National Semiconductor

Analog Microcontrollers Group- COP8 Flash Tools

This section provides specific tools ordering information for the devices in this datasheet, followed by a summary of the tools and development kits available at print time. Up-to-date information, device selection guides, demos, updates, and purchase information can be obtained at our web site at: **www.national.com/cop8**.

1.0 Tools Ordering Numbers For The COP8 Flash Family Devices

Note: The following order numbers apply to the COP8 devices in this datasheet only. Unless otherwise noted, tools can be purchased for worldwide delivery from National's e-store: **http://store.national.com/mic.html**

Tool	Order Number	Cost*	Notes/Includes
Evaluation CD	COP8-NSEVAL	Free	Web site download, or get CD from e-store
Reference Design	COP8-REF-FL1	VL	**For COP8Sx/Cx** - Board and Software; No power supply; Can also be used as a development target board with COP8 Emulator.
	COP8-REF-AM	VL	**For COP8AM/AN** – Board and Software; No power supply. Can also be used as a development target board with ISP connection.
Starter Kit	COP8-SKFLASH-00	VL	**Supports COP8Sx/Cx; (COP8AM/AN support has limitations**: See Summary below); Target board with 68pin PLCC COP8CDR9, Development CD, Cable, Debug Software and Source Code. No p/s.
Prototype/Eval Board	COP8-PRO-COB1	L	**COP8Flash applications require a user-supplied package adapter, with some limitations for 68pin devices.** Board with 40DIP socket, Development CD; No power supply.
Development CD	COP8-NSDEV	VL	**Included in EM, PM, PRO.** Order CD from website. Update from web.
Utilities	COP8-UTILS	Free	**Included in Development and Evaluation CDs** – Update from web
Software Library	COP8-SW-LIB		**Included in Development CD** – Update from the web.
Byte Craft C Compiler	COP8-SW-COP8C	M	DOS/16bit Version – No IDE.
	COP8-SW-COP8CW	H	Win 32 Version with IDE.
IAR Embedded Workbench.	COP8-SW-EWCOP8	H	Complete tool set, with COP8 Emulator/Debugger support.
	EWCOP8-BL	M	Baseline version – **Purchase from IAR only.**
	Assembler-Only Version	Free	Assembler only; No COP8 Emulator/Debugger support.
Unis Processor Expert	COP8-SW-PE	M	Stand-alone version on CD;
Hardware Emulators	COP8-EMFlash-00	L	Includes 110v/220v p/s, target cable with 2x7 connector, 68pin COP8CDR9 Null Target, manuals and software on CD.
	COP8-DMFlash-00	M	**-COP8AME/ANE9 uses optional 28pin Null Target;**
	COP8-IMFlash-00	H	Add SMD Target Package Adapter if needed.
Emulator Null Target	COP8-EMFA-68N	VL	68pin PLCC COP8CDR9; **Included in COP8-EM/DM/IM.**
	COP8-EMFA-28N	VL	28pin DIP COP8AME9; **Must order seperately.**
Emulator Target Package Adapters	COP8-EMFA-44P	VL	44 pin PLCC target package adapter.
	COP8-EMFA-68P	VL	68 pin PLCC target package adapter.
National's Engineering Programmer	COP8-PM-00	L	Board with 40DIP ZIF base socket for optional COP8FLASH programming adapters; Includes 110v/220v p/s, manuals and software on CD; **(Requires optional –PGMA programming adapters for flash)**
Programming Adapters (For any programmer supporting flash adapter base pinout)	COP8-PGMA-28DF1	L	For programming 28DIP COP8AM/AN only.
	COP8-PGMA-28SF1	L	For programming 28SOIC COP8AM/AN only.
	COP8-PGMA-44PF1	L	For programming all 44PLCC COP8FLASH.
	COP8-PGMA-44CSF	L	For programming all 44LLP COP8FLASH.
	COP8-PGMA-48TF1	L	For programming all 48TSSOP COP8 FLASH.
	COP8-PGMA-68PF1	L	For programming all 68PLCC COP8FLASH
	COP8-PGMA-56TF1	L	For programming all 56TSSOP COP8FLASH.
KANDA's Flash ISP Programmer	COP8-PM-ISPK1	L	Parallel/Serial connected Dongle, with target cable and Control Software; Updateable from the web; **Purchase from www.kanda.com**
	COP8ISP (From KANDA)	L	
Development Devices	COP8CBR9/CCR9/CDR9 COPCBE9/CCE9/CDE9 COP8SBR/SCR9/SDR9 COP8AME9/ANE9 All packages.	Free	Obtain samples from: www.national.com
*Cost: Free; VL=<$100; L=$100-$300; M=$300-$1k; H=$1k-$3k; VH=$3k-$5k			

2.0 COP8FLASH Tools Summary (for tools available as of this printing).

COP8 Evaluation Software and Reference Designs -		
Software and Hardware for: Evaluation of COP8 Development Environments; Learning about COP8 Architecture and Features; Demonstrating Application Specific Capabilities.		
Product	**Description**	**Source**
COP8 Evaluation CD	Software Evaluation package for Windows. A fully integrated _evaluation_ environment for COP8. Includes WCOP8 IDE evaluation version (Integrated Development Environment), COP8-NSASM (Full COP8 Assembler), COP8-MLSIM (COP8 Instruction Level Simulator), Byte Craft COP8C Compiler Demo, Manuals, Applications Software, and other COP8 technical information.	www.cop8.com FREE Download, or Order CD.
COP8 Hardware Reference Designs	Reference Designs for COP8 Families. Realtime hardware environment with a variety of functions for demonstrating the various capabilities and features of specific COP8 device families. Run Windows demo reference software, and exercise specific device capabilities. Also can be used as a realtime target board for code development. (Add our COP8Flash Emulator, or our COP8-NSDEV CD with your ISP cable for a complete low-cost development system.)	NSC Distributor, or Order from: www.cop8.com

COP8 Starter Kits and Hardware Target Solutions -		
Hardware Kits for: In-depth Evaluation and Testing of COP8 capabilities; Developing and Testing Code; Implementing Target Designs.		
Product	**Description**	**Source**
COP8 Flash Starter Kit	Flash Starter Kit – A complete Code Development Tool for COP8Flash Families. A Windows IDE with Assembler, Simulator, and Debug Monitor, combined with a simple realtime target environment. Quickly design and simulate your code, then download to the target 68pin COP8CDR9 superset flash device for execution and simple debugging. (Full COP8AM/AN support requires some user modifications.) Includes a library of software routines, and source code. No power supply. (Add a COP8-EMFlash Emulator for advanced emulation and debugging)	NSC Distributor, or Order from: www.cop8.com
COP8 Prototyping, and Evaluation Boards	A Multifunction Evaluation, Prototyping, and Target Board for COP8 DIP Devices. Realtime target design environment with a selection of peripherals and features on-board, plus a 2"x4" breadboard area. Add your own power source, then design, test, and implement a custom target system (stand-alone, or mounted into a standard enclosure), or just evaluate and test your application. Includes COP8-Development CD. (The 40pin DIP socket requires a user-supplied package adapter for COP8FLASH applications.)	NSC Distributor, or Order from: www.cop8.com

COP8 Software Development Languages and Integrated Environments -		
Integrated Software for: Project Management; Code Development; Simulation and Debug;		
Product	**Description**	**Source**
COP8 IDE from National	National's COP8 Software Development package for Windows on CD. A fully licensed version of our Evaluation CD, pluse COP8 Emulator Debugger support. **Included with most tools from National.**	NSC Distributor, or Order from: www.cop8.com
COP8-UTILS	COP8 assembly code examples, device drivers, and utilities to speed up code development. (Included with COP8 CDs)	FREE Download from: www.cop8.com
COP8-SW-LIB	COP8 source code examples, device drivers, and utilities to speed up code development, all compiled into an easy-to-use library environment with documentation.	FREE Download from: www.cop8.com

Byte Craft COP8C Compiler	ByteCraft COP8C- C Cross-Compiler and Code Development System. Includes BCLIDE (Integrated Development Environment) for Win32, editor, optimizing C Cross-Compiler, macro cross assembler, BC-Linker, and MetaLinktools support. (DOS/SUN versions available; Compiler is linkable under WCOP8 IDE)	ByteCraft Distributor, or Order from: www.cop8.com
IAR Embedded Workbench	IAR EWCOP8 - ANSI C-Compiler and Embedded Workbench. A fully integrated Win32 IDE, ANSI C-Compiler, macro assembler, editor, linker, librarian, and C-Spy high-level simulator/debugger. (EWCOP8-M version includes COP8Flash Emulator support) (EWCOP8-BL version is limited to 4k code limit; no FP).	IAR Distributor,or Order from: www.cop8.com
Unis Processor Expert	Processor Expert from Unis Corporation - COP8 Code Generation and Simulation tool with Graphical and Traditional user interfaces. Automatically generates customized source code "Beans" (modules) containing working code for all on-chip features and peripherals, then integrates them into a fully functional application code design, with all documentation.	Unis, or Order from: www.cop8.com

COP8 Hardware Emulation/Debug Tools -

Hardware Tools for: Real-time Emulation; Target Hardware Debug; Target Design Test.

Product	Description	Source
COP8Flash Emulators – COP8-EMFlash COP8-DMFlash COP8-IMFlash	COP8 In-Circuit Emulator for Flash Families. Windows based development and real-time in-circuit emulation tool, with trace (EM=None; DM=4k; IM=32k), 16(DM) or 32k(EM/IM) s/w breaks, source/symbolic debugger, and device programming. Includes COP8-NDEV CD, emulation cable with 2x7 connector, and power supply.	NSC Distributor, or Order from: www.cop8.com

Development and Production Programming Tools -

Programmers for: Design Development; Hardware Test; Pre-Production; Full Production

Product	Description	Source
COP8 Flash Emulators	COP8 Flash Emulators include in-circuit device programming capability during development.	NSC Distributor, or Order from web.
NiceMon Debugger, or FlashWin	National's software Utilities "Flash Win" and "NiceMon" provide development In-System-Programming for our Flash Starter Kit, our Prototype Development Board, or any other target board with appropriate connectors.	Download from: www.cop8.com
KANDA ISP Dongle	The COP8ISP programmer from KANDA is available for engineering, and small production ISP use.	www.cop8.com, or www.kanda.com
COP8 Programming Module	COP8-PM Development Programming Module. Windows programming tool for COP8 OTP and Flash Families. Includes on-board 40 DIP programming socket, control software, RS232 cable, and power supply. **(Requires optional COP8-PGMA programming adapters for COP8FLASH devices)**	NSC Distributor, or Order from web.
Third-Party Programmers	A variety of third-party programmers and automatic handling equipment are approved for non-ISP engineering and production use.	Various Vendors
Factory Programming	Factory programming available for high-volume requirements.	National Representative

3.0 Where To Get Tools

Tools can be ordered directly from National, National's e-store, a National Distributor, or from the tool vendor. Go to the vendor's web site for current listings of distributors.

Vendor	Home Office	Electronic Sites	Other Main Offices
Byte Craft Limited	421 King Street North Waterloo, Ontario Canada N2J 4E4 1-(519) 888-6911 fax:(519) 746-6751	www.bytecraft.com info@bytecraft.com	Distributors Worldwide
IAR Systems AB	PO Box 23051 S-750 23 Uppsala Sweden Tel: +46 18 16 78 00 Fax: +46 18 16 78 38	www.iar.se info@iar.se info@iar.com info@iarsys.co.uk info@iar.de	USA: San Francisco Tel: +1-415-765-5500 Fax: +1-415-765-5503 UK: London Tel: +44 171 924 33 34 Fax: +44 171 924 53 41 Germany: Munich Tel: +49 89 470 6022 Fax: +49 89 470 956
K&K Development ApS	Kaergaardsvej 42 DK-8355 Solbjerg Denmark Fax: +45-8692-8500	www.kkd.dk kkd@kkd.dk	
National Semiconductor	2900 Semiconductor Dr. Santa Clara, CA 95051 USA 1-800-272-9959 fax: 1-800-737-7018	www.national.com/cop8 support@nsc.com europe.support@nsc.com	Europe: 49(0)180 530 8585 fax: 49(0)180 530 8586 Hongkong: Distributors Worldwide

The following companies have approved COP8 programmers in a variety of configurations. **Contact your vendor's local office or distributor and request a COP8FLASH update.** You can link to their web sites and get the latest listing of approved programmers at: www.national.com/cop8.

Advantech; American Reliance; BP Microsystems; Data I/O; Dataman; EE Tools, Hi-Lo Systems; ICE Technology; KANDA, Lloyd Research; Logical Devices; Minato; MQP; Needhams; Phyton; SMS(Data I/O); Stag Programmers; System General; Tribal Microsystems;