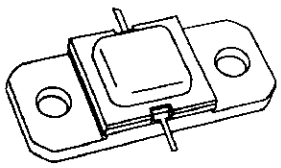
SGS-THOMSON MICROELECTRONICS

MSC81350M

RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

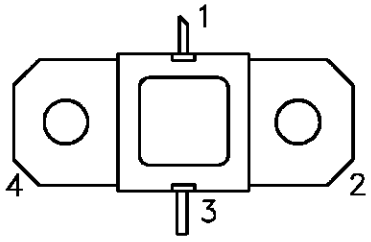
- REFRACTORY/GOLD METALLIZATION
- RUGGEDIZED VSWR 20:1
- INTERNAL INPUT/OUTPUT MATCHING
- LOW THERMAL RESISTANCE
- METAL/CERAMIC HERMETIC PACKAGE
- P_{OUT} = 350 W MIN. WITH 7.0 dB GAIN



.400 x .400 2NLFL (S042)
hermetically sealed

ORDER CODE	BRANDING
MSC81350M	81350M

PIN CONNECTION



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

DESCRIPTION

The MSC81350M device is a high power pulsed transistor specifically designed for IFF avionics applications.

This device is capable of withstanding a minimum 20:1 load VSWR at any phase angle under full rated conditions. Low RF thermal resistance and semi automatic wire bonding techniques ensure high reliability and product consistency.

The MSC81350M is housed in the unique AMPAC™ package with internal input/output matching structures.

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

Symbol	Parameter	Value	Unit
P_{DISS}	Power Dissipation* ($T_C \leq 55°C$)	720	W
I_C	Device Current*	19.8	A
V_{CC}	Collector-Supply Voltage*	55	V
T_J	Junction Temperature (Pulsed RF Operation)	250	°C
T_{STG}	Storage Temperature	– 65 to +200	°C

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance*	0.20	°C/W

*Applies only to rated RF amplifier operation

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 = 25mA	R_{BE} = 10Ω	65	—	—	V
I_{CES}	V_{CE} = 50V		—	—	25	mA
h_{FE}	V_{CE} = 5V	I_C = 1A	15	—	120	—

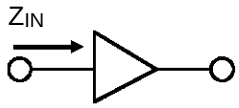
DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 1090 MHz	P_{IN} = 70 W	V_{CC} = 50 V	350	360	—	W
η_c	f = 1090 MHz	P_{IN} = 70 W	V_{CC} = 50 V	40	44	—	%
G_P	f = 1090 MHz	P_{IN} = 70 W	V_{CC} = 50 V	7.0	7.1	—	dB

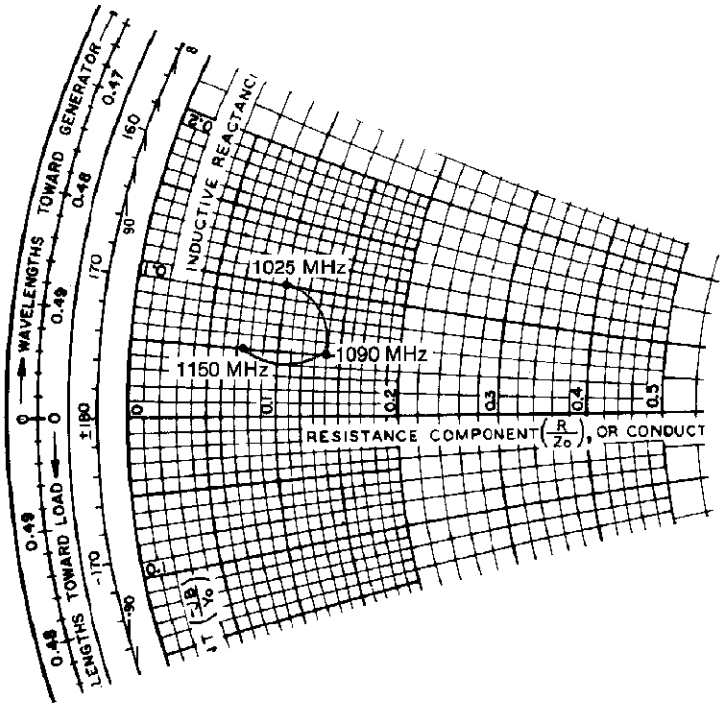
Note: Pulse Width = 10μSec
Duty Cycle = 1%

IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE

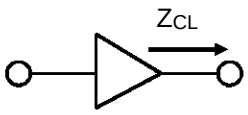


P_{IN} = 70 W
V_{CC} = 50 V
Normalized to 50 ohms

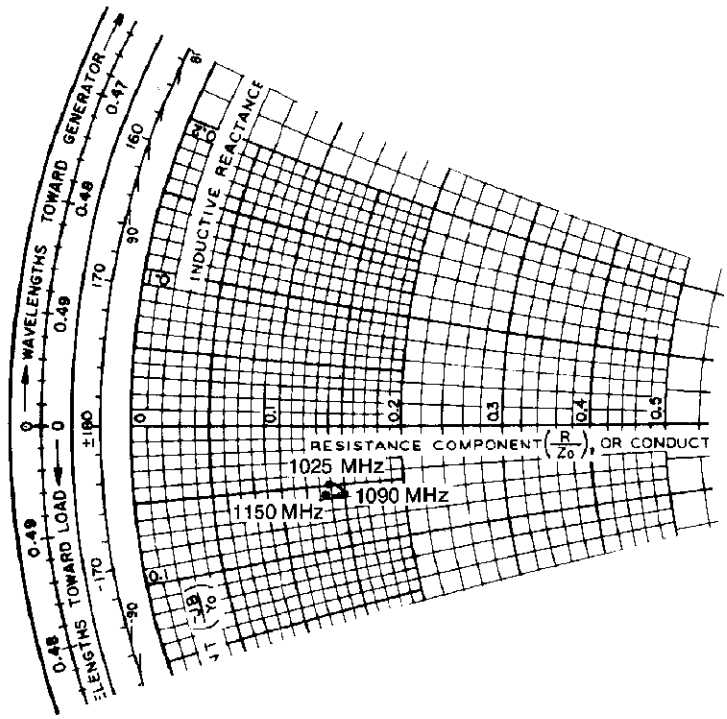


FREQ.	Z_{IN} (Ω)	Z_{CL} (Ω)
L = 1025 MHz	5.0 + j 5.0	7.0 – j 2.5
M = 1090 MHz	7.0 + j 2.5	7.5 – j 2.8
H = 1150 MHz	3.6 + j 2.5	6.8 – j 2.7

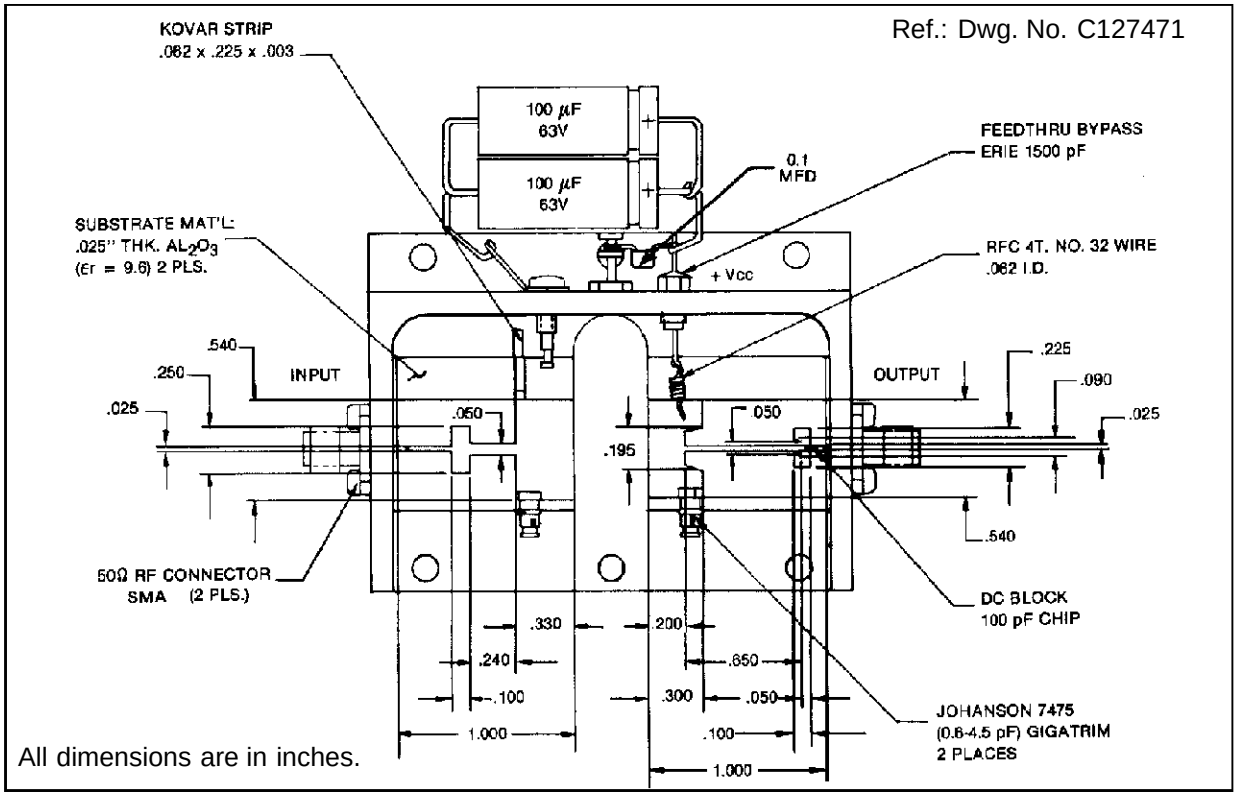
TYPICAL COLLECTOR LOAD IMPEDANCE



P_{IN} = 70 W
V_{CC} = 50 V
Normalized to 50 ohms



TEST CIRCUIT



PACKAGE MECHANICAL DATA