

RF & MICROWAVE TRANSISTORS
VHF-UHF CLASS C WIDE BAND

- FREQUENCY 130 TO 400MHz
- VOLTAGE 28V
- POWER OUT 2.5 TO 13.5W
- HIGH POWER GAIN
- HIGH EFFICIENCY
- CLASS C TRANSISTORS
- COMMON EMITTER



TO 60 (M137)

ORDER CODE

SD1050
 SD1070
 SD1075

BRANDING

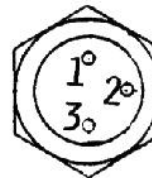
2N3375
 2N3632
 2N3733

DESCRIPTION

This line of silicon epitaxial NPN planar high frequency transistors employs a multi emitter electrode design. This feature together with a heavily diffused base matrix located between the individual emitters results in high RF current handling capability, high power gain, low base resistance and low output capacitance. These transistors are intended for Class A, B, or C amplifier, oscillator or frequency multiplier circuits and are specifically designed for operation in the VHF-UHF region.

| | |
|--------|---------|
| Device | Package |
| 2N3375 | TO 60 |
| 2N3632 | TO 60 |
| 2N3733 | TO 60 |

PIN CONNECTION



S882N3375-01

1 emitter
 2 base

3 collector

2N3375/2N3632/2N3733

ABSOLUTE MAXIMUM RATINGS ($T_{case} = 25^{\circ}C$)

| Symbol | Parameter | 2N3375 | 2N3632 | 2N3733 | Unit |
|--------------|--------------------------------|-------------|-------------|-------------|------|
| V_{CBO} | Collector to Base Voltage | 65 | 65 | 65 | V |
| V_{CEO} | Collector to Emitter Voltage | 40 | 40 | 40 | V |
| V_{EBO} | Emitter to Base Voltage | 4.0 | 4.0 | 4.0 | V |
| $I_{C(max)}$ | Continuous Collector Current | 1.5 | 3.0 | 3.0 | A |
| P_D | Total Dissipation at 25°C Stud | 11.6 | 23.0 | 23.0 | V |
| T_j | Junction Temperature | 200 | 200 | 200 | °C |
| T_{stg} | Storage Temperature | - 65 to 150 | - 65 to 150 | - 65 to 150 | °C |

| | | 2N3375 | 2N3632 | 2N3733 | |
|---------------|----------------------------------|--------|--------|--------|----|
| $R_{th(j-c)}$ | Junction-case Thermal Resistance | 15.0 | 7.6 | 7.6 | °C |

ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}C$)

STATIC

| Symbol | Test Conditions | | 2N3375 | | | 2N3632 | | | 2N3733 | | | Unit |
|------------|-----------------|---------------|--------|-------------------|------|--------|----------------|------|--------|------|------|------|
| | | | Min. | Typ. | Max. | Min. | Typ. | Max. | Min. | Typ. | Max. | |
| BV_{CBO} | $I_C = 0.5mA$ | $V_{BE} = 0$ | 65 | | | 65 | | | 65 | | | V |
| BV_{CEO} | $I_C = 200mA$ | $I_B = 0$ | 40 | | | 40 | | | 40 | | | V |
| BV_{EBO} | $I_E = 0.25mA$ | $I_C = 0$ | 4 | ($I_E = 0.1mA$) | | 4 | | | 4 | | | V |
| I_{CEO} | $V_{CB} = 30V$ | $I_E = 0$ | | | 0.1 | | | 0.25 | | | 0.25 | mA |
| H_{FE} | $V_{CE} = 5V$ | $I_C = 250mA$ | 10 | | | 5 | ($I_C = 1A$) | | 10 | | | |

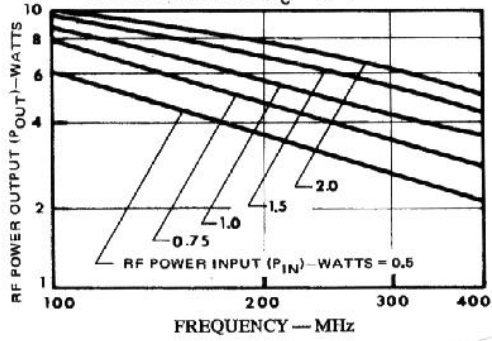
DYNAMIC

| Symbol | Test Conditions | | 2N3375 | | | 2N3632 | | | 2N3733 | | | Unit |
|----------|-----------------------|----------------|--------|------|------|--------|------|------|--------|------|------|------|
| | | | Min. | Typ. | Max. | Min. | Typ. | Max. | Min. | Typ. | Max. | |
| P_O | F = 175MHz Class C | $V_{CE} = 28V$ | | | | 13.5 | | | | | | W |
| P_O | F = 400MHz | $V_{CC} = 28V$ | 3 | | | | | | 10 | | | W |
| G_P | F = 175MHz | $V_{CC} = 28V$ | | | | 5.8 | | | | | | dB |
| G_P | F = 400MHz | $V_{CC} = 28V$ | 4.8 | | | | | | 4.0 | | | dB |
| η_C | F = 175MHz | $V_{CC} = 28V$ | | | | 70 | | | | | | % |
| η_C | F = 400MHz | $V_{CC} = 28V$ | 40 | | | | | | 45 | | | % |
| C_{OB} | F = 1MHz | $V_{CB} = 30V$ | | | 10 | | | 20 | | | 20 | pF |

APPLICATION INFORMATION (typical curves)

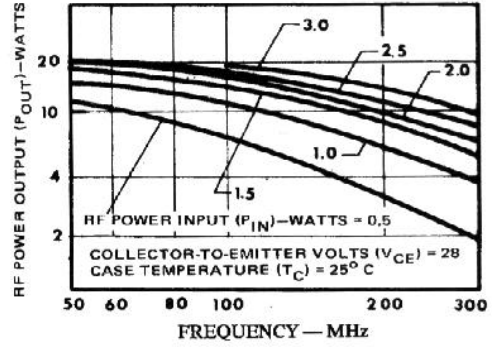
2N3375 POWER OUTPUT VS FREQUENCY

COLLECTOR-TO-EMITTER VOLTS (V_{CE}) = 28
CASE TEMPERATURE (T_C) = 25°C



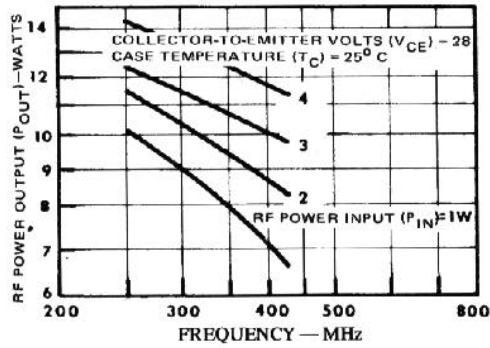
S882N3375-02

2N3632 POWER OUTPUT VS FREQUENCY



S882N3632-04

2N3733 POWER OUTPUT VS FREQUENCY

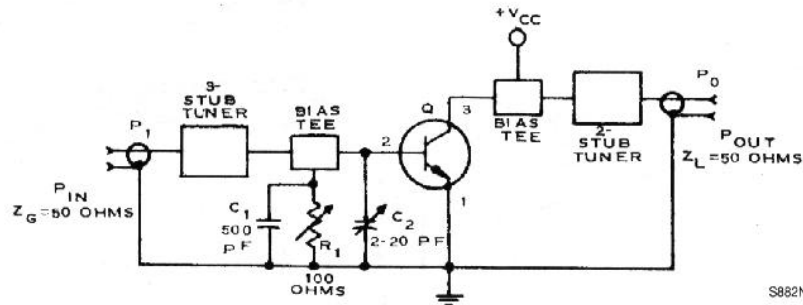


S882N3733-05

2N3375/2N3632/2N3733

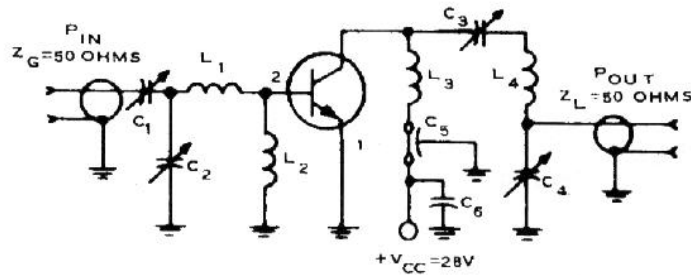
TEST CIRCUITS

2N3375 (400 MHz OPERATION)



S882N3375-02

2N3632 (175MHz OPERATION)



S882N3632-02

2N3632

C₁, C₂, C₃, C₄: 7 - 100pF

C₅: 100pF

C₆: 0.01F, disc ceramic

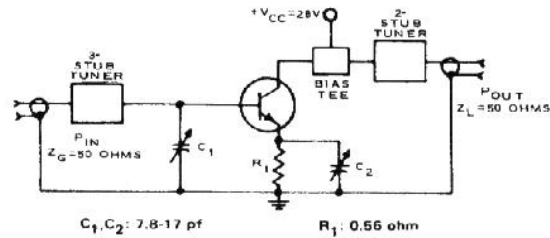
L₁: 1.5 turns No. 16 wire, 3/16" ID, 5/16" long

L₂: Ferrite choke, Z = 450

L₃: 1 turn No. 16 wire, 1/4" ID, 3/8" long

L₄: 2 turns No. 16 wire, 1/4" ID, 1/4" long

2N3733(400MHz OPERATION)



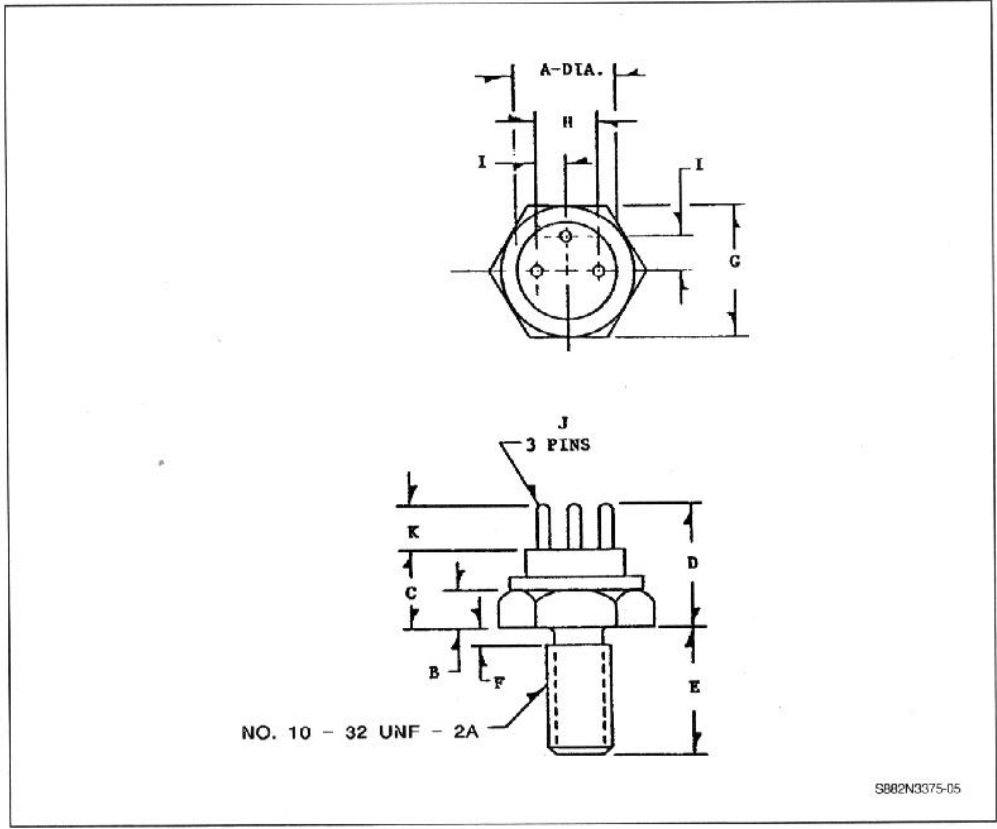
C₁, C₂: 7.8-17 pf

R₁: 0.55 ohm

S882N3733-02

PACKAGE MECHANICAL DATA

TO 60



| | Minimum Inches | Maximum Inches |
|---|----------------|----------------|
| A | .320 | .340 |
| B | .110 | .135 |
| C | .245 | .300 |
| D | .400 | .450 |
| E | .420 | .455 |
| E | .140 | .160 |

| | Minimum Inches | Maximum Inches |
|---|----------------|----------------|
| F | | .078 |
| G | .420 | .440 |
| H | .190 | .210 |
| I | .095 | .105 |
| J | .030 | .046 |
| K | .140 | .160 |