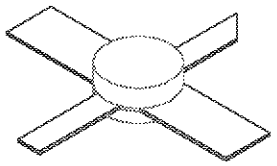
SGS-THOMSON MICROELECTRONICS

MSC81035MP

RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

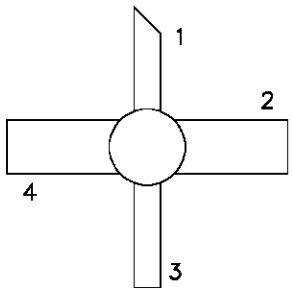
- REFRACTORY/GOLD METALLIZATION
- EMITTER SITE BALLASTED
- ∞:1 VSWR CAPABILITY
- LOW THERMAL RESISTANCE
- INPUT MATCHING
- OVERLAY GEOMETRY
- METAL/CERAMIC HERMETIC PACKAGE
- P_{OUT} = 35 W MIN. WITH 10.7 dB GAIN



.280 4LSL (S051)
epoxy sealed

ORDER CODE	BRANDING
MSC81035MP	81035MP

PIN CONNECTION



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

DESCRIPTION

The MSC81035MP is a medium power Class C transistor designed specifically for pulsed L-Band avionics applications. This device is a direct replacement for the MSC1035MP. MSC81035MP offers improved saturated ouput power and collector efficiency based on the test circuit described herein.

Low RF thermal resistance and computerized automatic wire bonding techniques ensure high reliability and product consistency.

The MSC81035MP is housed in the IMPAC™ package with internal input matching.

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C)

Symbol	Parameter	Value	Unit
P_{DISS}	Power Dissipation* ($T_C \leq 100°C$)	150	W
I_C	Device Current*	3.0	A
V_{CC}	Collector-Supply Voltage*	55	V
T_J	Junction Temperature (Pulsed RF Operation)	250	°C
T_{STG}	Storage Temperature	– 65 to +150	°C

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance*	1.0	°C/W

*Applies only to rated RF amplifier operation

Note: Thermal Resistance determined by Infra-Red Scanning of Hot-Spot Junction Temperature at rated RF operating conditions.

ELECTRICAL SPECIFICATIONS (T_{case} = 25°C)

STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	I_C = 10mA	I_E = 0mA	65	—	—	V
BV_{EBO}	I_E = 1mA	I_C = 0mA	3.5	—	—	V
BV_{CER}	IC = 10mA	R_{BE} = 10Ω	65	—	—	V
I_{CES}	V_{BE} = 0V	V_{CE} = 50V	—	—	5	mA
h_{FE}	V_{CE} = 5V	I_C = 500mA	15	—	120	—

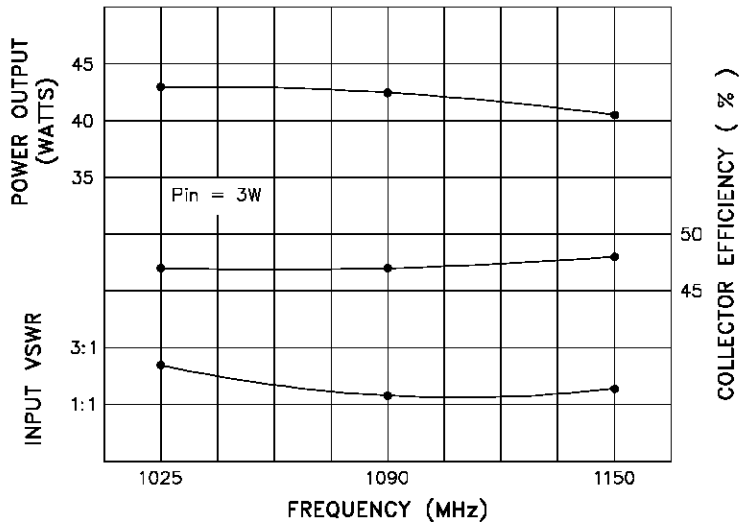
DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 1025 — 1150 MHz	P_{IN} = 3.0W	V_{CC} = 50V	35	40	—	W
ηc	f = 1025 — 1150 MHz	P_{IN} = 3.0W	V_{CC} = 50V	10.7	11.2	—	%
G_P	f = 1025 — 1150 MHz	P_{IN} = 3.0W	V_{CC} = 50V	43	48	—	dB

Note: Pulse Width = 10µSec
Duty Cycle = 1%

TYPICAL PERFORMANCE

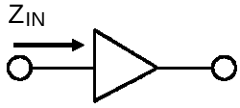
TYPICAL BROADBAND POWER AMPLIFIER



IMPEDANCE DATA

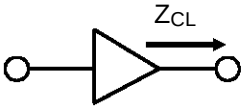
TYPICAL INPUT IMPEDANCE

Z_{IN}

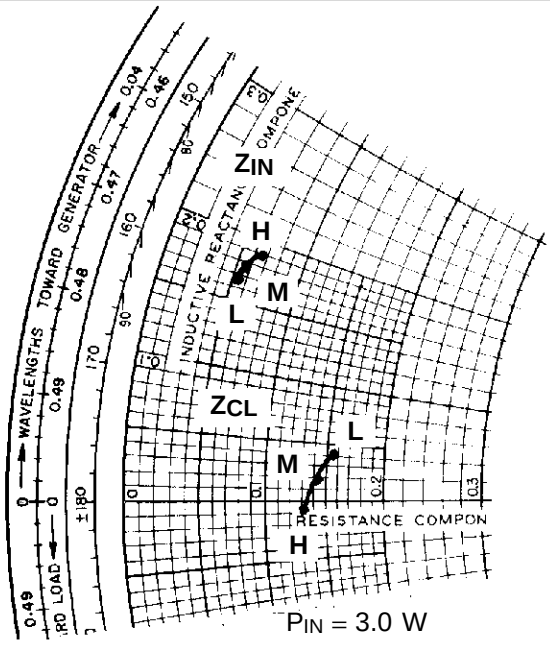


TYPICAL COLLECTOR LOAD IMPEDANCE

Z_{CL}



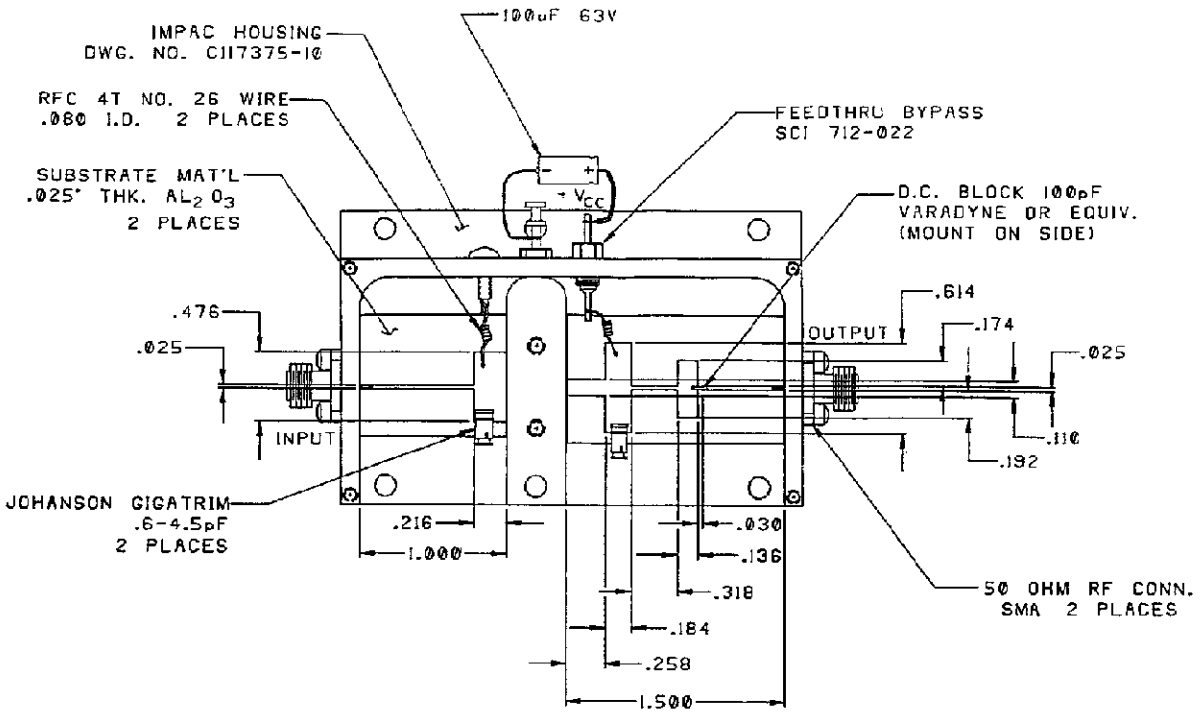
FREQ.	Z_{IN} (Ω)	Z_{CL} (Ω)
L = 1025 MHz	2.6 + j 8.3	7.7 + j 2.0
M = 1090 MHz	2.8 + j 8.7	7.1 + j 1.0
H = 1150 MHz	3.2 + j 4.4	6.5 – j 0.5



P_{IN} = 3.0 W
V_{CC} = 50 V
Normalized to 50 ohms

TEST CIRCUIT

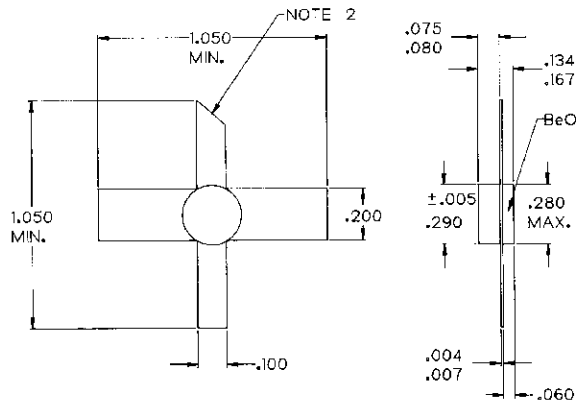
Ref.: Dwg. No. 101 002888



All dimensions are in inches.

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.: J135032E



NOTES:
1. ALL TOLERANCE ± .010 EXCEPT WHERE NOTED; DIMENSIONS IN INCHES.
2. COLLECTOR LEAD SLANT CUT.