

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 ± 5 , ± 6 , ± 12 , ± 15 , and ± 5 , -12 volts. Employing current limiting and thermal shutdown protection, these dual polarity regulators are ideal for local on-card regulation.

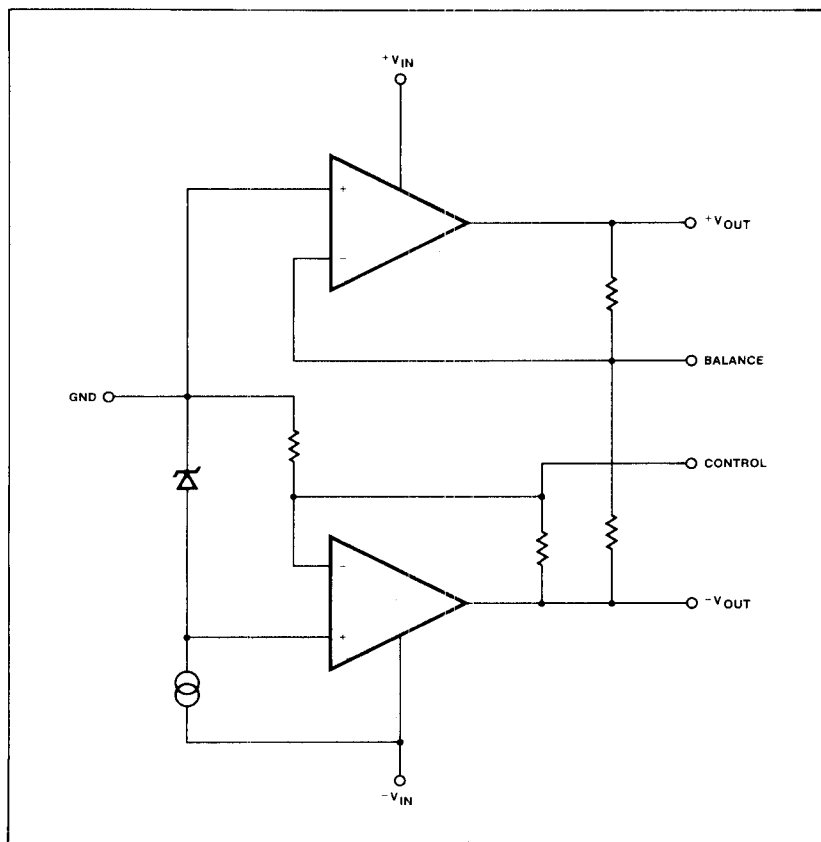
FEATURES

- Output current to 300mA
- Internally current limited
- Thermal overload protected
- Input voltage to ± 32 V
- 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

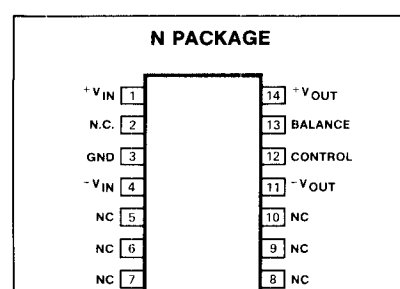
ABSOLUTE MAXIMUM RATINGS

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

BLOCK DIAGRAM



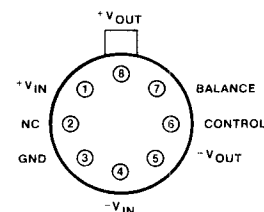
PIN CONFIGURATIONS



ORDER PART NUMBERS

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

T PACKAGE



ORDER PART NUMBERS

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

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

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/ $^\circ C$

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/ $^\circ C$

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/ $^\circ C$

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	$\pm 20 \leq V_{IN} \leq \pm 30V$		100	150		100	300	mV
Load regulation	$1mA \leq I_{Load} \leq 50mA$ $1mA \leq I_{Load} \leq 200mA$		10 30	25 100		10 30	50 200	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+} Positive quiescent current	$I_{Load} = 0$		1.70	3.5		1.70	3.5	mA
I_{Q-} Negative quiescent current	$I_{Load} = 0$		5.60	8.5		5.60	8.5	mA
V_{BAL} Input/output differential voltage			2.5			2.5		V
Output voltage balance			.2			.2		V
Output noise voltage	100Hz to 10kHz		55			55		μV_{rms}
I_{Peak} Peak output current			400			400		mA
Temperature stability of output voltage			1			1		mV/ $^\circ C$

DC ELECTRICAL CHARACTERISTICS (Cont'd)

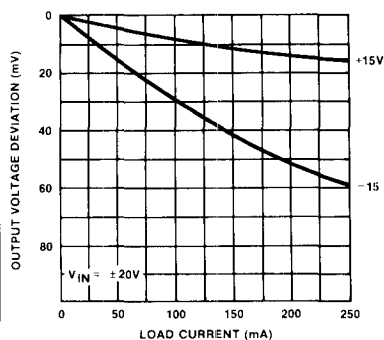
PARAMETER	TEST CONDITIONS	SE5555			NE5555			UNIT
		Min	Typ	Max	Min	Typ	Max	
V_{OUT} Output voltage		+4.8 -12.5	+5 -12	+5.2 -11.5	+4.8 -12.5	+5 -12	+5.2 -11.5	V
Line regulation	$\pm 20 \leq V_{IN} \leq \pm 30V$		100	150		100	300	mV
Load regulation	$1mA \leq I_{Load} \leq 50mA$ $1mA \leq I_{Load} \leq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

NOTES

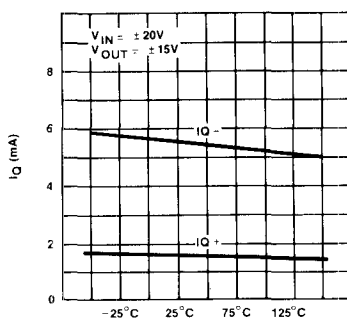
- Junction temperature range
SE prefix $-55^\circ C < T_J < 150^\circ C$
NE prefix $0^\circ C < T_J < 125^\circ C$
- C_{IN} needed only when isolated from filter capacitors
 C_{OUT} needed only if dynamic regulation is to be improved
- Thermal resistance, DIP
 $\theta_{JA} = 95^\circ C/W$ $\theta_{JC}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

TYPICAL PERFORMANCE CHARACTERISTICS

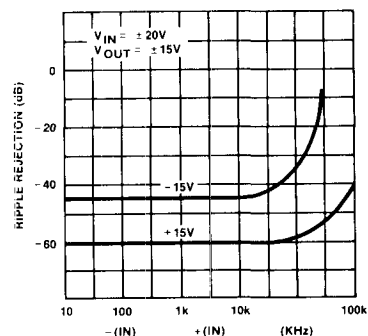
LOAD REGULATION



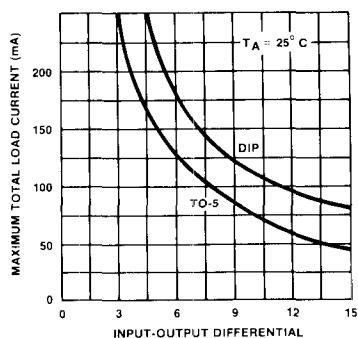
$I_Q +, I_Q -$



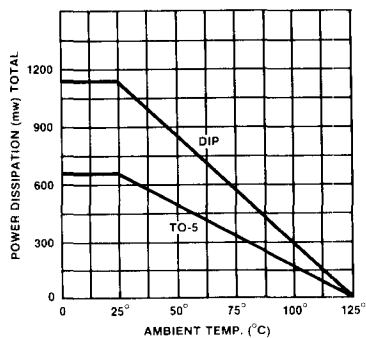
RIPPLE REJECTION



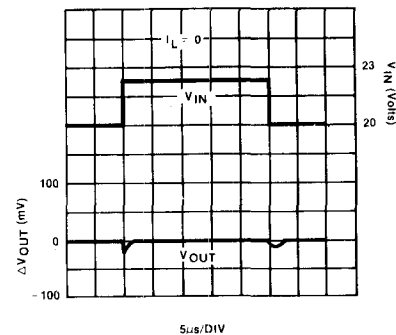
MAXIMUM CURRENT CAPABILITY



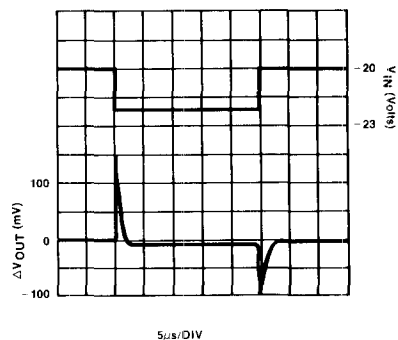
MAXIMUM POWER DISSIPATION⁴



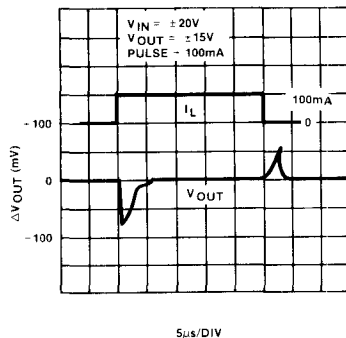
LINE TRANSIENT RESPONSE, POSITIVE



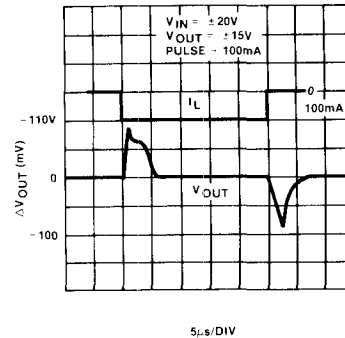
LINE TRANSIENT RESPONSE, NEGATIVE



LOAD TRANSIENT RESPONSE, POSITIVE

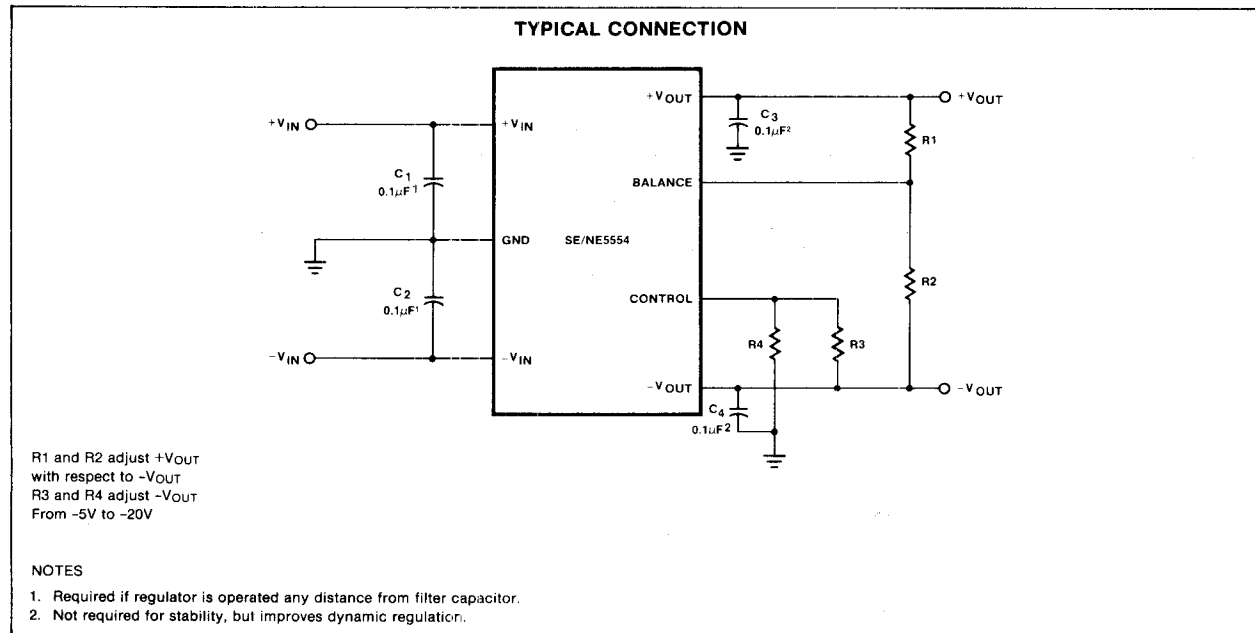


LOAD TRANSIENT RESPONSE, NEGATIVE



4. Device capability in free air.

BLOCK DIAGRAM



TYPICAL APPLICATIONS

