Cisco 1.25 GHz Surge-Gap Taps

Standard Profile 2 and 4 Port Design/Full Profile 8 Port Design

The Cisco® 1.25 GHz Surge-Gap Tap product line is the latest evolution of the HFC network providing full support of the DOCSIS 3.1 standard. DOSCIS 3.1 support will allow MSOs to fully and efficiently utilize their broadband networks to provide the services that their subscribers demand. Support for DOCSIS 3.1 means that the frequency capabilities of the devices is increased to the full 1.218 GHz spectrum as well as full compatibility with the new OFDM signalling requirements. These new capabilities will allow MSOs to increase revenue generation by allowing increased capability across their networks to drive new and improved services to their customer base.

In addition to the new DOCSIS 3.1 capabilities, the Cisco 1.25 GHz Surge-Gap Tap product line continues to support IEEE-compliant 6 kV surge protection which provides protection against voltage transients in lightning strike areas and locations with unreliable power networks. In addition, the Cisco 1.25 GHz Surge-Gap Tap products offer the same “make-before-break” capabilities of previous Cisco tap products, which allow cable technicians to pull the tap’s faceplate and perform maintenance without interrupting service to subscribers located downstream.

The Cisco 1.25 GHz Surge-Gap Tap is the latest addition to the Surge-Gap product line aimed at supporting DOCSIS 3.1 network architectures. Cisco 1.25 Surge-Gap Taps are an extended offering of Cisco’s multimedia product family: Standard Profile 2 and 4 port products, as well as the Full Profile 8 port product.

Figure 1. Cisco 1.2 GHz Surge-Gap Taps

Features

- Expanded Frequency Range - Handles DOCSIS 3.1 requirements of 1.218 GHz and OFDM signalling
- Surge Tolerance - Rugged design that allows the taps to continue to operate after surges that would typically damage ordinary products and interrupt service
- Return Loss - Superior return loss performance to lessen reflections for a “cleaner” signal
- Powder coated housing for environmental protection
- Sealed and swaged extended F-ports for greater resistance to moisture ingress
- Nickel plated brass F-ports to help ensure a corrosion-resistant drop interface
- Component covers for additional protection of faceplate circuitry during maintenance
- Versatile housing design that permits aerial, pedestal, or MDU mounting schemes

Specifications

Tables 1 through 7 provide product specifications for the Cisco 1.25 GHz Surge-Gap Tap.

Table 1. General Specifications

Item	Value	
	Frequency (MHz)	**Specifications**
Power passing	-	12 amps
Tap-Tap isolation (Minimum)	5 to 10	21 dB
	11 to 85	25 dB
	86 to 204	27 dB
	205 to 750	23 dB
	751 to 1250	20 dB
In-Out return loss (minimum)	5 to 1000	18 dB
	1001 to 1250	16 dB
Tap port return loss (minimum)	5 to 1000	18 dB
	1001 to 1250	16 dB
Hum modulation @ 10 amps (typical)	5 to 450	70 dBc
	451 to 750	65 dBc
	751 to 1250	55 dBc
EMI shielding (minimum)*	5 to 15	85 dB
	16 to 1250	100 dB

* **Note:** Tested per ANSI/SCTE 48-2 2003

Table 2. AC/RF Bypass Switch Performance

Item	Value
System Open Circuit Time	0 ms
Contact resistance (Max.)	10 mOhms
Through current capacity	12 amps
Voltage capacity	90 VAC
RF frequency range	5 to 1250 MHz
Insertion loss and return loss	See Loss Table
Operating temperature	-40ºC to +60ºC

Unless otherwise noted, specifications reflect typical performance and are referenced to 68° F (20° C). Specifications are based upon measurements made in accordance with SCTE and ANSI standards (where applicable), using standard frequency assignments.

Table 3. AC/RF Bypass Switch Insertion Loss & Return Loss Table

Item	Value					
AC/RF Bypass	**5 MHz**	**500 MHz**	**750 MHz**	**870 MHz**	**1 GHz**	**1.25 GHz**
Short Circuited Insertion Loss (dB)	0.02 Max <0.01 Mean	0.6 Max 0.4 Mean	0.8 Max 0.5 Mean	0.7 Max 0.4 Mean	0.7 Max 0.5 Mean	0.7 Max 0.5 Mean
Short Circuited Return Loss (dB)	45 Min 50 Mean	16 Min 16.5 Mean	16 Min 16.5 Mean	18 Min 18.5 Mean	21 Min 22 Mean	21 Min 22 Mean

Table 4. Mechanical, Environmental, and Compliance Specifications

Item	Value
Mechanical	
Water and dust ingress rating	IP68
Standard Tap • Dimensions (H x W x D)	2-Way/4-Way 3.6 x 3.6 x 3.0 in.
Full Profile Tap • Dimensions (H x W x D)	2-Way/4-Way/8-Way 4.25 x 5.50 x 3.0 in.
Standard Tap • Weight	2-Way: 0.30Kg, 0.66 lb 4-Way: 0.31Kg, 0.68 lb
Full Profile Tap • Weight	2-Way: 0.45 Kg, 0.99 lb 4-Way: 0.46 Kg, 1.01 lb 8-Way: 0.48 Kg, 1.06 lb
Bolt Torque Requirements	Center conductor seizure: • 15 lb-in to 20 lb-in (1.7 Nm to 2.3 Nm) Housing closure: • 50 lb-in to 60 lb-in (5.6 Nm to 6.8 Nm) Port plugs: • 50 lb-in to 60 lb-in (5.6 Nm to 6.8 Nm)
Surge Resistance • Input/Output ports • Tap ports	 6 kV (combination wave) 6 kV (combination wave)
Environmental	
Operating temperature	-40 to 60°C -40 to 140°F
Standards Compliance	
Mechanical	ANSI/SCTE 01 1996 - F-port interface specification SCTE IPS-SP-500 - entry port interface specification
Emissions	FCC - Part 76, Subpart K EN 50083-2/A1: 1998
Environmental	ASTM G 53 - weathering specification ASTM B 117 - salt spray specification ASTM D 31 - chip resistance specification EN 60529: 1992 (IP test) Bellcore GR-63-CORE - vibration/transportation ANSI/EEEE C62.41 - lightning
Electrical Safety	UL/CSA 60950-1

Unless otherwise noted, specifications reflect typical performance and are referenced to 68° F (20° C). Specifications are based upon measurements made in accordance with SCTE and ANSI standards (where applicable), using standard frequency assignments.

Table 5. RF Section Specifications for 2-Way Standard Profile Surge Gap Tap

Item	Value													
	Type	4		8		11		14		17		20		23	
	Freq.	Typ.	Max	Typ.	Max	Typ.	Max	Typ.	Max	Typ.	Max	Typ.	Max	Typ.	Max
Insertion Loss (dB) (In-Out)	5	-	-	2.6	3.2	1.8	2.0	1.0	1.2	0.8	1.1	0.6	0.8	0.4	0.7
	10	-	-	2.4	3.0	1.4	1.6	0.8	1.0	0.7	0.9	0.5	0.7	0.4	0.6
	40	-	-	2.1	2.5	1.4	1.6	0.7	0.9	0.6	0.8	0.5	0.7	0.3	0.5
	85	-	-	2.1	2.5	1.4	1.6	0.8	1.0	0.6	0.8	0.5	0.7	0.4	0.7
	100	-	-	2.2	2.5	1.4	1.6	0.9	1.1	0.7	0.9	0.5	0.7	0.4	0.7
	200	-	-	2.3	2.6	1.6	1.8	1.0	1.2	0.9	1.1	0.6	0.9	0.6	0.8
	550	-	-	3.5	3.8	2.2	2.5	1.4	1.7	1.2	1.4	1.0	1.3	0.9	1.2
	750	-	-	4.2	4.5	2.7	2.9	1.7	1.9	1.3	1.6	1.1	1.4	1.1	1.3
	870	-	-	4.6	4.8	3.0	3.2	2.0	2.3	1.5	1.8	1.3	1.7	1.2	1.5
	1000	-	-	4.8	5.1	3.3	3.6	2.1	2.6	1.8	2.2	1.5	1.9	1.5	1.8
	1218	-	-	4.9	5.2	4.0	4.2	2.4	3.1	2.1	2.5	1.9	2.3	1.8	2.2
	1250	-	-	5.1	5.4	4.0	4.3	2.7	3.2	2.3	2.6	2.1	2.4	2.0	2.3
Tap Loss (dB)	5	4.0		8.5		10.7		13.7		16.1		19.5		22.5	
Tolerance ±1.0 dB	10	4.0		8.5		11.0		14.0		17.0		20.0		23.0	
	40	4.0		8.5		11.0		14.0		17.0		20.0		23.0	
	85	4.0		8.5		11.0		14.0		17.0		20.0		23.0	
	100	4.0		8.5		11.0		14.0		17.0		20.0		23.0	
	200	4.0		8.5		11.0		14.0		17.0		20.0		23.0	
	550	4.0		8.5		11.0		14.0		17.0		20.0		23.0	
	750	4.0		8.5		11.0		14.0		17.0		20.0		23.0	
	870	4.0		8.5		11.0		14.0		17.0		20.0		23.0	
±1.25 dB @1001-1250MHz	1000	4.0		8.5		11.0		14.2		17.0		20.2		23.2	
	1218	4.0		9.2		11.2		14.4		17.0		20.2		23.4	
	1250	4.1		9.5		11.5		14.5		17.5		20.4		23.5	
Out-Tap Isolation (dB)(Min)	5 to 10	-		18		19		21		23		25		27	
	11 to 85	-		23		25		26		30		32		34	
	86 to 204	-		23		25		26		30		32		34	
	205 to 550			23		25		26		30		32		34	
	551 to 650			23		25		26		30		32		34	
	651 to 750	-		21		23		24		28		29		32	
	751 to 870	-		21		21		23		26		28		30	
	871 to 1000	-		20		20		21		24		26		27	
	1000 to 1250	-		20		19		20		22		23		23	

Unless otherwise noted, specifications reflect typical performance and are referenced to 68° F (20° C). Specifications are based upon measurements made in accordance with SCTE and ANSI standards (where applicable), using standard frequency assignments.

Table 6. RF Section Specifications for 4-Way Standard Profile Surge Gap Tap

Item	Value												
	Type	8		11		14		17		20		23	
	Freq.	Typ.	Max	Typ.	Max	Typ.	Max	Typ.	Max	Typ.	Max	Typ.	Max
Insertion Loss (dB) (In-Out)	5	-	-	2.7	3.2	1.8	2.1	1.0	1.4	0.6	0.8	0.6	0.8
	10	-	-	2.2	2.5	1.2	1.5	0.8	1.2	0.5	0.7	0.5	0.7
	40	-	-	2.2	2.5	1.2	1.5	0.8	1.2	0.5	0.7	0.5	0.7
	85	-	-	2.3	2.6	1.4	1.6	0.8	1.2	0.6	0.8	0.5	0.7
	100	-	-	2.3	2.6	1.4	1.7	0.8	1.2	0.6	0.8	0.6	0.8
	200	-	-	2.5	2.8	1.5	1.8	1.0	1.3	0.7	0.9	0.7	0.9
	550	-	-	3.5	3.8	2.2	2.5	1.4	1.8	1.1	1.4	1.1	1.3
	750	-	-	4.3	4.5	2.6	2.9	1.7	2.1	1.3	1.6	1.2	1.5
	870	-	-	4.7	4.8	3.0	3.2	1.9	2.3	1.5	1.8	1.4	1.6
	1000	-	-	4.9	5.1	3.4	3.6	2.3	2.7	1.8	2.1	1.6	1.9
	1218	-	-	5.0	5.3	3.9	4.1	2.7	3.1	2.2	2.5	2.0	2.3
	1250	-	-	5.0	5.4	4.0	4.2	2.9	3.2	2.4	2.6	2.1	2.4
Tap Loss (dB) Tolerance ±1.0 dB	5	7.5		12.0		13.8		16.5		19.5		22.4	
	10	7.5		12.0		14.0		17.0		20.0		23.0	
	40	7.5		12.0		14.0		17.0		20.0		23.0	
	85	7.5		12.0		14.0		17.0		20.0		23.0	
	100	7.5		12.0		14.0		17.0		20.0		23.0	
	200	7.5		12.0		14.0		17.0		20.0		23.0	
	550	7.5		12.0		14.0		17.0		20.0		23.0	
	750	7.5		12.0		14.0		17.0		20.0		23.2	
	870	7.5		12.0		14.0		17.0		20.0		23.2	
±1.25 dB @1001-1250MHz	1000	7.8		12.3		14.1		17.0		19.8		22.9	
	1218	8.2		12.6		14.5		17.1		20		22.9	
	1250	8.5		13.0		14.8		17.3		20.2		22.9	
Out-Tap Isolation (dB)(Min)	5 to 10	-		20		21		23		25		27	
	11 to 85	-		25		28		30		29		33	
	86 to 204	-		25		28		30		29		33	
	205 to 550			25		28		30		29		33	
	551 to 650	-		23		28		30		29		33	
	651 to 750	-		23		26		28		27		31	
	751 to 870	-		21		24		25		25		27	
	871 to 1000	-		20		22		23		23		25	
	1000 to 1250	-		20		20		21		21		23	

Unless otherwise noted, specifications reflect typical performance and are referenced to 68° F (20° C). Specifications are based upon measurements made in accordance with SCTE and ANSI standards (where applicable), using standard frequency assignments.

Table 7. RF Section Specifications for 8-Way Full Profile Surge Gap Tap

Item	Value									
	Type	11		14		17		20		23	
	Freq.	Typ.	Max	Typ.	Max	Typ.	Max	Typ.	Max	Typ.	Max
Insertion Loss (dB) (In-Out)	5	-	-	2.9	3.5	1.9	2.4	1.0	1.2	0.9	1.0
	10	-	-	2.7	3.1	1.4	1.8	0.8	1.0	0.7	0.9
	40	-	-	2.7	3.1	1.4	1.7	0.8	1.0	0.6	0.8
	85	-	-	2.7	3.1	1.4	1.7	0.8	1.0	0.7	0.9
	100	-	-	2.7	3.1	1.4	1.7	0.8	1.0	0.7	0.9
	200	-	-	2.9	3.2	1.6	1.8	1.0	1.2	0.8	1.0
	550	-	-	3.9	4.4	2.3	2.6	1.5	1.8	1.4	1.7
	750	-	-	4.5	4.9	2.7	2.9	1.8	2.1	1.6	1.9
	870	-	-	4.9	5.2	3.0	3.2	2.1	2.4	1.8	2.0
	1000	-	-	5.2	5.6	3.4	3.6	2.4	2.8	2.0	2.3
	1218	-	-	5.7	5.9	3.9	4.1	2.9	3.3	2.7	2.8
	1250	-	-	5.7	6.0	4.0	4.2	3.2	3.4	2.8	2.9
Tap Loss (dB) Tolerance ±1.0 dB	5	11.0		15.0		18.0		20.0		22.5	
	10	11.0		15.0		18.0		20.5		23.0	
	40	11.0		15.0		18.0		20.5		23.0	
	85	11.0		15.0		18.0		20.5		23.0	
	100	11.0		15.0		18.0		20.5		23.0	
	200	11.0		15.0		18.0		20.5		23.0	
	550	11.0		15.0		18.0		20.5		23.0	
	750	11.0		15.0		18.0		20.1		22.8	
	870	11.5		15.0		18.0		20.1		22.7	
±1.25 dB @1001-1250MHz	1000	11.5		15.4		18.0		20.1		22.7	
	1218	12.3		15.8		18.3		20.8		23.3	
	1250	12.5		16.0		18.5		21.0		23.5	
Out-Tap Isolation (dB)(Min)	5 to 10	-		22		24		25		26	
	11 to 85	-		27		28		28		31	
	86 to 204	-		27		28		28		31	
	205 to 550	-		27		28		28		31	
	551 to 650	-		27		28		28		31	
	651 to 750	-		27		28		28		31	
	751 to 870	-		24		25		25		27	
	871 to 1000	-		23		23		23		27	
	1000 to 1250	-		22		23		23		23	

Unless otherwise noted, specifications reflect typical performance and are referenced to 68° F (20° C). Specifications are based upon measurements made in accordance with SCTE and ANSI standards (where applicable), using standard frequency assignments.

Ordering Information

To place an order, visit the Cisco Commerce Workspace tool at https://cisco-apps.cisco.com/cisco/psn/commerce and refer to the ordering information provided in Table 8 through 9.

Table 8. Ordering Information - 1.25 GHz Surge-Gap Taps

Product Description	Part Number
Standard Taps	
Cisco Surge-Gap Tap 1.25 GHz, 2-way, 4 dB	SG-TAP-2-04-STD
Cisco Surge-Gap Tap 1.25 GHz, 2-way, 8 dB	SG-TAP-2-08-STD
Cisco Surge-Gap Tap 1.25 GHz, 2-way, 11 dB	SG-TAP-2-11-STD
Cisco Surge-Gap Tap 1.25 GHz, 2-way, 14 dB	SG-TAP-2-14-STD
Cisco Surge-Gap Tap 1.25 GHz, 2-way, 17 dB	SG-TAP-2-17-STD
Cisco Surge-Gap Tap 1.25 GHz, 2-way, 20 dB	SG-TAP-2-20-STD
Cisco Surge-Gap Tap 1.25 GHz, 2-way, 23 dB	SG-TAP-2-23-STD
Cisco Surge-Gap Tap 1.25 GHz, 4-way, 8 dB	SG-TAP-4-08-STD
Cisco Surge-Gap Tap 1.25 GHz, 4-way, 11 dB	SG-TAP-4-11-STD
Cisco Surge-Gap Tap 1.25 GHz, 4-way, 14 dB	SG-TAP-4-14-STD
Cisco Surge-Gap Tap 1.25 GHz, 4-way, 17 dB	SG-TAP-4-17-STD
Cisco Surge-Gap Tap 1.25 GHz, 4-way, 20 dB	SG-TAP-4-20-STD
Cisco Surge-Gap Tap 1.25 GHz, 4-way, 23 dB	SG-TAP-4-23-STD
Standard Tap - Surge Gap Face Plates	
Cisco Surge-Gap Tap Faceplate 1.25 GHz, 2-way, 4 dB	SG-TAP-2-04-SFP
Cisco Surge-Gap Tap Faceplate 1.25 GHz, 2-way, 8 dB	SG-TAP-2-08-SFP
Cisco Surge-Gap Tap Faceplate 1.25 GHz, 2-way, 11 dB	SG-TAP-2-11-SFP
Cisco Surge-Gap Tap Faceplate 1.25 GHz, 2-way, 14 dB	SG-TAP-2-14-SFP
Cisco Surge-Gap Tap Faceplate 1.25 GHz, 2-way, 17 dB	SG-TAP-2-17-SFP
Cisco Surge-Gap Tap Faceplate 1.25 GHz, 2-way, 20 dB	SG-TAP-2-20-SFP
Cisco Surge-Gap Tap Faceplate 1.25 GHz, 2-way, 23 dB	SG-TAP-2-23-SFP
Cisco Surge-Gap Tap Faceplate 1.25 GHz, 4-way, 8 dB	SG-TAP-4-08-SFP
Cisco Surge-Gap Tap Faceplate 1.25 GHz, 4-way, 11 dB	SG-TAP-4-11-SFP
Cisco Surge-Gap Tap Faceplate 1.25 GHz, 4-way, 14 dB	SG-TAP-4-14-SFP
Cisco Surge-Gap Tap Faceplate 1.25 GHz, 4-way, 17 dB	SG-TAP-4-17-SFP
Cisco Surge-Gap Tap Faceplate 1.25 GHz, 4-way, 20 dB	SG-TAP-4-20-SFP
Cisco Surge-Gap Tap Faceplate 1.25 GHz, 4-way, 23 dB	SG-TAP-4-23-SFP

Table 9. Ordering Information - Surge-Gap Full Profile Taps

Product Description	Part Number
Full Profile Taps	
Cisco Surge-Gap Full Profile Tap 1.25 GHz, 2-way, 4 dB	SG-TAP-2-04-FP
Cisco Surge-Gap Full Profile Tap 1.25 GHz, 2-way, 8 dB	SG-TAP-2-08-FP
Cisco Surge-Gap Full Profile Tap 1.25 GHz, 2-way, 11 dB	SG-TAP-2-11-FP
Cisco Surge-Gap Full Profile Tap 1.25 GHz, 2-way, 14 dB	SG-TAP-2-14-FP
Cisco Surge-Gap Full Profile Tap 1.25 GHz, 2-way, 17 dB	SG-TAP-2-17-FP
Cisco Surge-Gap Full Profile Tap 1.25 GHz, 2-way, 20 dB	SG-TAP-2-20-FP
Cisco Surge-Gap Full Profile Tap 1.25 GHz, 2-way, 23 dB	SG-TAP-2-23-FP
Cisco Surge-Gap Full Profile Tap 1.25 GHz, 4-way, 8 dB	SG-TAP-4-08-FP
Cisco Surge-Gap Full Profile Tap 1.25 GHz, 4-way, 11 dB	SG-TAP-4-11-FP
Cisco Surge-Gap Full Profile Tap 1.25 GHz, 4-way, 14 dB	SG-TAP-4-14-FP
Cisco Surge-Gap Full Profile Tap 1.25 GHz, 4-way, 17 dB	SG-TAP-4-17-FP
Cisco Surge-Gap Full Profile Tap 1.25 GHz, 4-way, 20 dB	SG-TAP-4-20-FP
Cisco Surge-Gap Full Profile Tap 1.25 GHz, 4-way, 23 dB	SG-TAP-4-23-FP
Cisco Surge-Gap Full Profile Tap 1.25 GHz, 8-way, 11 dB	SG-TAP-8-11-FP
Cisco Surge-Gap Full Profile Tap 1.25 GHz, 8-way, 14 dB	SG-TAP-8-14-FP
Cisco Surge-Gap Full Profile Tap 1.25 GHz, 8-way, 17 dB	SG-TAP-8-17-FP
Cisco Surge-Gap Full Profile Tap 1.25 GHz, 8-way, 20 dB	SG-TAP-8-20-FP
Cisco Surge-Gap Full Profile Tap 1.25 GHz, 8-way, 23 dB	SG-TAP-8-23-FP
Full Profile Taps - Surge Gap Face Plates	
Cisco Surge-Gap Full Profile Tap, Faceplate 1.25 GHz, 2-way, 4 dB	SG-TAP-2-04-FFP
Cisco Surge-Gap Full Profile Tap, Faceplate 1.25 GHz, 2-way, 8 dB	SG-TAP-2-08-FFP
Cisco Surge-Gap Full Profile Tap, Faceplate 1.25 GHz, 2-way, 11 dB	SG-TAP-2-11-FFP
Cisco Surge-Gap Full Profile Tap, Faceplate 1.25 GHz, 2-way, 14 dB	SG-TAP-2-14-FFP
Cisco Surge-Gap Full Profile Tap, Faceplate 1.25 GHz, 2-way, 17 dB	SG-TAP-2-17-FFP
Cisco Surge-Gap Full Profile Tap, Faceplate 1.25 GHz, 2-way, 20 dB	SG-TAP-2-20-FFP
Cisco Surge-Gap Full Profile Tap, Faceplate 1.25 GHz, 2-way, 23 dB	SG-TAP-2-23-FFP
Cisco Surge-Gap Full Profile Tap, Faceplate 1.25 GHz, 4-way, 8 dB	SG-TAP-4-08-FFP
Cisco Surge-Gap Full Profile Tap, Faceplate 1.25 GHz, 4-way, 11 dB	SG-TAP-4-11-FFP
Cisco Surge-Gap Full Profile Tap, Faceplate 1.25 GHz, 4-way, 14 dB	SG-TAP-4-14-FFP
Cisco Surge-Gap Full Profile Tap, Faceplate 1.25 GHz, 4-way, 17 dB	SG-TAP-4-17-FFP
Cisco Surge-Gap Full Profile Tap, Faceplate 1.25 GHz, 4-way, 20 dB	SG-TAP-4-20-FFP
Cisco Surge-Gap Full Profile Tap, Faceplate 1.25 GHz, 4-way, 23 dB	SG-TAP-4-23-FFP
Cisco Surge-Gap Full Profile Tap, Faceplate 1.25 GHz, 8-way, 11 dB	SG-TAP-8-11-FFP
Cisco Surge-Gap Full Profile Tap, Faceplate 1.25 GHz, 8-way, 14 dB	SG-TAP-8-14-FFP
Cisco Surge-Gap Full Profile Tap, Faceplate 1.25 GHz, 8-way, 17 dB	SG-TAP-8-17-FFP
Cisco Surge-Gap Full Profile Tap, Faceplate 1.25 GHz, 8-way, 20 dB	SG-TAP-8-20-FFP
Cisco Surge-Gap Full Profile Tap, Faceplate 1.25 GHz, 8-way, 23 dB	SG-TAP-8-23-FFP

For More Information

Cisco 1.25 GHz Surge-Gap Taps products include some of the industry's most complete range of high-performance components. For additional information, please contact your Cisco Account Manager or Cisco System Engineer.

Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV Amsterdam,
The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at www.cisco.com/go/offices.

Printed in USA C78-732058-01 12/14