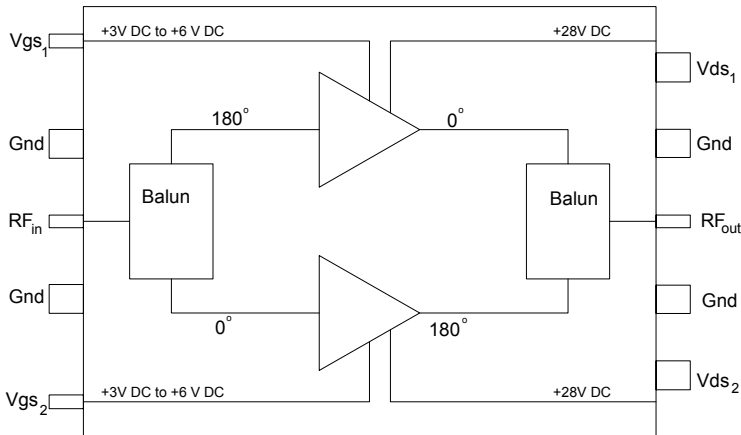




Product Description

Sirenza Microdevices' **SDM-09120** 130W power module is a robust impedance matched, single-stage, push-pull Class AB amplifier module suitable for use as a power amplifier driver or output stage. The power transistors are fabricated using Sirenza's latest, high performance LD MOS process. It is a drop-in, no-tune solution for high power applications requiring high efficiency, excellent linearity, and unit-to-unit repeatability. It is internally matched to 50 ohms.

Functional Block Diagram

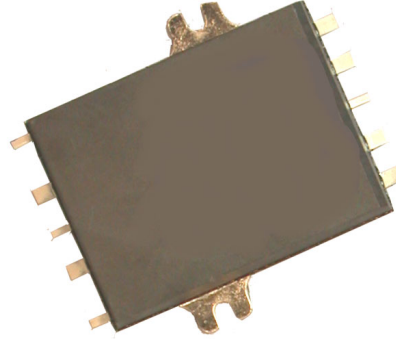


Case Flange = Ground

SDM-09120

925-960 MHz Class AB

130W Power Amplifier Module



Product Features

- 50 Ω RF impedance
- 130W Output P_{1dB}
- Single Supply Operation : Nominally 28V
- High Gain: 15 dB at 942 MHz
- High Efficiency: 42% at 942 MHz
- ESD Protection: JEDEC Class 2 (2000V HBM)

Applications

- Base Station PA driver
- Repeater
- CDMA
- GSM / EDGE

Key Specifications

Symbol	Parameter	Units	Min.	Typ.	Max.
Frequency	Frequency of Operation	MHz	925	-	960
P_{1dB}	Output Power at 1dB Compression, 943 MHz	W	120	130	-
Gain	120W PEP Output Power, 942MHz and 943MHz	dB	14	15	-
Gain Flatness	Peak-to-Peak Gain Variation, 120W PEP, 925 - 960MHz	dB	-	0.3	0.5
IRL	Input Return Loss, 120W PEP Output Power, 925 - 960MHz	dB	-	-14	-12
IMD	3rd Order Product, 120W PEP Output, 942MHz and 943MHz	dBc	-	-28	-26
IMD Variation	120W PEP Output, Change in Spacing 100KHz - 25MHz	dB	-	1.0	-
Efficiency	Drain Efficiency, 120W PEP Output, 942MHz and 943MHz	%	32	33	-
	Drain Efficiency, 120W CW Output, 943MHz	%	-	42	-
Delay	Signal Delay from Pin 3 to Pin 8	nS	-	4.0	-
Phase Linearity	Deviation from Linear Phase (Peak-to-Peak)	Deg	-	0.7	-
Test Conditions $Z_{in} = Z_{out} = 50\Omega$, $V_{DD} = 28.0V$, $I_{DQ1} = I_{DQ2} = 500mA$, $T_{Flange} = 25^{\circ}C$					

Quality Specifications

Parameter	Description	Unit	Typical
ESD Rating	Human Body Model	Volts	2000
MTTF	200°C Channel	Hours	1.2×10^6

The information provided herein is believed to be reliable at press time. Sirenza Microdevices assumes no responsibility for inaccuracies or omissions. Sirenza Microdevices assumes no responsibility for the use of this information, and all such information shall be entirely at the user's own risk. Prices and specifications are subject to change without notice. No patent rights or licenses to any of the circuits described herein are implied or granted to any third party. Sirenza Microdevices does not authorize or warrant any Sirenza Microdevices product for use in life-support devices and/or systems. Copyright 2005 Sirenza Microdevices, Inc. All worldwide rights reserved.

303 S. Technology Court,
Broomfield, CO 80021

Phone: (800) SMI-MMIC

1

<http://www.sirenza.com>
EDS-103478 Rev D

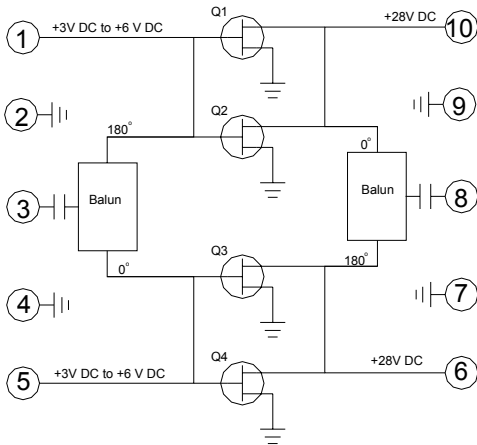


SDM-09120 925-960 MHz 130W Power Amp Module

Pin Description

Pin #	Function	Description
1	V _{GS1}	LDMOS FET Q1 and Q2 gate bias. V _{GSTH} 3.0 to 5.0 VDC. See Notes 2, 3 and 4
2,4,7,9	Ground	Module Topside ground.
3	RF Input	Internally DC blocked
5	V _{GS2}	LDMOS FET Q3 and Q4 gate bias. V _{GSTH} 3.0 to 5.0 VDC. See Notes 2, 3 and 4
6	V _{D2}	LDMOS FET Q3 and Q4 drain bias. See Note 1.
8	RF Output	Internally DC blocked
10	V _{D1}	LDMOS FET Q1 and Q2 drain bias. See Note 1.
Flange	Ground	Baseplate provides electrical ground and a thermal transfer path for the device. Proper mounting assures optimal performance and the highest reliability. See Sirenza applications note AN-054 Detailed Installation Instructions for Power Modules.

Simplified Device Schematic



Note 1:

Internal RF decoupling is included on all bias leads. No additional bypass elements are required, however some applications may require energy storage on the V_D leads to accommodate modulated signals.

Note 2:

Gate voltage must be applied to V_{GS} leads simultaneously with or after application of drain voltage to prevent potentially destructive oscillations. Bias voltages should never be applied to a module unless it is properly terminated on both input and output.

Note 3:

The required V_{GS} corresponding to a specific I_{DQ} will vary from module to module and may differ between V_{GS1} and V_{GS2} on the same module by as much as ±0.10 volts due to the normal die-to-die variation in threshold voltage for LDMOS transistors.

Note 4:

The threshold voltage (V_{GSTH}) of LDMOS transistors varies with device temperature. External temperature compensation may be required. See Sirenza application notes AN-067 LDMOS Bias Temperature Compensation.

Note 5:

This module was designed to have its leads hand soldered to an adjacent PCB. The maximum soldering iron tip temperature should not exceed 700° C, and the soldering iron tip should not be in direct contact with the lead for longer than 10 seconds. Refer to app note AN054 (www.sirenza.com) for further installation instructions.

Absolute Maximum Ratings

Parameters	Value	Unit
Drain Voltage (V _{DD})	35	V
RF Input Power	+43	dBm
Load Impedance for Continuous Operation Without Damage	5:1	VSWR
Control (Gate) Voltage, VDD = 0 VDC	15	V
Output Device Channel Temperature	+200	°C
Operating Temperature Range	-20 to +90	°C
Storage Temperature Range	-40 to +100	°C

Operation of this device beyond any one of these limits may cause permanent damage. For reliable continuous operation see typical setup values specified in the table on page one.



Caution: ESD Sensitive

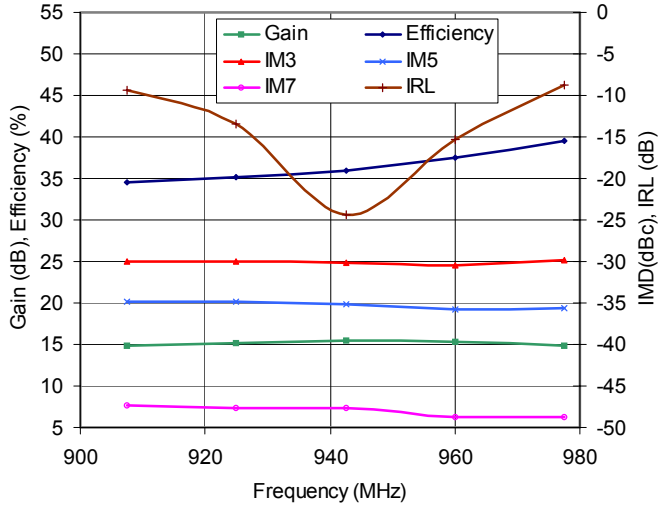
Appropriate precaution in handling, packaging and testing devices must be observed.



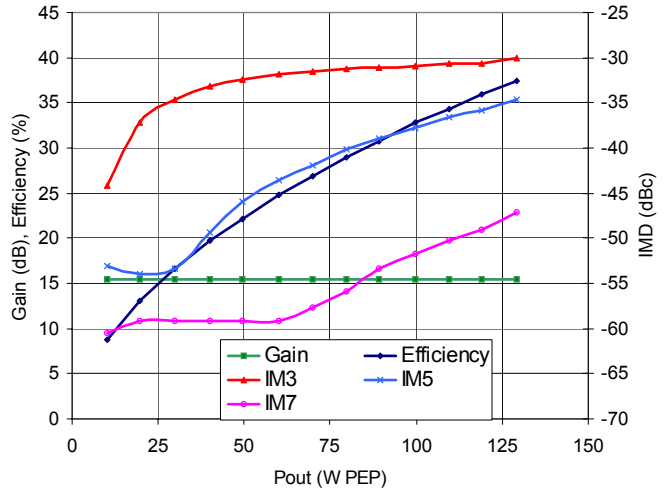
SDM-09120 925-960 MHz 130W Power Amp Module

Typical Performance Curves

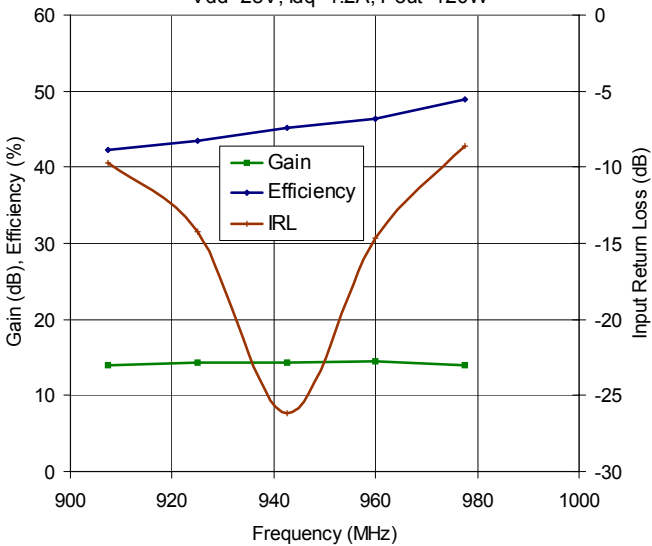
2 Tone Gain, Efficiency, Linearity and IRL vs Frequency
Vdd=28V, Idq=1.2A, Pout=120W PEP, Delta F=1 MHz



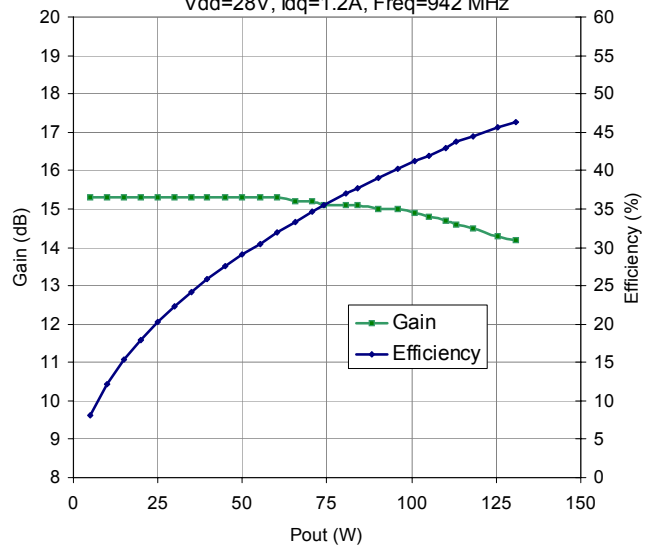
2 Tone Gain, Efficiency, Linearity vs Pout
Vdd=28V, Idq=1.2A, Freq=942 MHz, Delta F=1 MHz



CW Gain, Efficiency, IRL vs Frequency
Vdd=28V, Idq=1.2A, Pout=120W



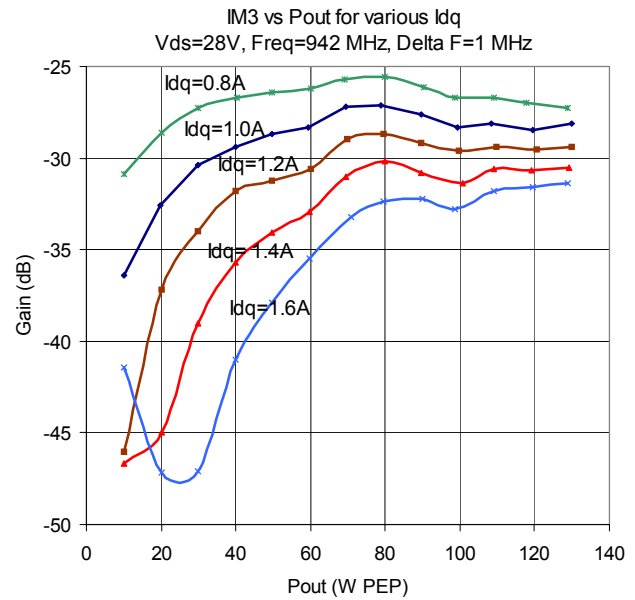
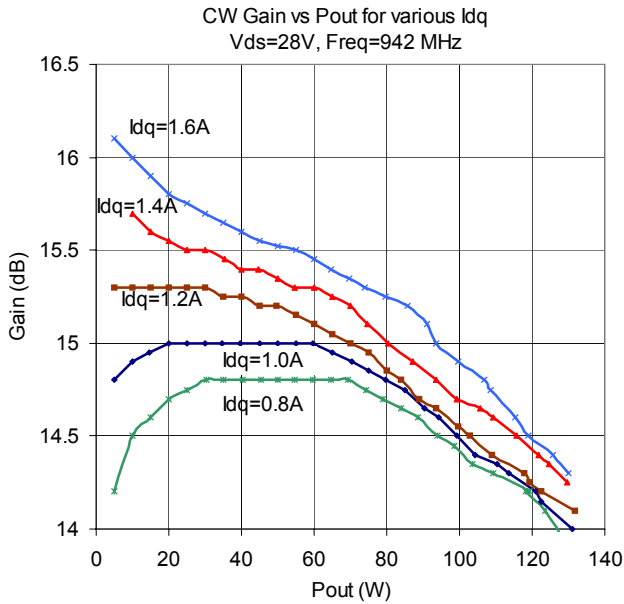
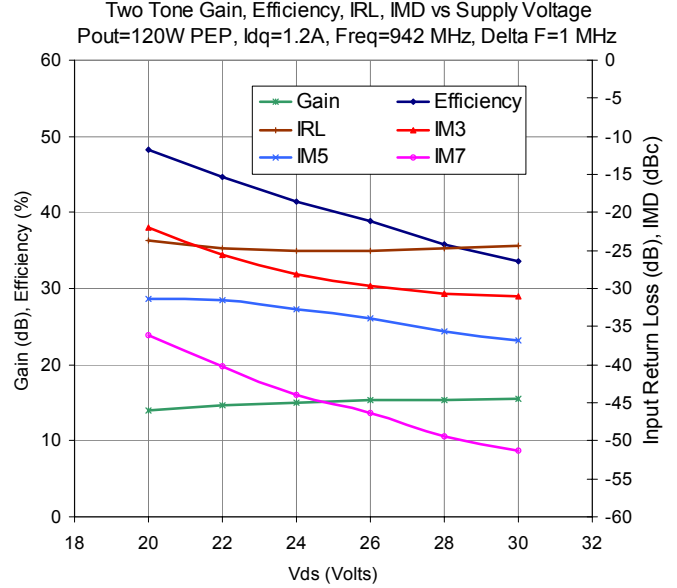
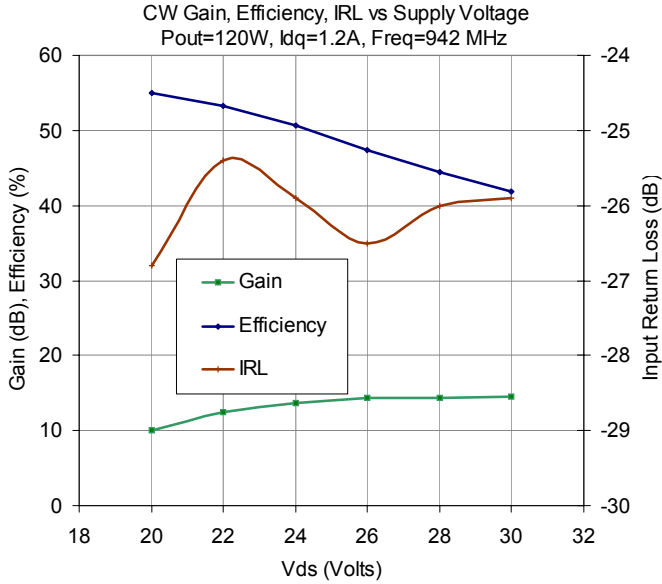
CW Gain, Efficiency vs Pout
Vdd=28V, Idq=1.2A, Freq=942 MHz





SDM-09120 925-960 MHz 130W Power Amp Module

Typical Performance Curves (cont'd)

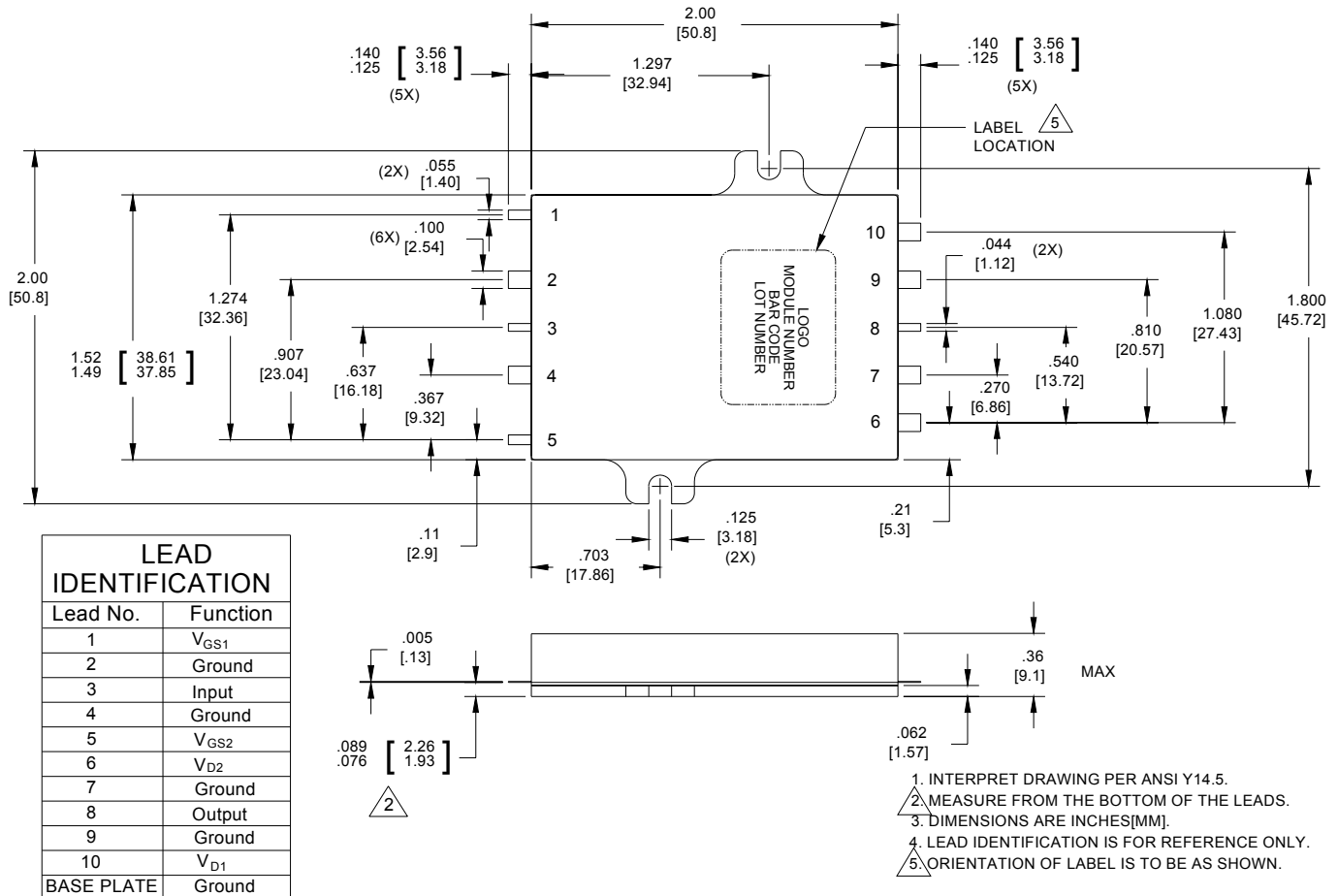


Note:
Evaluation test fixture information available on Sirenza Website, referred to as SDM-EVAL



SDM-09120 925-960 MHz 130W Power Amp Module

Package Outline Drawing



MODULE WEIGHT = 41gm NOMINAL

Note:

Refer to Application note AN054, "Detailed Installation Instructions for Power Modules" for detailed mounting information.

SUNSTAR 商斯达实业集团是集研发、生产、工程、销售、代理经销、技术咨询、信息服务等为一体的高科技企业，是专业高科技电子产品生产厂家，是具有 10 多年历史的专业电子元器件供应商，是中国最早和最大的仓储式连锁规模经营大型综合电子零部件代理分销商之一，是一家专业代理和分销世界各大品牌 IC 芯片和电子元器件的连锁经营综合性国际公司，专业经营进口、国产名厂名牌电子元件，型号、种类齐全。在香港、北京、深圳、上海、西安、成都等全国主要电子市场设有直属分公司和产品展示展销窗口门市部专卖店及代理分销商，已在全国范围内建成强大统一的供货和代理分销网络。我们专业代理经销、开发生产电子元器件、集成电路、传感器、微波光电元器件、工控机/DOC/DOM 电子盘、专用电路、单片机开发、MCU/DSP/ARM/FPGA 软件硬件、二极管、三极管、模块等，是您可靠的一站式现货配套供应商、方案提供商、部件功能模块开发配套商。商斯达实业公司拥有庞大的资料库，有数位毕业于著名高校——有中国电子工业摇篮之称的西安电子科技大学（西军电）并长期从事国防尖端科技研究的高级工程师为您精挑细选、量身订做各种高科技电子元器件，并解决各种技术问题。

微波光电部专业代理经销高频、微波、光纤、光电元器件、组件、部件、模块、整机；电磁兼容元器件、材料、设备；微波 CAD、EDA 软件、开发测试仿真工具；微波、光纤仪器仪表。欢迎国外高科技微波、光纤厂商将优秀产品介绍到中国、共同开拓市场。长期大量现货专业批发高频、微波、卫星、光纤、电视、CATV 器件：晶振、VCO、连接器、PIN 开关、变容二极管、开关二极管、低噪晶体管、功率电阻及电容、放大器、功率管、MMIC、混频器、耦合器、功分器、振荡器、合成器、衰减器、滤波器、隔离器、环行器、移相器、调制解调器；光电子器件和组件：红外发射管、红外接收管、光电开关、光敏管、发光二极管和发光二极管组件、半导体激光二极管和激光器组件、光电探测器和光接收组件、光发射接收模块、光纤激光器和光放大器、光调制器、光开关、DWDM 用光发射和接收器件、用户接入系统光收发器件与模块、光纤连接器、光纤跳线/尾纤、光衰减器、光纤适配器、光隔离器、光耦合器、光环行器、光复用器/转换器；无线收发芯片和模组、蓝牙芯片和模组。

更多产品请看本公司产品专用销售网站：

商斯达中国传感器科技信息网：<http://www.sensor-ic.com/>

商斯达工控安防网：<http://www.pc-ps.net/>

商斯达电子元器件网：<http://www.sunstare.com/>

商斯达微波光电产品网：[HTTP://www.rfoe.net/](http://www.rfoe.net/)

商斯达消费电子产品网：<http://www.icasic.com/>

商斯达实业科技产品网：<http://www.sunstars.cn/> 微波元器件销售热线：

地址：深圳市福田区福华路福庆街鸿图大厦 1602 室

电话：0755-82884100 83397033 83396822 83398585

传真：0755-83376182 (0) 13823648918 MSN: SUNS8888@hotmail.com

邮编：518033 E-mail:szss20@163.com QQ: 195847376

深圳赛格展销部：深圳华强北路赛格电子市场 2583 号 电话：0755-83665529 25059422

技术支持：0755-83394033 13501568376

欢迎索取免费详细资料、设计指南和光盘；产品凡多，未能尽录，欢迎来电查询。

北京分公司：北京海淀区知春路 132 号中发电子大厦 3097 号

TEL: 010-81159046 82615020 13501189838 FAX: 010-62543996

上海分公司：上海市北京东路 668 号上海赛格电子市场 D125 号

TEL: 021-28311762 56703037 13701955389 FAX: 021-56703037

西安分公司：西安高新开发区 20 所(中国电子科技集团导航技术研究所)

西安劳动南路 88 号电子商城二楼 D23 号

TEL: 029-81022619 13072977981 FAX:029-88789382