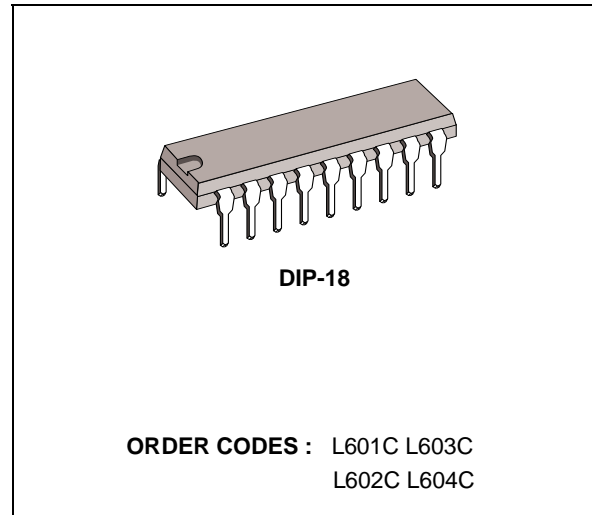


DARLINGTON ARRAYS

- EIGHT DARLINGTONS PER PACKAGE
- OUTPUT CURRENT 400 mA PER DRIVER (500 mA PEAK)
- OUTPUT VOLTAGE 90 V ($V_{CE(sus)} = 70$ V)
- INTEGRAL SUPPRESSION DIODES FOR INDUCTIVE LOADS
- OUTPUTS CAN BE PARALLELED FOR HIGHER CURRENT
- TTL / CMOS / PMOS / DTL COMPATIBLE INPUTS
- INPUTS PINNED OPPOSITE OUTPUTS TO SIMPLIFY LAYOUT



DESCRIPTION

The L601, L602, L603 and L604 are high voltage, high current darlington arrays each containing eight open collector darlington pairs with common emitters. Each channel is rated at 400 mA and can with stand peak currents of 500 mA. Suppression diodes are included for inductive load driving and the inputs are pinned opposite the outputs to simplify board layout.

The four versions interface to all common logic families:

| | |
|------|-----------------|
| L601 | General purpose |
| L602 | 14 - 25 V PMOS |
| L603 | 5 V TTL |
| L604 | 6 - 15 V CMOS |

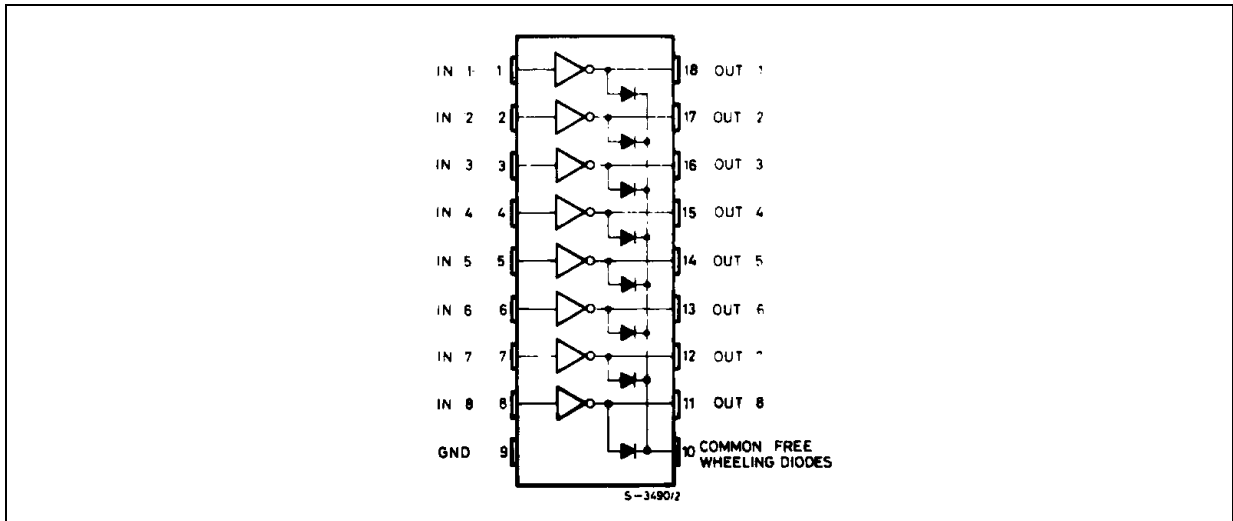
These versatile devices are useful for driving a wide range of loads, including solenoids, relays DC motors, LED displays, filament lamps, thermal print-heads and high power buffers.

ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | Unit |
|-----------|--|------------|------------------|
| V_{CEX} | Collector Emitter Voltage (input open) | 90 | V |
| I_c | Collector Current | 0.4 | A |
| I_c | Collector Peak Current | 0.5 | A |
| V_i | Input Voltage (for L602 L603 and L604) | 30 | |
| I_i | Input Current (for L601 only) | 25 | mA |
| P_{tot} | Total Power Dissipation a $T_{amb} = 25^\circ\text{C}$ | 1.8 | W |
| T_{op} | Operating Junction Temperature | -25 to 150 | $^\circ\text{C}$ |

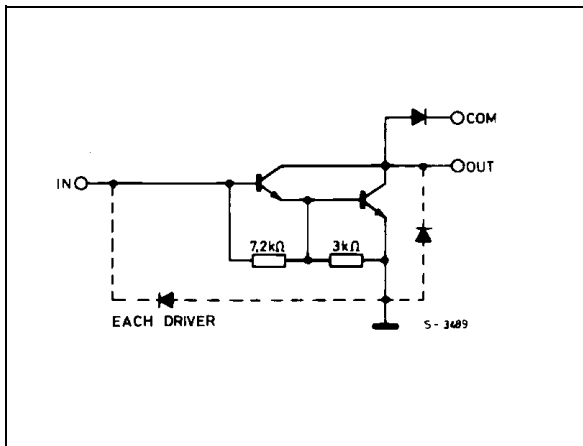
L601-L602-L603-L604

PIN CONNECTION (top view)

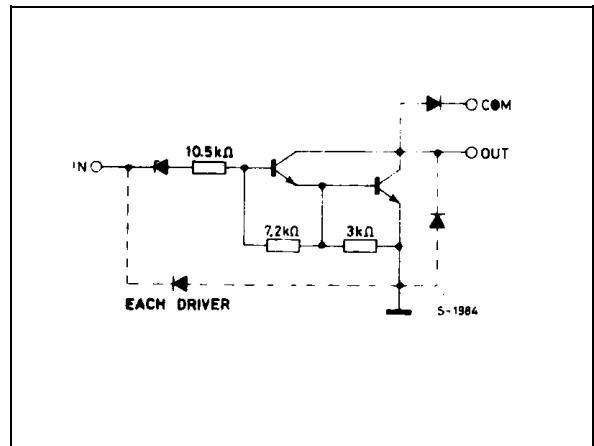


SCHEMATIC DIAGRAMS

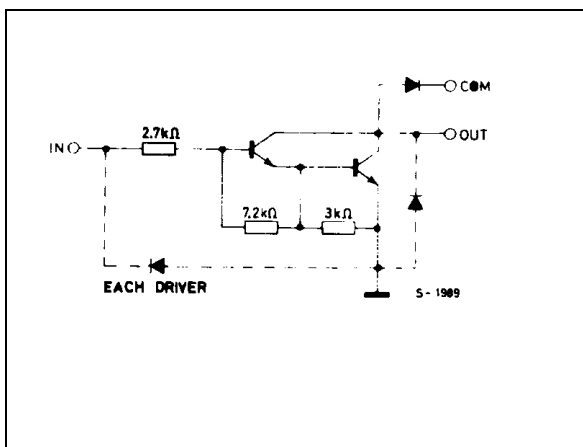
L601



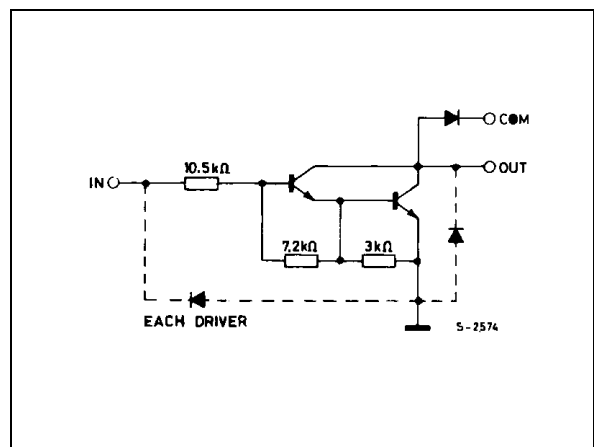
L602



L603



L604



THERMAL DATA

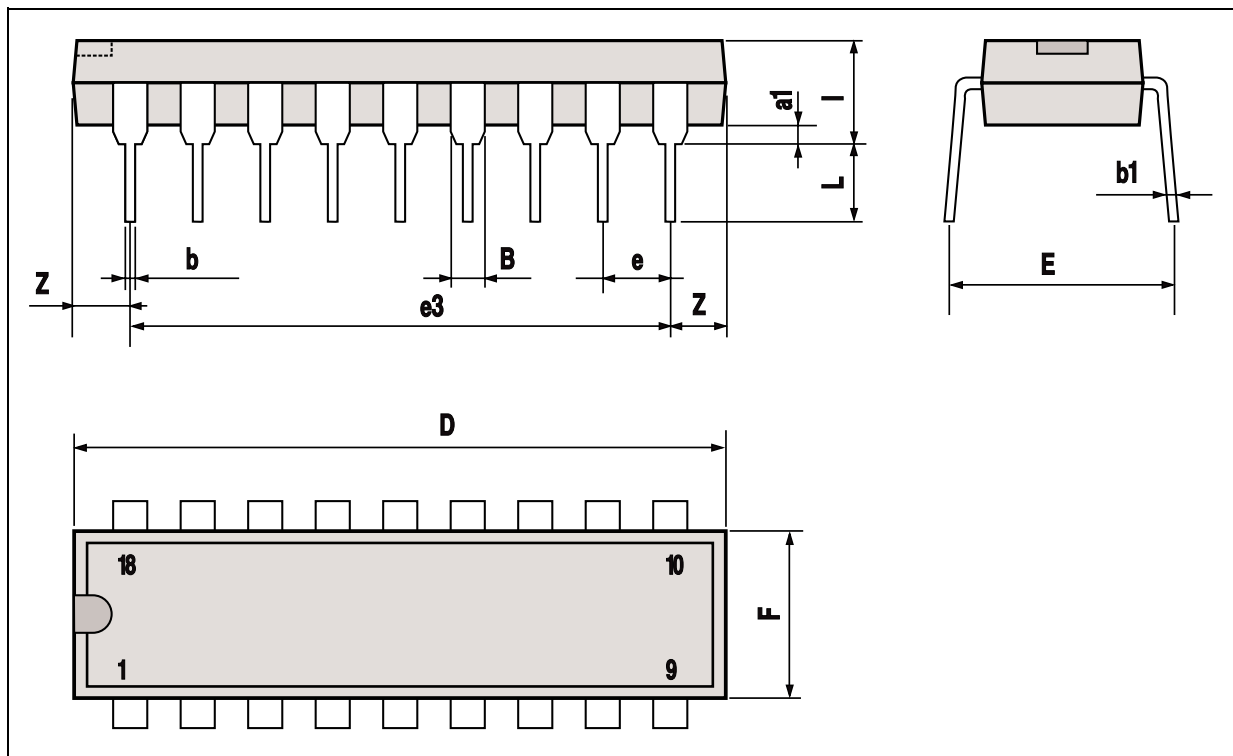
| Symbol | Parameter | Value | Unit |
|----------------|-------------------------------------|--------|------|
| $R_{th-j-amb}$ | Thermal resistance Junction-ambient | Max 70 | °C/W |

ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ °C}$, unless otherwise specified)

| Symbol | Parameter | Test conditions | Min. | Typ. | Max. | Unit |
|---------------|---------------------------------------|---|------------------------|------|------------------|------------------|
| I_{CEX} | Output Leakage Current | $V_{CE} = 90\text{ V}$ | | | 10 | μA |
| $V_{CE(sat)}$ | Collector Emitter Saturation Voltage | $I_C = 300\text{ mA}$ $I_B = 500\text{ }\mu\text{A}$ $I_C = 200\text{ mA}$ $I_B = \mu\text{A}$ $I_C = 100\text{ mA}$ $I_B = 250\text{ }\mu\text{A}$ | | | 2 1.7 1.2 | V V V |
| h_{FE} | DC Forward Current Gain (L601 only) | $V_{CE} = 3\text{ V}$ $I_C = 300\text{ mA}$ | 1000 | | | - |
| V_i | Minimum Input Voltage (ON condition) | $V_{CE} = 3\text{ V}$ for L602 for L603 for L604 $I_C = 300\text{ mA}$ | | | 11.5 2.5 5 | V V V |
| V_i | Maximum Input Voltage (OFF condition) | $V_{CE} = 90\text{ V}$ for L601 for L602 for L603 for L604 $I_C = 25\text{ }\mu\text{A}$ | 0.55 7 0.75 1 | | | V V V V |
| I_R | Clamp Diode Reverse Current | $V_R = 90\text{ V}$ | | | 50 | μA |
| V_F | Clamp Diode Forward Voltage | $I_F = 300\text{ mA}$ | | 2 | 2.4 | V |
| t_{on} | Turn-on Delay | 0.5 V_i to 0.5 V_o | | 0.4 | | μs |
| t_{off} | Turn-off Delay | 0.5 V_i to 0.5 V_o | | 0.4 | | μs |

DIP18 PACKAGE MECHANICAL DATA

| DIM. | mm | | | inch | | |
|------|-------|-------|-------|-------|-------|-------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| a1 | 0.254 | | | 0.010 | | |
| B | 1.39 | | 1.65 | 0.055 | | 0.065 |
| b | | 0.46 | | | 0.018 | |
| b1 | | 0.25 | | | 0.010 | |
| D | | | 23.24 | | | 0.915 |
| E | | 8.5 | | | 0.335 | |
| e | | 2.54 | | | 0.100 | |
| e3 | | 20.32 | | | 0.800 | |
| F | | | 7.1 | | | 0.280 |
| l | | | 3.93 | | | 0.155 |
| L | | 3.3 | | | 0.130 | |
| Z | | 1.27 | 1.59 | | 0.050 | 0.063 |



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