ELECTRONICS, INC.
44 FARRAND STREET
BLOOMFIELD, NJ 07003
(973) 748–5089

# NTE963
# Linear Integrated Circuit
# Voltage Regulator, Negative, –6V, 1A

**Description:**

The NTE963 voltage regulator employs current limiting, thermal shutdown, and safe–area compensation which makes it remarkably rugged under most operating conditions. With adequate heat–sinking they can deliver output currents in excess of 1.0 amperes.

**Features:**

- No External Components Required
- Internal Thermal Overload Protection
- Internal Short–Circuit Current Limiting
- Output Transistor Safe–Area Compensation

**Absolute Maximum Ratings:** ($T_A$ = +25°C unless otherwise specified)

Input Voltage, $V_{IN}$ . . . . . –35V

Internal Power Dissipation, $P_D$ . . . . . Internally Limited
Derate Above +25°C . . . . . 15.4mW/°C

Thermal Resistance, Junction–to–Ambient, $R_{thJA}$ . . . . . 65°C/W

Internal Power Dissipation ($T_C$ = +25°C), $P_D$ . . . . . Internally Limited
Derate Above +75°C . . . . . 200mW/°C

Thermal Resistance, Junction–to–Ambient ($T_C$ = +25°C), $R_{thJA}$ . . . . . 5°C/W

Maximum Junction Temperature Range, $T_J$ . . . . . 0° to +150°C

Storage Temperature Range, $T_{stg}$ . . . . . –65° to +150°C

**Electrical Characteristics:** ($V_{IN}$ = –11V, $I_O$ = 500mA, 0°C ≤ $T_J$ ≤ +125°C unless otherwise specified)

| Parameter | Symbol | Test Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| Output Voltage | $V_O$ | $T_J$ = +25°C | | –5.75 | –6.0 | –6.25 | V |
| | | 5mA ≤ $I_O$ ≤ 1A, $P_O$ ≤ 15W, –8.0V ≤ $V_{IN}$ ≤ –21V | | –5.7 | – | –6.3 | V |
| Line Regulation | $Reg_{Line}$ | $T_J$ = +25°C | –8.0V ≤ $V_{IN}$ ≤ –25V | – | 43 | 120 | mV |
| | | | –9.0V ≤ $V_{IN}$ ≤ –13V | – | 10 | 60 | |

**Electrical Characteristics:** ($V_{IN}$ = –11V, $I_O$ = 500mA, 0°C ≤ $T_J$ ≤ +125°C unless otherwise specified)

| Parameter | Symbol | Test Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| Load Regulation | $Reg_{Load}$ | $T_J$ = +25°C | 5mA ≤ $I_O$ ≤ 1.5A | – | 13 | 120 | mV |
| | | | 250mA ≤ $I_O$ ≤ 750mA | – | 5.0 | 60 | |
| Quiescent Current | $I_B$ | $T_J$ = +25°C | | – | 4.3 | 8.0 | mA |
| Quiescent Current Change | $\Delta I_B$ | –8.0V ≤ $V_{IN}$ ≤ –25V | | – | – | 1.3 | mA |
| | | 5mA ≤ $I_O$ ≤ 1A | | – | – | 0.5 | |
| Ripple Rejection | RR | 9.0V ≤ $V_{IN}$ ≤ 19.0V, f = 120Hz | | – | 65 | – | dB |
| Dropout Voltage | $V_{IN} – V_O$ | $T_J$ = +25°C, $I_O$ = 1A | | – | 2.0 | – | V |
| Output Noise Voltage | $V_n$ | $T_A$ = +25°C, 10Hz ≤ f ≤ 100kHz | | – | 45 | – | $\mu V/V_O$ |
| Output Resistance | $r_O$ | f = 1kHz | | – | 17 | – | mΩ |
| Short–Circuit Current Limit | $I_{sc}$ | $T_A$ = +25°C, $V_{IN}$ = 35V | | – | 0.2 | – | A |
| Peak Output Current | $I_{max}$ | $T_J$ = +25°C | | – | 2.2 | – | A |
| Average Temperature Coefficient of Output Voltage | $TCV_O$ | | | – | –1.0 | – | mV/°C |