

isc Silicon NPN Power Transistor

2SC1970

DESCRIPTION

- High Power Gain-  
:  $G_{pe} \geq 9.2\text{dB}$ ,  $f = 175\text{MHz}$ ,  $P_O = 1\text{W}$ ;  $V_{CC} = 13.5\text{V}$
- High Reliability

APPLICATIONS

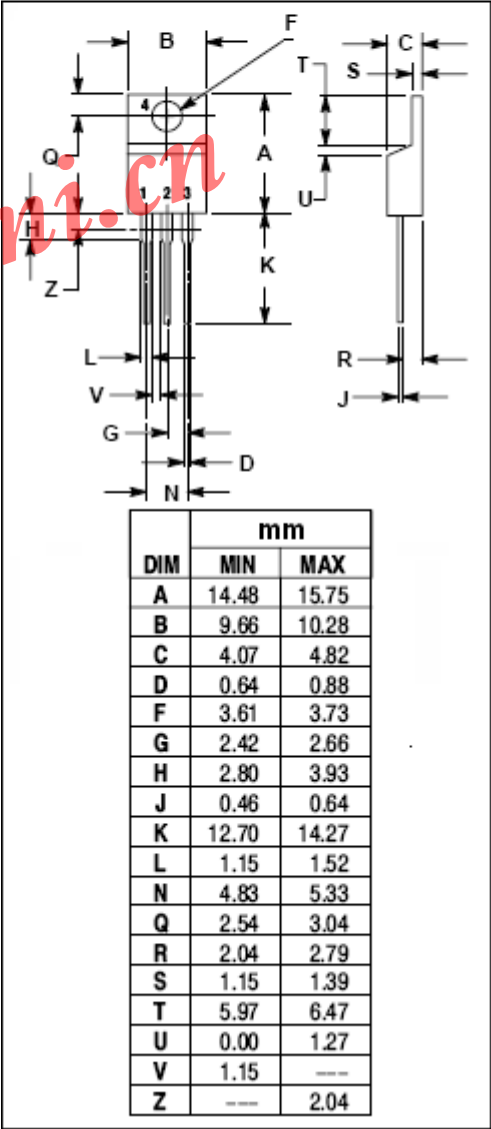
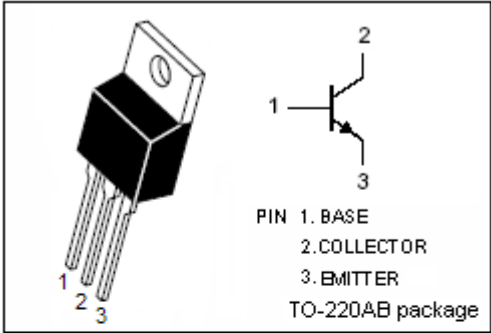
- Designed for RF power amplifiers on VHF band mobile radio applications.

ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

| SYMBOL    | PARAMETER                                                 | VALUE   | UNIT             |
|-----------|-----------------------------------------------------------|---------|------------------|
| $V_{CBO}$ | Collector-Base Voltage                                    | 40      | V                |
| $V_{CEO}$ | Collector-Emitter Voltage $R_{BE} = \infty$               | 17      | V                |
| $V_{EBO}$ | Emitter-Base Voltage                                      | 4       | V                |
| $I_C$     | Collector Current                                         | 0.6     | A                |
| $P_C$     | Collector Power Dissipation<br>@ $T_C = 25^\circ\text{C}$ | 5       | W                |
|           | Collector Power Dissipation<br>@ $T_a = 25^\circ\text{C}$ | 1       |                  |
| $T_j$     | Junction Temperature                                      | 150     | $^\circ\text{C}$ |
| $T_{stg}$ | Storage Temperature Range                                 | -55~150 | $^\circ\text{C}$ |

THERMAL CHARACTERISTICS

| SYMBOL        | PARAMETER                               | MAX | UNIT                      |
|---------------|-----------------------------------------|-----|---------------------------|
| $R_{th\ j-a}$ | Thermal Resistance, Junction to Ambient | 125 | $^\circ\text{C}/\text{W}$ |
| $R_{th\ j-c}$ | Thermal Resistance, Junction to Case    | 25  | $^\circ\text{C}/\text{W}$ |



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## ELECTRICAL CHARACTERISTICS

 $T_C=25^{\circ}\text{C}$  unless otherwise specified

| SYMBOL        | PARAMETER                           | CONDITIONS                                                           | MIN | TYP. | MAX | UNIT |
|---------------|-------------------------------------|----------------------------------------------------------------------|-----|------|-----|------|
| $V_{(BR)CBO}$ | Collector-Base Breakdown Voltage    | $I_C=5\text{mA}$ , $I_E=0$                                           | 40  |      |     | V    |
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage | $I_C=50\text{mA}$ ; $R_{BE}=\infty$                                  | 17  |      |     | V    |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage      | $I_E=1\text{mA}$ , $I_C=0$                                           | 4   |      |     | V    |
| $I_{CBO}$     | Collector Cutoff Current            | $V_{CB}=25\text{V}$ ; $I_E=0$                                        |     |      | 0.1 | mA   |
| $I_{EBO}$     | Emitter Cutoff Current              | $V_{EB}=3\text{V}$ ; $I_C=0$                                         |     |      | 0.1 | mA   |
| $h_{FE}$      | DC Current Gain                     | $I_C=0.1\text{A}$ ; $V_{CE}=10\text{V}$                              | 10  |      | 180 |      |
| $P_O$         | Output Power                        | $V_{CC}=13.5\text{V}$ ; $P_{in}=0.12\text{W}$ ;<br>$f=175\text{MHz}$ | 1   | 1.2  |     | W    |
| $\eta_C$      | Collector Efficiency                |                                                                      | 50  | 60   |     | %    |

◆  $h_{FE}$  Classifications

| X     | A     | B     | C      | D      |
|-------|-------|-------|--------|--------|
| 10-25 | 20-45 | 35-70 | 55-110 | 90-180 |