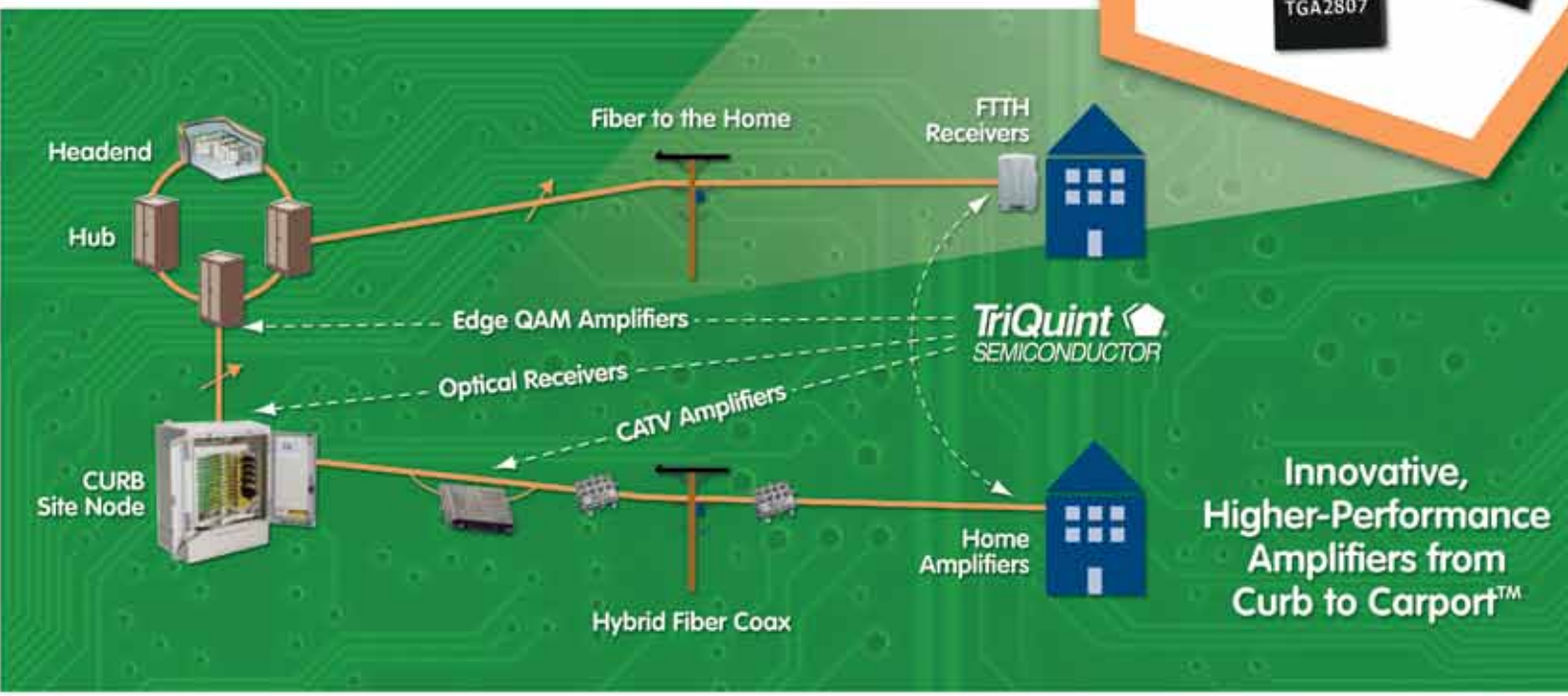
TriAccess™ Solutions for Advanced CATV & High-Speed Data

TriQuint's complete cable TV (CATV) and Fiber to the Home (FTTH) TriAccess™ product line is designed around the needs of high-speed broadband service providers. To pursue emerging opportunities and meet market requirements, network systems are growing ever-deeper, expanding in bandwidth and increasing in switched content. The TriAccess line offers end-to-end connectivity that enables 75 Ohm 'triple-play' (voice, video and internet) service systems. Whether to increase efficiency, lower operational costs, expand a service area, compete effectively or open a new market, TriQuint's TriAccess portfolio of integrated high-efficiency GaAs RFICs and modules simplify RF connectivity.



Innovative, Higher-Performance Amplifiers from Curb to Carport™

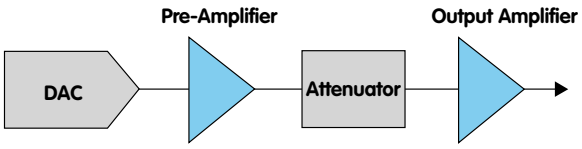
Connecting the Digital World to the Global Network®

TriQuint SEMICONDUCTOR 25 YEARS OF INNOVATION

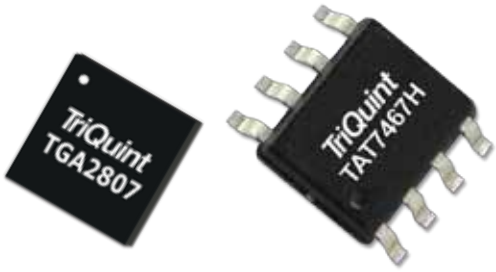
Solutions for Advanced CATV & High-Speed Data Applications

Edge QAM / DOCSIS® 3.0 Amplifiers

A number of new services are becoming available through the more efficient use of cable spectrum. Whether it's Video on Demand, higher throughput DOCSIS data or Switched Digital Video channels, the use of efficient and compact Edge QAM systems facilitates successful system roll-outs.



The TriAccess portfolio includes RFIC products specifically designed to meet the stringent RF requirements of DOCSIS-based Edge QAM systems. TriQuint solutions can reduce power consumption up to 50% and can cut space requirements 80%. The TGA2806-SM, TGA2807-SM, TAT7467H and TAT7469 provide a complete set of options for low-power consumption Edge QAM.



Benefits
5-8 Volt bias considerations – optimized for DOCSIS 3.0
On-chip linearization = lower-power consumption

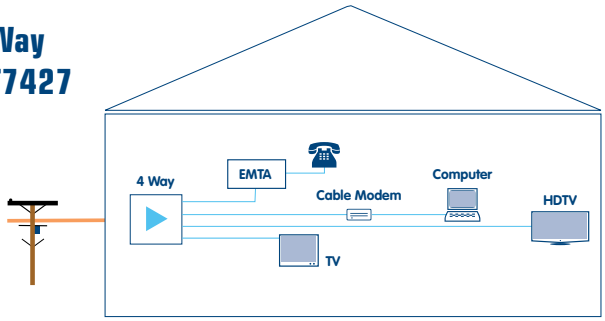
Applications
Edge QAM systems: 40-1,000 MHz
Cable modem termination systems
Low-voltage headend / infrastructure applications

Subscriber / Home Amplifiers

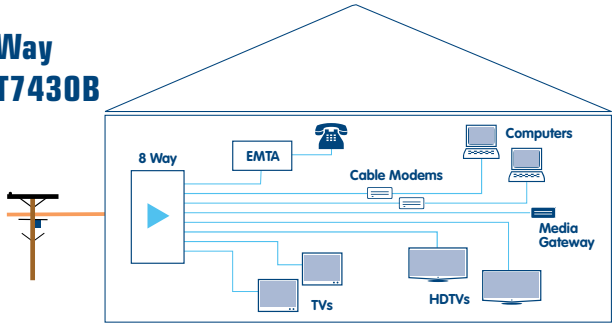
Amplification at the subscriber premises has become increasingly segmented. From simple single port, video-only amplification to full multiport, multi-service support, TriQuint products include the RFIC and RF switch devices needed to meet today's subscriber amplification requirements.

TriQuint's TriAccess line of high-performance ICs, including drop amplifiers, offer multiple gain levels that cost-effectively enable central gateway and multi-room architectures as well as MOCA (Multi-media Over Coax Alliance), or Ethernet over coax applications. TriQuint's new TAT7427 and TAT7430B as well as the TAT7461 give manufacturers a competitive edge while delivering a full range of solutions to meet the new home / subscriber architecture standards sought by leading MSOs.

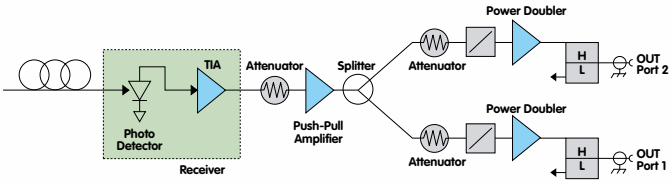
4-Way
TAT7427



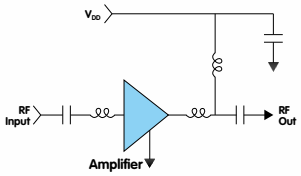
8-Way
TAT7430B



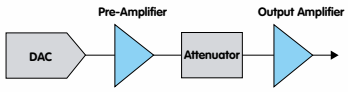
CATV & FTTH Solutions



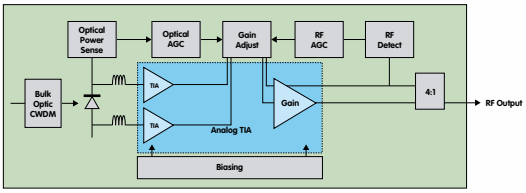
CATV Infrastructure



Subscriber Home Amplifiers



Edge QAM DOCSIS® 3.0



FTTH / RFoG

CATV Receiver Amplifiers

Application	Frequency Range (MHz)	Gain (dB)	Noise		Voltage / Current (V / mA)	Package Style	Part Number
			NF (dB)	Equivalent Input Noise (pA / rtHz)			
Single-Stage							
TIA	DC - 2000	19[2]	1.7	–	5[3] / 100	SOT-89	TAT7457[1]
Output Stage	50 - 1000	16	2.3	–	6 / 130	SOT-89	TAT7461
V-ONU Gain Stage	50 - 2600	16.5	2.5	–	5 / 100	SOT-89	TAT7460
V-ONU Output	50 - 2600	13	4.4	–	5 / 150	SOIC-8	TAT7464
Multi-Stage							
GPON	50 - 1000	33	–	3.9	5 or 12 / 200 or 100	QFN 4x4	TAT6254C
RFoG	50 - 1000	32	–	4.0	5 or 12 / 200 or 100	QFN 4x4	TAT6254D

NOTES: 1 = In development, 2 = With external 820 ohm feedback resistor, open loop gain of 25 dB, 3 = Operates from 5V - 8V

DOCSIS® 3.0 / Edge QAM Headend Amplifiers

DOCSIS 3.0 Approx Output Margin (dB)	OIP3 (dBm)	Gain (dB)	Single-Die Dual Adjacent Amplifiers[2]	On-Chip Linearization	Voltage / Current (V / mA)	Package Style	Part Number
Input Stage							
Input Stage	41	13	No	No	5 to 8 / 190	SOIC-8	TAT7466
Input Stage	38	17.5	No	No	5 to 8 / 235	SOIC-8	TAT7469
Output Stage							
+2	43	11	Yes	No	5 / 320	SOIC-8	AH22
+2	43	13.5	Yes	No	5 / 340	SOIC-8	TAT7472[1]
+2	43	17	Yes	Yes	5 / 380	SOIC-8	TAT7467H
+4	43	20	Yes	No	5 to 8 / 350	QFN 5x5	TGA2806
+5	45	18.5	Yes	No	5 to 8 / 320	QFN 5x5	TGA2807

NOTES: 1 = In development, 2 = OIP2 > +70 dBm with careful balun selection, parts with single-chip construction inherently have better OIP2, OIP2 is 100% production tested for solutions without matched devices

Protectors

Description	Application	Trigger Voltage (V)	Leakage Current (nA)	Capacitance (femto Farads)	Package Area (mm^2)	Package Style	Part Number
3-Terminal Dual Bi-Directional MESFET Protection Device	ESD & Surge Protection	$V_{TR\ 1,2}$ = 25V $V_{TR\ 1,3}$ = 18V $V_{TR\ 3,2}$ = 41V	$I_{1,2}$ = 20 @ 1V, 500 @ 15V $I_{1,3}$ = 20 @ 1V, 500 @ 15V $I_{3,2}$ = 15 @ 1V, 500 @ 15V	$C_{1,2}$ = 290 @ 1V, 10MHz $C_{1,3}$ = 290 @ 1V, 10MHz $C_{3,2}$ = 220 @ 1V, 10MHz	1.8	T / SLP-3	TQP200002

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Connecting the Digital World to the Global Network®

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CATV & FTTH Solutions

CATV Infrastructure Amplifiers

Application	Gain (dB)	OIP3 (dBm)	CTB (dBc)	CSO (dBc)	Single-Die Dual Adjacent Amplifiers[2]	On-Chip Linearization	Voltage / Current (V / mA)	Package Style	Part Number
24V Push-Pull	28 - 34[4]	–	-62.5[5]	-75[5]	Yes[3]	Yes	24 / 265 - 335	SOIC-16W	TAT8858[1]
24V Power Doubler	22 - 27[4]	–	-70[6]	-75[6]	Yes[3]	Yes	24 / 340 - 390	SOIC-16W	TAT8857[1]
12V Power Doubler	11	52	-80[7]	-72[7]	Yes	No	12 / 540	SOIC-16W	TGA2801

NOTES: 1 = In development, 2 = Parts with single-chip construction inherently have better 2nd order linearity, 3 = Multiple stages on different die, 4 = Gain adjustable with external feedback network, 5 = 265 mA, 44 dBmV/ch flat 80 ch NTSC, 6 = 380 mA, 47 dBmV/ch, flat 80 ch NTSC, 7 = 112 ch flat, 44 dBmV/c

Home Amplifiers, Single Ended Amplifiers

Application	Frequency Range (MHz)	Gain (dB)	P1dB / OIP3 / OIP2 (dBm)	CTB (dBc)	CSO (dBc)	Voltage / Current (V / mA)	Package Style	Part Number
Multiple Use	DC - 2000	19	20 / +38 / +60	-80	-65	5 / 100	SOT-89	TAT7457[1]
MSO Standard	50 - 1000	16	22.5 / +39 / +61	-88	-72	6 / 130	SOT-89	TAT7461
High Gain (MOCA)	50 - 1000	18	22.5 / +39 / +61	-88	-70	6 / 145	SOT-89	TAT7427B
High Gain (MOCA / Multi Port)	50 - 1000	22.8	22 / +41 / +65	-81	-68	8 / 190	SOT-89	TAT7430B
CATV / SAT Bands	50 - 2600	16.5	18 / +36 / +58	-72	-61	5 / 100	SOT-89	TAT7460

NOTES: 1 = In development

General Purpose CATV Amplifiers

Description	Frequency Range (MHz)	P1dB / OIP3 (dBm)	Gain (dB)	NF (dB)	Pout (dBmV / ch, 77ch)	Voltage / Current (V / mA)	Package Style	Part Number
Single Ended Amplifier	50 - 1000	20 / 38	19	2.0	–	5 / 100	SOT-89	TAT7457[1]
Single Ended MESFET Amplifier	50 - 1000	20 / 40	14.8	3.5	34	5 / 150	SOT-89	AH2
Dual HBT Amplifier	50 - 1000	20 / 37	13.5	4.5	34	>7 / 160	SOIC-8	AG606
Dual MESFET Amplifier	50 - 1000	25.5 / 43	11.1	4.5	39	5 / 320	SOIC-8	AH22S
Dual Amplifier	50 - 1000	23 / 40	18	4.0	36	5 - 8 / 235	SOIC-8	TAT7469
Differential Amplifier	50 - 1000	24 / 43	17	4.5	42	5 / 380	SOIC-8	TAT7467H
Dual pHEMT Amplifier	50 - 1000	22 / 41	13	4.0	39	5 - 8 / 190	SOIC-8	TAT7466
Dual pHEMT Amplifier	50 - 2600	21 / 40	13	4.4	33	5 / 150	SOIC-8	TAT7464
Single Ended Amplifier	50 - 2600	20.5 / 36	16.5	2.5	30	5 / 100	SOT-89	TAT7460

NOTES: 1 = In development

SAW Filters

Description	Frequency Range (MHz)	Bandwidth (MHz)	Insertion Loss (dB)	Modes of Operation	Package Size (mm)	Part Number
Cable IF Filter	36.15	8	22.0 max	SE	DIP-O	855748
Cable IF Filter	44	6	22.0 max	SE	DIP-O	855079
Cable IF Filter	44	6	22.0 max	SE	24.6x9.0	856129
Cable IF Filter	110.59	1	7.8 max	SE	13.3x6.5	855659
Cable IF Filter	202.75	1.2	7.6 max	SE	13.3x6.5	855068
Cable IF Filter	499.25	1	9.0 max	SE	9.0x7.0	855104
Tuner IF Filter	1086	10	5.0 max	BAL	3.0x3.0	855964
Tuner IF Filter	1086	10	–	BAL	3.0x3.0	856330
Tuner IF Filter	1090	10	5.8 max	BAL	3.8x3.8	856096
Tuner IF Filter	1220	10	5.5 max	BAL	3.0x3.0	856298
Tuner IF Filter	1220	50	–	BAL	3.8x3.8	856598
Tuner IF Filter	1250	100	6.5 typ	BAL / BAL	3.0x3.0	856653

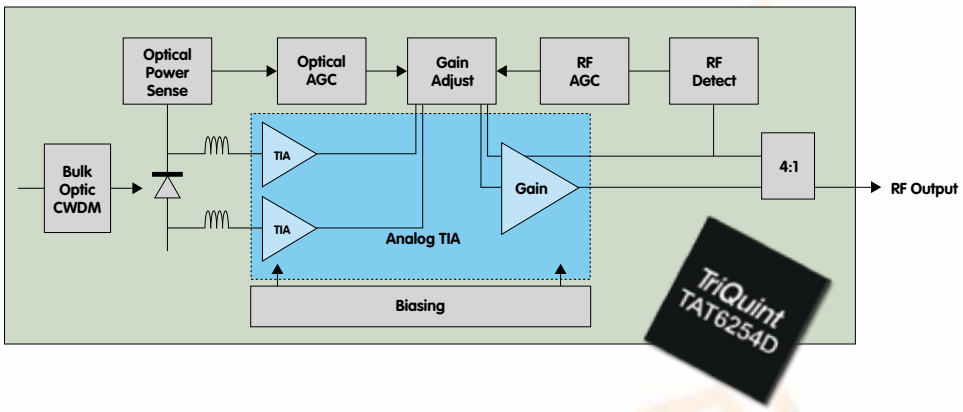
Benefits
Best-in-class single-ended amplifier distortion
High-performance repeatable pHEMT process
Excellent return loss
Multiple gain level applications
Low noise / low distortion

Applications
Drop amplifiers for multi-room or central gateway architectures
MOCA or Ethernet over coax amplifiers
Distribution amplifier gain blocks

Fiber to the Home / RFoG Receivers

A highly-effective way to bring broadband data capability to the subscriber is to drive fiber all the way to the premise. Use of RFoG (RF over Glass) is increasingly popular for new construction and network upgrades as it leverages the current CATV infrastructure so well and offers a smooth incremental upgrade path in particularly competitive markets. To help designers cost-effectively meet the challenge of satisfying RF requirements at the Residential-Optical Network Unit (R-ONU), the TriQuint TriAccess portfolio includes a family of RFICs that satisfy the difficult gain, noise and distortion requirements of PONs (Passive Optical Networks).

TriQuint solutions, including the TAT6254C and TAT6254D, are specifically designed to support current GPON and emerging RFoG specifications. Their ultra low noise, dual single die and single package convenience offer the best means to extend optical link budgets for easier, more cost-effective network deployments.

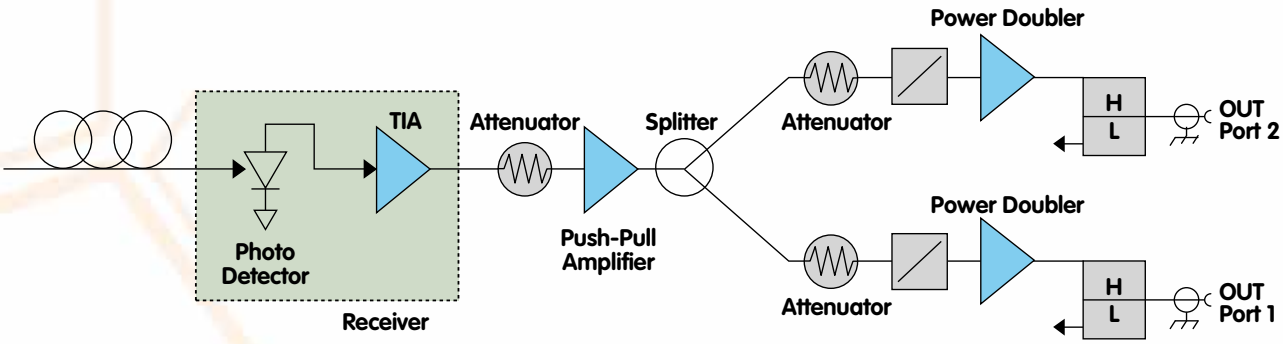


Benefits
Ultra low noise GaAs: less than 4 pA/rtHz EIN
Dual single die TIA for repeatable CSO performance
Industry proven single package solution
Best optical link budget for easier, more cost-effective deployment
Low distortion

Applications
FTTH downstream 50-1000 MHz receivers
FTTH RFoG optically detected AGC
FTTH with RF detected AGC
FTTH in all QAM applications

CATV Infrastructure Amplifiers

TriQuint's TriAccess CATV infrastructure products, optimized for cable-specific performance, address the key challenges cable system operators must confront including service complexities, the need for higher data rates, voice service provisions and increased HDTV demands. Solutions to economically satisfy these requirements can be found in new generations of line amplifiers that offer better network efficiency. TriQuint's TAT8858 (integrated push-pull amplifier) and TAT8857 (integrated power doubler) are ideal for CATV infrastructure applications, providing the economy of GaAs-based design and superior efficiency performance.



Benefits
Single package multi-chip module
Integrated low-distortion GaAs
High-efficiency / low-power consumption
Low distortion on-chip linearization
Complete offering of product gain levels

Applications
Hybrid fiber coax nodes
CATV line extenders
Distribution amplifiers

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