New Jersey Semi-Conductor Products, Inc.

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TELEPHONE: (973) 376-2922
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Part Number: BLY93A
Description: BJTs, Si NPN Power HF

## The RF Line

### NPN SILICON RF POWER TRANSISTOR

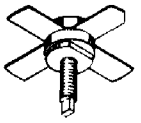
. . . designed primarily for wideband large-signal amplifier stages in the 125-175 MHz frequency range.

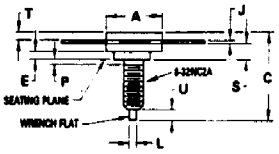
- Specified 28 Volt, 175 MHz Characteristics –
  Output Power = 40 Watts
  Minimum Gain = 7.6 dB
  Efficiency = 60%
- Characterized from 125 to 175 MHz
- Includes Series Equivalent Impedances

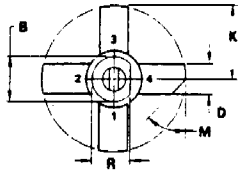
**40 W – 175 MHz**

**RF POWER TRANSISTOR**

**NPN SILICON**






STYLE 1:
PIN 1. EMITTER
2. BASE
3. EMITTER
4. COLLECTOR

| DIM | MILLIMETERS MIN | MILLIMETERS MAX | INCHES MIN | INCHES MAX |
|---|---|---|---|---|
| A | 9.40 | 9.78 | 0.370 | 0.385 |
| B | 8.13 | 8.38 | 0.320 | 0.330 |
| C | 17.02 | 20.07 | 0.670 | 0.790 |
| D | 5.46 | 5.97 | 0.215 | 0.235 |
| E | 1.78 | — | 0.070 | — |
| J | 0.08 | 0.18 | 0.003 | 0.007 |
| K | 12.45 | — | 0.490 | — |
| L | 1.40 | 1.78 | 0.055 | 0.070 |
| M | 45° NOM | | 45° NOM | |
| P | — | 1.27 | — | 0.050 |
| R | 7.59 | 7.80 | 0.299 | 0.307 |
| S | 4.01 | 4.52 | 0.158 | 0.178 |
| T | 2.11 | 2.64 | 0.083 | 0.100 |
| U | 2.49 | 3.35 | 0.098 | 0.132 |

*MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| Collector-Emitter Voltage | $V_{CEO}$ | 35 | Vdc |
| Collector-Base Voltage | $V_{CB}$ | 65 | Vdc |
| Emitter-Base Voltage | $V_{EB}$ | 4.0 | Vdc |
| Collector Current – Continuous | $I_C$ | 5.0 | Adc |
| Total Device Dissipation @ $T_C$ = 25°C<br>Derate above 25°C | $P_D$ | 60<br>342 | Watts<br>mW/°C |
| Operating and Storage Junction Temperature Range | $T_J$,$T_{stg}$ | -65 to +200 | °C |

*Indicates JEDEC Registered Data.

Quality Semi-Conductors

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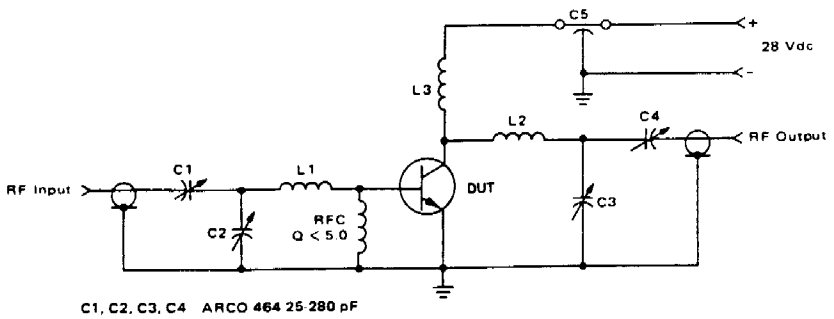
***ELECTRICAL CHARACTERISTICS** ($T_C$ = 25°C unless otherwise noted.)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| **OFF CHARACTERISTICS** | | | | | |
| Collector-Emitter Breakdown Voltage (Note 1) ($I_C$ = 200 mAdc, $I_B$ = 0) | $V_{(BR)CEO}$ | 35 | – | – | Vdc |
| Collector-Emitter Breakdown Voltage ($I_C$ = 200 mAdc, $V_{BE}$ = 0) | $V_{(BR)CES}$ | 65 | – | – | Vdc |
| Emitter-Base Breakdown Voltage ($I_E$ = 10 mAdc, $I_C$ = 0) | $V_{(BR)EBO}$ | 4.0 | – | – | Vdc |
| Collector Cutoff Current ($V_{CB}$ = 30 Vdc, $I_E$ = 0) | $I_{CBO}$ | – | – | 1.0 | mAdc |
| **ON CHARACTERISTICS** | | | | | |
| DC Current Gain ($I_C$ = 500 mAdc, $V_{CE}$ = 5.0 Vdc) | $h_{FE}$ | 5.0 | – | – | – |
| **DYNAMIC CHARACTERISTICS** | | | | | |
| Output Capacitance ($V_{CB}$ = 30 Vdc, $I_E$ = 0, f = 0.1 to 1.0 MHz) | $C_{ob}$ | – | 45 | 65 | pF |
| **FUNCTIONAL TEST** | | | | | |
| Common-Emitter Amplifier Power Gain (Figure 1) ($P_{out}$ = 40 Watts, $V_{CE}$ = 28 Vdc, f = 175 MHz) | $G_{PE}$ | 7.6 | 8.1 | – | dB |
| Collector Efficiency (Figure 1) ($P_{out}$ = 40 Watts, $V_{CE}$ = 28 Vdc, f = 175 MHz) | $\eta$ | 60 | – | – | % |

Note 1: Pulsed through 25 mH inductor.
*Indicates JEDEC Registered Data.

FIGURE 1 – 175 MHz TEST CIRCUIT SCHEMATIC




| | |
|---|---|
| C1, C2, C3, C4 | ARCO 464 25-280 pF |
| C5 | 0.1 μF |
| L1 | 1" Straight #14 AWG |
| L2 | 1 Turn #16 AWG, 1/4" I.D. |
| L3 | 0.22 μH |