SGS-THOMSON MICROELECTRONICS

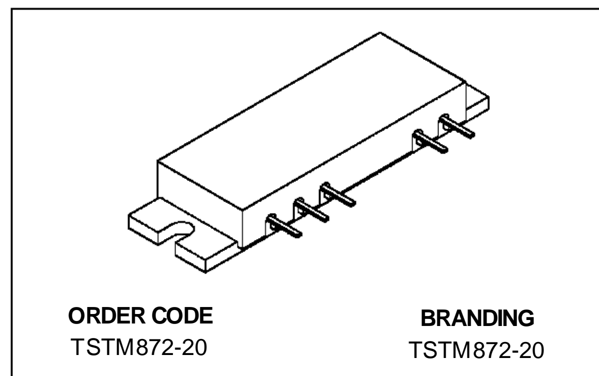
TSTM872-20

RF POWER MODULE MOBILE APPLICATIONS

PRODUCT DEVELOPMENT DATA SHEET

This data sheet contains the design criteria and target specifications for a product which is currently under development by SGS-THOMSON. The design criteria and specifications of this item could change prior to introduction and SGS-THOMSON assumes no liability for use of information contained herein.

- MOBILE CLASS C POWER AMPLIFIER
- 806 - 870 MHz
- 12.5 VOLTS
- INPUT/OUTPUT 50 OHMS
- P_{OUT} = 20 W MIN.
- GAIN = 19 dB MIN.



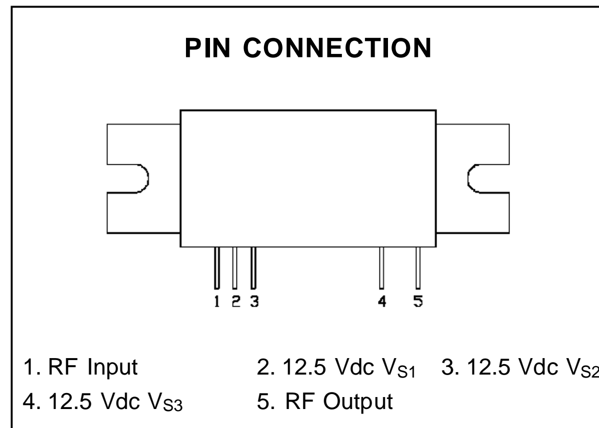
ORDER CODE	BRANDING
TSTM872-20	TSTM872-20

DESCRIPTION

The TSTM872-20 module is designed for high power, high efficiency, analog private mobile radio systems in the 806 - 870 MHz frequency range.

A significant advantage of this module is its high RF power output performance and very low standby current.

PIN CONNECTION



1. RF Input
2. 12.5 Vdc V_{S1}
3. 12.5 Vdc V_{S2}
4. 12.5 Vdc V_{S3}
5. RF Output

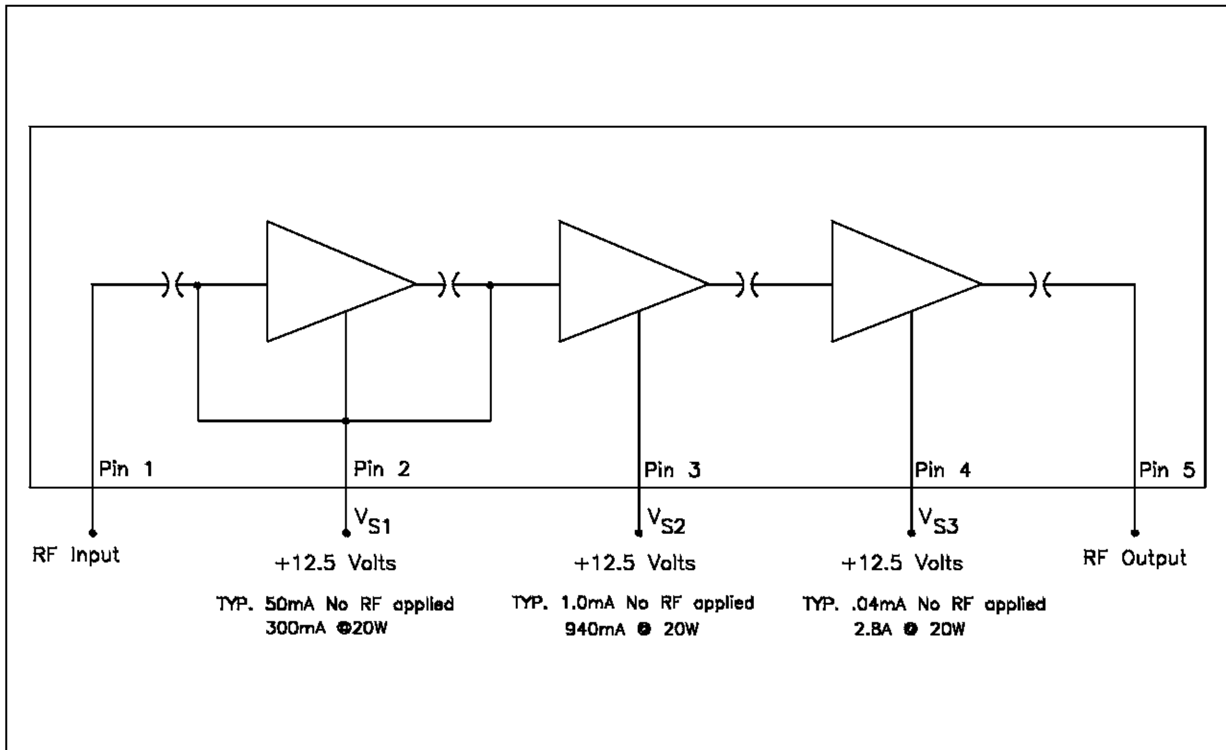
ABSOLUTE MAXIMUM RATINGS (Tcase = 25°C)

Symbol	Parameter	Value	Unit
V_{S1}, V_{S2}, V_{S3}	DC Supply Voltage	16	Vdc
P_{IN}	RF Input Power	400	mW
P_{OUT}	RF Output Power	25	W
T_{STG}	Storage Temperature	– 30 to +100	°C
T_C	Operating Case Temperature	– 30 to +100	°C

ELECTRICAL SPECIFICATIONS (T_{case} = 25 °C, V_{S1}, V_{S2}, V_{S3} = 12.5 Volts unless otherwise noted.)

Symbol	Parameter	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
BW	Frequency Range		806	—	870	MHz
P_{IN}	Input Power	P_{OUT} = 20 W	—	—	250	mW
η	Efficiency	P_{OUT} = 20 W	35	40	—	%
$I_{Q1(q)}$	Quiescent Current V_{S1}	No RF applied	—	50	—	mA
$I_{Q2(q)}$	Quiescent Current V_{S2}	No RF applied	—	1.0	—	mA
$I_{Q3\ (q)}$	Quiescent Current V_{S3}	No RF applied	—	0.04	—	mA
H	Harmonics	P_{OUT} = 20 W	—	–58	—	dBc
Z_{IN}	Input Impedance	P_{OUT} = 20 W	—	—	2.0:1	VSWR
—	Load Mismatch	VSWR = 30:1 V = 16 Vdc P_{OUT} = 25 W	No Degradation in Output Power			

INTERNAL CONFIGURATION



APPLICATIONS RECOMMENDATIONS

OPERATION LIMITS

The TSTM872-20 power module should never be operated under any condition which exceeds the Absolute Maximum Ratings presented on this data sheet. Nor should the module be operated continuously at any of the specified maximum ratings. If the module is to be subjected to one or more of the maximum rating conditions, care must be taken to monitor other parameters which may be affected.

DECOUPLING

Failure to properly decouple any of the voltage supply pins will result in oscillations at certain operating frequencies. Therefore, it is recommended that these pins be bypassed as indicated in the Module DC and Test Fixture Configuration drawing of this data sheet.

MODULE MOUNTING

To insure adequate thermal transfer from the module to the heatsink, it is recommended that a satisfactory thermal compound such as Dow Corning 340, Wakefield 120-2 or equivalent be applied between the module flange and the heatsink.

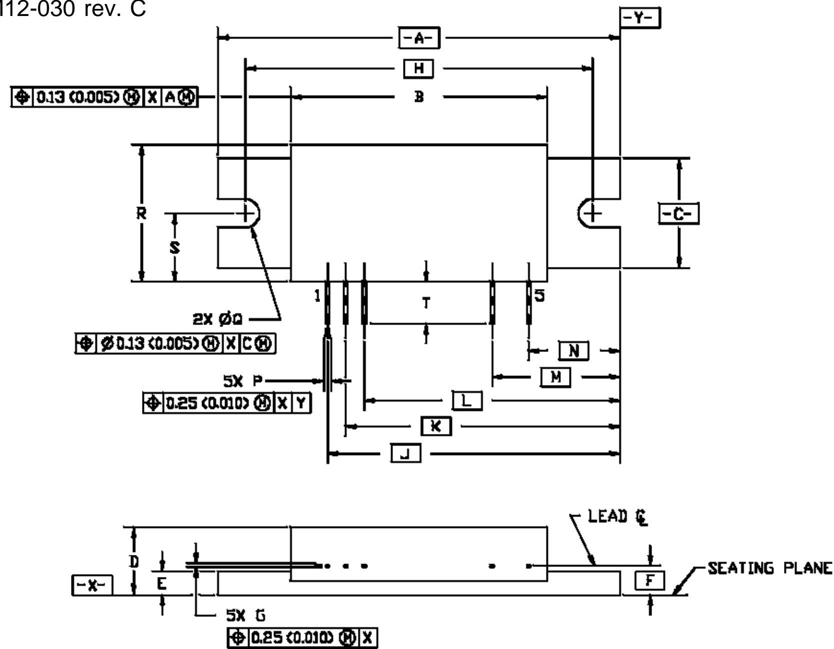
The heatsink mounting surface under the module should be flat to within +/- 0.05 mm (+/- 0.002 inch). The module should be mounted to the heatsink using 3.5 mm (or 6-32) or equivalent screws torques to 5-6 kg-cm (4-6 in-lb).

The module leads should be attached to equipment PC board using 180°C solder applied to the leads with a properly grounded soldering iron tip, not to exceed 195°C, applied a minimum of 2 mm (0.080”) from the body of the module for a duration not to exceed 15 seconds per lead. It is imperative that no other portion of the module, other than the leads, be subjected to temperatures in excess of 100°C (maximum storage temperature), for any period of time, as the plastic moulded cover, internal components and sealing adhesives may be adversely affected by such conditions.

Due to the construction techniques and materials used within the module, reflow soldering of the flange heatsink or leads, is not recommended.

PACKAGE MECHANICAL DATA

Ref.: Dwg. No. M12-030 rev. C



NOTE-
UNLESS OTHERWISE SPECIFIED
TOLERANCES ARE ±0.25mm (0.010in)

SGS-THOMSON MICROELECTRONICS		
	MINIMUM Inches/mm	MAXIMUM Inches/mm
A	2.190/55.63	2.210/56.13
B	1.395/35.44	1.415/35.94
C	0.595/15.12	0.610/15.49
D	0.350/8.89	0.376/9.55
E	0.120/3.05	0.135/3.42
F	0.160/4.06	
G	0.008/0.21	0.012/0.30
H	1.900/48.26	
J	1.600/40.64	
K	1.500/38.10	
L	1.400/35.56	
M	0.700/17.78	
N	0.500/12.70	
P	0.018/0.46	0.022/0.55
Q	0.150/3.81	0.160/4.06
R	0.690/17.53	0.770/19.55
S	0.345/8.77	0.385/9.77
T	0.225/5.72	———

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