# NPN POWER DARLINGTON TRANSISTOR ARRAY

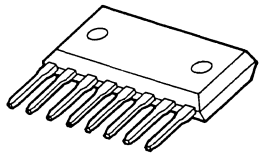
**D74FY4D**

**80 VOLTS**
**4 AMP, 3 WATTS**

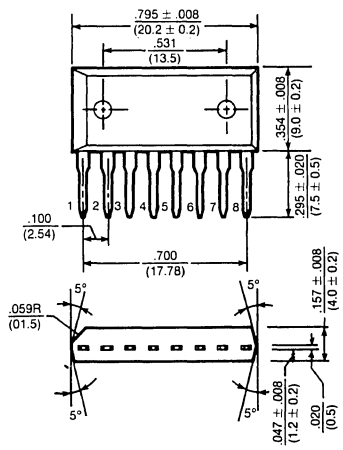
Designed for high power switching applications, hammer drive, pulse motor drive and inductive load drive applications.

**Features:**

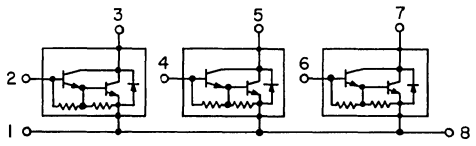
- High reliability small-sized available (3 in 1)
- Epoxy single-inline package (8 pin)
- High collector power dissipation: $P_D$ = 3W @ $T_A$ = 25° C (Three device action)
- High collector current: $I_C$ = 4A (Max.)
- High DC current gain: $h_{FE}$ = 2000 (Min.) @ $V_{CE}$ = 2V, $I_C$ = 1A



**CASE STYLE SIP-8 PIN**
DIMENSIONS ARE IN INCHES AND (MILLIMETERS)




**ARRAY CONFIGURATION**




## maximum ratings ($T_A$ = 25° C) (unless otherwise specified)

| RATING | SYMBOL | D74FY4D | UNITS |
|---|---|---|---|
| Collector-Emitter Voltage | $V_{CEO}$ | 80 | Volts |
| Collector-Base Voltage | $V_{CBO}$ | 100 | Volts |
| Emitter Base Voltage | $V_{EBO}$ | 5 | Volts |
| Collector Current — Continuous<br>Peak | $I_C$<br>$I_{CM}$ | 4<br>6 | A |
| Base Current — Continuous | $I_B$ | 0.4 | A |
| Collector Power Dissipation (One Device Action, $T_A$ = 25° C) | $P_D$ | 1.8 | Watts |
| Collector Power Dissipation (Three Device Action, $T_A$ = 25° C) | $P_D$ | 3.0 | Watts |
| Operating and Storage Junction Temperature Range | $T_J$, $T_{STG}$ | -55 to +150 | °C |

## thermal characteristics

| | | | |
|---|---|---|---|
| Thermal Resistance, Junction to Ambient | $\Sigma R_{\theta JA}$ | 41.7 | °C/W |
| Maximum Lead Temperature for Soldering Purpose: ⅛" from Case for 5 Seconds | $T_L$ | 260 | °C |

## electrical characteristics ($T_A$ = 25° C) (unless otherwise specified)

| CHARACTERISTIC | SYMBOL | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|
| **off characteristics** | | | | | |
| Collector-Emitter Breakdown Voltage ($I_C$ = 10mA, $I_B$ = 0) | $V_{BR(CEO)}$ | 80 | — | — | Volts |
| Collector-Base Breakdown Voltage ($I_C$ = 1mA, $I_E$ = 0) | $V_{BR(CBO)}$ | 100 | — | — | Volts |
| Collector Cutoff Current ($V_{CB}$ = 100V, $I_E$ = 0) | $I_{CBO}$ | — | — | 20 | μA |
| Collector Cutoff Current ($V_{CE}$ = 80V, $I_B$ = 0) | $I_{CEO}$ | — | — | 20 | μA |
| Emitter Cutoff Current ($V_{EB}$ = 5V, $I_C$ = 0) | $I_{EBO}$ | — | — | 2.5 | mA |
| **on characteristics** | | | | | |
| DC Current Gain ($I_C$ = 1A, $V_{CE}$ = 2V) ($I_C$ = 3A, $V_{CE}$ = 2V) | $h_{FE}$ | 2000<br>1000 | —<br>— | —<br>— | — |
| Collector-Emitter Saturation Voltage ($I_C$ = 3A, $I_B$ = 6mA) | $V_{CE(sat)}$ | — | — | 1.5 | Volts |
| Base-Emitter Saturation Voltage ($I_C$ = 3A, $I_B$ = 6mA) | $V_{BE(sat)}$ | — | — | 2.0 | Volts |
| **switching characteristics** | | | | | |
| Turn-on Time | $V_{CC}$ = 30V<br>$I_{B1}$ = -$I_{B2}$ = 6mA<br>Duty Cycle = 1% | $t_{on}$ | — | 0.2 | — | μs |
| Storage Time | | $t_{stg}$ | — | 1.5 | — | |
| Fall Time | | $t_f$ | — | 0.6 | — | |

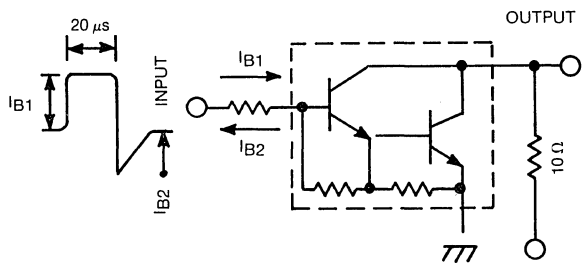



**FIG. 1 SWITCHING TIME TEST CIRCUIT**

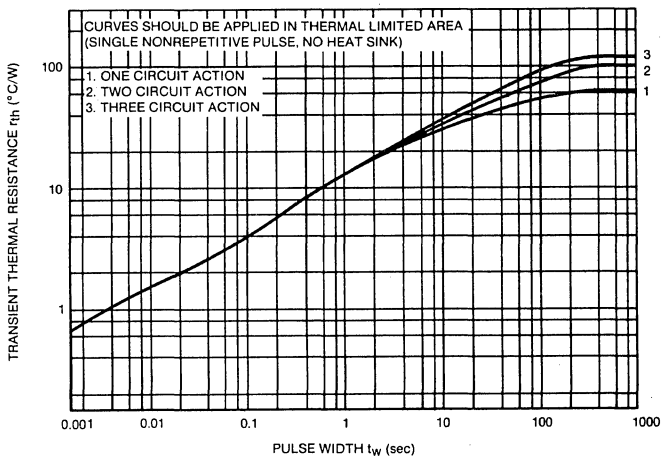



**FIG. 2 TRANSIENT THERMAL RESISTANCE vs. PULSE WIDTH**

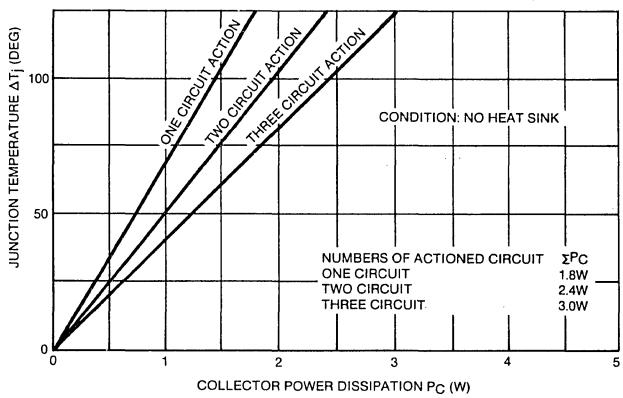



**FIG. 3 COLLECTOR POWER DISSIPATION vs. JUNCTION TEMPERATURE**

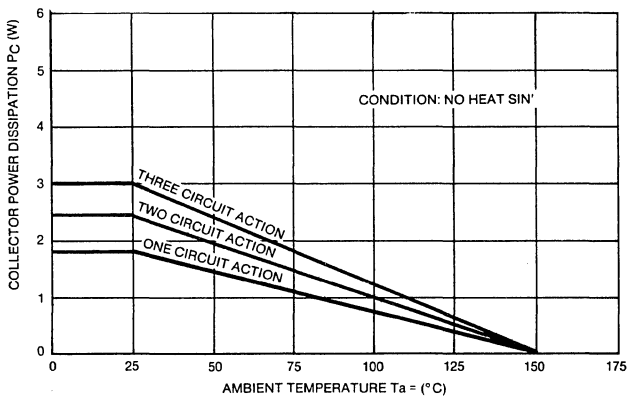



**FIG. 4 TOTAL COLLECTOR POWER DISSIPATION**