

ROELECTRONICS STM1645-10 RF POWER MODULES SATELLITE COMMUNICATIONS APPLICATIONS

PRELIMINARY DATA

- SATELLITE COMMUNICATIONS AMPLIFIER
- 1625 1665 MHz
- 18/28 VOLTS
- INPUT/OUTPUT 50 OHMS
- Pout = 10 W MIN.
- GAIN = 30 dB MIN.





DESCRIPTION

The STM1645-10 module is designed for high power satellite communication applications in the 1.6 GHz frequency range operating at 28 Volts.

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

Symbol	Parameter	Value	Unit	
V _{C1}	DC Supply Voltage	20	Vdc	
V _{C2}	DC Supply Voltage	32	Vdc	
Pin	RF Input Power	20	mW	
Роит	RF Output Power	16	W	
T _{STG}	Storage Temperature	– 40 to +100	°C	
Tc	Operating Case Temperature	– 35 to +70	°C	

Symbol	Parameter	Test Conditions		Value			Unit
				Min.	Тур.	Max.	Unit
BW	Frequency Range			1625		1665	MHz
PIN	Input Power	Pout = 10 W		—	_	10.0	dBm
GP	Power Gain	P _{OUT} = 10 W		30	_	_	dB
η	Efficiency	Pout = 10 W		30	35	—	%
Н	Harmonics	Pout = 10 W reference		—	-45	-40	dBc
ZIN	Input Impedance	$P_{OUT} = 10 W$	$Z_G,\ Z_L=50\Omega$	—	1.5:1	2.0:1	VSWR
_	Load Mismatch	VSWR = 10:1 P _{OUT} = 10 W	V = 28 Vdc	No E	No Degradation in Output Power		

ELECTRICAL SPECIFICATIONS ($T_{case} = 25 \circ C$, $V_{C1*} = 18 V$, $V_{C2} = 28 V$)

*Note: V_{C1} = 18V Regulated \pm 1%

D.C. TEST FIXTURE BYPASSING





TYPICAL PERFORMANCE



POWER OUTPUT vs FREQUENCY



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APPLICATIONS RECOMMENDATIONS

OPERATION LIMITS

The STM1645-10 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 mayl 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.

POWER CONTROL

The recommeded method of power control for the STM1645-10 is to set $P_{IN} = 10$ mW, $V_{C1} = 18V$ and $V_{C2} = 28$ volts nominal at a flange temperature of 25°C to achieve an output power of 10 watts. Varing V_{C2} will allow stable power control over a wide range of flange temperature. The current consumption of V_{C2} is typically 850mA to 900mA for 10 watts power ouput.

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 \pm 0.05mm (\pm 0.002 inch). The module should be mounted to the heatsink using 3 mm (or 4-40) or equivalent screws torqued 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 2mm (0.080 inch) 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



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