

Introduction					
Content			Name		LINK
Document			Capacitive Touch Solution Brochure		Link
			CTSU Capacitive Touch Introduction Guide		Link
Blog			Do You Want to Develop a Touchless Button? Introducing a Solution Using a General-Purpose MCU		Link
			Infusion Level Monitor Using Capacitive Touch Sensing		Link
			Introducing Smart Wakeup Solution for Low Power Capacitive Touch Sensing Application		Link
			Introducing Waterproof Capacitance Solution for Self-Capacitive Touch Keys in Wet Area		Link
			Introduction of Noise Countermeasure Guide for Capacitive Touch Sensors of Renesas MCU		Link
ビデオ			Capacitive Touch Solutions		Link
FAQ			Capacitive Touch Key FAQ (RL78 Family)		Link
			Capacitive Touch Key FAQ (RX Family)		Link
			Capacitive Touch Key FAQ (RA Family)		Link
Device Selection					
Operating Frequency	Number of touch terminals	Family	Content	Model Name	LINK
16MHz	12	RL78	Web page	RL78/G16 (Support RSSK)	Link
	29		Web page	RL78/G22 (Support RSSK)	Link
	32		Web page	RL78/G23 (Support RSSK)	Link
32MHz	12	RX	Web page	RX113	Link
	36		Web page	RX130 (Support RSSK)	Link
	36		Web page	RX140 (Support RSSK)	Link
48MHz	11	RA	Web page	RA4W1	Link
	26		Web page	RA2A1	Link
	27		Web page	RA4M1	Link
	30		Web page	RA2E1	Link
	32		Web page	RA2L1 (Support RSSK)	Link
54MHz	12	RX	Web page	RX23W	Link
	24		Web page	RX230	Link
	24		Web page	RX231	Link
64MHz	34		Web page	RX261 (Support RSSK)	Link
	36		Web page	RX260	Link
80MHz	12	RA	Web page	RA4L1 (Support RSSK)	Link
100MHz	12		Web page	RA4M2	Link
	7		Web page	RA6M1	Link
	20		Web page	RA4M3	Link
120MHz	17	RX	Web page	RX671 (Support RSSK)	Link
	18		Web page	RA6M2 (Support RSSK)	Link
	18		Web page	RA6M3	Link
200MHz	20		Web page	RA6M4	Link
	20		Web page	RA6M5	Link

Evaluation Kit					
Family Name	Product Name	Description	Content	Name	LINK
RL78	RL78/G16	Purchase info	Web page	Capacitive Touch Evaluation System for RL78/G16	Link
		Setup Design info	Document	RL78/G16 Capacitive Touch Evaluation System User's Manua	Link
			Document	RTK0EG0047S01001BJ - Design Package	Link
			Document	RL78 Family Board Support Package Module Using Software Integration System	Link
			Document	RL78/G16 Capacitive Touch Evaluation System Sample Code	Link
			Sample Software	RL78/G16 Capacitive Touch Evaluation System Sample Code	Link
	RL78/G22	Purchase info	Web page	Capacitive Touch Evaluation System for RL78/G22	Link
		Setup Design info	Document	RL78/G22 Capacitive Touch Evaluation System User's Manual	Link
			Document	RTK0EG0042S01001BJ - Design Package	Link
			Document	RL78 Family Board Support Package Module Using Software Integration System	Link
			Document	RL78 Family Capacitive Touch Sensing Unit (CTS02L) Operation Explanation	Link
			Document	RL78/G22 Capacitive Touch Evaluation System Sample Code	Link
			Sample Software	RL78/G22 Capacitive Touch Evaluation System Sample Code	Link
	RL78/G23	Purchase info	Web page	Capacitive Touch Evaluation System for RL78/G23	Link
		Setup Design info	Document	RL78/G23 Capacitive Touch Evaluation System User's Manual	Link
			Document	RTK0EG0030S01001BJ - Design Package	Link
			Document	RL78 Family Board Support Package Module Using Software Integration System	Link
			Document	RL78 Family Capacitive Touch Sensing Unit (CTS02L) Operation Explanation	Link
			Document	RL78/G23 Capacitive Touch Evaluation System Sample Code	Link
			Sample Software	RL78/G23 Capacitive Touch Evaluation System Sample Code	Link
RX	RX130	Purchase info	Web page	Capacitive Touch Evaluation System for RX130	Link
		Setup Design info	Document	RX130 RX Capacitive Touch Evaluation System CPU Board User's Manual	Link
			Document	RX Capacitive Touch Evaluation System Self-Capacitance Touch Buttons/Slider Board User's Manual	Link
			Document	RX Capacitive Touch Evaluation System Mutual-Capacitance Matrix Key/Proximity Sensor Board User's Manual	Link
			Document	RTK0EG0003S02001BJ - Design Package	Link
			Document	RX130 Capacitive Touch Evaluation System Sample Code for QE	Link
			Sample Software	RX130 Capacitive Touch Evaluation System Sample Code	Link
	RX140	Purchase info	Web page	Capacitive Touch Evaluation System for RX140	Link
		Setup Design info	Document	RX140 Capacitive Touch Evaluation System User's Manual	Link
			Document	RTK0EG0039S01001BJ - Design Package	Link
			Document	RX140 Self-capacitance Waterproof Touch Button Demo Software	Link
			Document	RX140 Capacitive Touch Evaluation System Sample Code	Link
			Sample Software	RX140 Capacitive Touch Evaluation System Sample Code	Link
	RX261	Purchase info	Web page	Capacitive Touch Evaluation System for RX261	Link
		Setup Design info	Document	RX261 Capacitive Touch Evaluation System User's Manual	Link
			Document	RTK0EG0055S01001BJ - Design Package	Link
			Document	RX261 Capacitive Touch Evaluation System Sample Code	Link
			Sample Software	RX261 Capacitive Touch Evaluation System Sample Code	Link
	RX671	Purchase info	Web page	Capacitive Touch Evaluation System for RX671	Link
		Setup Design info	Document	RX671 Capacitive Touch Evaluation System User's Manua	Link
			Document	RTK0EG0044S01001BJ - Design Package	Link
			Document	RX671 Capacitive Touch Evaluation System Sample Code	Link
			Sample Software	RX671 Capacitive Touch Evaluation System Sample Code	Link

Evaluation Kit					
Family Name	Product Name	Description	Content	Name	LINK
RA	RA2L1	Purchase info	Web page	Capacitive Touch Evaluation System for RA2L1	Link
		Setup Design info	Document	RA2L1 Capacitive Touch Evaluation System User's Manua	Link
			Document	RA2L1 Capacitive Touch Evaluation System Quick Start Guide	Link
			Document	RTK0EG0022S01001BJ - Design Package	Link
			Document	RA2L1 Group Capacitive Touch Evaluation System Example Project	Link
			Sample Software	RA2L1 Group Capacitive Touch Evaluation System Example Project	Link
			Video	RA2L1 48MHz, 32-bit MCUs with Arm® Cortex®-M23 Core	Link
			Video	Introducing the Renesas RA Family of 32-Bit Microcontrollers	Link
			Video	Evaluation Kits for Renesas Advanced (RA) Microcontrollers	Link
	RA4L1	Purchase info	Web page	Capacitive Touch Evaluation System for RA4L1	Link
		Setup Design info	Document	RA4L1 Capacitive Touch Evaluation System User's Manual	Link
			Document	RA4L1 Capacitive Touch Evaluation System Quick Start Guide	Link
			Document	RTK0EG0057S01001BJ - Design Package	Link
			Document	RA4L1 Group Capacitive Touch Evaluation System Example Project	Link
			Sample Software	RA4L1 Group Capacitive Touch Evaluation System Example Project	Link
			Video	RA4L1 MCU with Integrated LCD and Cap Touch Overview	Link
			Video	Introducing the Renesas RA Family of 32-Bit Microcontrollers	Link
			Video	Evaluation Kits for Renesas Advanced (RA) Microcontrollers	Link
	RA6M2	Purchase info	Web page	Capacitive Touch Evaluation System for RA6M2	Link
		Setup Design info	Document	RA6M2 Capacitive Touch Evaluation System User's Manual	Link
			Document	RA6M2 Capacitive Touch Evaluation System Quick Start Guide	Link
			Document	RTK0EG0021S01001BJ - Design Package	Link
			Document	RA6M2 Group Capacitive Touch Evaluation System Example Project	Link
			Sample Software	RA6M2 Group Capacitive Touch Evaluation System Example Project	Link

Development Support							
Description		Content	Name		LINK		
Noise suppression		Document	Capacitive Touch Noise Immunity Guide		Link		
Ripple Countermeasures		Document	Capacitive Touch Ripple Noise Prevention Guide		Link		
Electrode Design		Document	CTSU Capacitive Touch Electrode Design Guide		Link		
Low Power Consumption Guide		Document	RL78/G22 Capacitive Touch Low Power Guide (SMS / MEC function)		Link		
		Document	RL78/G22 Capacitive Touch Low Power Guide (SNOOZE function)		Link		
		Document	RL78/G23 Capacitive Touch Low Power Guide (SMS function)		Link		
		Document	RL78/G23 Capacitive Touch Low Power Guide (SNOOZE function)		Link		
		Document	Capacitive Touch Low Power Application Development using SMS		Link		
		Document	RA6M2 Capacitive Touch Low Power Guide		Link		
Tools & Software							
Family	Environment/Tool Type	Description	Content	Name	LINK		
RL78,RX,RA Family	Software	Setup	Document	CTSU Self Test Software	Link		
			Document	RL78 Family CTSU Module Software Integration System	Link		
			Document	RL78 Family TOUCH Module Software Integration System	Link		
			Document	Capacitive Touch Software Filter Sample Program	Link		
	Integrated Development Environment	Free Download	Web page	e² studio	Link		
			Setup	Video	e² studio Quick Start Guide - Install e² studio and CC-RL Compiler on Linux	Link	
		Video		Renesas Emulator Selection Guide for RX	Link		
		Video		e² studio Quick Start Guide - Install e² studio and CC-RX Compiler on Linux	Link		
		Video		e² studio Quick Start Guide - Installation for RA Family on macOS	Link		
		Video		e² studio on Linux - Install e² studio and GNU Arm Embedded for RA	Link		
		How to use	Video	Reality AI / e² studio Integration Overview Video	Link		
			Video	Introducing the Installer with Simplified Operation from e² studio 2023-07	Link		
			Video	e² studio Tips - How to change the device in the project	Link		
			Video	e² studio Tips - How to import CS+ for CA, CX Project	Link		
			Video	e² studio Tips - How to Import CS+ for CC Project	Link		
			Video	e² studio Tips - How to Save the Build Log and Set the Number of Lines to Display	Link		
			Video	e² studio Tips - How to Manage Source Code Versions (Using EGIT)	Link		
			Video	e² studio Tips - GUI Window to Look At if You Don't Know How to Operate It	Link		
			Development Support Tool	Free Download	Web page	QE for Capacitive Touch	Link
					Document	QE for Capacitive Touch Advanced Mode Parameter Guide	Link
		Setup		Document	RL78 Family Using QE and SIS to Develop Capacitive Touch Applications	Link	
				Document	RL78 Family Using the standalone version of QE to Develop Capacitive Touch Applications	Link	
				Document	RL78 Family Using QE (standalone ver.) to Develop Touch Applications for FPB board	Link	
				Document	RX Family QE CTSU module Firmware Integration Technology	Link	
	Document			RX Family QE Touch module Firmware Integration Technology	Link		
	Document			RA Family Using QE and FSP to Develop Capacitive Touch Applications	Link		
	Document			RA Family QE for Capacitive Touch usage for IAR EWARM	Link		
	Document			RA Family QE for Capacitive Touch usage for Keil® MDK	Link		
	Video			Getting Started with QE for Capacitive Touch for RL78	Link		
	Video			QE for Capacitive Touch Tutorial: Settings for RL78	Link		
	Video			QE for Capacitive Touch Tutorial: Tuning for RL78	Link		
	Video			QE for Capacitive Touch Tutorial: Serial Monitoring for RL78	Link		
	Video			Getting Started with QE for Capacitive Touch	Link		
	Video			QE for Capacitive Touch Tutorial - Settings	Link		
	Video			QE for Capacitive Touch Tutorial - Tuning	Link		
	Video			QE for Capacitive Touch Tutorial - Monitoring	Link		
	Video			Getting Started with QE for Capacitive Touch for RA	Link		
	Video			QE for Capacitive Touch Tutorial: Step 1 Configuration for RA	Link		
	Video			QE for Capacitive Touch Tutorial: Step 2 Tuning for RA	Link		
	Video			QE for Capacitive Touch Tutorial: Step 3 Monitoring for RA	Link		
	How to use	Video		QE for Capacitive Touch Feature - Two Types of Touch Judgment Modes with CTSU2 and QE	Link		
		Video		QE for Capacitive Touch Tutorial: How to monitor gesture AI	Link		
		Video		How to tune via serial communication using the standalone app of QE.	Link		
		Video		QE for Capacitive Touch Feature - Check Monitoring Values Using The Monitoring Log Feature	Link		
		Video		3D Gesture AI Solution - QE for Capacitive Touch Makes It Easy To Develop a Contactless User Interface	Link		
		Video		QE for Capacitive Touch Tutorial: How to create the gesture data	Link		
		Video		How to migrate the touch modules from version 1.1 to version 2.0 using the compatible APIs with QE tool.	Link		
		Video		QE for Capacitive Touch Feature - Measuring Standard Deviation	Link		
		Video		QE for Capacitive Touch Tips - Warning Message Appeared During Tuning	Link		
		Video		QE for Capacitive Touch[RA] Tutorial: Use QE for Capacitive Touch with FSP in IAR Embedded Workbench for Arm	Link		
		Video		QE for Capacitive Touch[RA] Tutorial: Use QE for Capacitive Touch with FSP in Keil® MDK	Link		
		Video		QE for Capacitive Touch Feature - A New Workflow Diagram in QE V3.2.0	Link		
		Video		QE for Capacitive Touch Tutorial: How to Tune via Serial Communication Using the Plug-in	Link		

Tools & Software					
Family	Environment/Tool Type	Description	Content	Name	LINK
RL78	Code Generation Support Tool	Free Download	Web page	RL78 Smart Configurator	Link
			Document	Smart Configurator User's Manual: RL78 API Reference	Link
		Setup	Document	RL78 Smart Configurator User's Guide: CS+	Link
			Document	RL78 Smart Configurator User's Guide: e² studio	Link
			Document	RL78 Smart Configurator User's Guide: IAREW	Link
			Document	Smart Configurator, Code Generator Project Porting Procedures for CS+ and e2 studio	Link
			Video	Introduction of Smart Configurator for RL78 Family	Link
			Video	e² studio Quick Start Guide (2/3) - Project Generation for RL78	Link
			Video	e² studio Quick Start Guide (3/3) - Build and Debug for RL78	Link
			Video	How to Create a Smart Configurator Project in e² studio	Link
			Video	How to Create a UART Communication Project Using Smart Configurator in e² studio	Link
			How to use	Video	How To Use Smart Configurator - Walkthrough the Settings of Clocks and Components
		Video		Using Smart Configurator with IAR Embedded Workbench for RL78 (2/2) - Creating an EWB Project for Smart Configurator	Link
		Video		Easy Coding in e² studio With the Smart Configurator Developer Assistance Feature	Link
		Video		How to Use the User Code Protection Feature in Smart Configurator	Link
		Video		Smart Configurator Feature - How to generate HEX values for Code Generator drivers	Link
		Video		Smart Configurator Feature - Easy Transfer of Component Settings from One Project to Another	Link
Video	How to Use Symbolic Name with Smart Configurator	Link			
RX	Code Generation Support Tool	Free Download	Web page	RX Smart Configurator	Link
			Document	RX Smart Configurator User's Guide: CS+	Link
		Setup	Document	RX Smart Configurator User's Guide: e² studio	Link
			Document	RX Smart Configurator User's Guide: IAREW	Link
	HAL Driver	Free Download	Web page	FIT	Link
			Document	FIT User's Manual	Link
		Setup	Document	FIT Board Support Package Module Using Firmware Integration Technology	Link
			Document	FIT RX Family Guide for Porting the FIT Project to the Other RX Family	Link
			Document	FIT RX Family Manually Importing Firmware Integration Technology Modules	Link
			RA	Code Generation Support Tool	Free Download
Video	Generating an RA Secure Project for IAR Embedded Workbench	Link			
Setup	Video	Generating an RA Non-secure Project for IAR Embedded Workbench			Link
	Video	Generating a Simple RA FSP Project with Keil MDK			Link
	Video	Tips - How to Import Example Project in IAR EWARM for RA			Link
	Video	Tips - How to import example project in Arm Keil MDK for RA			Link
HAL Driver	Free Download	Web page		RA Flexible Software Package (FSP)	Link
		Document		FSP User's Manual	Link
	Setup	Document		FSP User's Manual (Web Version - HTML)	Link
		Video		RA Family Partner Ecosystem Overview	Link
		Video		Introducing the Renesas RA Family of 32-Bit Microcontrollers	Link
		Video		Evaluation Kits for Renesas Advanced (RA) Microcontrollers	Link
		Video		Generating Your First RA FSP Project	Link
Video	Generating a Simple RA FSP Project with Keil MDK	Link			
Video	e² studio Tips - How to Import Example Project in e² studio for RA	Link			
Video	Tips - How to Import Example Project in IAR EWARM for RA	Link			
Video	Tips - How to import example project in Arm Keil MDK for RA	Link			

Reference Design			
Description	Content	Name	LINK
Capacitive Touch Evaluation System and Touchless Demo for Low Power Waiting Smart wake-up solution for	Web page	Smart-Wake-Up-Solution	Link
	Document	RL78/G22 Sample S/W for home appliance panel UI demo using MEC function	Link
	Document	RX140 Group Smart Wakeup Solution (Touchless Demo)	Link
	Document	RX140 Group Smart Wakeup Solution	Link
	Sample Software	RL78/G22 Sample S/W for home appliance panel UI demo using MEC function	Link
	Sample Software	RL78G22 Smart Wakeup Solution	Link
	Sample Software	RX140 Group Smart Wakeup Solution	Link
	Sample Software	RX261/RX260 Group Smart Wakeup Solution	Link
	Video	RX140 Smart Wake Up Solution	Link
Comparison of water resistance of conventional GND shields and active shields against self-capacitance buttons	Video	RL78/G22 Appliance UI Demo -Contributing to The Innovative UI of Kitchen Appliances	Link
	Web page	Self-Capacitance Waterproof Button Solution	Link
	Document	RA2L1 Group Self-Capacitance Waterproof Demo Hardware Manual	Link
	Sample Software	RL78/G23 Self-capacitance Waterproof Touch Button Demo Sample Software	Link
	Sample Software	RX140 Self-capacitance Waterproof Touch Button Demo Software	Link
	Sample Software	RA2L1 Group Self-capacitance Waterproof Touch Button Demo Sample Software	Link
Detects finger and hand approaches without physical contact	Video	Self-capacitance Waterproof Touch Button Solution	Link
	Web page	Touchless Button Reference Design	Link
	Document	Touchless Button Electrode Board	Link
	Document	RL78/G22 Sample S/W for home appliance panel UI demo using MEC function	Link
	Sample Software	RL78/G22 Sample S/W for home appliance panel UI demo using MEC function	Link
	Sample Software	RL78/G23 Group Touchless Button Electrode Board Sample Software	Link
	Sample Software	RX130 Group Touchless Button Demo Solution Sample Software	Link
	Sample Software	RX130 Group Touchless Button Electrode Board Sample Software	Link
	Sample Software	RX140 Group Touchless Button Demo Solution Sample Software	Link
	Sample Software	RA2L1 Group Touchless Button Demo Solution Sample Software	Link
	Sample Software	RA2L1 Group Touchless Button Electrode Board Sample Software	Link
	Sample Software	RA6M2 Group Touchless Button Demo Solution Sample Software	Link
	Sample Software	RA6M2 Group Touchless Button Electrode Board Sample Software	Link
	Video	Touchless Button Electrode Board	Link
	Video	Touchless Button Demo	Link
	Video	RL78/G22 Appliance UI Demo -Contributing to The Innovative UI of Kitchen Appliances	Link
Reference design for detecting hand position in space	Web page	3D Gesture Touch-Free User Interface Reference Design	Link
	Document	RA2L1 Group CTSU Application Example: 3D Gesture Electrode Board (Hardware)	Link
	Document	RX231 Group CTSU Application Example: 3D Gesture Demo Set (Hardware)	Link
	Document	RX130 Group CTSU Application Example: 3D Gesture Demo Set Small version (Hardware)	Link
	Document	QE for Capacitive Touch 3D Gesture Recognition Application Development Guide	Link
	Document	RX Family CTSU 3D Gesture Demo Set Evaluation Tool '3D Monitor'	Link
	Sample Software	CTSUS 3D Gesture Demo Set Sample Software (Standard version)	Link
	Sample Software	CTSUS 3D Gesture Demo Set Sample Software (Small version)	Link
	Sample Software	CTSUS 3D Gesture Demo Set Sample Software (Slim version)	Link
	Sample Software	RX140 Group CTSU 3D Gesture Electrode Board Sample Software	Link
	Sample Software	CTSUS 2D Gesture Reference Design Demo Set Sample Software	Link
	Sample Software	RA2L1 Group 3D Gesture Electrode Board Sample Software	Link
Demonstration kit for water level measurement with one channel of self-capacitance electrode and one channel of shielded electrode	Web page	Capacitive Sensor Application Demonstration Kit	Link
	Document	RX130 Group Capacitive Water Level Measurement Demo Set	Link
	Document	RX Family Capacitive Liquid Level Indicator Demo System Sample Software	Link
	Document	Liquid Level Design Package	Link
	Document	RX Family Capacitive Liquid Level Indicator Demo System Sample Software	Link
	Sample Software	Water level measurement demo	Link
Partner			
Description	Company Name		LINK
Development and sales of glass capacitive switch modules	NORITAKE ITRON CORPORATION		Link
Evaluation board development and programmer supply partner	Hokuto Electronics Co.		Link
Touch Module Partners	Yokoyama Shokai Corporation		Link
Development and sales of transparent electrodes for capacitance switches	Toyo Label Co.		Link
Developed intelligent touch keys that match function and price	TAKAYA Corporation		Link
Easy to use, accurate, and fast capacitance extractor/simulator for PCBs and touch screens	CapExt		Link
HMI hardware solution provides an excellent demonstration for embedded GUI applications	WT Microelectronics		Link