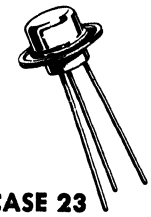
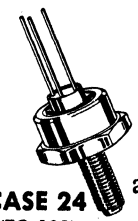
# 2N2949 (SILICON)
# 2N2950



CASE 23
(TO-107)
2N2949



CASE 24
(TO-102)
2N2950

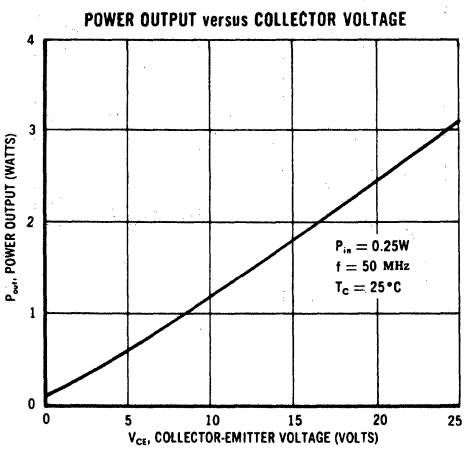
NPN silicon annular transistors for power amplifier and driver applications to 100 MHz.

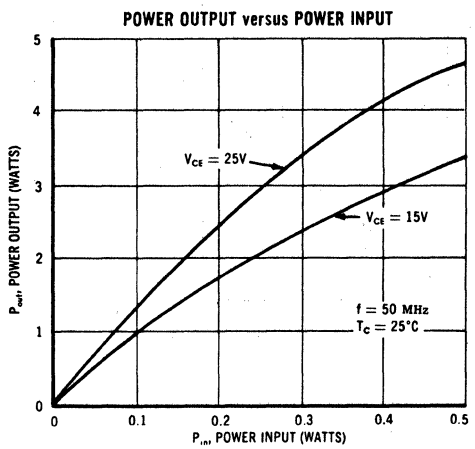
Collector connected to case; stud isolated from case

## MAXIMUM RATINGS*

| Rating | Symbol | Value | | Unit |
|---|---|---|---|---|
| Collector-Base Voltage | $V_{CB}$ | 60 | | Vdc |
| Collector-Emitter Voltage | $V_{CES}$ | 60 | | Vdc |
| Emitter - Base Voltage | $V_{EB}$ | 3.0 | | Vdc |
| Collector Current (Continuous) | $I_C$ | 0.7 | | Adc |
| Base Current (Continuous) | $I_B$ | 100 | | mAdc |
| RF Input Power (Nom) | $P_{in}$ | 1.0 | | Watt |
| RF Output Power (Nom) | $P_{out}$ | 5.0 | | Watts |
| Total Device Dissipation (25°C Case temperature) (Derating Factor above 25°C) | $P_D$ | 6.0<br>40 | | Watts<br>mW/°C |
| Total Device Dissipation at 25° Ambient (Derating Factor above 25°C) | $P_D$ | 2N2949<br>0.5<br>3.33 | 2N2950<br>0.7<br>4.67 | Watt<br>mW/°C |
| Junction Temperature | $T_J$ | 175 | | °C |
| Storage Temperature Range | $T_{stg}$ | -65 to + 175 | | °C |

* The maximum ratings as given for dc conditions can be exceeded on a pulse basis. See Electrical Characteristics.



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

| Characteristic | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Collector-Emitter Sustain Voltage | $V_{CES(sus)}$ (1) | $I_C$=0.250 A, $R_{BE}$= 0 | 85 | 120 | -- | Volts |
| Collector Emitter-Open Base Sustain Voltage | $V_{CEO(sus)}$ (1) | $I_C$=0.250A, $I_B$=0 | 40 | -- | -- | Volts |
| Collector-Emitter Current | $I_{CES}$ | $V_{CE}$= 60 Vdc, $V_{BE}$=0<br>$V_{CE}$=50 Vdc, $V_{BE}$= 0<br>$T_C$= +175°C | --<br>-- | --<br>-- | 100<br>500 | μAdc |
| Collector - Cutoff Current | $I_{CBO}$ | $V_{CB}$=50 Vdc, $I_E$=0 | -- | -- | 0.1 | μAdc |
| Emitter-Cutoff Current | $I_{EBO}$ | $V_{EB}$= 3 Vdc, $I_C$=0 | -- | -- | 100 | μAdc |
| DC Current Gain | $h_{FE}$ | $V_{CE}$= 2.0 Vdc<br>$I_C$= 40 mAdc<br>$V_{CE}$=2.0 Vdc<br>$I_C$= 400 mAdc | 5.0<br>5.0 | --<br>-- | 100<br>-- | --<br>-- |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C$= 400 mAdc, $I_B$= 80 mAdc | -- | -- | 0.5 | Vdc |
| Emitter-Base Saturation Voltage | $V_{BE(sat)}$ | $I_C$=400 mAdc, $I_B$=80mAdc | -- | -- | 2.0 | Vdc |
| AC Current Gain | $\lvert h_{fe} \rvert$ | $V_{CE}$=2.0 Vdc<br>$I_C$=40 mAdc, f=50 MHz | 2.0 | -- | -- | -- |
| Collector Output Capacitance | $C_{ob}$ | $V_{CB}$= 25 Vdc, $I_E$=0<br>f=100 kHz | -- | -- | 20 | pF |
| Power Input | $P_{in}$ | $P_{out}$=3.5 watts, f=50 MHz<br>$V_{CE}$=25 Vdc, $I_{C(max)}$=325 mA | -- | -- | 0.35 | Watt |
| Efficiency | $\eta$ | | 43 | -- | -- | % |

(1) Pulse Width ≤ 100μs, Duty Cycle ≈ 2%