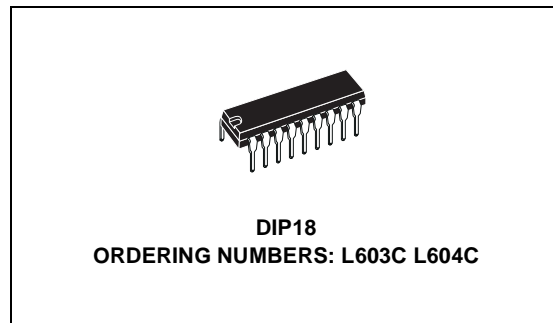




## L603 - L604

### DARLINGTON ARRAYS

- EIGHT DARLINGTONS PER PACKAGE
- OUTPUT CURRENT 400 mA PER DRIVER (500mA 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 INPUTS
- INPUTS PINNED OPPOSITE OUTPUTS TO SIMPLIFY LAYOUT



#### DESCRIPTION

The 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 400mA 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.

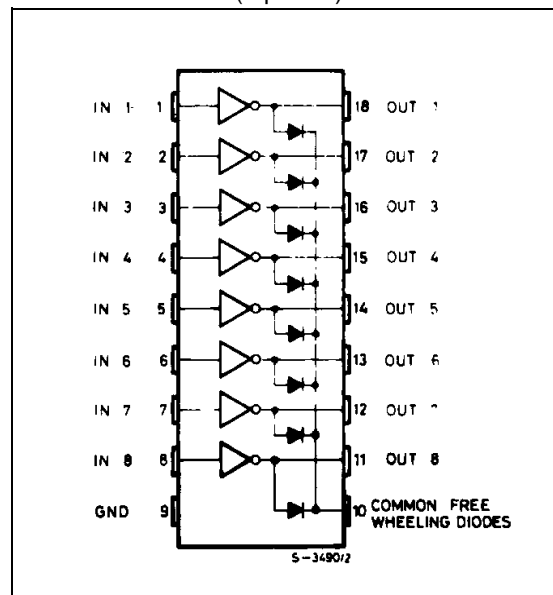
The four versions interface to all common logic families:

**L603** = 5V TTL

**L604** = 6 - 15V CMOS

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

#### PIN CONNECTION (top view)



#### 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 L603 and L604)                       | 30         | V                |
| $P_{tot}$ | Total Power Dissipation at $T_{amb} = 25^\circ\text{C}$ | 1.8        | W                |
| $T_{op}$  | Operating Junction Temperature                          | -25 to 150 | $^\circ\text{C}$ |

## L603 - L604

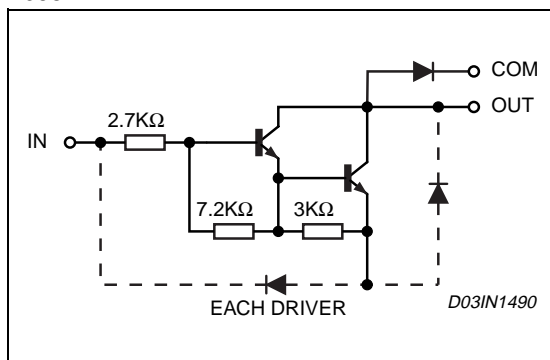
### THERMAL DATA

| Symbol                | Parameter                           | Value  | Unit |
|-----------------------|-------------------------------------|--------|------|
| $R_{th-j\text{ amb}}$ | Thermal Resistance Junction ambient | max 70 | °C/W |

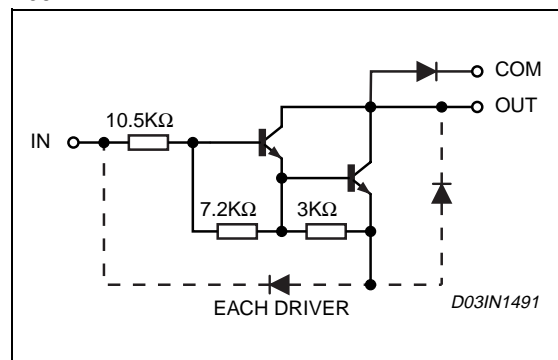
### ELECTRICAL CHARACTERISTICS

| Symbol        | Parameter                             | Test Condition                                | Min.      | Typ. | Max. | Unit    |
|---------------|---------------------------------------|---|-----------|------|------|---------|
| $I_{CEX}$     | Output Leakage Current                | $V_{CE} = 90V$                                |           |      | 10   | $\mu A$ |
| $V_{CE(sat)}$ | Collector Emitter Saturation Voltage  | $I_C = 300mA; I_B = 500\mu A$                 |           |      | 2    | V       |
|               |                                       | $I_C = 200mA; I_B = \mu A$                    |           |      | 1.7  | V       |
|               |                                       | $I_C = 100mA; I_B = 250\mu A$                 |           |      | 1.2  | V       |
| $V_i$         | Maximum Input Voltage (ON condition)  | $V_{CE} = 3V; I_C = 300mA$<br>L603<br>L604    |           |      | 2.5  | V       |
|               |                                       |   |           |      | 5    | V       |
| $V_i$         | Maximum Input Voltage (OFF condition) | $V_{CE} = 90V; I_C = 25\mu A$<br>L603<br>L604 | 0.75<br>1 |      |      | V<br>V  |
| $I_R$         | Clamp Diode Reverse Current           | $V_R = 90V$                                   |           |      | 50   | $\mu A$ |
| $V_F$         | Clamp Diode Forward Voltage           | $I_F = 300mA$                                 |           | 2    | 2.4  | V       |
| $t_{on}$      | Turn-on Delay                         | $0.5 V_i$ to $0.5 V_o$                        |           | 0.4  |      | $\mu s$ |
| $t_{off}$     | Turn-off Delay                        | $0.5 V_i$ to $0.5 V_o$                        |           | 0.4  |      | $\mu A$ |

#### L603

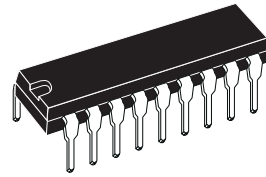


#### L604

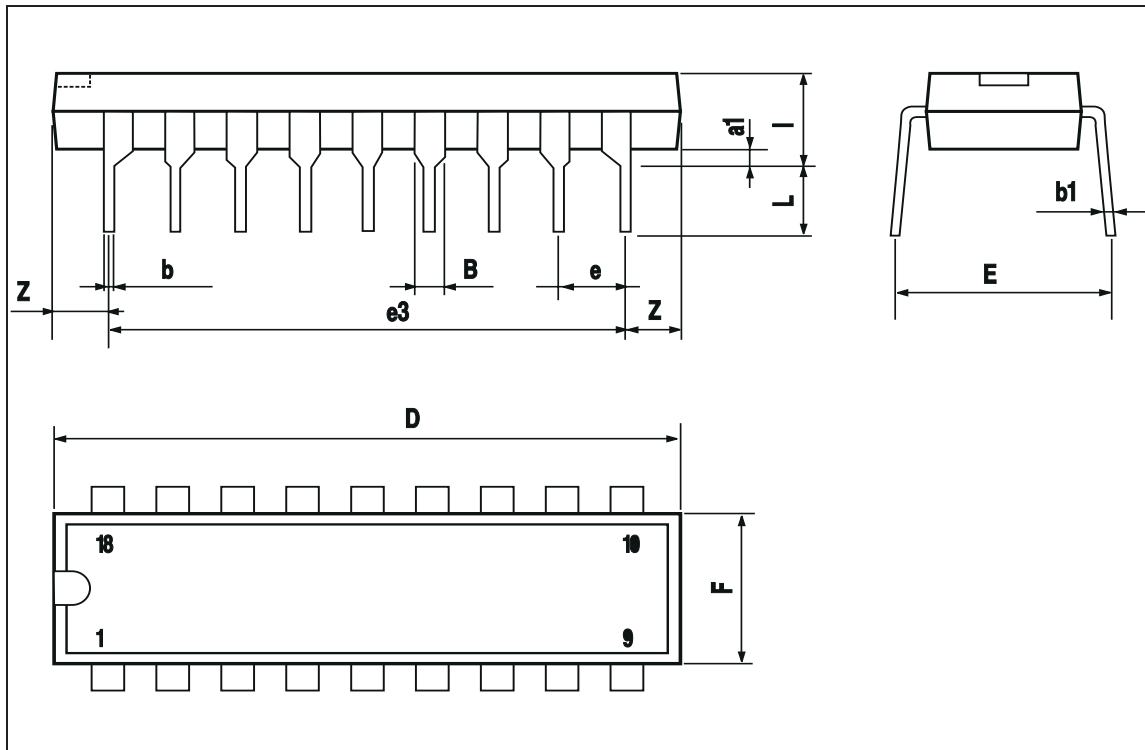


| DIM. | mm    |       |       | inch  |       |       |
|------|-------|-------|-------|-------|-------|-------|
|      | MIN.  | TYP.  | MAX.  | MIN.  | TYP.  | MAX.  |
| a1   | 0.254 |       |       | 0.010 |       |       |
| B    | 1.39  |       | 1.65  | 0.055 |       | 0.065 |
| b    |       | 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 |
| I    |       |       | 3.93  |       |       | 0.155 |
| L    |       | 3.3   |       |       | 0.130 |       |
| Z    |       | 1.27  | 1.59  |       | 0.050 | 0.063 |

### OUTLINE AND MECHANICAL DATA



**DIP18**



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