# MPQ6426
# MPQ6427

**CASE 646-05, STYLE 1**
**TO-116**

**QUAD**
**DARLINGTON TRANSISTOR**

**NPN SILICON**



## MAXIMUM RATINGS

| Rating | Symbol | Value | | Unit |
|---|---|---|---|---|
| Collector-Emitter Voltage<br>MPQ6426<br>MPQ6427 | $V_{CEO}$ | <br>30<br>40 | | Vdc |
| Collector-Base Voltage<br>MPQ6426<br>MPQ6427 | $V_{CBO}$ | <br>40<br>50 | | Vdc |
| Emitter-Base Voltage | $V_{EBO}$ | 12 | | Vdc |
| Collector Current — Continuous | $I_C$ | 500 | | mAdc |
| | | Each Die | Four Die Equal Power | |
| Total Device Dissipation<br>@ $T_A$ = 25°C(1)<br>Derate above 25°C | $P_D$ | <br>500<br>4.0 | <br>900<br>7.2 | <br>mW<br>mW/°C |
| Total Device Dissipation<br>@ $T_C$ = 25°C<br>Derate above 25°C | $P_D$ | <br>825<br>6.7 | <br>2400<br>19.2 | <br>mW<br>mW/°C |
| Operating and Storage Junction Temperature Range | $T_J$, $T_{stg}$ | −55 to +150 | | °C |

(1) Second Breakdown occurs at power levels greater than 3 times the power dissipation rating.

## THERMAL CHARACTERISTICS

| Characteristic | | Junction to Case | Junction to Ambient | Unit |
|---|---|---|---|---|
| Thermal Resistance | Each Die | 151 | 250 | °C/W |
| | Effective, 4 Die | 52 | 139 | °C/W |
| Coupling Factors | Q1-Q4 or Q2-Q3 | 34 | 70 | % |
| | Q1-Q2 or Q3-Q4 | 2.0 | 26 | % |

## ELECTRICAL CHARACTERISTICS ($T_A$ = 25°C unless otherwise noted.)

| Characteristic | | Symbol | Min | Max | Unit |
|---|---|---|---|---|---|
| **OFF CHARACTERISTICS** | | | | | |
| Collector-Emitter Breakdown Voltage(2)<br>($I_C$ = 10 mAdc, $I_B$ = 0) | <br>MPQ6426<br>MPQ6427 | $V_{(BR)CEO}$ | <br>30<br>40 | <br>— | Vdc |
| Collector-Base Breakdown Voltage<br>($I_C$ = 100 μAdc, $I_E$ = 0) | <br>MPQ6426<br>MPQ6427 | $V_{(BR)CBO}$ | <br>40<br>50 | <br>— | Vdc |
| Emitter-Base Breakdown Voltage<br>($I_E$ = 10 μAdc, $I_C$ = 0) | | $V_{(BR)EBO}$ | 12 | — | Vdc |
| Collector Cutoff Current<br>($V_{CB}$ = 30 Vdc, $I_E$ = 0) | | $I_{CBO}$ | — | 100 | nAdc |
| Emitter Cutoff Current<br>($V_{BE}$ = 10 Vdc, $I_C$ = 0) | | $I_{EBO}$ | — | 100 | nAdc |
| **ON CHARACTERISTICS(2)** | | | | | |
| DC Current Gain<br>($I_C$ = 10 mAdc, $V_{CE}$ = 5.0 Vdc)<br>($I_C$ = 100 mAdc, $V_{CE}$ = 5.0 Vdc) | | $h_{FE}$ | <br>5000<br>10,000 | <br>—<br>— | — |
| Collector-Emitter Saturation Voltage<br>($I_C$ = 100 mAdc, $I_B$ = 0.1 mAdc) | | $V_{CE(sat)}$ | — | 1.5 | Vdc |
| Base-Emitter On Voltage<br>($I_C$ = 100 mAdc, $V_{CE}$ = 5.0 Vdc) | | $V_{BE(on)}$ | — | 2.0 | Vdc |
| **SMALL-SIGNAL CHARACTERISTICS** | | | | | |
| Current-Gain — Bandwidth Product<br>($I_C$ = 10 mAdc, $V_{CE}$ = 5.0 Vdc, f = 100 MHz) | | $f_T$ | 125 | — | MHz |
| Output Capacitance<br>($V_{CB}$ = 10 Vdc, $I_E$ = 0, f = 100 kHz) | | $C_{obo}$ | — | 8.0 | pF |
| Input Capacitance<br>($V_{BE}$ = 0.5 Vdc, $I_C$ = 0, f = 100 kHz) | | $C_{ibo}$ | — | 15 | pF |

(2) Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

## NOISE CHARACTERISTICS
($V_{CE}$ = 5.0 Vdc, $T_A$ = 25°C)

FIGURE 1 – NOISE VOLTAGE

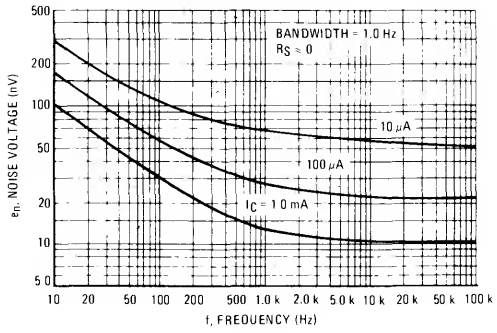



FIGURE 2 – NOISE CURRENT

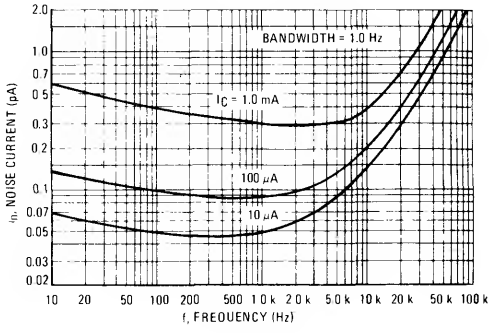



FIGURE 3 – TOTAL WIDEBAND NOISE VOLTAGE

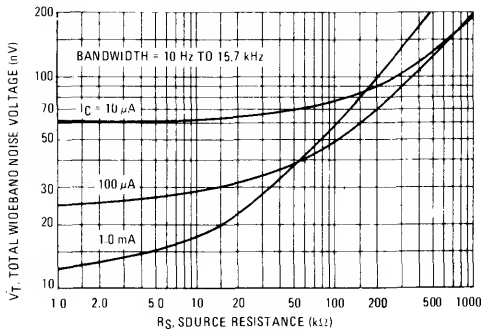
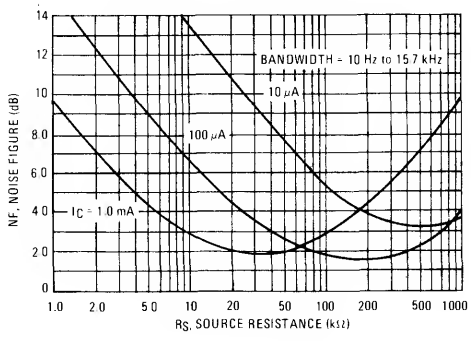



FIGURE 4 – WIDEBAND NOISE FIGURE




## DYNAMIC CHARACTERISTICS

FIGURE 5 – CAPACITANCE

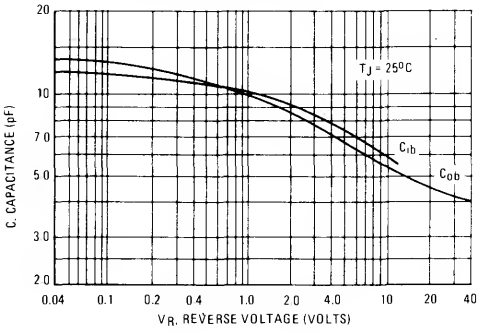



FIGURE 6 – HIGH FREQUENCY CURRENT GAIN