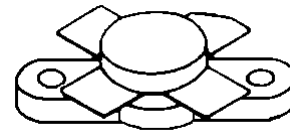


## RF & MICROWAVE TRANSISTORS HF SSB APPLICATIONS

- OPTIMIZED FOR SSB
- 30 MHz
- 28 VOLTS
- IMD -30 dB
- COMMON EMITTER
- GOLD METALLIZATION
- $P_{OUT} = 130$  W PEP WITH 12 dB GAIN



**.500 4LFL (M174)**  
epoxy sealed

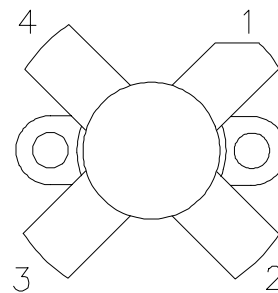
**ORDER CODE**  
SD1729

**BRANDING**  
TH416

### DESCRIPTION

The SD1729 is a Class AB 28 V epitaxial silicon NPN planar transistor designed primarily for SSB communications. This device utilizes emitter ballasting to achieve extreme ruggedness under severe operating conditions.

### PIN CONNECTION



1. Collector      3. Base  
2. Emitter      4. Emitter

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

| Symbol     | Parameter                 | Value        | Unit               |
|------------|---------------------------|--------------|--------------------|
| $V_{CBO}$  | Collector-Base Voltage    | 70           | V                  |
| $V_{CEO}$  | Collector-Emitter Voltage | 35           | V                  |
| $V_{EBO}$  | Emitter-Base Voltage      | 4.0          | V                  |
| $I_C$      | Device Current            | 12           | A                  |
| $P_{DISS}$ | Power Dissipation         | 175          | W                  |
| $T_J$      | Junction Temperature      | +200         | $^{\circ}\text{C}$ |
| $T_{STG}$  | Storage Temperature       | - 65 to +150 | $^{\circ}\text{C}$ |

### THERMAL DATA

|               |                                  |     |                      |
|---------------|----------------------------------|-----|----------------------|
| $R_{TH(j-c)}$ | Junction-Case Thermal Resistance | 1.0 | $^{\circ}\text{C/W}$ |
|---------------|----------------------------------|-----|----------------------|

## SD1729 (TH416)

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

#### STATIC

| Symbol     | Test Conditions                            | Value |      |      | Unit |
|------------|--------------------------------------------|-------|------|------|------|
|            |                                            | Min.  | Typ. | Max. |      |
| $BV_{CES}$ | $I_C = 50\text{ mA}$ $V_{BE} = 0\text{ V}$ | 70    | —    | —    | V    |
| $BV_{CEO}$ | $I_C = 100\text{ mA}$ $I_B = 0\text{ mA}$  | 35    | —    | —    | V    |
| $BV_{EBO}$ | $I_E = 20\text{ mA}$ $I_C = 0\text{ mA}$   | 4.0   | —    | —    | V    |
| $I_{CES}$  | $V_{CE} = 35\text{ V}$ $I_E = 0\text{ mA}$ | —     | —    | 20   | mA   |
| $h_{FE}$   | $V_{CE} = 5\text{ V}$ $I_C = 7\text{ A}$   | 18    | —    | 50   | —    |

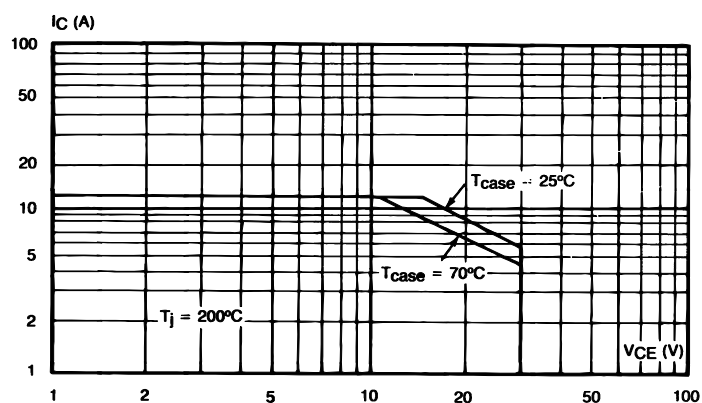
#### DYNAMIC

| Symbol    | Test Conditions                                                              | Value |      |      | Unit |
|-----------|------------------------------------------------------------------------------|-------|------|------|------|
|           |                                                                              | Min.  | Typ. | Max. |      |
| $P_{OUT}$ | $f = 30\text{ MHz}$ $V_{CE} = 28\text{ V}$ $I_{CQ} = 150\text{ mA}$          | 130   | —    | —    | W    |
| $G_P$     | $P_{OUT} = 130\text{ W PEP}$ $V_{CE} = 28\text{ V}$ $I_{CQ} = 150\text{ mA}$ | 12    | —    | —    | dB   |
| $IMD^*$   | $P_{OUT} = 130\text{ W PEP}$ $V_{CE} = 28\text{ V}$ $I_{CQ} = 150\text{ mA}$ | —     | —    | -30  | dBc  |
| $\eta_C$  | $P_{OUT} = 130\text{ W PEP}$ $V_{CE} = 28\text{ V}$ $I_{CQ} = 150\text{ mA}$ | 37    | —    | —    | %    |
| $C_{OB}$  | $f = 1\text{ MHz}$ $V_{CB} = 28\text{ V}$                                    | —     | 220  | —    | pF   |

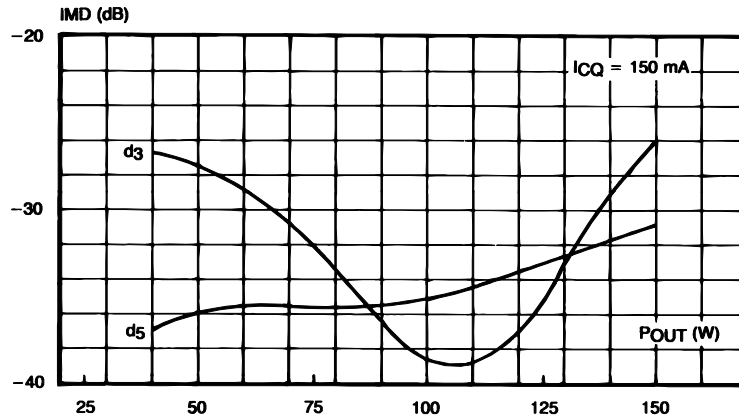
Note: \*  $f_1 = 30.00\text{ MHz}$ ,  $f_2 = 30.001\text{ MHz}$

### TYPICAL PERFORMANCE

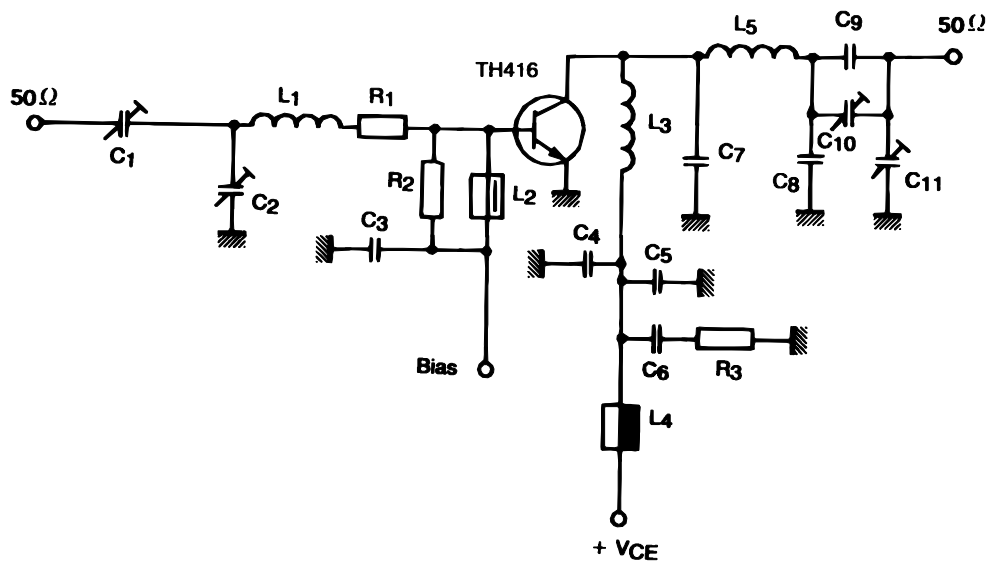
#### SAFE OPERATING AREA



## TYPICAL PERFORMANCE (cont'd)

INTERMODULATION DISTORTION vs  
POWER OUTPUT

## TEST CIRCUIT

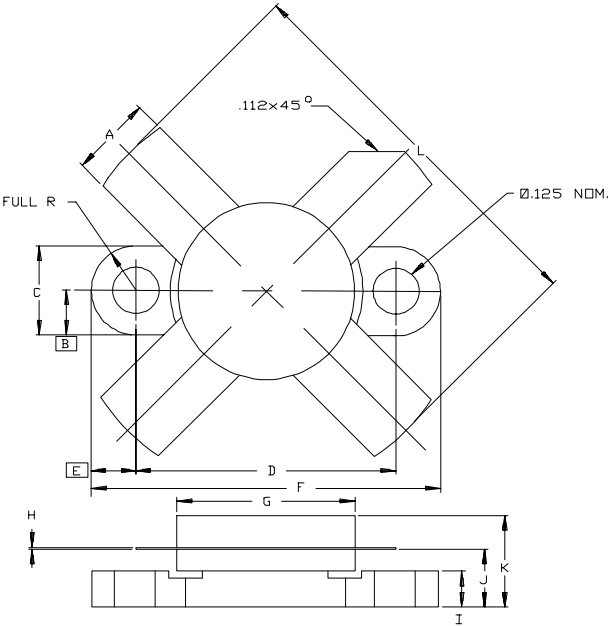


C1 : 20 - 120pF  
 C2 : 50 - 300pF  
 C3, C4 : 3.9nF  
 C5 : 100nF  
 C6 : 2.2μF  
 C7 : 2 x 180pF in Parallel  
 C8 : 3 x 56pF and 33pF in Parallel  
 C9 : 4 x 56pF and 68pF in Parallel  
 C10, C11 : 360pF

L1 : 88nF  
 L2 : 22μH Choke Coil  
 L3, L5 : 80nF  
 L4 : Ferroxcube Choke Coil  
 R1 : 0.55Ω  
 R2 : 27Ω  
 R3 : 4.7Ω

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0174



| SGS-THOMSON MICROELECTRONICS |                      |                      | CONT'D |                      |                      |
|------------------------------|----------------------|----------------------|--------|----------------------|----------------------|
|                              | MINIMUM<br>Inches/mm | MAXIMUM<br>Inches/mm |        | MINIMUM<br>Inches/mm | MAXIMUM<br>Inches/mm |
| A                            | .220/5,59            | .230/5,84            | K      |                      | .280/7,11            |
| B                            | .125/3,18            |                      | L      |                      | 1.050/26,67          |
| C                            | .245/6,22            | .255/6,48            |        |                      |                      |
| D                            | .720/18,28           | .730/18,54           |        |                      |                      |
| E                            | .125/3,18            |                      |        |                      |                      |
| F                            | .970/24,64           | .980/24,89           |        |                      |                      |
| G                            | .495/12,57           | .505/12,83           |        |                      |                      |
| H                            | .003/0,08            | .007/0,18            |        |                      |                      |
| I                            | .090/2,29            | .110/2,79            |        |                      |                      |
| J                            | .160/4,06            | .175/4,45            |        |                      |                      |

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