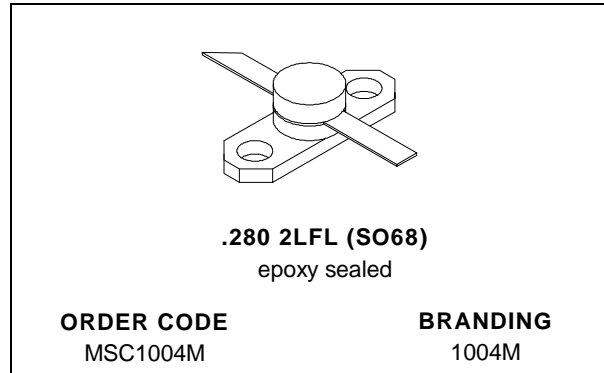


## RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

- 1025 - 1150 MHz
- RUGGEDIZED VSWR  $\infty:1$
- INTERNAL INPUT MATCHING
- LOW THERMAL RESISTANCE
- $P_{OUT} = 4.0$  W MIN. WITH 9.0 dB GAIN

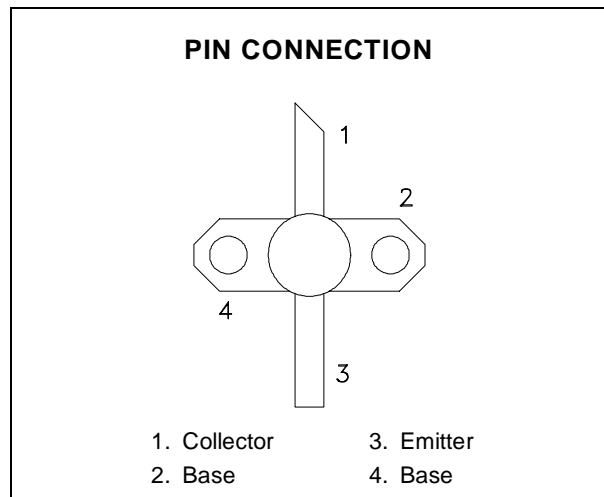


### DESCRIPTION

The MSC1004M is a low-level Class C pulsed transistor specifically designed for DME/IFF driver or output applications.

These devices are capable of withstanding a  $\infty:1$  load VSWR at any phase angle under full rated conditions. Low RF thermal resistance and automatic bonding techniques ensure high reliability and product consistency.

The MSC1004M is housed in the IMPAC™ package with internal input matching.



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

| Symbol     | Parameter                                      | Value        | Unit        |
|------------|--|--------------|-------------|
| $P_{DISS}$ | Power Dissipation* ( $T_C \leq 100^{\circ}C$ ) | 18           | W           |
| $I_C$      | Device Current*                                | 650          | mA          |
| $V_{CC}$   | Collector-Supply Voltage*                      | 32           | V           |
| $T_J$      | Junction Temperature                           | 200          | $^{\circ}C$ |
| $T_{STG}$  | Storage Temperature                            | - 65 to +150 | $^{\circ}C$ |

### THERMAL DATA

|               |                                   |   |               |
|---------------|-----------------------------------|---|---------------|
| $R_{TH(j-c)}$ | Junction-Case Thermal Resistance* | 5 | $^{\circ}C/W$ |
|---------------|-----------------------------------|---|---------------|

\*Applies only to rated RF amplifier operation

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

**STATIC**

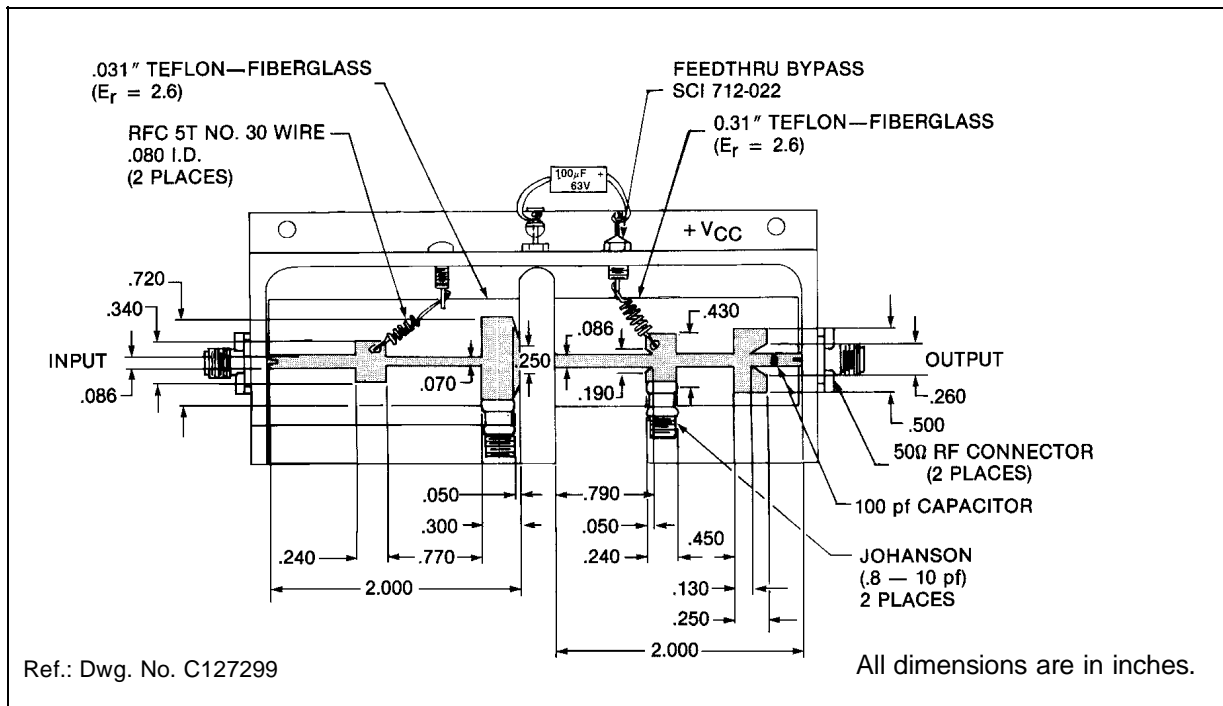
| Symbol     | Test Conditions                                | Value |      |      | Unit |
|------------|--|-------|------|------|------|
|            |  | Min.  | Typ. | Max. |      |
| $BV_{CBO}$ | $I_C = 1\text{ mA}$<br>$I_E = 0\text{ mA}$     | 45    | —    | —    | V    |
| $BV_{CER}$ | $I_C = 5\text{ mA}$<br>$R_{BE} = 10\ \Omega$   | 45    | —    | —    | V    |
| $BV_{EBO}$ | $I_E = 1\text{ mA}$<br>$I_C = 0\text{ mA}$     | 3.5   | —    | —    | V    |
| $I_{CES}$  | $V_{CE} = 28\text{ V}$                         | —     | —    | 1.0  | mA   |
| $h_{FE}$   | $V_{CE} = 5\text{ V}$<br>$I_C = 200\text{ mA}$ | 30    | —    | 300  | —    |

**DYNAMIC**

| Symbol    | Test Conditions  | Value |      |      | Unit |
|-----------|--|-------|------|------|------|
|           |  | Min.  | Typ. | Max. |      |
| $P_{OUT}$ | $f = 1025 - 1150\text{ MHz}$<br>$P_{IN} = 500\text{ mW}$<br>$V_{CC} = 28\text{ V}$ | 4.0   | —    | —    | W    |
| $\eta_c$  | $f = 1025 - 1150\text{ MHz}$<br>$P_{IN} = 500\text{ mW}$<br>$V_{CC} = 28\text{ V}$ | 35    | —    | —    | %    |
| $G_P$     | $f = 1025 - 1150\text{ MHz}$<br>$P_{IN} = 500\text{ mW}$<br>$V_{CC} = 28\text{ V}$ | 9.0   | —    | —    | dB   |

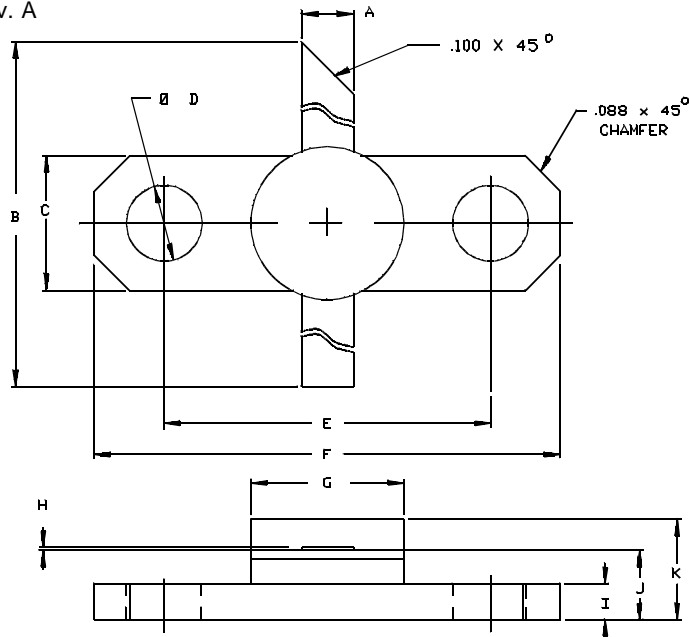
Note: Pulse Width =  $10\ \mu\text{Sec}$   
Duty Cycle = 1%

**TEST CIRCUIT**



PACKAGE MECHANICAL DATA

Ref.: Dwg. No. 12-0218 rev. A



| SGS-THOMSON MICROELECTRONICS |                      |                      | CONT'D |                      |                      |
|------------------------------|----------------------|----------------------|--------|----------------------|----------------------|
|                              | MINIMUM<br>Inches/mm | MAXIMUM<br>Inches/mm |        | MINIMUM<br>Inches/mm | MAXIMUM<br>Inches/mm |
| A                            | .095/2,41            | .105/2,67            | I      | .052/1,32            | .072/1,83            |
| B                            | 1.050/26,67          |                      | J      | .120/3,05            | .130/3,30            |
| C                            | .245/6,22            | .255/6,48            | K      |                      | .210/5,33            |
| D                            | .120/3,05            | .140/3,56            |        |                      |                      |
| E                            | .552/14,02           | .572/14,53           |        |                      |                      |
| F                            | .790/20,07           | .810/20,57           |        |                      |                      |
| G                            |                      | .285/7,24            |        |                      |                      |
| H                            | .003/0,08            | .007/0,18            |        |                      |                      |

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