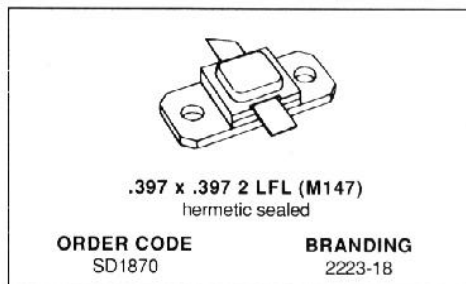


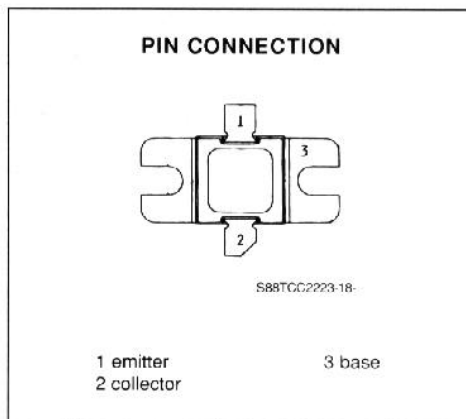
RF & MICROWAVE TRANSISTORS
MICROWAVE TELECOMMUNICATION APPLICATIONS

- FREQUENCY 2.2-2.3GHz
- POWER OUT 18.0W
- POWER GAIN 6.5dB
- VOLTAGE 24.0V
- HERMETIC PACKAGE
- ALL GOLD METALLIZED SYSTEM
- OVERLAY DIE GEOMETRY
- HIGH RELIABILITY AND RUGGEDNESS
- LOW THERMAL RESISTANCE
- COMMON BASE
- BROADBAND PERFORMANCE



DESCRIPTION

The TCC2223-18 is an internally input and output matched NPN silicon transistor designed for microwave applications. The device utilizes polysilicon site ballasting with gold metalized die to achieve high reliability and ruggedness. The TCC2223-18 is a 24V device designed to provide 18W over 2.2-2.3GHz band with a minimum gain of 6.5dB. The SD1870 is branded 2223-18.



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

| Symbol | Parameter | Value | Unit |
|-----------|------------------------------------|-------------|------|
| V_{CEO} | Collector - Base Voltage | 15 | V |
| V_{CBO} | Collector - Emitter Voltage | 45 | V |
| V_{EBO} | Emitter - Base Voltage | 3.5 | V |
| I_C | Collector Current (max.) | 6.1 | A |
| P_{Tot} | Total Device Dissipation at + 25°C | 58.3 | W |
| T_{stg} | Storage Temperature | - 65 to 200 | °C |
| T_j | Junction Temperature | 200 | °C |

THERMAL DATA

| | | | |
|---------------|----------------------------------|-----|------|
| $R_{th(j-c)}$ | Junction-case Thermal Resistance | 3.0 | °C/W |
|---------------|----------------------------------|-----|------|

TCC2223-18**ELECTRICAL CHARACTERISTICS** ($T_{\text{case}} = 25^{\circ}\text{C}$)

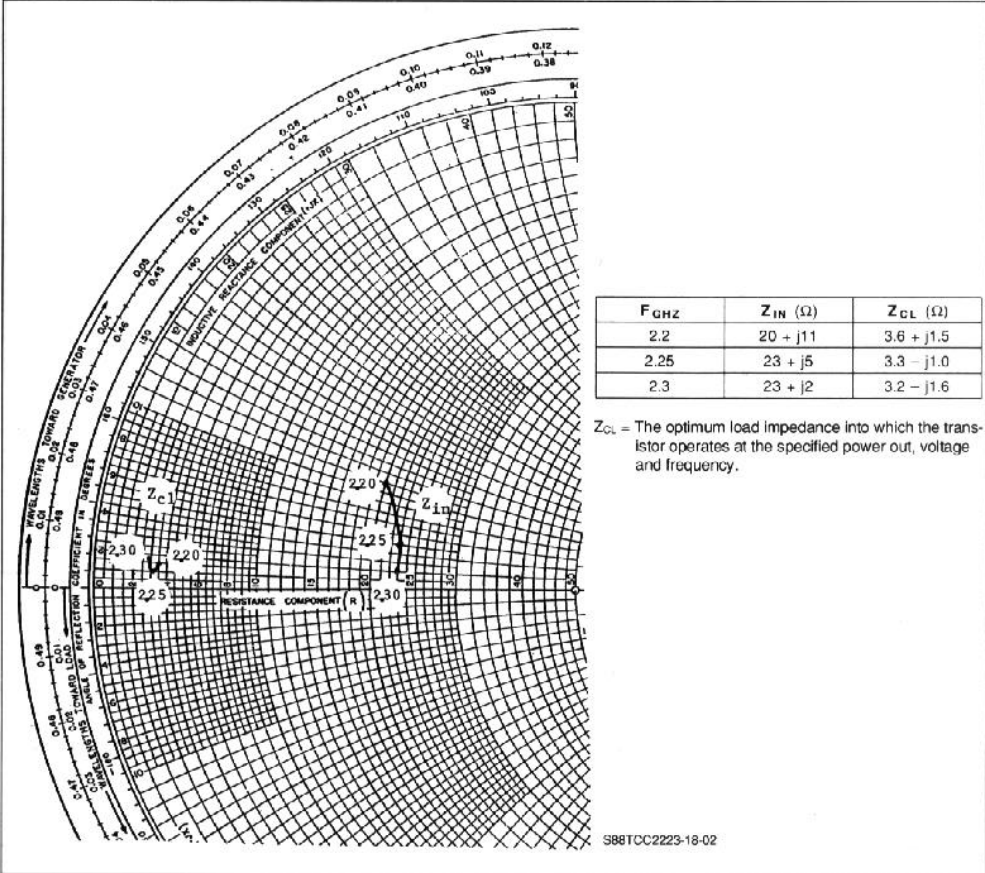
STATIC

| Symbol | Test Conditions | | Value | | | Unit |
|-------------------|------------------------------|-----------------------------|-------|------|------|------|
| | | | Min. | Typ. | Max. | |
| BV_{CEO} | $I_{\text{C}} = 8\text{mA}$ | $I_{\text{B}} = 0$ | 15 | | | V |
| BV_{CBO} | $I_{\text{C}} = 8\text{mA}$ | $V_{\text{BE}} = 0$ | 45 | | | V |
| BV_{EBO} | $I_{\text{E}} = 8\text{mA}$ | $I_{\text{C}} = 0$ | 3.5 | | | V |
| I_{CBO} | $V_{\text{CB}} = 24\text{V}$ | $V_{\text{BE}} = 0$ | | | 0.4 | mA |
| h_{FE} | $V_{\text{CE}} = 5\text{V}$ | $I_{\text{C}} = .5\text{A}$ | 15 | | 150 | |

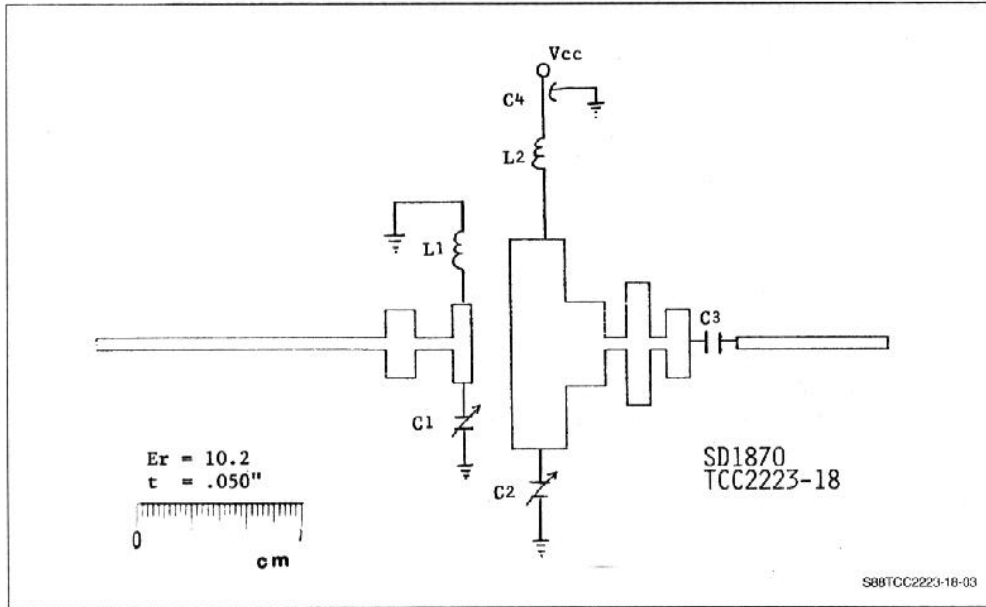
DYNAMIC

| Symbol | Test Conditions | | | Value | | | Unit |
|-------------------|---------------------------|------------------------------|-------------------------------|-------|------|------|------|
| | | | | Min. | Typ. | Max. | |
| P_{O} | $f = 2.2 - 2.3\text{GHz}$ | $V_{\text{CB}} = 24\text{V}$ | $P_{\text{IN}} = 4\text{W}$ | 18 | | | W |
| P_{G} | $f = 2.2 - 2.3\text{GHz}$ | $V_{\text{CB}} = 24\text{V}$ | $P_{\text{IN}} = 4\text{W}$ | 6.5 | | | dB |
| η_{C} | $f = 2.2 - 2.3\text{GHz}$ | $V_{\text{CB}} = 24\text{V}$ | $P_{\text{OUT}} = 18\text{W}$ | 40 | | | % |

TYPICAL SERIES EQUIVALENT INPUT/OUTPUT IMPEDANCE WORKSHEET



TCC2223-18

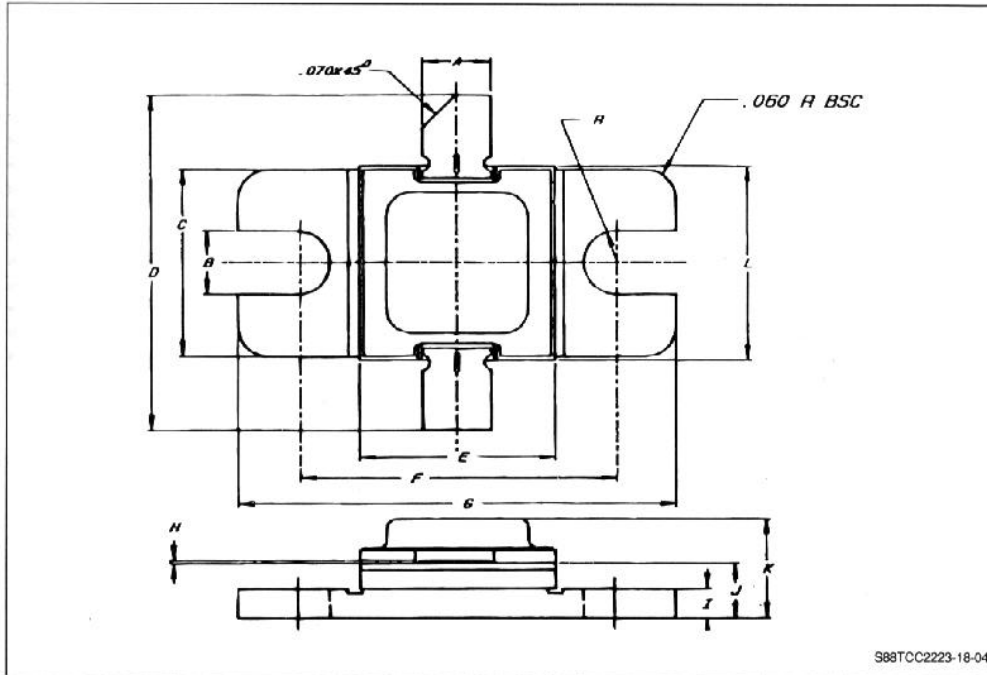


PARTS LIST

| ITEM REF. | Description |
|-----------|--------------------------------------|
| L1 | 2 Turns #20 Wire 100" Dia |
| L2 | 2 Turns #20 Wire 100" Dia |
| C1 | 4 - 2.5pF Johanson Trimmer Capacitor |
| C2 | 4 - 2.5pF Johanson Trimmer Capacitor |
| C3 | 100pF ATC Chip Capacitor Size A |
| C4 | 15.000pF EMI Filter Capacitor (erie) |
| | Circuit Board Material Epsilon 10 |
| | er = 10.2 T = .050" 1oz Copper |

PACKAGE MECHANICAL DATA

.397 x .397 2LFL



| | Minimum Inches/mm | Maximum Inches/mm |
|---|----------------------|----------------------|
| A | .135/3.43 | .145/3.68 |
| B | .125/3.18 BSC | |
| C | .380/9.65 | .390/9.91 |
| D | .885/22.48 | |
| E | .392/9.96 | .402/10.29 |
| F | .645/16.38 | .655/16.64 |

| | Minimum Inches/mm | Maximum Inches/mm |
|---|----------------------|----------------------|
| G | .895/22.73 | .905/22.99 |
| H | .002/0.05 | .006/0.15 |
| I | .055/1.40 | .065/1.65 |
| J | .105/2.67 | .125/3.18 |
| K | | .230/5.84 |
| L | .392/9.96 | .402/10.29 |