

LINEAR INTEGRATED CIRCUITS

DESCRIPTION

The 75450 and 75450A are dual peripheral drivers designed for use in systems that employ TTL or DTL logic. These circuits feature two standard 7400 series gates and two uncommitted, high current, high voltage, npn output driver transistors.

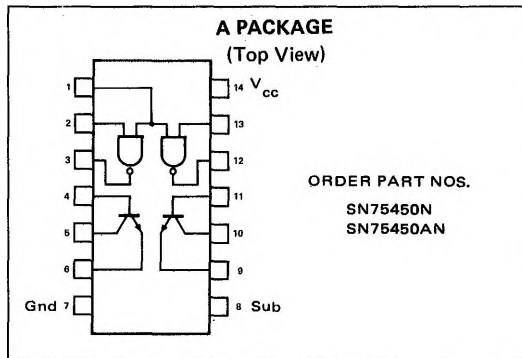
ABSOLUTE MAXIMUM RATINGS

| | |
|------------------------------------|-------|
| Supply Voltage | +7V |
| Input Voltage | +5.5V |
| Collector-Emitter Voltage | +30V |
| Continuous Collector Current | 300mA |
| Continuous Total Power Dissipation | 800mW |

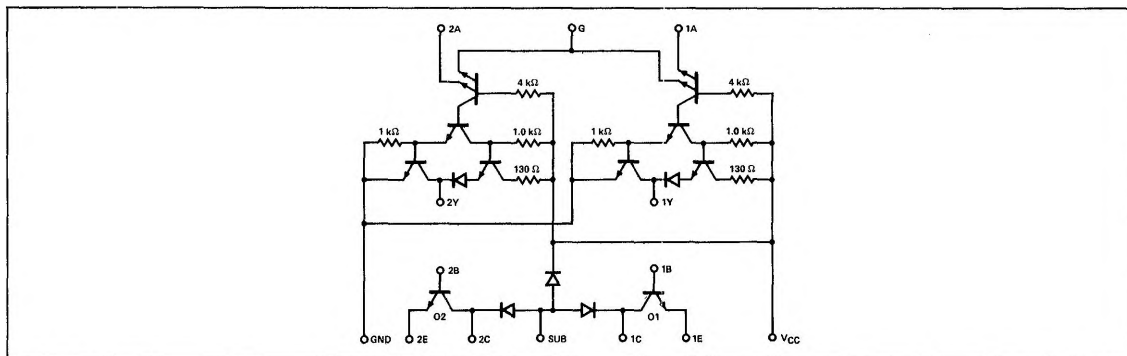
NOTES:

Positive Logic: $Y = \overline{AG}$ (gate only)
 $C = AG$ (gate and transistor)

PIN CONFIGURATION



EQUIVALENT CIRCUIT



ELECTRICAL CHARACTERISTICS - TTL GATES ($V_{CC} = 5V, T_A = 25^{\circ}C$)

| PARAMETER | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--|---|-----|------|--------------|---------|
| V_{IH} High-Level Input Voltage | | 2 | | | V |
| V_{IL} Low-Level Input Voltage | | | | 0.8 | V |
| V_I Input Clamp Voltage | $V_{CC} = 4.75V, I_1 = -12mA$ | | | -1.5 | V |
| V_{OH} High-Level Output Voltage | $V_{CC} = 4.75V, V_{IL} = 0.8V, I_{OM} = -400\mu A$ | 2.4 | 3.3 | | V |
| V_{OL} Low-Level Output Voltage | $V_{CC} = 4.75V, V_{IH} = 2V, I_{OL} = 16mA$ | | 0.22 | 0.4 | V |
| I_I Input Current at Maximum Input Voltage | Input A Input G $V_{CC} = 5.25V, V_1 = 5.5V$ | | | 1 2 | mA |
| I_{IH} High-Level Input Current | Input A Input G $V_{CC} = 5.25V, V_1 = 2.4V$ | | | 40 80 | μA |
| I_{IL} Low-Level Input Current | Input A Input G $V_{CC} = 5.25V, V_1 = 0.4V$ | | | -1.6 -3.2 | mA |
| I_{OS} Short Circuit Output Current | $V_{CC} = 5.25V$ | -18 | | -55 | mA |
| I_{CCH} Supply Current, High-Level Output | $V_{CC} = 5.25V, V_1 = 0$ | | 2 | 4 | mA |
| I_{CCL} Supply Current, Low-Level Output | $V_{CC} = 5.25V, V_1 = 5V$ | | 6 | 11 | mA |

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ELECTRICAL CHARACTERISTICS - OUTPUT TRANSISTORS (Cont'd)

| PARAMETER | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--|--|-----|------|-----|------|
| $V_{(BR) CBO}$ Collector-Base Breakdown Voltage | $I_C = 100\mu A, I_E = 0$ | 35 | | | V |
| $V_{(BR) CER}$ Collector-Emitter Breakdown Voltage | $I_C = 100\mu A, R_{BE} = 500\Omega$ | 30 | | | V |
| $V_{(BR) EBO}$ Emitter-Base Breakdown Voltage | $I_E = 100\mu A, I_C = 0$ | 5 | | | V |
| h_{FE} Static Forward Current Transfer Ratio | $V_{CE} = 3V, I_C = 100mA, T_A = 25^\circ C$ | 25 | | | |
| | $V_{CE} = 3V, I_C = 300mA, T_A = 25^\circ C$ | 30 | | | |
| | $V_{CE} = 3V, I_C = 100mA, T_A = 0^\circ C$ | 20 | | | |
| | $V_{CE} = 3V, I_C = 300mA, T_A = 0^\circ C$ | 25 | | | |
| V_{BE} Base-Emitter Voltage | $I_B = 10mA, I_C = 100mA$ | | 0.85 | 1 | V |
| | $I_B = 30mA, I_C = 300mA$ | | 1.05 | 1.2 | V |
| $V_{CE (sat)}$ Collector-Emitter Saturation Voltage | $I_B = 10mA, I_C = 100mA$ | | 0.25 | 0.4 | V |
| | $I_B = 30mA, I_C = 300mA$ | | 0.5 | 0.7 | V |

SWITCHING CHARACTERISTICS - TTL GATES ($V_{CC} = 5V, T_A = 25^\circ C$)

| PARAMETER | TEST CONDITIONS | 75450 | | | 75450A | | | UNIT |
|--|-------------------------------------|-------|-----|-----|--------|-----|-----|------|
| | | MIN | TYP | MAX | MIN | TYP | MAX | |
| TTL GATES | | | | | | | | |
| t_{PLH} Propagation Delay Time Low-to-High-Level Output | $C_L = 15pF, R_L = 400\Omega$ | | 12 | 22 | | 20 | | ns |
| t_{PHL} Propagation Delay Time, High-to-High-Level Output | | | 8 | 15 | | 8 | | ns |
| OUTPUT TRANSISTORS | | | | | | | | |
| t_D Delay Time | $I_C = 200mA, I_{B(1)} = 20mA$ | | 8 | 15 | | 8 | | ns |
| t_r Rise Time | $I_{B(2)} = -40mA,$ | | 12 | 20 | | 12 | | ns |
| t_s Storage Time | $V_{BE(off)} = -1V$ | | 7 | 15 | | 7 | | ns |
| t_f Fall Time | $C_L = 15pF, R_L = 50$ | | 6 | 15 | | 6 | | ns |
| GATES AND TRANSISTORS COMBINED | | | | | | | | |
| t_{PLH} Propagation Delay Time, Low-to-High-Level Output | $I_C = 200mA, C_L = 15pF, R_L = 50$ | | 17 | | | 40 | | ns |
| t_{PHL} Propagation Delay Time, High-to-Low-Level Output | | | 16 | | | 25 | | ns |
| t_{TLH} Transition Time, Low-to-High-Level Output | | | 7 | | | 10 | | ns |
| t_{THL} Transition Time, High-to-Low-Level Output | | | 9 | | | 12 | | ns |