

Your Global Source for RF, Microwave and Power Conversion Products

SUNSTAR微波光电 <http://www.rfoe.net/> TEL:0755-83396822 FAX:0755-83376182 E-MAIL:szss20@163.com

Our valued suppliers

(Click on the supplier name below to visit their storefront on www.rell.com)

Richardson Electronics' RF, Wireless & Power Division designs and distributes components, modules and assemblies used in RF and Wireless Infrastructure, Communication Networks, Digital Broadcasting, Defense and Power Conversion.

Strategic partnerships with over 80 leading manufacturers provide you with complete engineering and technical support for design-in components or custom-engineered solutions from anywhere in the world.

Local sales engineers work side-by-side with your team to design circuits, select cost-effective components, provide reference designs, test prototypes and assemblies and supply the highest quality RF, Microwave and Power Conversion solutions.

Prototype to Production

- Circuit Design
- Component Selection
- Supply Chain
- Testing
- Assembly

Global Coverage & Local Service

- 36 Local Sales Offices
- Local Delivery Worldwide
- Design Centers - Worldwide

This expanded line card is organized as a reference tool to help you find the most up-to-date listings of RF, Microwave and Power Conversion suppliers and products.

Abracon
Aeroflex / Inmet
Aeroflex / KDI
Amphenol Connex
Amphenol RF
ANADIGICS
Anaren
ATC (American Technical Ceramics)
Avago Technologies
Bomar Interconnect
Bonitron
Carlisle Interconnect Technologies
Cornell Dubilier
Crystek
CTS Electronic Components
Dynex
EDI (Electronic Devices, Inc.)
Emerson Network Power
EZ Form Cable
Ferraz Shawmut
Fractus
Freescale Semiconductor
F.W. Bell
General Electric
Genteq
Gore
Honeywell Semiconductor
HUBER+SUHNER

HVVi Semiconductors
Illinois Capacitor, Inc.
Infineon
IQD Frequency Products
Johanson Manufacturing
KEMET
Laird Technologies
LS Research
M/A-COM Technology Solutions
Maxwell Technologies
Micronetics
Microsemi
Mimix Broadband
Mitsubishi
National Electronics
NDK America
NEC Semiconductor
Nitronex
Nujira
Ohmite
Pacific Monolithics
PCTEL
Peregrine Semiconductor
Polyphaser
Powerex
Radiall
Radiall - AEP
Radiotronix

Raltron
RES-INGENIUM
RF Industries
Sarantel
Scintera
SDT Technology
Semikron
Sierra Wireless
Spectrum Advanced
Specialty Products
Spectrum Microwave
STMicroelectronics
SV Microwave
Teledyne Coax
Teledyne Relays
TOKO
TriQuint Semiconductor
TT electronics Semelab
Tyco Electronics
United Chemi-Con
UMS
(United Monolithic Semiconductors)
Valpey Fisher
Vincotech
Wakefield
WanTcom
Westcode

RF, Microwave Components

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RF Amplifier Enhancement Products

Page 4

Power Conversion Components

Page 12-15

RF Active Component Solutions



Abrakon

- Oscillators: VCO, VCXO, TCXO



Anadigics

- Amplifiers, RF and Microwave
- Broadband 75 ohm Comp.
- Integrated Tuners, Broadband
- LNAs
- Switches, RF & Microwave
- Upconverters, Broadband



Anaren

- Mixers
- Splitters/Combiners
- Transformers



Avago Technologies

- Amplifiers, RF and mmW
- Attenuators, MMIC VVA
- Diodes (PIN, Schottky)
- Doublers
- ICs, IF
- LNAs
- Mixers
- Transistors, RF Bipolar
- Transistors, RF GaAsFET
- Up and Downconverters

Americas, Europe, India, Japan,
SE Asia, Australia, New Zealand



Crystek

- Oscillators, VCO



CTS Electronic Components

- Modules, Front-end
- Oscillators: OCXO, VCO
- PLLs



Freescale Semiconductor

- Amplifiers, RF & Microwave
- Digital Signal Processors
- ICs, Multi-Function
- Microcontrollers
- Modules, RF
- Transistors, RF
- Sensors



Honeywell Semiconductor

- Attenuators, MMIC
- Broadband 75 ohm Components
- Switches, RF & Microwave



HVVi

- Transistors, RF High Voltage Vertical FET (HVVFET™)



Infineon Technologies

- Amplifiers, RF & Microwave
- Bias Drivers
- Control Components
- Diodes
- ICs, Linear
- Modules, RF
- Switches
- Transistors, RF



IQD Frequency Products (formerly Rakon/CMAC)

- Crystals, Quartz
- Oscillators: Clock, OCXO, TCXO, VCXO



Laird Technologies

- Modules, Bluetooth
- Modules, WLAN
- Modules, ZigBee
- Radio Modules, Short Range



LS Research

- Modules, Bluetooth
- Modules, WLAN
- Modules, ZigBee
- Radio Modules, Short Range



M/A-COM Technology Solutions

- Amplifiers, MMIC & HMIC
- Attenuators, MMIC & Coaxial
- Bias Drivers
- Broadband 75 ohm Comp.
- Diodes (PIN, Schottky, Varactor)
- Doublers/Triplers
- ICs, IF
- LNAs
- Mixers
- Modulators & Demodulators
- Modules, RF Hybrid, Multi-Chip
- Oscillators, VCO
- Splitters/Combiners
- Switches, RF & Microwave
- Transformers
- Transistors, RF Bipolar, RF LDMOS, RF MOSFET, RF & Microwave



Micronetics

- Oscillators, VCO



Microsemi

- Amplifiers - RF & Microwave
- Diodes (PIN, Schottky, Varactor)
- ICs
- Microwave & RF Power Supply
- Transistors, RF Bipolar, RF MOSFET, RF SiC



Mimix Broadband

- Amplifiers
- Switches, RF & Microwave
- Transistors, RF & Microwave



NDK

- Crystal Filters
- Crystals, Quartz
- Filters, RF/IF
- Oscillators: Clock, OCXO, TCXO, VCXO
- SAW Components



NEC Semiconductor

- Amplifiers
 - Broadband 75 ohm Comp.
 - LNAs
 - ICs, IF
 - Switches, RF & Microwave
 - Transistors, RF & Microwave
- Europe



Nitronex

- Transistors, RF Power GaN
- Americas, Asia, Nordic Countries, Russia



Pacific Monolithics

- Amplifiers



Peregrine Semiconductor

- Attenuators, MMIC
- Broadband 75 ohm Comp.
- Mixers
- PLLs
- Prescalers
- Switches, RF & Microwave

All franchise agreements are worldwide. Other agreements are indicated in green.

RF Active Component Solutions



Radiotronics

- Radio Modules, Short Range



Raltron

- Oscillators
- Resonators



RES-INGENIUM

- Amplifiers, RF & Microwave
- Divider/Combiner
- RF Modules



Richardson Electronics

- Amplifiers, RF Power
- Custom Microwave Solutions
- LNAs, Connectorized
- Mixers
- Modules: Multi-Chip (MCMs), RF Hybrid
- Transistors, RF & Microwave
- RF Design and Testing Services
- SAW Components
- Splitters/Combiners
- Oscillators, TCXO, VCO
- Transformers, RF



STMicroelectronics

- Transistors: RF Bipolar, RF LDMOS, RF MOSFET



TT electronics Semelab

- Transistors, RF MOSFET



Sierra Wireless (formerly Wavecom)

- Wireless CPUs, GSM/GPRS/EDGE/CDMA

Americas



Spectrum Microwave

- Amplifiers
- Mixers



TOKO

- Diodes, Varactor
- ICs, IF
- Transformers
- Voltage Regulators

Americas



TriQuint Semiconductor

- Amplifiers
- Amplifiers, Microwave
- Broadband 75 ohm Comp.
- Downconverters
- ICs, IF
- LNAs
- Mixers
- Modules, Multi-Chip (MCMs)
- SAW Components
- Switches, RF & Microwave
- Transistors: RF Bipolar, RF Power GaN, RF & Microwave



UMS

- Amplifiers, Microwave
- Attenuators, MMIC
- Mixers
- Prescalers
- Switches, RF & Microwave
- Transistor, RF & Microwave
- Up and Downconverters



Valpey Fisher

- Oscillators: Clock, OCXO, TCXO, VCXO



Vincotech

- Modules, GPS



WanTcom

- Amplifiers - RF & Microwave

RF Amplifier Enhancement Products



Nujira

- Envelope Tracking



Scintera

- Analog Pre-Distortion

All franchise agreements are worldwide. Other agreements are indicated in green.



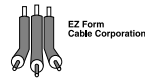
AEP

- Adapters, RF
- Cable & Assemblies
- Connectors, Coaxial



Bomar

- Adapters, RF
- Connectors, Coaxial
- Tools



EZ Form Cable

- Cable, Coaxial



M/A-COM Technology Solutions

- Attenuators, Coaxial
- Cable & Assemblies
- Terminations, Coaxial



RF Industries

- Adapters, RF
- Attenuators, Coaxial
- Cable Assemblies, Coaxial
- Cables, Coaxial
- Connectors, Coaxial
- Miscellaneous Product, RF & Microwave
- Tools



Teledyne Coax Switches

- Switches, Coaxial



Aeroflex-Inmet

- Adapters
- Attenuators, Coaxial
- Bias Tees
- DC Blocks
- Matching Pads
- Open/Short Circuits
- Terminations, Coaxial



Carlisle Interconnect Technologies

- RF Cables
 - Semi-Flex Series
 - Q-Flex Series
 - TS, K, KU Series
- RF & Microwave Connectors and Adapters
- Test Cable Assemblies
- Test Cables, Workhorse



Gore

- Cable & Assemblies
- Test Cable Assemblies



Polyphaser

- Lightning Products (EMPs)



HUBER+SUHNER

- Adapters, RF
- Attenuators, Coaxial
- Cable & Assemblies
- Cable, Coaxial
- Connectors, Coaxial
- Fiber Optic Cable Assemblies
- Lightning Products (EMPs)
- Terminations, Coaxial
- Test Cable Assemblies
- Tools

North America, United Kingdom



Radiall

- Adapters, RF
- Attenuators, Coaxial
- Cable & Assemblies
- Connectors, Coaxial
- Couplers
- Switches, Coaxial
- Terminations, Coaxial



Amphenol

- Adapters, RF
- Cable & Assemblies
- Connectors, Coaxial
- Tools



Emerson Network Power

- Adapters, RF
- Cable & Assemblies
- Connectors, Coaxial
- Tools

Amphenol Connex

Amphenol Connex

- Adapters, RF
- Cable & Assemblies
- Connectors, Coaxial
- Tools



SDT Technology

- Adapters, RF
- Cable Assemblies, Coaxial
- Connectors, Coaxial



SV Microwave

- Adapters, RF
- Attenuators, Terminations
- Connectors, Coaxial
- Terminations, Coaxial

Tyco Electronics

- Adapters, RF
- Attenuators, Coaxial
- Backplane Connectors
- Cable & Assemblies
- Connectors, Coaxial
- Fiber Optic Connectors
- High Voltage Connectors
- Input/Output Connectors
- Lightning Products (EMPs)
- Multi-Pin Connectors
- PCB and Wire connectors
- Pin and Socket Connectors
- Relays and Circuit Breakers
- Ribbon/Flexible Connectors
- Sockets
- Switches
- Terminal Blocks
- Terminals and Splices
- Terminations, Coaxial
- Test Cables, Coaxial
- Tools

Americas

All franchise agreements are worldwide. Other agreements are indicated in green.

RF Passive and Electro-Mechanical Solutions



Aeroflex-KDI

- Attenuators
- Resistors
- Terminations



Avago Technologies

- Filters, BAW
- Americas, Europe, India, Japan, SE Asia, Australia, New Zealand



Gore

- Filters & Gaskets, EMI/RFI
- Shielding, EMI/RFI
- SMT Ground Pads



Laird Technologies

- Accessories, Antennas
- Antennas, Active
- Antennas, Embedded SMD
- Antennas, Indoor
- Antennas, Portable Device
- Antennas, Vehicular



Richardson Electronics

- Accessories, Antennas
- Antennas, Active
- Custom Microwave Solutions
- Filters, SAW
- RF Design and Testing Services
- SAW Components
- Splitters/Combiners



Teledyne Relays

- Relays, Military
- Relays, RF
- Relays, Solid State



Anaren

- Attenuators
- Balun Transformers
- Combiners/Dividers
- Couplers
- Crossovers, Xinger™
- Delay Lines
- Resistors
- Terminations



CTS Electronic Components

- Diplexers, SMD
- Duplexers
- Filters, Bandpass



HUBER+SUHNER

- Antennas
- North America, United Kingdom



M/A-COM Technology Solutions

- Antennas
- Balun Transformers
- Circulators, Isolators
- Combiners/Dividers
- Couplers
- Delay Lines
- Diplexers



Sarantel

- Antennas, Active
- Antennas, Passive



Fractus

- Antennas, Embedded SMD



Johanson Manufacturing

- Attenuators
- Capacitors, Hi-Q Variable
- Coils, Variable RF
- Couplers
- Microwave Tuning Elements
- Resistors
- Terminations



PCTEL (formerly MAXRAD)

- Accessories, Antenna
- Antennas, Active
- Antennas, Indoor
- Antennas, Passive
- Antennas, Vehicular



Spectrum Advanced Specialty Products

- Antennas, Ceramic Patch
- Connectors, EMI Filtered
- Filters, EMI/RFI
- Gaskets, EMI/RFI



ATC - American Technical Ceramics

- Attenuators
- Capacitors, Broadband
- Capacitors, Hi-Q Fixed
- Custom Thin Film Circuits
- Inductors, Hi-Q
- Resistors
- Terminations



TriQuint Semiconductor

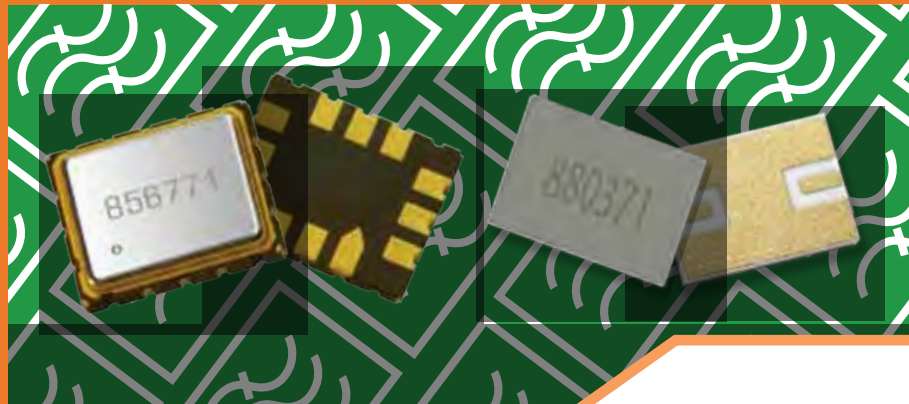
- Filters, SAW
- SAW Components



TOKO

- Antennas, Ceramic Patch
- Balun Transformers
- Chokes
- Coils, Variable RF
- Filters, Ceramic IF
- Filters, Common-Mode
- Filters, Dielectric
- Filters, EMI/RFI
- Inductors, Hi Q
- Americas

All franchise agreements are worldwide. Other agreements are indicated in green.



Looking for a Better Filter Solution?



Look to the filter leader – TriQuint Semiconductor. Choose from hundreds of standard & application-specific SAWs & BAWs for your RF design.

- **Wide Portfolio:** Standard 70 & 140 MHz; SAWs up to 2.4 GHz
- **SAW Leader & Innovator:** IF & RF, duplexers / triplexers, filter banks, and integrated products
- **Unmatched Support:** FAEs, factory design assistance, and data sheets
- **Fits All Application Needs:** Cellular, Bluetooth®, GPS, CATV, BTS, PnP microwave, test & measurement, and more

Connecting the Digital World
to the Global Network®

TriQuint
SEMICONDUCTOR

25 YEARS OF RF
INNOVATION



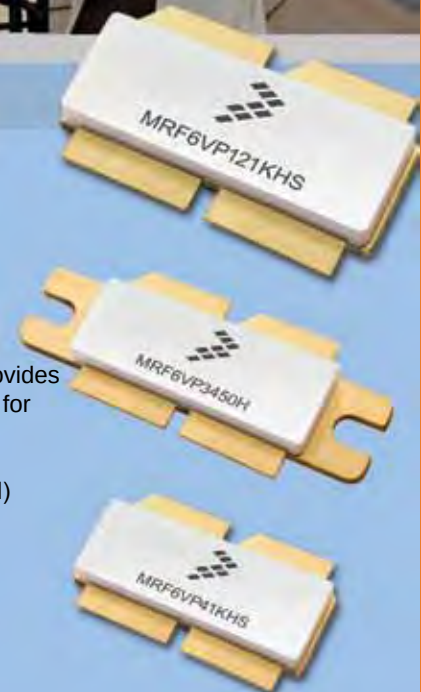
Freescall Semiconductor

Delivering RF power amplifier solutions to help customers meet the increasing demands of system performance

Building on a legacy of leadership in the RF power transistor market, Freescall provides a broad portfolio of high power transistors for

- Avionics
- Broadcast
- ISM (Industrial, Scientific and Medical)

Freescall leverages its heritage of innovation and RF expertise to usher in a new era of cost-effective, reliable, field-proven solutions for evolving industries.



Amplifiers - ANADIGICS, Avago Technologies, Freescale, Infineon, M/A-COM Technology Solutions, Microsemi, Mimix, NEC, Pacific Monolithics, RES-INGENIUM, Richardson Electronics, Spectrum Microwave, UMS, TriQuint Semiconductor, WanTcom

Analog Pre-Distortion - Scintera

Attenuators, MMIC - Avago Technologies, Honeywell, M/A-COM Technology Solutions, Peregrine Semiconductor, UMS

Bias Drivers - Infineon, M/A-COM Technology Solutions

Broadband 75 ohm Components - ANADIGICS, Honeywell, M/A-COM Technology Solutions, NEC, Peregrine Semiconductor, TriQuint Semiconductor

Control Components - Infineon

Crystal Filters - NDK

Crystals, Quartz - IQD Frequency Products, NDK

Custom Microwave Solutions - Richardson Electronics

Diodes (PIN, Schottky, Varactor) - Avago Technologies, Infineon, M/A-COM Technology Solutions, Microsemi, TOKO

Digital Signal Processors - Freescale

Divider/Combiner - RES-INGENIUM

Doublers/Triplers - Avago Technologies, M/A-COM Technology Solutions

Envelope Tracking - Nujira

Filters, RF/IF - NDK

ICs, IF - Avago Technologies, M/A-COM Technology Solutions, Microsemi, NEC, TOKO, TriQuint Semiconductor

ICs, Linear - Infineon

ICs, Multi-Function - Freescale

Integrated Tuners, Broadband - ANADIGICS

LNAs - ANADIGICS, Avago Technologies

Microcontrollers - Freescale

Microwave & RF Power Supply - Microsemi

Mixers - Anaren, Avago Technologies, M/A-COM Technology Solutions, Peregrine Semiconductor, Richardson Electronics, Spectrum Microwave, TriQuint Semiconductor, UMS

Modulators & Demodulators - M/A-COM Technology Solutions

Modules, Bluetooth - Laird Technologies, LS Research

Modules, Front-End - CTS

Modules, GPS - Vincotech

Modules, Multi-Chip (MCMs) - M/A-COM Technology Solutions, Richardson Electronics, TriQuint Semiconductor

Modules, RF Hybrid - Freescale, Infineon, M/A-COM Technology Solutions, RES-INGENIUM, Richardson Electronics

Modules, Short-Range Radios - Laird Technologies, LS Research, Radiotronics

Modules, WLAN - Laird Technologies, LS Research

Modules, Zigbee - Freescale, Laird Technologies, LS Research

Oscillators, Clock - NDK, IQD Frequency Products, Raltron, Valpey Fisher

Oscillators, OCXO - CTS, NDK, IQD Frequency Products, Raltron, Valpey Fisher

Oscillators, TCXO - Abracon, NDK, IQD Frequency Products, Raltron, Richardson Electronics, Valpey Fisher

Oscillators, VCO - Abracon, Crystek, CTS, M/A-COM Technology Solutions, Freescale, Raltron, Richardson Electronics

Oscillators, VCXO - Abracon, IQD Frequency Products, NDK, Raltron, Valpey Fisher

PLLs - CTS, Peregrine Semiconductor

Prescalers - Peregrine Semiconductor, UMS

Resonators - Raltron

RF Design and Testing Services - Richardson Electronics

SAW Components - NDK, Richardson Electronics, TriQuint Semiconductor

Semiconductors - Microsemi

Sensors - Freescale

Splitters/Combiners - Anaren, M/A-COM Technology Solutions, Richardson Electronics

Switches, RF & Microwave - ANADIGICS, Honeywell, Infineon, M/A-COM Technology Solutions, Mimix, NEC, Peregrine Semiconductor, TriQuint Semiconductor, UMS

Transformers - Anaren, M/A-COM Technology Solutions, Richardson Electronics, TOKO

Transistors, GaAsFET - Avago Technologies, Freescale, M/A-COM Technology Solutions, UMS

Transistors, RF HVVFET - HVVi

Transistors, RF Bipolar - Avago Technologies, M/A-COM Technology Solutions, Microsemi, STMicroelectronics, TriQuint Semiconductor

Transistors, RF LDMOS - Freescale, Infineon Technologies, M/A-COM Technology Solutions, Microsemi, STMicroelectronics

Transistors, RF SiC - Microsemi

Transistors, RF MOSFET - M/A-COM Technology Solutions, Microsemi, STMicroelectronics, TT electronics Semelab

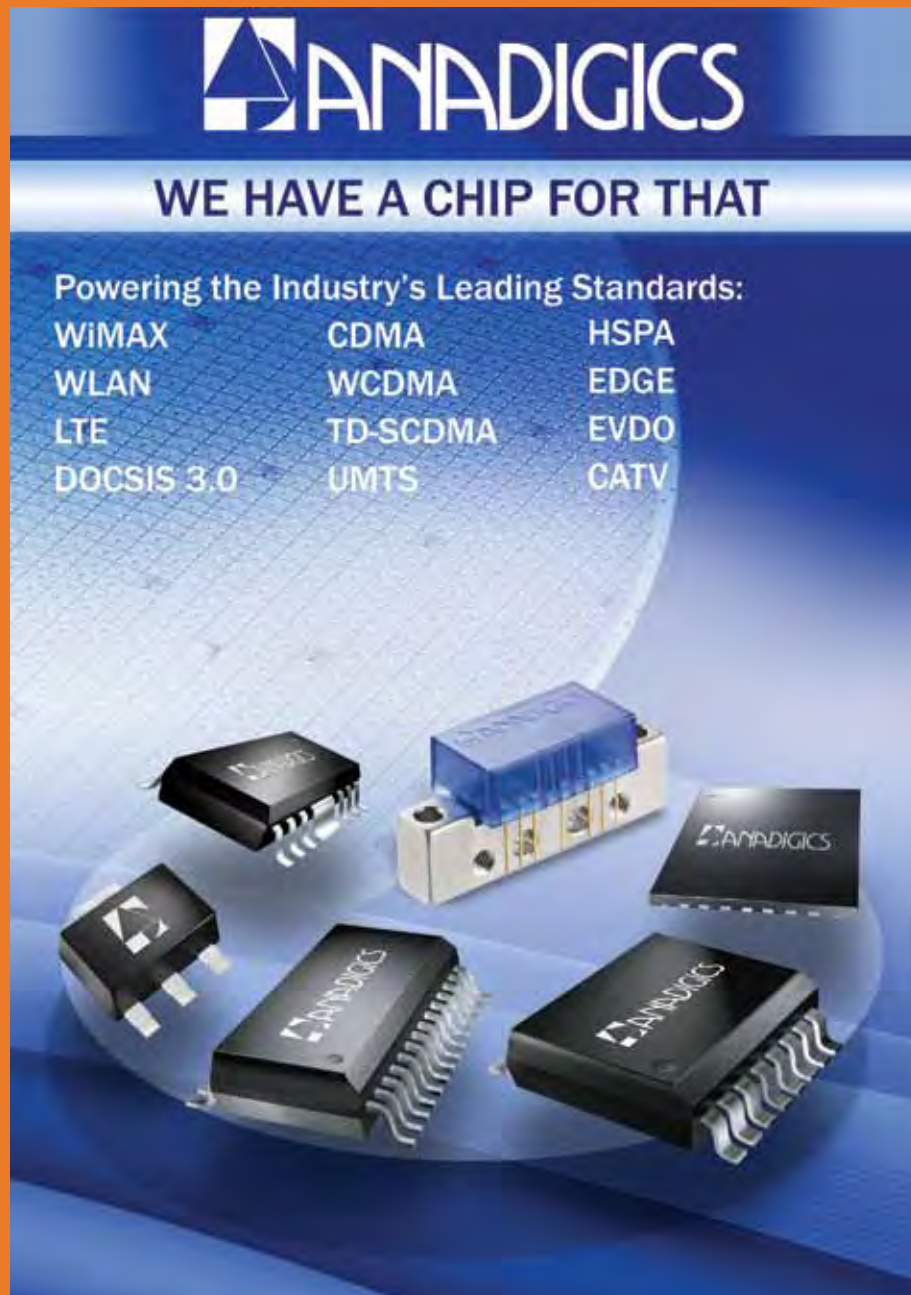
Transistors, RF & Microwave - Avago Technologies, Freescale, HVVi, Infineon, Microsemi, Mimix, M/A-COM Technology Solutions, NEC, Nitronex, Richardson Electronics, STMicroelectronics, UMS, TriQuint Semiconductor

Transistors, RF Power GaN - Nitronex, TriQuint Semiconductor

Up and Downconverters - ANADIGICS, Avago Technologies, Freescale, TriQuint Semiconductor, UMS

Voltage Regulators - TOKO

Wireless CPUs, GSM/GPRS/EDGE/CDMA - Sierra Wireless



ANADIGICS

WE HAVE A CHIP FOR THAT

Powering the Industry's Leading Standards:

WiMAX	CDMA	HSPA
WLAN	WCDMA	EDGE
LTE	TD-SCDMA	EVDO
DOCSIS 3.0	UMTS	CATV

The advertisement displays several Anadigics RF components, including a small black chip, a blue surface-mount component, a large black chip with a white logo, and a large black chip with multiple pins.



Peregrine Semiconductor

High-Power Switches with 50W P1dB

Design with the UltraCMOS™ Advantage

Ultra-linear silicon-on-sapphire RFICs are changing the way RF is designed. **Forever.**

Simply Designed. Simply **Green.**
Only **UltraCMOS™**.

The advertisement shows various RF components including RF Switches, Mixers, Digital Step Attenuators, PLLs, and Prescalers, all set against a background of blue water splashes. A green badge in the bottom right corner reads "Ultra CMOS Green".

Adapters, RF - AEP, Aeroflex-Inmet, Amphenol, Amphenol Connex, Bomar, Emerson Network Power, HUBER+SUHNER, RF Industries, Radiall, SDT Technology, SV Microwave, Tyco Electronics

Attenuators, Coaxial - Aeroflex-Inmet, HUBER+SUHNER, M/A-COM Technology Solutions, RF Industries, Radiall, Tyco Electronics

Attenuators, Terminations - SV Microwave

Backplane Connectors - Tyco Electronics

Bias Tees - Aeroflex-Inmet

Cable, Coaxial - Carlisle Interconnect Technologies, EZ Form Cable, HUBER+SUHNER, RF Industries

Cable & Assemblies - AEP, Amphenol, Amphenol Connex, Emerson Network Power, Gore, HUBER+SUHNER, M/A-COM Technology Solutions, RF Industries, Radiall, Tyco Electronics

Cable Assemblies, Coaxial - Carlisle Interconnect Technologies, RF Industries, SDT Technology

Connectors, Coaxial - AEP, Amphenol, Amphenol Connex, Bomar, Emerson Network Power, HUBER+SUHNER, Radiall, RF Industries, SDT Technology, SV Microwave, Tyco Electronics

Couplers - Radiall

DC Blocks - Aeroflex-Inmet

Fiber Optic Cable Assemblies - HUBER+SUHNER

Fiber Optic Connectors - Tyco Electronics

High Voltage Connectors - Tyco Electronics

Input/Output Connectors - Tyco Electronics

Lightning Products (EMPs) - HUBER+SUHNER, Polyphaser, Tyco Electronics

Matching Pads - Aeroflex-Inmet

Misc. Product, RF & Microwave - RF Industries

Multi-Pin Connectors - Tyco Electronics

Open/Short Circuits - Aeroflex-Inmet

PCB and Wire Connectors - Tyco Electronics

Pin and Socket Connectors - Tyco Electronics

RF Cables (Q-Flex Series, Semi-Flex Series, TS, K, KU Series) - Carlisle Interconnect Technologies

RF & Microwave Connectors & Adapters - Carlisle Interconnect Technologies

Relays and Circuit Breakers - Tyco Electronics

Ribbon/Flexible Connectors - Tyco Electronics

Sockets - Tyco Electronics

Switches, Coaxial - Radiall, Teledyne

Switches - Tyco Electronics

Terminal Blocks - Tyco Electronics

Terminals and Splices - Tyco Electronics

Terminations, Coaxial - Aeroflex-Inmet, HUBER+SUHNER, M/A-COM Technology Solutions, Radiall, SV Microwave, Tyco Electronics

Test Cable Assemblies - Carlisle Interconnect Technologies, Gore, HUBER+SUHNER

Test Cables, Coaxial - Tyco Electronics

Test Cables, Workhorse - Carlisle Interconnect Technologies

Tools - Amphenol, Amphenol Connex, Bomar, Emerson Network Power, HUBER+SUHNER, RF Industries, Tyco Electronics

Accessories, Antennas - Laird Technologies, PCTEL, Richardson Electronics

Antennas, Active - HUBER+SUHNER, Laird Technologies, M/A-COM Technology Solutions, PCTEL, Richardson Electronics, Sarantel

Antennas, Ceramic Patch - Spectrum Advanced Specialty Products, Richardson Electronics, TOKO

Antennas, Embedded SMD - Fractus, Laird Technologies

Antennas, Indoor - Laird Technologies, PCTEL

Antennas, Passive - PCTEL, Sarantel

Antennas, Portable Device - Laird Technologies

Antennas, Vehicular - Laird Technologies, PCTEL

Attenuators - ATC, Aeroflex-KDI, Anaren, Johanson Mfg.

Baluns, Transformers - Anaren, M/A-COM Technology Solutions, TOKO

Capacitors, Broadband - ATC

Capacitors, Hi-Q Fixed - ATC

Capacitors, Hi-Q Variable - Johanson Mfg.

Chokes - TOKO

Circulators / Isolators - M/A-COM Technology Solutions

Coils, RF - Johanson Mfg., TOKO

Combiners/Dividers - Anaren, M/A-COM Technology Solutions, Richardson Electronics

Connectors, EMI Filtered - Spectrum Advanced Specialty Products

Couplers - Anaren, Johanson Mfg., M/A-COM Technology Solutions

Crossovers, Xinger™ - Anaren

Crystal Filters - NDK

Crystals, Quartz - IQD Frequency Products, NDK

Custom Thin Film Circuits - ATC

Custom Microwave Solutions - Richardson Electronics

Delay Lines - Anaren, M/A-COM Technology Solutions

Diplexers, SMD - CTS, M/A-COM Technology Solutions, TOKO

Duplexers - CTS, TOKO

Filters, Bandpass - CTS

Filters, BAW - Avago Technologies

Filters, Ceramic IF - TOKO

Filters, Common-Mode - TOKO

Filters, Dielectric - CTS, TOKO

Filters, EMI/RFI - GORE, Spectrum Advanced Specialty Products, TOKO

Filters, Helical - TOKO

Filters, Low Pass - TOKO, Spectrum Control

Filters, SAW - NDK, RF Monolithics, Richardson Electronics, TriQuint Semiconductor

Gaskets, EMI/RFI - GORE, Spectrum Advanced Specialty Products

Inductors, Hi-Q - TOKO

Inductors, Power SMD - TOKO

Inductors, RF Chip - ATC

Microwave Tuning Elements - Johanson Mfg.

Relays, Military - Teledyne Relays

Relays, RF - Teledyne Relays

Relays, Solid State - Teledyne Relays

Resistors - Aeroflex-KDI, Anaren, ATC, Johanson Mfg.

RF Design and Testing Services - Richardson Electronics

SAW Components - NDK, Richardson Electronics, TriQuint Semiconductor

Shielding, EMI/RFI - GORE

SMT Ground Pads - GORE

Splitters / Combiners - Richardson Electronics

Terminations - Aeroflex-KDI, Anaren, ATC, Johanson Mfg.

SUNSTAR微波光电 <http://www.rfoe.net/> TEL:0755-83396822 FAX:0755-81376182 E-MAIL:szss20@163.com

World Class Technology from Richardson Electronics

Attenuators

DC Blocks

Adapters

Bias Tees

Terminations

Power Dividers

AEROFLEX INMET



From tower to touch screen, Anaren offers the most innovative passive components.

Whatever your priority, rely on Anaren and Richardson Electronics for today's revolutionary passive components. For instance...



Power Dividers

> **New:** Our smallest ever Wilkinson power divider – only 1 x 1mm



Baluns

> **New:** Ultra-low profile SMT baluns tuned to today's A-to-D converters



Terminations

> **New:** Low-cost, high-performance terminations – RoHS-compliant & covering DC to 6.0GHz



Couplers

> **New:** Our still-growing line of reliable, RoHS-compliant Xinger®-brand hybrids & directionals

All of them (and more!) are ready-to-ship. And volume-priced to keep you competitive. Visit www.rell.com to learn more or obtain a quote.

*Components not shown to scale

Anaren®
What'll we think of next?®

Passive Products — Power Conversion



Cornell Dubilier

- Capacitors, AC Oil
 - General Purpose
 - HID Lighting
 - Motor Run
- Capacitors, Aluminum Electrolytic
 - Screw terminal
 - Snap-type
- Capacitors, Film
- Capacitors, High Frequency, Pulse, Snubber
- Capacitors, High Voltage, Oil Filled
- Capacitors, High Voltage, Oil Filled, Commutating
- Capacitors, Mica
- Capacitors, Oil Filled
- Capacitors, Power Factor Correction



General Electric

- Capacitors, High Frequency, Pulse, Snubber
- Capacitors, High Voltage, Frequency Induction
- Capacitors, High Voltage, Oil Filled, Commutating
- Capacitors, High Voltage, Oil Filled



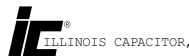
Ferraz Shawmut

- Fuses
 - Standard & Semiconductor
- Thermal Management Products
 - Bonded Fin
 - Chill Plates & Other Fabricated Assemblies
 - Extrusions
- Voltage Suppression Products



Genteq

- Capacitors, AC Oil
 - General Purpose
 - HID Lighting
 - Motor Run
- Capacitors, AC Dry
 - HID Lighting
 - Motor Run
- Capacitors, Aluminum Electrolytic
 - Screw Terminal
 - Snap-In (or Snap-Type)
- Capacitors, Dry-Axial Leaded



Illinois Capacitor, Inc.

- Capacitors, Aluminum Electrolytic
- Capacitors, Film
- Capacitors, Solid Conductive Polymer Electrolyte



KEMET

- Capacitors, Aluminum Electrolytic
 - Screw terminal
 - Snap-type
- Capacitors, Film
- Capacitors, High Frequency, Pulse, Snubber
- Capacitors, High Voltage, Oil Filled
- Capacitors, Power Factor Correction



Maxwell Technologies

- Capacitors, Ultra Capacitors
- Americas, China, India, Taiwan



National Electronics

- Assemblies & Engineered Solutions Services
- Capacitors, High Voltage, Microwave
- Chemical Process & Finishing Capabilities
- Special Services Capabilities
 - Component Selecting
 - Kitting
 - Private Label
 - Testing
- Thermal Management Services
 - Brazing, Welding and Joint Operations
 - Chemical Processing and Finishing Capabilities
 - Complete Machine Capabilities
 - Design & Support (Software)



Ohmite

- Resistors, Carbon Composition
- Resistors, Ceramic Composition
- Resistors, Film
- Resistors, High Current Wirewound
- Resistors, High Voltage & Precision
- Resistors, Thick Film Power
- Resistors, Wirewound/Metal Oxide
- Resistors, Wirewound Power



United Chemi-Con

- Capacitors, Aluminum Electrolytic
 - Screw terminal
 - Snap-type
- Capacitors, Film
- Capacitors, Multilayer Ceramic
- Capacitors, Solid Conductive Polymer Electrolyte
- Varistors, Metal Oxide



Wakefield

- Thermal Management Products
 - Bonded Fin
 - Chill Plates & Other Fabricated Assemblies
 - Clamp & Spring Assemblies
 - Extrusions
 - Heatsinks, Boardlevel
 - Thermal Compounds

All franchise agreements are worldwide. Other agreements are indicated in green.

MORE OPTIONS FOR POWER ELECTRONICS



DC link power film capacitors

Next generation inverter designs for renewable energy applications demand reliable DC link capacitors with higher capacitance values, voltage, and current ratings. Now available in new case sizes, Cornell Dubilier's expanded range of Type 947C power film capacitors meet or exceed the requirements for bulk energy storage, ripple filtering and life expectancy for wind and solar power inverter designs, as well as electric vehicle applications. Select from hundreds of standard catalog listings, or connect with our engineers to develop special designs to your requirements.

TYPE 947C POWER FILM CAPACITORS
 85, 90 & 116 mm CASE SIZES
 CAPACITANCE VALUES TO 1500 μ F
 APPLIED VOLTAGE TO 1200 Vdc
 RIPPLE CURRENT RATINGS TO 100 A_{ripple}

CAPACITOR SOLUTIONS FOR POWER ELECTRONICS **CDE CORNELL DUBILIER**

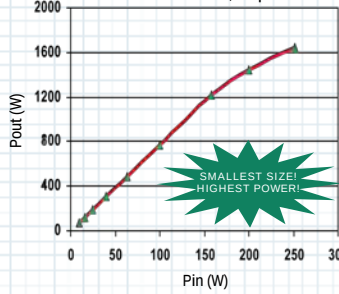


A Powerful Portfolio of Power Technologies

SiC RF Power



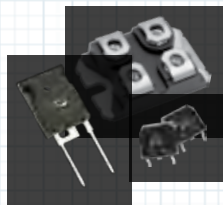
0405SC-1500M: Pin vs Pout
 450MHz, Vdd=125V, 300 μ s 6%



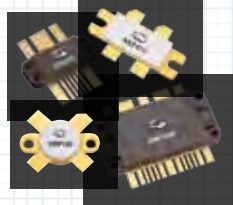
**SMALLEST SIZE!
HIGHEST POWER!**

	0405SC-1000M	0150SC-1250M	0405SC-1500M
Freq:	405-450 MHz	156 MHz	405-450 MHz
Power Out:	1100W typ	1400W typ	1600W typ
Power Gain:	8 dB	9 dB	8 dB
Pulse Width:	300 μ s	300 μ s	300 μ s
Duty Cycle:	10%	10%	6%
VSWR-T:	10:1	10:1	10:1
Efficiency:	45%	60%	45%
Bias:	125V	125V	125V
Package:	0.9"x0.4"	0.9"x0.4"	0.9"x0.4"
Metallization:	all AU	all AU	all AU

Power Products



Switching Discretes
 MOSFET: 200-1200V, 4 - 175A
 IGBT's : 600-1200V, 8-200A
 Diode : 200-1200V, 5 - 100A



High Freq. VDMOS
 2-300MHz
 50 - 300V Operation
 100 - 2,000 Watts
 (parts not to scale)



Power Modules
 Standard and Custom
 Mosfet - IGBT - FRED - SiC
 75V-1700V, 10A-750A
 Low profile - high efficiency

Microsemi

Industrial Power Semiconductors



Bonitron

- Braking Resistors
- Braking Transistors
- Bus Products
- Capacitors, Chargers and Dischargers
- Diode Sharing
- Energy Storage Products
- Filtering Products
- Line Regen
- Monitoring Products
- Motor Protection Products
- Output Filters
- Power Supplies
- Ride-thru Products



EDI

- Bridges, Single Phase
 - Fast Recovery
 - Standard Recovery
 - Ultra-Fast Recovery
- Bridges, Three Phase
- Custom Devices
- Diodes, Axial Lead
 - Fast Recovery
 - Standard Recovery
 - Ultra-Fast Recovery
- HV Assemblies



F.W. Bell

- Transducers, Current/Voltage
 - Closed Loop
 - Open Loop
 - Hall Effect



Microsemi Power Products Group

- COOLMOS MOSFETs
- Custom Power Modules
- Diode Bridge Modules
- Diodes, Schottky
- FREDs
- FREDFETs
- IGBT Modules
- IGBTs, Discrete
- MOSFET Modules
- MOSFETs
- MOSFETs, RF Power



Mitsubishi

- Bridges, Three Phase
- ASIPM
- Diode Modules
- DIP-IPM
- GCTs
- GTOs
- HVIC (High Voltage ICs)
- HVIGBT Modules
- HVIPM
- IGBT Modules
- IPMs (Intelligent Power Modules)
- PFC Modules

Europe



National Electronics

- Assemblies & Engineered Solutions
- Custom Power Modules
- Diode Bridge Modules
- Diode Modules, Standard Recovery
- Diodes, Standard Recovery
- Rectifiers, Fast Recovery
- Rectifiers, Standard Recovery
- SCR Modules
- SCR/Diode Modules
- SCRs, Inverter Grade
- SCRs, Phase Controlled
- Transducers, Current / Voltage



Powerex

- Assemblies & Engineered Solutions
- Custom Power Modules
- Bridges, Three Phase
- Diode Modules, Fast Recovery
- Diode Modules, Standard Recovery
- Diodes, Standard Recovery
- DIP-IPM
- FREDs
- GCTs
- GTOs
- HVIC (High Voltage ICs)
- IGBT Modules
- IGBTs, Discrete
- IPMs (Intelligent Power Modules)
- MOSFET Modules
- PIMs (Power Integrated Modules)
- Rectifier Diodes
 - High Power, High Speed,
 - High Speed Switching-Soft Recovery
- SCR Modules
- SCR/Diode Modules
- SCRs, Inverter Grade
- SCRs, Phase Controlled
- Transistor/IGBT/MOSFET Drivers

Americas



Semikron

- Assemblies & Engineered Solutions
- CIB Modules
- Diode Bridge Modules
- Diode Modules, Fast Recovery
- Diode Modules, Standard Recovery
- Diodes, Standard Recovery
- IGBT Modules
- IPMs (Intelligent Power Modules)
- MOSFET Modules
- Rectifiers, Fast Recovery
- Rectifiers, Standard Recovery
- SCR Modules
- SCR/Diode Modules
- SCRs, Phase Controlled
- Transistor/IGBT/MOSFET Drivers

Asia



Vincotech

- PIMs
- IGBT Modules



Westcode

- Assemblies & Engineered Solutions
- Diode Modules, Standard Recovery
- GTOs
- Rectifiers, Fast Recovery
- Rectifiers, Standard Recovery
- SCR Modules
- SCR/Diode Modules
- SCRs, Inverter Grade
- SCRs, Phase Controlled

All franchise agreements are worldwide.

Other agreements are indicated in green.

Assemblies & Engineered Solutions Services - National

Capacitors, AC Dry - Genteq

Capacitors, AC Oil - Cornell Dubilier, Genteq

Capacitors, Aluminum Electrolytic - Cornell Dubilier, Genteq, Illinois Capacitor, KEMET, United Chemi-Con

Capacitors, Dry-Axial Leaded - Genteq

Capacitors, Film - Cornell Dubilier, General Electric, Illinois Capacitor, KEMET, United Chemi-Con

Capacitors, High Frequency, Pulse, Snubber - Cornell Dubilier, General Electric, Illinois Capacitor, KEMET

Capacitors, High Voltage, Frequency Induction - General Electric

Capacitors, High Voltage, Microwave - National

Capacitors, High Voltage, Oil Filled - Cornell Dubilier, General Electric, KEMET

Capacitors, High Voltage, Oil Filled, Commutating - Cornell Dubilier, General Electric

Capacitors, Mica - Cornell Dubilier

Capacitors, Multilayer Ceramic - United Chemi-Con
Capacitors, Oil Filled - Cornell Dubilier, General Electric, KEMET

Capacitors, Power Factor Correction - Cornell Dubilier, KEMET

Capacitors, Solid Conductive Polymer Electrolyte - Illinois Capacitor, United Chemi-Con

Capacitors, Ultra Capacitors - Maxwell Technologies

Chemical Process & Finishing Capabilities - National

Fuses - Ferraz Shawmut

Resistors, Carbon Composition - Ohmite

Resistors, Ceramic Composition - Ohmite

Resistors, Film - Ohmite

Resistors, High Current Wirewound - Ohmite

Resistors, High Voltage & Precision - Ohmite

Resistors, Thick Film Power - Ohmite

Resistors, Wirewound/Metal Oxide - Ohmite

Resistors, Wirewound Power - Ohmite

Special Services Capabilities - National

Thermal Management Products - Ferraz Shawmut, National, Wakefield

Thermal Management Solutions - National

Varistors, Metal Oxide - United Chemi-Con

Voltage Suppression Products - Ferraz Shawmut

ASIPM - Mitsubishi

Assemblies & Engineered Solutions - Dynex, National Electronics, Powerex, Semikron, Westcode

Braking Resistors - Bonitron

Braking Transistors - Bonitron

Bridges, Single Phase (Fast Recovery, Standard Recovery, Ultra-Fast Recovery) - EDI

Bridges, Three Phase - EDI, Mitsubishi, Powerex

Bus Products - Bonitron

Capacitors, Chargers and Dischargers - Bonitron

CIB Modules - Semikron

COOLMOS MOSFETs - Microsemi

Custom Devices - EDI

Custom Power Modules - Microsemi, National Electronics, Powerex

Diodes, Axial Lead (Fast Recovery, Standard Recovery, Ultra-Fast Recovery) - EDI

Diode Bridge Modules - Microsemi, National Electronics, Semikron

Diodes, Fast Recovery - Dynex

Diode Modules, Fast Recovery - Powerex, Semikron

Diode Modules, Standard Recovery - National Electronics, Powerex, Semikron, Westcode

Diodes, Rectifier - Dynex

Diode Sharing - Bonitron

Diodes, Shottky - Microsemi

Diodes, Standard Recovery - National Electronics, Powerex, Semikron

DIP-IPM - Mitsubishi, Powerex

Energy Storage Products - Bonitron

Filtering Products - Bonitron

FREDFETs - Microsemi

FREDs - Dynex, Microsemi, Powerex

GCTs - Mitsubishi, Powerex

GTOs - Dynex, Mitsubishi, Powerex, Westcode

HV Assemblies - EDI

HVIC (High Voltage ICs) - Mitsubishi, Powerex

HVIGBT Modules - Mitsubishi

HVIPM - Mitsubishi

i2 Phase Control SCRs - Dynex

IGBTs, Discrete - Microsemi, Powerex

IGBT Modules - Dynex, Microsemi, Mitsubishi, Powerex, Semikron, Vincotech

IPMs (Intelligent Power Modules) - Mitsubishi, Powerex, Semikron

Line Regen - Bonitron

Monitoring Products - Bonitron

MOSFETs - Microsemi

MOSFET Modules - Microsemi, Powerex, Semikron

MOSFETs, RF Power - Microsemi

Motor Protection Products - Bonitron

Output Filters - Bonitron

PFC Modules - Mitsubishi

PIMs (Power Integrated Modules) - Powerex, Vincotech

Power Supplies - Bonitron

Rectifier Diodes (High Power, High Speed, High Speed Switching-Soft Recovery) - Powerex

Rectifiers, Fast Recovery - National Electronics, Semikron, Westcode

Rectifiers, Standard Recovery - National Electronics, Semikron, Westcode

Ride-thru Products - Bonitron

SCR/Diode Modules - National Electronics, Powerex, Semikron, Westcode

SCRs, Inverter Grade - National Electronics, Powerex, Westcode

SCR Modules - National Electronics, Powerex, Semikron, Westcode

SCRs, Phase Controlled - Dynex, National Electronics, Powerex, Semikron, Westcode

Thyristors, Pulse Power - Dynex

Transducers, Current / Voltage - F.W. Bell, National Electronics

Transistor/IGBT/MOSFET Drivers - Powerex, Semikron



MACOM
Technology Solutions
CELEBRATING 60 YEARS

Delivering
innovative
products for
leading edge
RF applications

The First Name
in Microwave

The advertisement features a blue background with a white arc logo for MACOM. Below the logo, the text 'Technology Solutions' and 'CELEBRATING 60 YEARS' are displayed. The main headline reads 'Delivering innovative products for leading edge RF applications'. Below this, the tagline 'The First Name in Microwave' is shown. The bottom half of the image is filled with various RF components, including a large square circuit board, a cylindrical component, several small chips, a coaxial connector, and a yellow component, all arranged around a central white arc. A globe is visible in the bottom left corner.

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。

微波光电部专业研制、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；光电子元件和组件：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。

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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/)

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