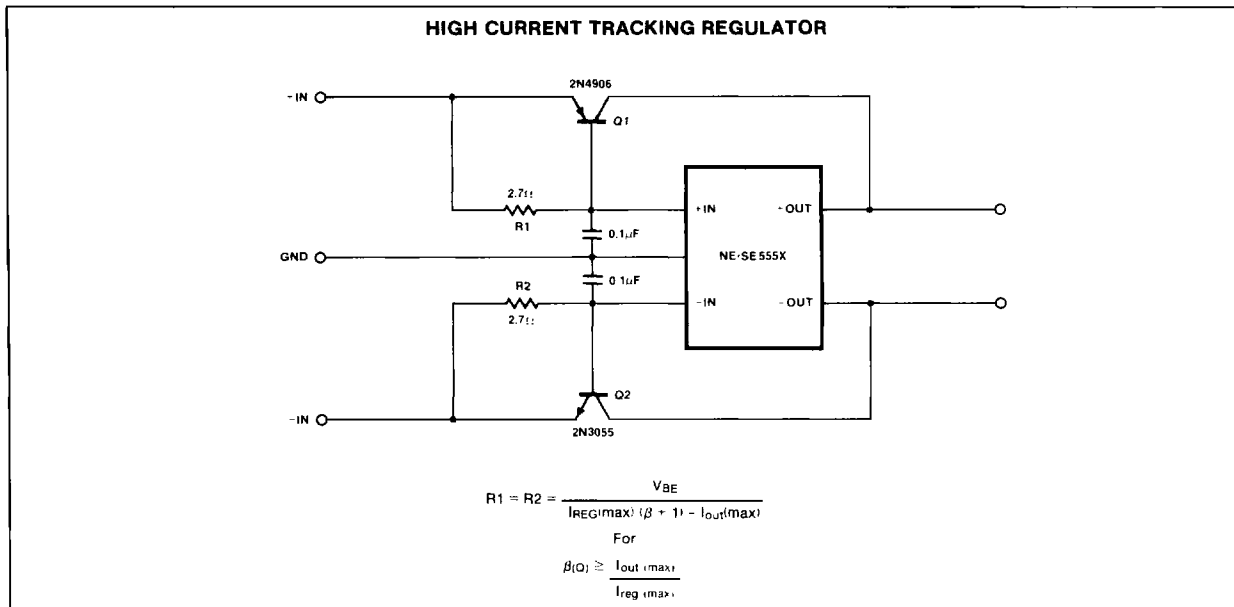
TYPICAL PERFORMANCE CHARACTERISTICS



BLOCK DIAGRAM



TYPICAL APPLICATIONS



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