NISSHINBO

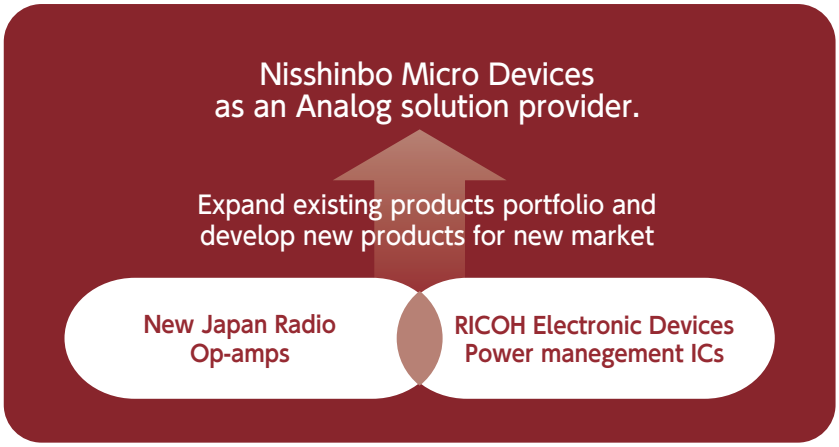
Electronic Devices For Automotive Selection Guide

2024

Nisshinbo Micro Devices Inc.

About Nisshinbo Micro Devices Inc.

"Nisshinbo Micro Devices Inc. is the result of the integration of former New Japan Radio Co., Ltd. and former RICOH Electronic Devices Co., Ltd. Both companies, having contributed to expanding the Nisshinbo Group's microdevices business so far, will further grow as an ""Analog Solution Provider"" for growing markets by strengthening our structure and achieving synergies through business integration.
Nisshinbo Micro Devices will provide analog solutions through electronic devices and microwave products based on the strength of analog technology in accordance with the Nisshinbo Group's corporate philosophy of ""Change and Challenge! For the creation of the future of Earth and People"". We will contribute to developing connected society, and aim to be a company with value and presence that is expected by customers around the world."



Supporting the development of the automotive industry with reliable automotive ICs

The automotive industry is currently going through a period of extraordinary transformation thanks to the developing of electric vehicles, the demonstration of practical applications for autonomous driving, and the appearance of new mobility services. Nisshinbo Micro Devices provides fine services that satisfy customer's needs based on the experiences and results of two former companies which have contributed to the development of car electronics for long years.
Furthermore, we contribute to the changes of automotive industry by two core competences as Signal Processing and Energy Management that correspond to progressive requirements of automotive sensors and V2X.

About Nisshinbo Micro Devices Inc.

Nisshinbo Micro Devices Inc. is the result of an integration former New Japan Radio Co., Ltd. and former RICOH Electronic Devices Co., Ltd.

At a Glance: Nisshinbo Micro Devices Inc.
https://www.nisshinbo-microdevices.co.jp/en/about/hayawakari/

Contents

Quality Grade

Nisshinbo Micro Devices Inc. provides four quality grades of products to meet each market and/or customer's quality requirements.

We propose products according to customer's purpose such as the automotive products that classified acceding to purpose/area of automotive applications and the products that meet long term reliability requirement such as 24 hours operated equipment (e.g. factory automation related, social infrastructures and so on).

Quality grade of NISD EM

Principal Purpose	Automotive		Industrial equipment and Social infrastructures	General purpose and Consumer application
	Powertrain and safety driving related	Chassis, Body control and In-vehicle		
Suffix	Q (Qualified)	P (Peripheral)	D (inDustrial)	S (Standard)
Operation Temperature Range	-40℃ to +125℃		-40℃ or -50℃ to +125℃	-40℃ to +125℃
			-40℃ or -50℃ to +105℃	-40℃ to +105℃
			-40℃ or -50℃ to +85℃	-40℃ to +85℃
Qualification *1	AEC-Q100		JEDEC + Operating life stress test 2000h	JEDEC
QMS	IATF16949		ISO9001	
Screening	Hight voltage stress	Hight voltage stress	Hight voltage stress	Hight voltage stress
Test Condition	High Temperature Room Temperature Low Temperature	High Temperature Room Temperature	High Temperature Room Temperature	Room Temperature

*1 Please contact us for detailed certification and product information.

Quality grade of RF Devices

Principal Purpose	Automotive	General purpose and consumer application
	Chassis, Body control and In-vehicle	
Suffix	A (AEC-Q100)	S (Standard)
Operation temperature range	-40℃ to +125℃	-40℃ to +105℃
	-40℃ to +105℃	
Qualification*1	AEC-Q100	JEDEC
QMS	IATF16949 Correspond to VDA6.3 *1	ISO9001
Screening	Hight voltage stress	Hight voltage stress
Test condition	High Temperature Room Temperature	Room Temperature

*1 Please contact us for detailed certification and product information.

Quality grade of former company products (before December 2021)

Automotive products are available in a variety of specifications to match the application.

		Electronic devices that part number starting with NJx				Electronic devices that part number starting with R					
Suffix		H	Z/Z2	T	A (RF Device)	R8	R	K	J	H	A
Operation Temperature Range	-40℃ to +125℃	●	●	● (T1)	●	●	●	●			●
	-40℃ to +110℃					●					
	-40℃ to +105℃			● (T)	●				●		●
	-40℃ to +85℃									●	●
Test Condition	High Temperature	●	●	●	●	●	●	●	●	●	●
	Room Temperature	●	●	●	●	●	●	●	●	●	●
	Low Temperature	●	●	●		●	●	●	●	●	
QMS		IATF16949/ Correspond to VDA6.3 *1	IATF16949 *2		IATF16949 *2/ Correspond to VDA6.3 *1	IATF16949 *2					
AEC-Q100		All products	The AEC mark AEC shows applicable products		All products	All products	The AEC mark AEC shows applicable products				

*1 Please contact us for detailed certification and product information. *2 Excluding some outsourced manufacturers

Product Longevity Program

For lifecycle-focused applications [PRODUCT LONGEVITY PROGRAM]

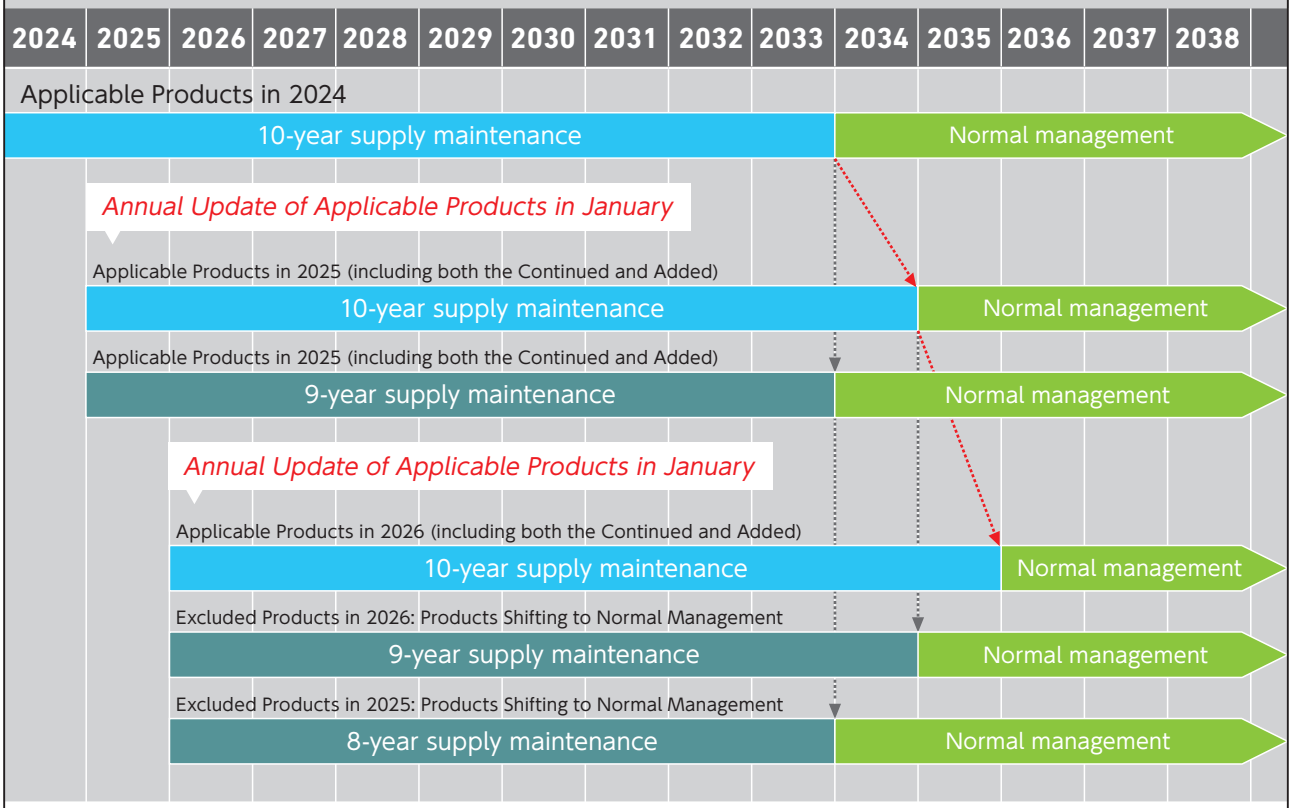
For long life applications, sudden production end of parts can have a critical impact on the continuity of equipment's production. It also brings costly steps such as investigation/procurement of alternative parts and redesign of the board due to parts change. We are operating PLP (Product Longevity Program) to minimize the risk of customers. PLP maintains the products supply for at least 10 years. Customers receive one year advanced notice when PLP product finally becomes EOL after 10 years. PLP prodcut list is updated in January every year by checking each condition of related product line and material supply. By using products under PLP, customers can make a long-term production plan.

PRODUCT LONGEVITY PROGRAM

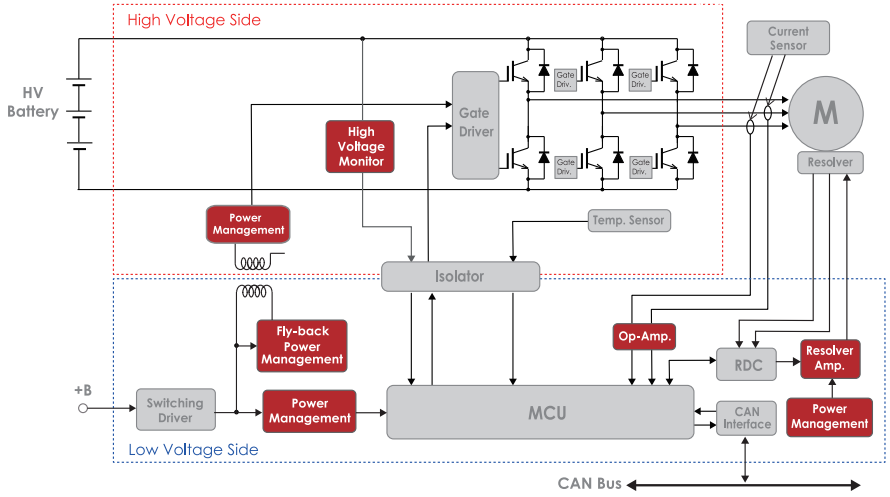
Overview

1. Applicable Products : We announce the Product List for the Program on this page of our website.
   The heart mark ♡ shows applicable products.
2. Supply Period : We maintain supply of the Applicable Products for ten years from January, 2024.
3. Update : We update the Product List in January every year.
4. EOL : We provide you one year or more advanced notice when Applicable Products become EOL.

Figure of Product longevity Program



e-Axle Block Diagram



Operational Amplifier

Comparator

ASSP

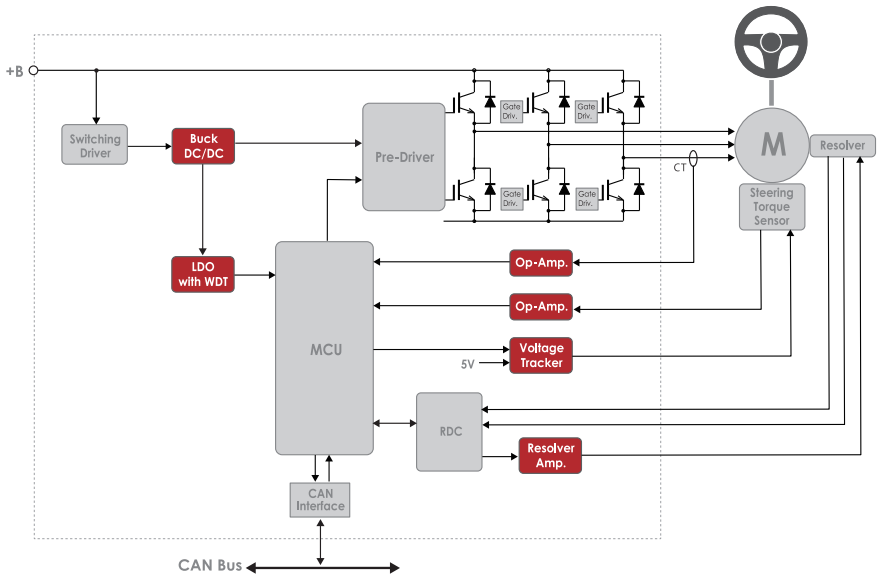
(LDO) Power Management

(DC/DC) Power Management

(Tracking Regulator) Power Management

(Voltage Detector, Watchdog Timer) Power Management

Electronic Power Steering (EPS) Block Diagram



Operational Amplifier

Comparator

ASSP

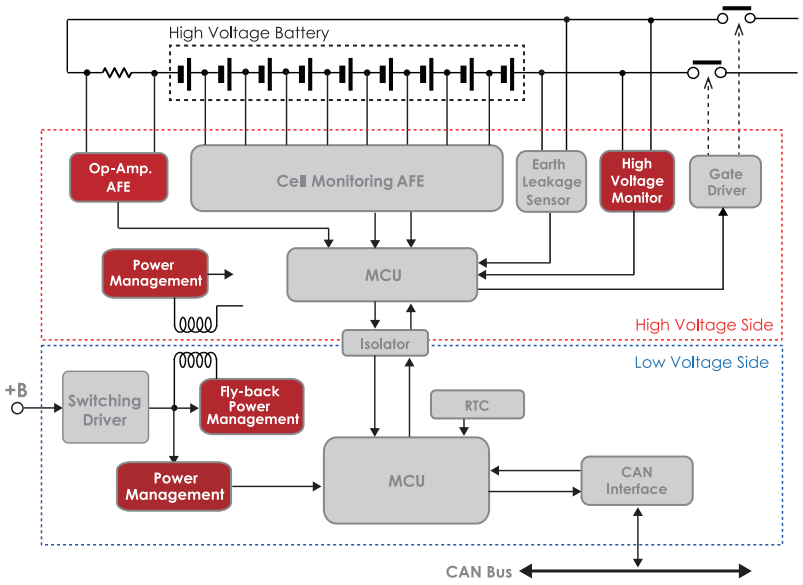
(LDO) Power Management

(DC/DC) Power Management

(Tracking Regulator) Power Management

(Voltage Detector, Watchdog Timer) Power Management

Battery Management System (BMS) Block Diagram



Operational Amplifier

Comparator

ASSP

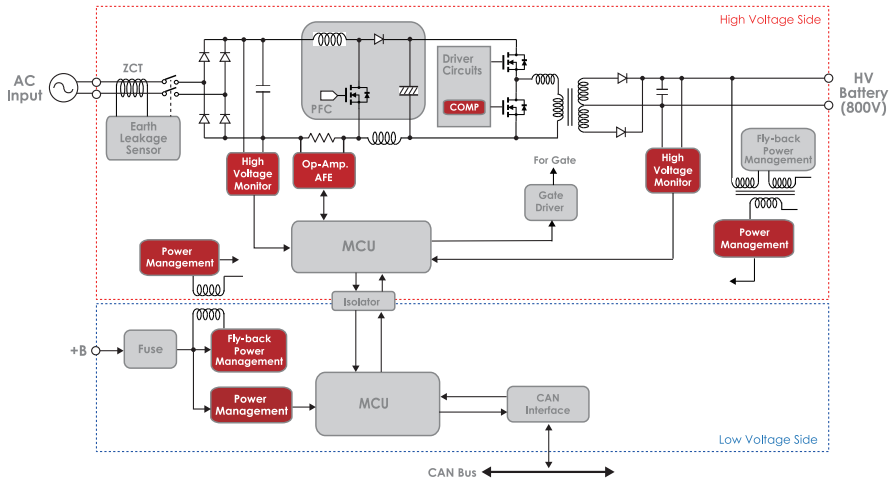
(LDO) Power Management

(DC/DC) Power Management

(Tracking Regulator) Power Management

(Voltage Detector, Watchdog Timer) Power Management

On Board Charger (OBC) Block Diagram



Operational Amplifier

Comparator

ASSP

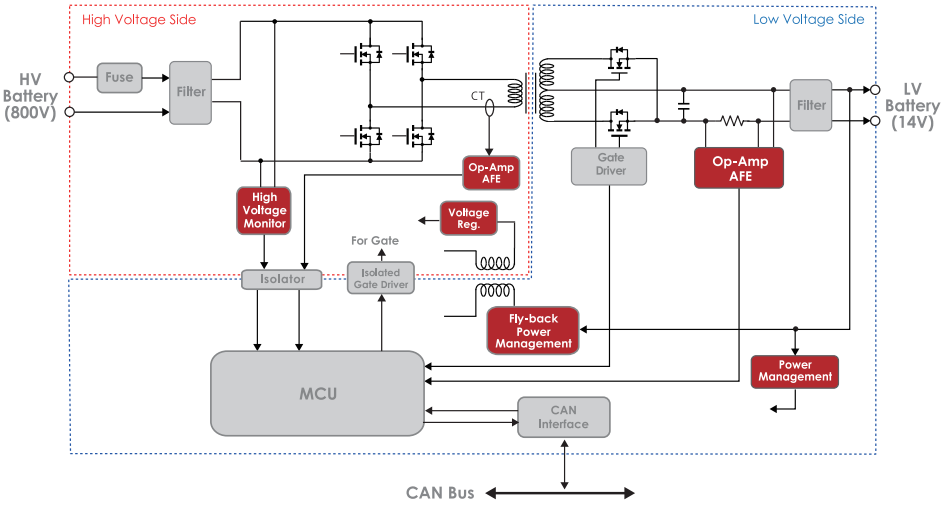
(LDO) Power Management

(DC/DC) Power Management

(Tracking Regulator) Power Management

(Voltage Detector, Watchdog Timer) Power Management

DC/DC Converter Block Diagram



Operational Amplifier

Comparator

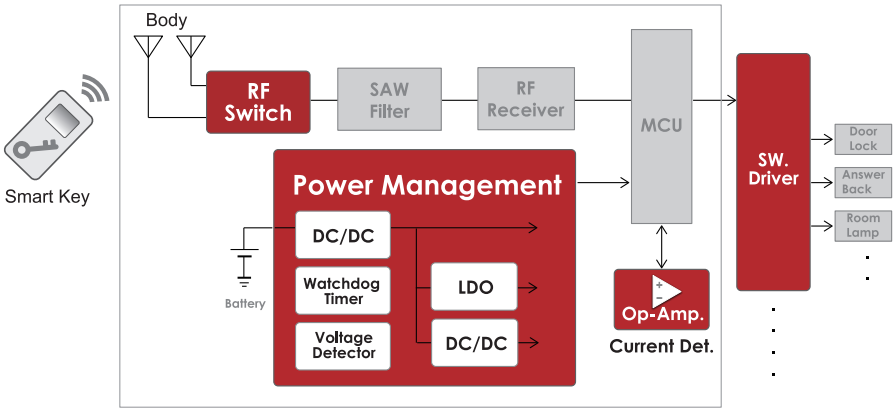
ASSP

(LDO) Power Management

(DC/DC) Power Management

(Voltage Detector, Watchdog Timer) Power Management

Body Control Module (BCM) Block Diagram



Operational Amplifier

(LDO) Power Management

(DC/DC) Power Management

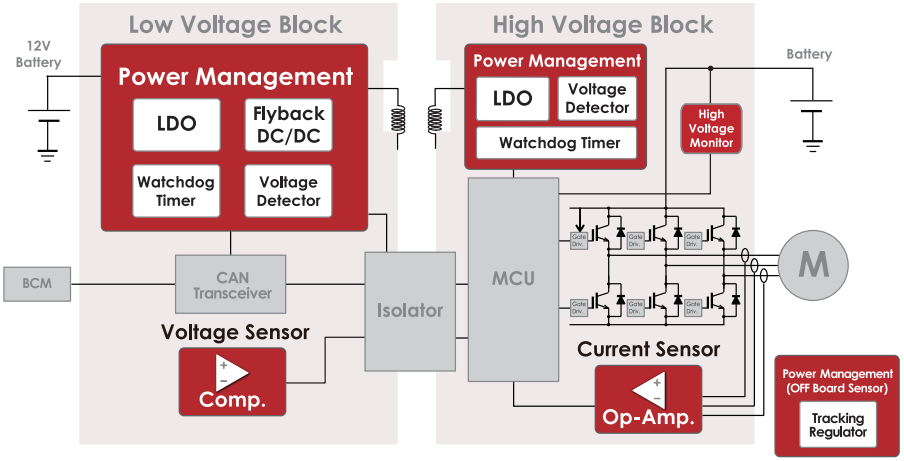
(Voltage Detector, Watchdog Timer) Power Management

(Gate Driver) Switching Driver

(High Side Switches/ Low Side Switches) Switching Driver

(RF Switch) RF Device

Electric Compressor Block Diagram



Operational Amplifier

Comparator

ASSP

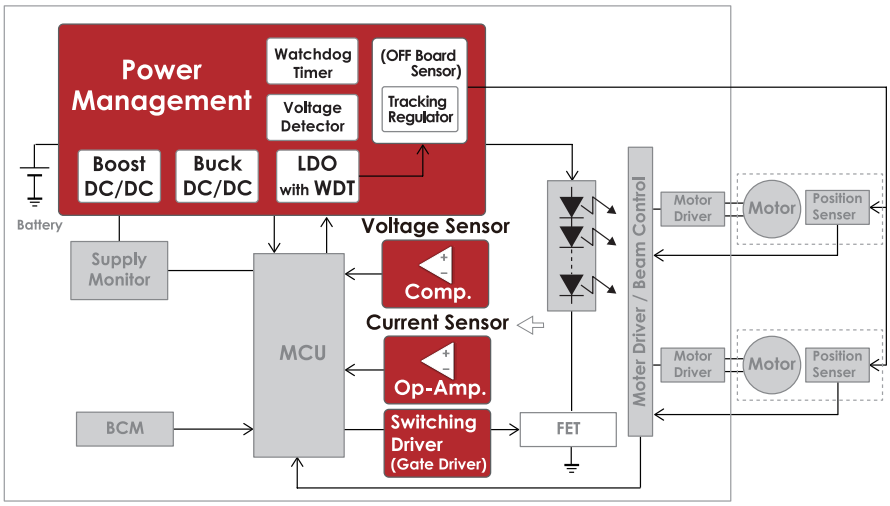
(LDO) Power Management

(DC/DC) Power Management

(Tracking Regulator) Power Management

(Voltage Detector, Watchdog Timer) Power Management

LED Headlight ECU Block Diagram



Operational Amplifier

Comparator

(LDO) Power Management

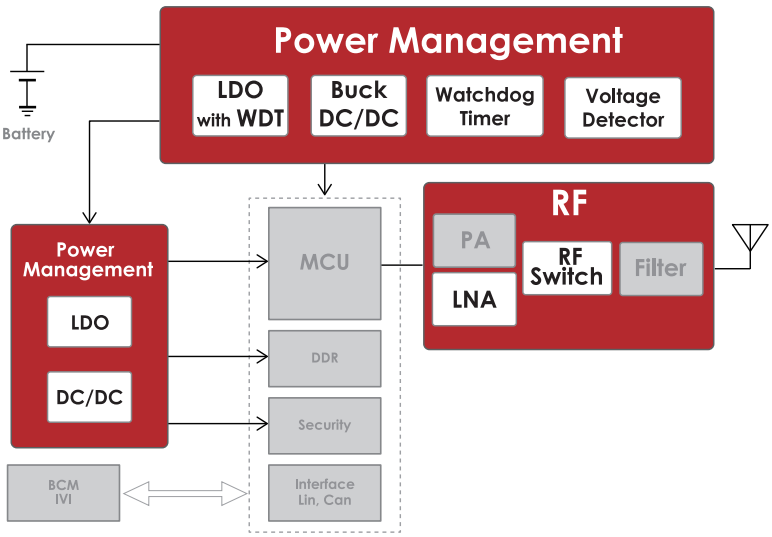
(DC/DC) Power Management

(Tracking Regulator) Power Management

(Voltage Detector, Watchdog Timer) Power Management

(Gate Driver) Switching Driver

Vehicle to Everything (V2X) Block Diagram



(RF Switch) RF Device

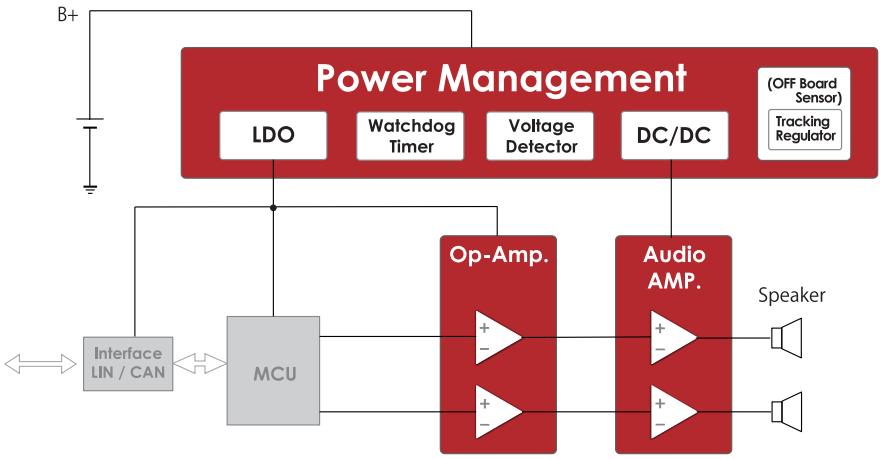
(LNA) RF Device

(LDO) Power Management

(DC/DC) Power Management

(Voltage Detector, Watchdog Timer) Power Management

Acoustic Vehicle Alerting System (AVAS) Block Diagram



Operational Amplifier

(Class D Amplifier) Audio Amplifier

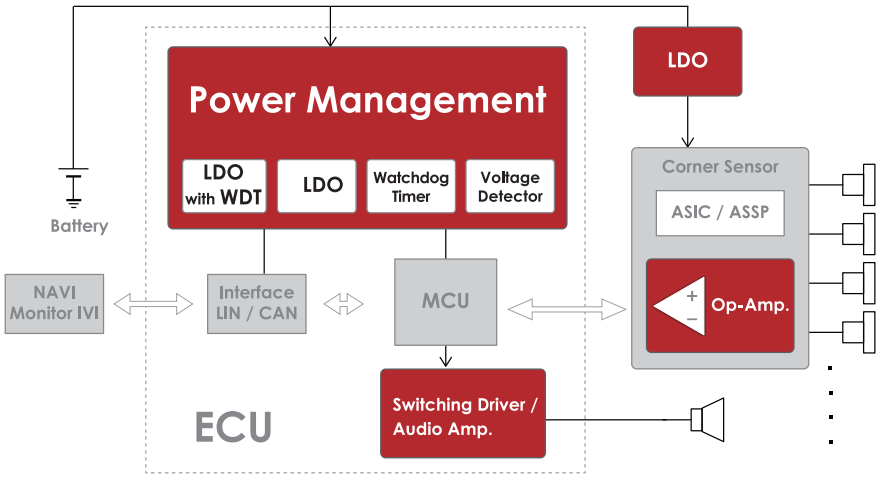
(LDO) Power Management

(DC/DC) PowerManagement

(Tracking Regulator) Power Management

(Voltage Detector, Watchdog Timer) Power Management

Corner Sensor ECU Block Diagram



Operational Amplifier

(LDO) Power Management

(DC/DC) Power Management

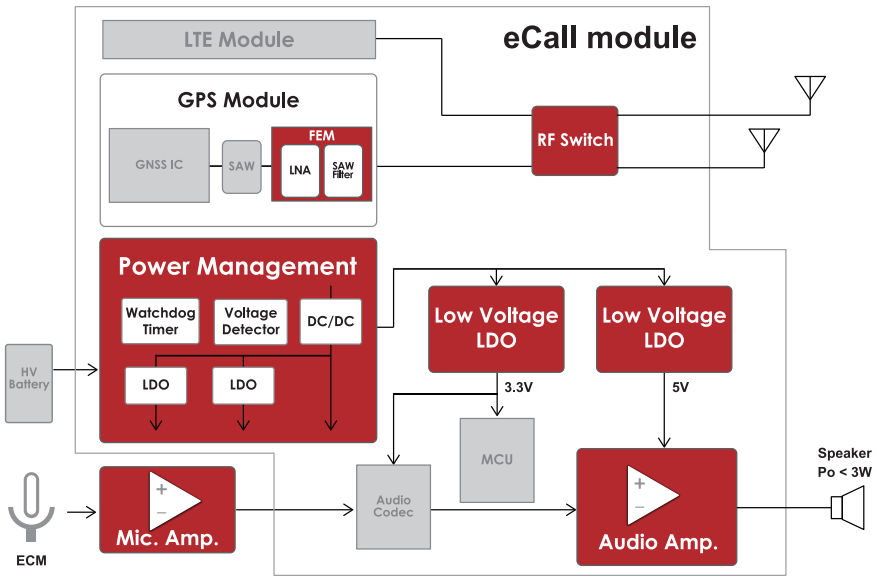
(Voltage Detector, Watchdog Timer) Power Management

(High Side Switches/ Low Side Switches) Switching Driver

(Power Amplifier) Audio Amplifier

(Class D Amplifier) Audio Amplifier

eCall Block Diagram



(Microphone Amplifier) Audio Amplifier

(Power Amplifier) Audio Amplifier

(Class D Amplifier) Audio Amplifier

(LDO) Power Management

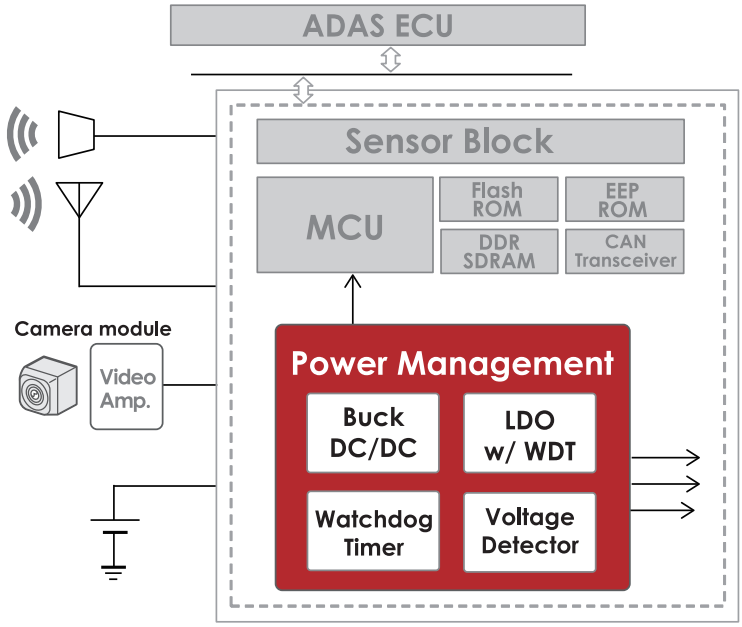
(DC/DC) Power Management

(Voltage Detector, Watchdog Timer) Power Management

(RF Switch) RF Device

(Front-End Module) RF Device

Front Sensing (Advanced Driving Assistant System (ADAS)) Block Diagram



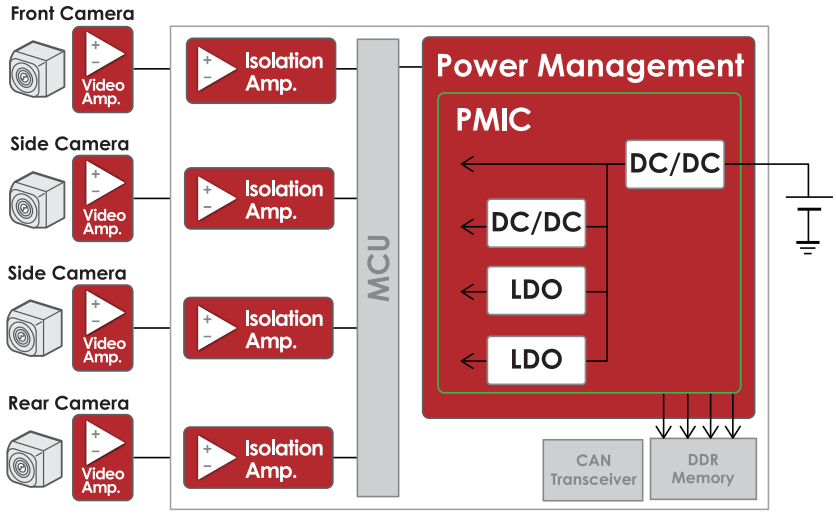
*ADAS: Advanced Driving Assistant System

(LDO) Power Management

(DC/DC) Power Management

(Voltage Detector, Watchdog Timer) Power Management

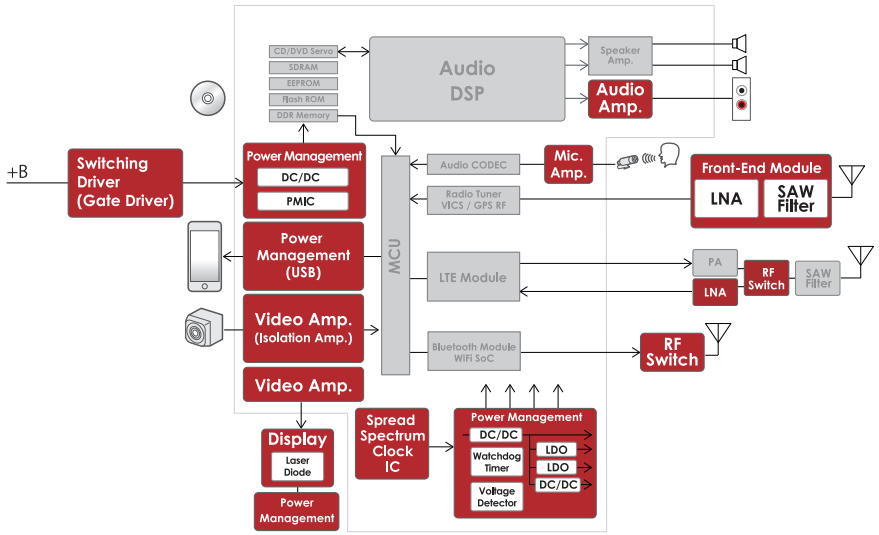
Camera Sensing (Parking Assist System) Block Diagram



(PMIC) Power Management

Video Amplifier

Entertainment (Car AV) Block Diagram



Operational Amplifier

(LDO) Power Management

(DC/DC) Powe Management

(Voltage Detector, Watchdog Timer) Power Management

(PMIC) Power Management

(High Side Switches/ Low Side Switches) Switching Driver

Clock IC with SSFM for Switching Regulator

(Microphone Amplifier) Audio Amplifier

(Microphone Amplifier) Audio Amplifier

Video Amplifier

LD Driver ICs for Display

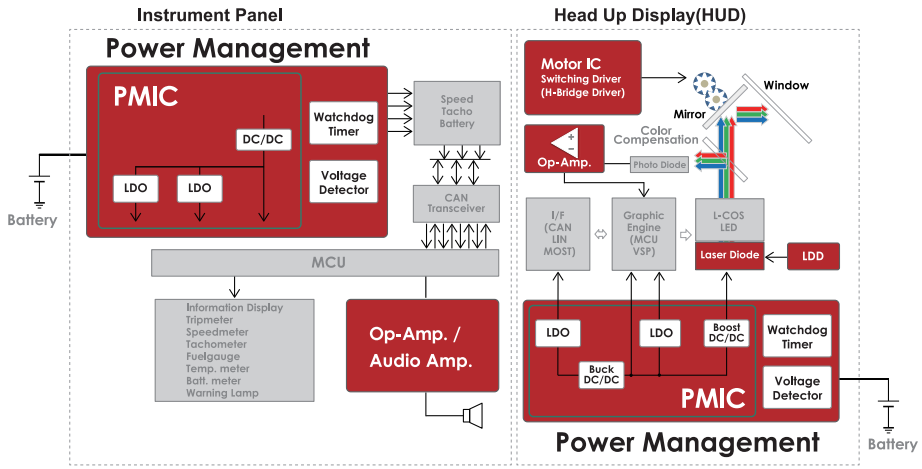
(RF Switch) RF Device

(LNA) RF Device

(Front-End Module) RF Device

SAW Filter

Information (Head Up Display(HUD), Instrument Panel) Block Diagram



Operational Amplifier

(LDO) Power Management

(DC/DC) Power Management

(Voltage Detector, Watchdog Timer) Power Management

(PMIC) Power Management

(Audio Amplifier) Audio Amplifier

(Class D Amplifier) Audio Amplifier

Motor IC

LD Driver ICs for Display

Automotive Devices Lineup

U.D. : Under development NEW : New product AEC : AEC-Q100 AEC : AEC-Q100 Developing
♡ : Products available in PRODUCT LONGEVITY PROGRAM ♡xxxx : Products available in PRODUCT LONGEVITY PROGRAM with time limit

Operational Amplifiers (Op-Amp.)

Part No.	No. of circuit	Power Supply	Supply Voltage [V]		Characteristics					Operating Temp. Range [℃]		Auto motive Quality Classifi cation	Package	Note
					VIO [mV]		ICC [mA]		SR [v/μs]					
			min.	max.	typ.*1	max.	typ.*1	max.	typ.*1	min.	max.			
U.D. MUSES8920A	2	Dual	± 3.5	± 17	0.8	5 *1	4.5	6.0 *1	25	-40	125	—	DFN8-X7(ESON8-X7)	
										-40	85		DIP8, SOP8 JEDEC 150mil(EMP8)	
NJM2119	2	Single	4	36	0.09	1	0.5	1.5	0.3	-40	125	Z	DMP8	
NJM2904B AEC ♡	2	Single	3	36	0.5	3	0.35	0.6	0.4	-40	125	T1	MSOP8(VSP8)	
NJM2904B AEC ♡	2	Single	3	36	0.5	3	0.35	0.6	0.4	-40	125	Z2	MSOP8(VSP8)	
NJM8080	2	Dual	± 2	± 18	0.3	3 *1	3	4.5 *1	5	-40	125	—	SSOP8, SOP8, MSOP8(TVSP8)	
NJM8087	2	Dual	± 4	± 16	0.1	0.8 *1	1.3	1.5 *1	20	-40	125	—	SOP8 JEDEC 150mil(EMP8)	
NJM8208 AEC ♡	2	Single	3	35	0.15	1	0.45	0.7	0.2	-40	125	Z	MSOP8(VSP8)	
NJM8532 AEC ♡	2	Single	1.8	14	1	5	0.29	0.45	0.4	-40	125	T1	MSOP8(VSP8)	
NJM8532 AEC ♡	2	Single	1.8	14	1	5	0.29	0.45	0.4	-40	125	Z	MSOP8(VSP8)	
NJU7046 AEC ♡	1	Single	2.7	5.5	0.9	5	1.4	2.2	9	-40	125	T1	SOT-23-5	
NJU7047 AEC ♡	2	Single	2.7	5.5	0.9	5	1.35	2.25	9	-40	125	T1	MSOP8(TVSP8)	
NJU7057 ♡	2	Single	1.8	5.5	0.8	4	0.26	0.42	0.8	-40	125	T1	MSOP8(TVSP8)	
NJU7077 AEC ♡	2	Single	2.2	5.5	0.02	0.4	0.6	0.9	0.5	-40	125	Z	MSOP8(VSP8)	
NJU77552 AEC ♡	2	Single	2.2	5.5	1	6.5	0.05	0.07	0.8	-40	125	T1	MSOP8(VSP8)	
NJU77701 AEC ♡	1	Single	2.4	5.5	0.4	1.8	3.8	4.8	35	-40	125	T1	SOT-23-5	
NJU77572 ♡	2	Single	2.7	5.5	0.6	3.5 *1	1.15	2.2 *1	5	-55	125	—	MSOP8(VSP8)	
NJU77582 ♡	2	Single	2.7	5.5	0.5	2.5 *1	2.3	3.8 *1	10	-55	125	—	MSOP8(VSP8)	
NL6012 AEC ♡	2	Single	2.1	5.5	0.002	0.01 *1	0.015	0.025	0.11	-40	125	—	VSP-8-AF	

*1 Ta=25℃

Comparators

Part No.	No. of circuit	Power Supply	Supply Voltage [V]		Characteristics					Operating Temp. Range [℃]		Automotive Quality Classification	Package	Note
					VIO [mV]		ICC [mA]		Propagation Delay [μs]					
			min.	max.	typ.*1	max.	typ.*1	max.	typ.*1	min.	max.			
NJM2903 AEC ♡	2	Single	2	36	—	5	0.2	1	1.5	-40	125	Z2	MSOP8(VSP8)	
NJU77242 AEC	2	Single	1.8	5.5	1	7	0.0075	0.0125	1.25	-40	125	Z2	MSOP8(VSP8)	
NJU77252 ♡	2	Single	2.7	5.5	1	7 *1	0.14	0.21 *1	0.042	-40	125	—	MSOP8(VSP8)	

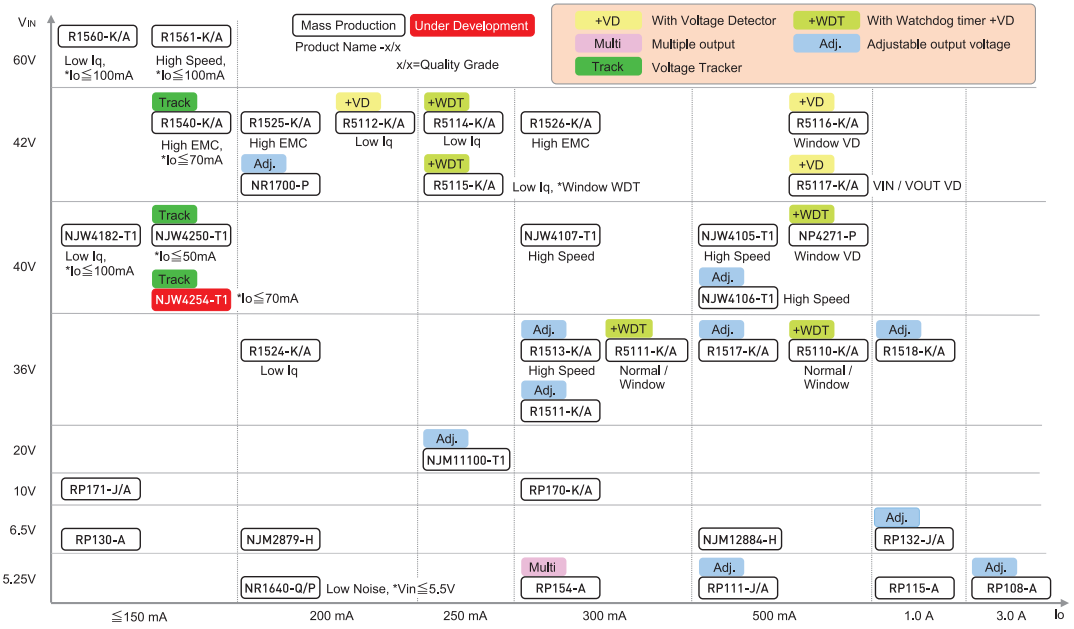
*1 Ta=25℃

Power Management ICs

Automatic : Automatic Shift to ECO Mode
Manual : Manual Shift to ECO Mode
Peak : Peak Voltage, Duration time=200ms
Thermal : Thermal Shutdown Circuit
Ripple : Ripple Rejection, Frequency = 1 kHz
Discharge : Auto-discharge Function
Reverse : Reverse Current Protection Circuit
Constant : Constant Slope Circuit
High Immunity : Enhanced Noise Immunity
Inrush : Inrush Current Limit Circuit
Diode : Diode Rectification
Soft-Start : Soft-start Circuit
UVLO : Undervoltage Lockout Circuit
OVLO : Overvoltage Lockout Circuit
OVP : Overvoltage Protection Circuit
Phase : Phase Compensation
SSCG : Spectrum Diffusion Type Oscillator
PG : Power Good Function
Sequencing : Start-up Sequencing Control

LDO Regulators and LDO Regulators (Tracking Regulators) Maximum Input Voltage and Output Current Chart

※ Main Product Only



LDO Regulators

Part No.	Output Current [mA]	Input Voltage Range [V] min.	Input Voltage Range [V] max.	Absolute Max. Ratings [V]	Output Voltage Range*1 [V] min.	Output Voltage Range*1 [V] max.	Output Voltage Accuracy [%] Full Temp.	Supply Current [μA] typ.	Operating Temperature Range [℃] min.	Operating Temperature Range [℃] max.	Auto motive Quality Classification	Package	key Features
R1515 AEC ♡	50	4.0	36.0	50.0	2.0	12.0	± 3.0	9	-40	105	J/A	SOT-89-5 HSOP-6J	Peak : 60V Thermal
R8151 AEC ♡	50	4.0	36.0	50.0	2.0	12.0	± 4.0	9	-40	110	R8	SOT-89-5	Peak : 60V Thermal
R8151 AEC ♡2032												HSOP-6J	
NJW4182 AEC	100	4.0	40.0	45.0	3.3	5.0	± 3.0	9	-40	125	H	SOT-23-5	Ultra-low current consumption Thermal
NJW4182 ♡	100	4.0	40.0	45.0	3.3	5.0	± 3.0	9	-40	125	T1	SOT-23-5	Ultra-low current consumption Thermal
R1560 AEC ♡	100	5.5	60.0	80.0	1.8	14.0	± 1.5	3	-40	125	K/A	HSOP-6J TO-252-5-P2	Peak : 90V Thermal
R1561 AEC ♡	100	5.5	60.0	80.0	1.8	14.0	± 1.5	20	-40	125	K/A	HSOP-6J TO-252-5-P2	Peak : 90V Thermal
R1180 AEC ♡	150	1.7	6.0	6.5	1.2	3.6	± 2.0 (Ta = 25℃)	1	-40	85	H/A	SOT-23-5	Ultra-low current consumption
R1114 ♡2029	150	2.0	6.0	6.5	1.5	4.0	± 2.0 (Ta = 25℃)	75	-40	85	A	SOT-23-5	Ripple : 70dB Discharge : Ver. D
R1163 ♡2029	150	2.0	6.0	6.5	1.5	5.0	± 1.5 (Ta = 25℃)	6	-40	85	A	SOT-23-5	Ripple : 70dB Reverse Automatic Discharge : Ver. D

*1 Please refer to the product datasheet for the output voltage lineup.

Power Management ICs

LDO Regulators

Part No.	Output Current [mA]	Input Voltage Range [V]		Absolute Max. Ratings [V]	Output Voltage Range*1 [V]		Output Voltage Accuracy [%]	Supply Current [μA]	Operating Temperature Range [℃]		Auto motive Quality Classification	Package	key Features
		min.	max.		min.	max.	Full Temp.	typ.	min.	max.			
RP130 AEC ♡	150	1.7	6.5	7.0	1.2	5.0	± 1.5	38	-40	105	A	DFN1212-4 SOT-23-5	Ripple : 80dB Discharge : Ver. D
RP171 AEC ♡	150	2.6	10.0	12.0	1.2	6.0	-3.5 to 3	23	-40	105	A	SOT-23-5	Ripple : 70dB Thermal Constant Discharge : Ver. D
R1150 AEC ♡2032	150	—	24.0	26.0	2.1 VD A: 2.3 B/C/D: 2.0	14.0 VD A: 15.0 B/C/D: 15.0	± 2.0 VD: ± 2.5 (Ta=25℃)	7	-40	85	H/A	SOT-89-5	Built-in Voltage Detector A: VIN detect (Normal type) B: SENSE detect (Normal type) C: VIN detect (with delay function) D: VOUT detect (with delay function) Thermal
R1514 AEC ♡	150	4.0	36.0	50.0	2.0	12.0	± 3.0	9	-40	105	J/A	SOT-89-5 HSOP-6J	Peak : 60V Thermal
R8150 AEC ♡	150	4.0	36.0	50.0	2.0	12.0	± 4.0 (Ta=-40 to 110℃)	9	-40	125	R8	HSOP-6J	Peak : 60V Thermal
R1516 AEC ♡	150	4.0	36.0	50.0	1.8	6.2	± 2.0	29	-40	105	J/A	SOT-89-5 HSOP-6J	Peak : 60V Thermal
NR1640 AEC ♡	200	2.7	5.5	6.5	2.5	4.8	± 1.5	350	-40	125	Q/P	SOT-23-5-DC	Outout noise: 6μVrms Ripple : 80dB(f=100kHz) Thermal Discharge : Ver.A、B、C、D
NJM2879 AEC ♡	200	2.3	6.5	7.0	1.5	5.0	± 2.0	150	-40	125	H	SOT-23-5	Discharge Thermal Reverse
R1524 AEC ♡	200	3.5	36.0	50.0	1.8	12.0	± 1.6	2.2	-40	125	K/A	SOT-23-5 SOT-89-5 HSOP-6J HSOP-8E	Peak : 60V Thermal
R8160 AEC ♡2032	200	3.5	36.0	50.0	3.3	9.0	± 1.6	2.2	-40	125	R8	SOT-23-5 SOT-89-5 HSOP-6J	Peak : 60V Thermal
NJW4104 AEC ♡	200	4.0	40.0	45.0	3.3	5.0	± 2.0	A ver.:5.5 B ver.:5.0	-40	125	T1	SOT-89-5-2 SOT-89-3	Fast Transient Response UVLO Thermal
R1525 AEC ♡	200	3.5	42.0	50.0	1.8	12.0	± 1.6	2.2	-40	125	K/A	SOT-23-5 SOT-89-5 HSOP-6J HSOP-8E	Peak : 60V Thermal High Immunity
R5112 AEC ♡	200	3.5	42.0	50.0	1.8 VD B: 1.6 D: 2.9	5.0 VD B: 4.8 D: 4.8	± 1.6 VD: ± 1.6	3.8	-40	125	K/A	HSOP-8E	+VD(Voltage Detector) Peak : 60V Thermal
NEW **NR1700** AEC	200	3.5	42.0	50.0	1.2 (Adj)	24.0 (Adj)	-2.5 to 3.6	11.5	-40	125	P	SOT-23-5-DC SOT-89-5-DM	Peak : 60V Thermal
NJM11100 AEC	240	2.1	18.0	20.0	1.3	17.0	Vref ± 2.5	200	-40	125	T1	SOT-23-6	Adjustable Type With Noise Bypass Pin Ripple : 75dB(f=1kHz) Thermal Reverse
R5114 AEC ♡	250	3.5	42.0	50.0	3.3 VD: 2.5	5.0 VD: 4.8	± 1.6 VD: ± 1.6	8.5	-40	125	K/A	HSOP-8E HSOP-18 HQFN0808-28	PLP♡ : HOP-8E, HSOP-18 Timeout WDT Peak : 60V Thermal
R5115 AEC ♡	250	3.5	42.0	50.0	3.3 VD: 2.5	5.0 VD: 4.8	± 1.6 VD: ± 1.6	8.5	-40	125	K/A	HSOP-8E HSOP-18 HQFN0808-28	PLP♡ : HOP-8E, HSOP-18 Window WDT Peak : 60V Thermal

*1 Please refer to the product datasheet for the output voltage lineup.

Part No.	Output Current [mA]	Input Voltage Range [V]		Absolute Max. Ratings [V]	Output Voltage Range*1 [V]		Output Voltage Accuracy [%]	Supply Current [μA]	Operating Temperature Range [℃]		Auto motive Quality Classification	Package	key Features
		min.	max.		min.	max.	Full Temp.	typ.	min.	max.			
RP154 AEC ♡	300	1.4	5.25	6.0	0.8	3.7	± 3.0	50	-40	105	A	DFN2020-8 SOT-23-6	2ch. Ripple : 75dB Discharge : Ver. B
R1130 ♡ 2029	300	2.5	8.0	9.0	1.5(Fix) 1.8(Adj)	5.0(Fix) 5.0(Adj)	± 2.0 (Fix) ± 36mV (Adj) (Ta=25℃)	50	-40	85	H	SOT-89-5	Adjustable Type With Noise Bypass Pin
RP170 AEC ♡	300	2.6	10.0	12.0	1.2	6.0	± 3.0	23	-40	K: 125 A: 105	K/A	SOT-23-5 SOT-89-5	Ripple : 70dB Thermal Constant Discharge : Ver. D
R1191 AEC ♡	300	3.5	16.0	18.0	2.0	15.0	± 2.5	6	-40	85	A	SOT-23-5 SOT-89-5	Ripple : 70dB Thermal Reverse Automatic Discharge : Ver. D
R1513 AEC ♡	300	3.5	36.0	50.0	1.2(Fix) 1.2(Adj)	5.0(Fix) 18.0(Adj)	1.0	75	-40	125	K/A	HSOP-6J	Ripple : 70dB(f=100Hz) Peak : 60V Thermal Discharge : Ver. D
R8156 AEC ♡ 2032	300	3.5	36.0	50.0	1.2(Fix) 1.2(Adj)	5.0(Fix) 18.0(Adj)	± 1.0	75	-40	125	R8	HSOP-8E	Ripple : 70dB(f=100Hz) Peak : 60V Thermal Discharge : Ver. D
R1510 ♡	300	3.5	36.0	50.0	2.5 VD A/B/C: 2.3 D: 2.3	12.0 VD A/B/C: 12.0 D: 10.6	± 4.5 VD: ± 3.2	12.5	-40	105	J/A	HSOP-8E	Built-in Voltage Detector A: VIN detect (Normal type) B: SENSE detect (Normal type) C: VIN detect (with delay function) D: VOUT detect (with delay function) Automatic Thermal
R1511 AEC ♡	300	3.5	36.0	50.0	3.0(Fix) 3.0(Adj)	9.0(Fix) 12.0(Adj)	± 2.0 (Fix) ± 60mV (Adj)	100	-40	125	K/A	HSOP-6J TO-252-5-P2	Peak : 60V Thermal
R8153 AEC ♡ 2032	300	3.5	36.0	50.0	3.0(Fix) 3.0(Adj)	9.0(Fix) 12.0(Adj)	± 2.0 (Fix) ± 60mV (Adj)	100	-40	125	R8	HSOP-6J TO-252-5-P2	Peak : 60V Thermal
R5111 AEC ♡	300	3.5	36.0	50.0	1.8 VD: 1.6	5.0 VD: 5.5	± 1.5 VD: ± 1.8	25	-40	125	K/A	HSOP-8E HSOP-18 HQFN0808-28	Timeout or Window WDT Peak : 60V Thermal Inrush
NJW4107 AEC ♡	300	4.0	40.0	45.0	3.3	5.0	± 1.5	A ver.:75 B ver.:70	-40	125	T1	SOT-89-5-2 SOT-89-3	Fast Transient Response UVLO Thermal
R1526 AEC ♡	300	3.5	42.0	50.0	1.8	9.0	± 1.6	32	-40	125	K/A	HSOP-8E	Peak : 60V Ripple : 50dB(f=100Hz) Thermal High Immunity
RP111 AEC ♡	500	1.4	5.25	6.0	0.7(Fix) 0.7(Adj)	3.4(Fix) 3.6(Adj)	± 1.5 (Fix) ± 50mV (Adj)	80	-40	105	J/A	SOT-23-5 SOT-89-5 HSOP-6J	Load regulation: Typ. 1mV Load transient response accuracy: Typ. -75mV/+45mV, 1mA ↔ 250mA (1/2 IOUT (Max.)) Ripple : 75dB Thermal Inrush Discharge : Ver. D
NJM12884 AEC ♡	500	2.3	6.5	7.0	1.5	5.0	± 2.0	200	-40	125	H	DFN8-WA (ESON8-WA)	Discharge Thermal Soft-Start Reverse

*1 Please refer to the product datasheet for the output voltage lineup.

Power Management ICs

LDO Regulators

Part No.	Output Current [mA]	Input Voltage Range [V]		Absolute Max. Ratings [V]	Output Voltage Range*1 [V]		Output Voltage Accuracy [%]	Supply Current [μA]	Operating Temperature Range [℃]		Auto motive Quality Classification	Package	key Features
		min.	max.		min.	max.	Full Temp.	typ.	min.	max.			
R1500 AEC ♡	500	4.0	24.0	36.0	3.0	12.0	±3.5	70	-40	105	J/A	SOT-89-5	Thermal
R5110 AEC ♡	500	3.5	36.0	50.0	1.8 VD: 1.6	5.0 VD: 5.5	±1.5 VD: ±1.8	25	-40	125	K/A	HSOP-8E HSOP-18 HQFN0808-28	Timeout or Window WDT Peak : 60V Thermal Inrush
R8360 AEC ♡2032	500	3.5	36.0	50.0	1.8 VD: 1.6	5.0 VD: 5.5	±1.5 VD: ±1.8	25	-40	125	R8	HSOP-8E HSOP-18	Timeout or Window WDT Peak : 60V Thermal Inrush
R1517 AEC ♡	500	3.5	36.0	50.0	2.5(Fix) 2.5(Adj)	9.0(Fix) 20.0(Adj)	±1.8 (Fix) ±45mV (Adj)	18	-40	125	K/A	HSOP-6J TO-252-5-P2	Constant : Adjustable Ver. E/F Peak : 60V Thermal Discharge : Ver. D/F
R8154 AEC ♡2032	500	3.5	36.0	50.0	2.5(Fix) 2.5(Adj)	9.0(Fix) 12.0(Adj)	±1.8 (Fix) ±45mV (Adj)	18	-40	125	R8	HSOP-6J TO-252-5-P2	Constant : Adjustable Ver. E/F Peak : 60V Thermal Discharge : Ver. D/F
NJW4116	500	4.0	40.0	45.0	3.3	5.0	±2.0	55	-40	125	T1/Z2	TO-252-5-L5	with Reset Function Thermal
NJW4105 AEC ♡	500	4.0	40.0	45.0	3.3	8.0	±1.5	65	-40	125	T1	TO-252-5-L5	Fast Transient Response Output voltage accuracy includes regulation Thermal
NJW4106 AEC ♡	500	4.0	40.0	45.0	2.5	16.0	±2.0(Adj)	65	-40	125	T1	TO-252-5-L5	Fast Transient Response Adjustable Type Output voltage accuracy includes regulation Thermal
NEW **NP4271** AEC	500	4.0	40.0	45.0	3.3 UV: 2.5 OV: 3.3	5.0 UV: 4.7 OV: 6.0	±2.0	120	-40	125	P	HSOP-8-AC	WDT Built-in Window VD Thermal
R5116 AEC ♡	500	3.5	42.0	50.0	3.3 UV: 2.5 OV: 3.3	5.0 UV: 5.0 OV: 5.5	-1.25 to 0.75 UV: -1.25 to 0.75 OV: -1.25 to 0.75	25	-40	125	K/A	HSOP-8E HQFN0808-28	PLP♡ : HSOP-8E Built-in Window VD Released Hysteresis: 0.7% (Max.) Peak : 60V Thermal
R5117 AEC ♡2032	500	3.5	42.0	50.0	3.3 SVD: 2.5 BVD: 3.5	5.0 SVD: 5.0 BVD: 12.0	-1.25 to 0.75 SVD: -1.25 to 0.75 BVD: -2.0 to 1.0	35	-40	125	K/A	HSOP-8E HQFN0808-28	PLP♡ : HSOP-8E Built-in Dual VD SVD Released Hysteresis: 0.7% (Max.) BVD Released Hysteresis: 5.0% (Max.) Peak : 60V Thermal
R1170 ♡2029	800	2.1	6.0	7.0	1.5	5.0	±2.0 (Ta=25℃)	80	-40	85	H/A	SOT-89-5	Thermal
RP115 AEC ♡	500 1000	1.4	5.25	6.0	0.9	3.9	-1.9 to 1.5	110	-40	105	A	DFN2020-8B SOT-89-5	Load regulation: Typ. 1mV Temperature Characteristics : Typ. ±30ppm/℃ Ripple : 75dB、80dB (VSET ≦ 1.8V) Thermal Reverse Constant Inrush Discharge : Ver. D
R1172 ♡2032	1000	1.4	6.0	6.5	0.8	5.0	±2.0 (Ta=25℃)	60	-40	85	H/A	SOT-23-5 SOT-89-5 HSOP-6J	Ripple : 70dB Thermal Inrush Discharge : Ver. D

*1 Please refer to the product datasheet for the output voltage lineup.

Part No.	Output Current [mA]	Input Voltage Range [V]		Absolute Max. Ratings [V]	Output Voltage Range*1 [V]		Output Voltage Accuracy [%]	Supply Current [μA]	Operating Temperature Range [℃]		Auto motive Quality Classification	Package	key Features
		min.	max.		min.	max.	Full Temp.	typ.	min.	max.			
RP132 AEC ♡	1000	1.4	6.5	7.0	0.8(Fix) 0.8(Adj)	5.0(Fix) 5.5(Adj)	± 1.9 (Fix) ± 29mV (Adj)	65	-40	105	J/A	SOT-89-5 HSOP-6J TO-252-5-P2	Ripple : 70dB Thermal Inrush Discharge : Ver. D
R1190 AEC ♡	1000	3.5	16.0	18.0	2.0	12.0	± 2.7	150	-40	85	A	HSOP-6J TO-252-5-P2	AEC-Q100=HSOP-6J Inrush : Adjustable Thermal Discharge : Ver. D
R1501 AEC ♡	1000	3	24.0	36.0	3.0	18.0	± 3.5	70	-40	105	J/A	HSOP-6J TO-252-5-P2	Thermal
R8152 AEC ♡ 2032	1000	3.0	24.0	36.0	3.0	18.0	± 4.0 (Ta=-40 to 110℃)	70	-40	125	R8	HSOP-6J	Thermal
R8152 AEC ♡												TO-252-5-P2	
R1518 AEC ♡	1000	3.5	36.0	50.0	2.5(Fix) 2.5(Adj)	9.0(Fix) 20.0(Adj)	± 1.8 (Fix) ± 45mV (Adj)	18	-40	125	K/A	HSOP-6J TO-252-5-P2	Constant : Ext.Adjustable Ver. E/F Peak : 60V Thermal Discharge : Ver. D/F
R8155 AEC ♡ 2032	1000	3.5	36.0	50.0	2.5(Fix) 2.5(Adj)	9.0(Fix) 12.0(Adj)	± 1.8 (Fix) ± 45mV (Adj)	18	-40	125	R8	HSOP-6J TO-252-5-P2	Constant : Ext.Adjustable Ver. E/F Peak : 60V Thermal Discharge : Ver. D/F
R1171 ♡ 2032	1500	2.1	6.0	7.0	1.5	5.0	± 2.0	130	-40	85	A	HSOP-6J	Thermal
NJM2815	1500	5.5	8.0	10.0	5.1	5.15	± 1.0	980	-40	85	—	HSOP8-M1	Built-in Output Voltage Thermal
NJM2816	1800	5.5	8.0	10.0	5.1	5.15	± 1.0	1150	-40	85	—	HSOP8-M1	Built-in Output Voltage Thermal
RP108 AEC ♡	3000	1.6	5.25	6.0	0.8(Fix) 0.8(Adj)	3.3(Fix) 4.2(Adj)	-3 to 2.4	350	-40	105	A	TO-252-5-P2	Thermal Reverse Constant Discharge : Ver. D/F

*1 Please refer to the product datasheet for the output voltage lineup.

LDO Regulators (Tracking Regulators)

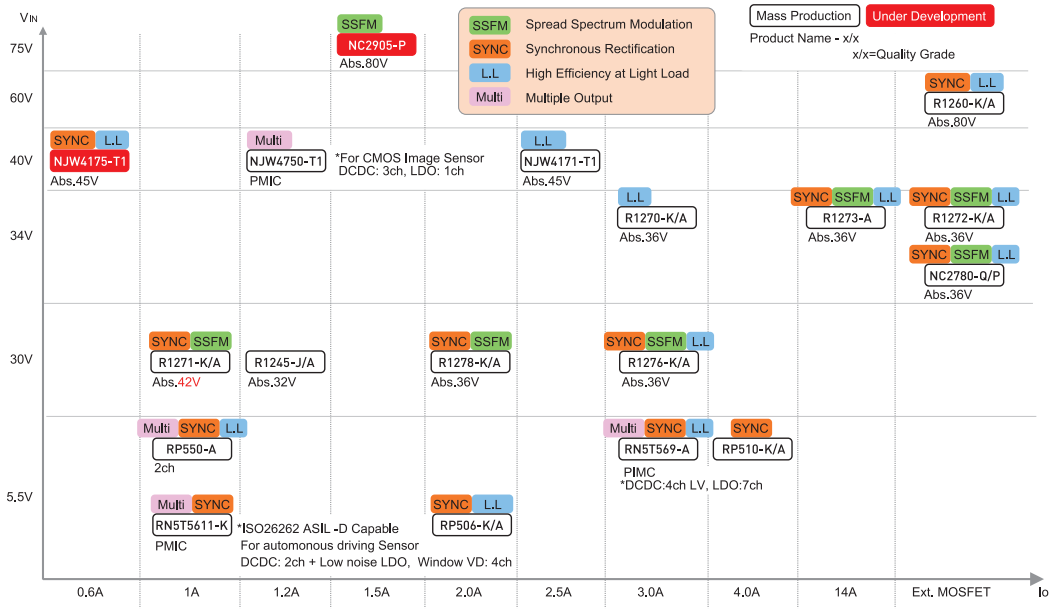
Part No.	Output Current [mA]	Operating Voltage Range [V]		Absolute Max. Ratings [V]	Output Voltage Range*1 [V]		Output Voltage Accuracy [mV]	Supply Current [μA]	Operating Temperature Range [℃]		Automotive Quality Classification	Package	key Features
		min.	max.		min.	max.	Full Temp.	typ.	min.	max.			
NEW **NJW4250** AEC	50	4.0	40.0	45.0	2.5	36.0	± 5	40	-40	125	T1	SOT-23-5	Foldback Protection Circuit Ripple : 80dB (f=100Hz) Thermal High Immunity
U.D. **NJW4254** AEC	70	4.0	40.0	45.0	2.5	36.0	± 5	40	-40	125	T1	SOT-89-5-2	Foldback Protection Circuit Ripple : 80dB (f=100Hz) Thermal
R1540 AEC ♡	70	3.5	42.0	50.0	2.2	14.0	± 15	60	-40	125	K/A	SOT-23-5 HSOP-8E	Foldback Protection Circuit Ripple : 80dB (f=100Hz) Thermal High Immunity

*1 Please refer to the product datasheet for the output voltage lineup.

Power Management ICs

DC/DC Switching Regulators (Buck) and PMICs Maximum Input Voltage and Output Current Chart

※Main Product Only



DC/DC Switching Regulators (Buck)

Part No.	Input Voltage Range [V]		Absolute Max. Ratings [V]	Output Current [mA]	Output Voltage Range [V]		SW. Device	Rectification	SW. Control	Oscillation Frequency [kHz]		Maximum Duty [%]	External clock synchronization	Operating Temperature Range [℃]		Automotive Quality Classification	Package	key Features
	min.	max.			min.	max.				min.	max.			min.	max.			
R1272 AEC ♡	–	4.0	34.0	36.0	0.7 (Adj)	5.3 (Adj)	Controller	Synchronous Rectification	Forced PWM PWM/VFM	250	1000	–	Yes	-40	125	K/A	HSOP-18	Protection Circuit Type : Latch-type or Hiccup-type Tracking function Soft-Start : Ext. Adjustable UVLO OVP Thermal SSCG : Ver. 03x/ 13x PG Phase : Ext.
NEW **NC2780** AEC	–	4.0	34.0	36.0	0.7 (Adj)	5.3 (Adj)	Controller	Synchronous Rectification	Forced PWM PWM/PFM	250	1000	–	Yes	-40	125	Q/P	HSOP-18-AK	Protection Circuit Type : Latch-type or Hiccup-type Tracking function Soft-Start : Ext. Adjustable UVLO OVP Thermal SSCG : Ver. A/C PG Phase : Ext.
R1260 AEC ♡	–	5.0	60.0	80.0	1.0 (Adj)	16.0 (Adj)	Controller	Synchronous Rectification	Forced PWM PWM/VFM	150	600	–	Yes	-40	125	K/A	HSOP-18	Protection Circuit Type : Latch-type or Hiccup-type Soft-Start : Ext. Adjustable UVLO Thermal SSCG : Ver. xxxB/D PG Phase : Ext.
NJW4152-BA ♡	600	4.4	40.0	45.0	0.8	38.0	Built-in MOSFET	Diode Rectification	PWM	300	1000	100	—	-40	125	Z	MSOP8 (VSP8)	Pulse-by-pulse current limit circuit Thermal Soft-Start UVLO Phase : Ext.
U.D. **NJW4175** AEC	600	3.4	40.0	45.0	0.8	26.0	Built-in MOSFET	Synchronous Rectification	PWM/PFM	2100 (Fix)		100	Yes	-40	125	T1	HSOP8 -M1	Light Load Mode Protection Circuit Type: Hiccup type Soft-Start Phase : Int. PG

Part No.	Input Voltage Range [V]		Absolute Max. Ratings [V]	Output Current [mA]	Output Voltage Range [V]		SW. Device	Rectification	SW. Control	Oscillation Frequency [kHz]		Maximum Duty [%]	External clock synchronization	Operating Temperature Range [℃]		Automotive Quality Classification	Package	key Features
	min.	max.			min.	max.				min.	max.			min.	max.			
RP550 AEC ♡	1000 × 2ch.	2.3	4.5 or 5.5	6.5	0.6 (Adj)	3.3 (Adj)	Built-in MOSFET	Synchronous Rectification	Forced PWM PWM/VFM	2300 (Fix)		100	–	-40	105	K/A	DFN3030-12	2ch. Protection Circuit Type : Latch-type Soft-Start UVLO Thermal
R1271 AEC ♡ 2030	1000	3.6	30.0	42.0	3.3 (Fix) 5.0 (Fix)		Built-in MOSFET	Synchronous Rectification	Forced PWM	2000 (Fix)		–	–	-40	125	K/A	DFN3030-12 HSOP-18	Protection Circuit Type : Latch-type or Hiccup-type PLP♡ : HSOP-18 Soft-Start : Ext. Adjustable UVLO OVLO Thermal SSCG : Ver. xx1C/D PG
R1245 AEC ♡	1200	4.5	30.0	32.0	0.8 (Adj)	27.3 (Adj)	Built-in MOSFET	Diode Rectification	PWM	A/B:330 (Fix) C/D:500 (Fix) E/F:1000 (Fix) G/H:2400 (Fix)		–	–	-40	105	J/A	HSOP-8E DFN2020-8	Protection Circuit Type : Latch-type or Hiccup-type Soft-Start UVLO Thermal
U.D. **NC2905** AEC	1500	4.0	75.0	80.0	0.8	60.0	Built-in MOSFET	Diode Rectification	PWM	100	2400	100	Yes	-40	125	P	HSOP-8-AC	Protection Circuit Type: Hiccup-type Thermal Soft-Start UVLO SSCG PG Phase : Ext.
RP506 AEC ♡ 2032	2000	2.5	4.5 or 5.5	6.5	0.8 (Fix) 0.6/0.8 (Adj)	3.3 (Fix) 4.0 (Adj)	Built-in MOSFET	Synchronous Rectification	Forced PWM PWM/VFM	1200 (Fix) 2300 (Fix)		100	–	-40	A: 105 K: 125	K/A	DFN3030-12	Protection Circuit Type : Latch-type Soft-Start : Ext. Adjustable UVLO Thermal PG Discharge : Ver. H/L
R1278 AEC ♡ 2030	2000	3.6	30.0	36.0	3.3 (Adj)	5.0 (Adj)	Built-in MOSFET	Synchronous Rectification	Forced PWM	1800	2200	–	Yes	-40	125	K/A	HSOP-18	Protection Circuit Type : Hiccup-type Tracking function Soft-Start : Ext. Adjustable UVLO OVLO Thermal SSCG : Ver. 003C PG Phase : Ext.
R1270 AEC ♡	2000	3.6	34.0	36.0	0.8 (Adj)	31.6 (Adj)	Built-in MOSFET	Diode Rectification	Forced PWM PWM/VFM	300	2400	–	Yes	-40	125	K/A	HSOP-18	Protection Circuit Type : Fold back-type , with Latch-type FLAG Output Function Soft-Start : Ext. Adjustable UVLO OVLO Thermal Phase : Ext.
NJW4119	2400	6.5	40.0	45.0	5.1	5.185	Built-in MOSFET	Diode Rectification	PWM	300 (Fix)		92	Yes	-40	125	—	HTSSOP24-P1	USB Power Supply Protection Circuit Type: Hiccup-type Thermal Soft-Start UVLO Phase : Ext. PG
NJW4171	2500	3.4	40.0	45.0	0.8	38.0	Built-in MOSFET	Diode Rectification	PWM/PFM(A) PWM(B)	100	2400	100	Yes	-40	125	T1	HSOP8-M1	Light Load Mode(A ver.) Protection Circuit Type: Hiccup-type Thermal Soft-Start UVLO Phase : Ext. PG
NJW4110 ♡	3000	2.7	5.5	7.0	0.6	5.0	Built-in MOSFET	Synchronous Rectification	PWM	100	2400	100	Yes	-40	125	T1	EQFN24-LE	Light Load Mode Protection Circuit Type: Hiccup-type Thermal Soft-Start : Ext. Adjustable UVLO PG

Power Management ICs

DC/DC Switching Regulators (Buck)

Part No.	Input Voltage Range [V] min.	Input Voltage Range [V] max.	Absolute Max. Ratings [V]	Output Current [mA]	Output Voltage Range [V] min.	Output Voltage Range [V] max.	SW. Device	Rectification	SW. Control	Oscillation Frequency [kHz] min.	Oscillation Frequency [kHz] max.	Maximum Duty [%]	External clock synchronization	Operating Temperature Range [℃] min.	Operating Temperature Range [℃] max.	Automotive Quality Classification	Package	key Features
R1276 AEC ♡2030	3000	3.6	30.0	36.0	0.7 (Adj)	6.5 (Adj)	Built-in MOSFET	Synchronous Rectification	Forced PWM PWM/VFM	250	1000	–	Yes	-40	125	K/A	HSOP-18	Protection Circuit Type : Hiccup-type Tracking function Soft-Start : Ext. Adjustable UVLO OVLO Thermal SSCG : Ver. 00xC PG Phase : Ext.
NJW4154	3000	4.5	40.0	45.0	0.8	35.2	Built-in MOSFET	Diode Rectification	PWM	300 (External Clock Synchronization)		88	Yes	-40	125	T1	HSOP 8-M1	Protection Circuit Type: Hiccup-type Thermal Soft-Start UVLO Phase : Ext. PG
RP510 AEC ♡2032	4000	2.5	5.5	6.5	0.8(Fix/Adj)	3.3(Fix/Adj)	Built-in MOSFET	Synchronous Rectification	Forced PWM	2300 (Fix)		100	–	-40	A: 105 K: 125	K/A	DFN3030-12	Protection Circuit Type : Latch-type or Fold back-type Soft-Start : Ext. Adjustable UVLO Thermal PG Discharge : Ver. H/N
R1273 AEC	14000	4.0	34.0	36.0	0.7(Adj)	5.3(Adj)	Built-in MOSFET	Synchronous Rectification	Forced PWM PWM/VFM	250	1000	–	Yes	-40	125	A	QFN0505-32B	Protection Circuit Type : Latch-type or Hiccup-type Tracking function Soft-Start : Ext. Adjustable UVLO OVP Thermal SSCG : Ver. 03x/ 13x PG Phase : Ext.

Power Management ICs

DC/DC Switching Regulators (Boost)

Part No.	Switching Current [A]	Input Voltage Range [V] min.	Input Voltage Range [V] max.	Absolute Max. Ratings [V]	Output Voltage Range [V] min.	Output Voltage Range [V] max.	SW. Device	SW. Control	Oscillation Frequency [kHz] min.	Oscillation Frequency [kHz] max.	Maximum Duty [%]	External clock synchronization	Operating Temperature Range [℃] min.	Operating Temperature Range [℃] max.	Automotive Quality Classification	Package	key Features
R1211 ♡2032	–	2.5	6.0	6.5	Adjustable		Controller	PWM	B:700 D:300		90	–	-40	85	A	SOT-23-6W	for LCD/CCD/OLED Protection Circuit Type : Latch-type Diode Phase : Int. with stand-by. Soft-Start UVLO
NJW4722	–	6.0	25.0	45.0	5.0	–	Controller	PWM	100	600	75	–	-40	125	Z	SSOP16-B3	5.3V Gate Drive Abailable for Fly-back With Load SW. function Pulse-by-pulse current limit circuit Diode Soft-Start UVLO Phase : Ext.
NJM2369	–	3.6	32.0	36.0	3.6	–	Controller	PWM	5	350	–	–	-40	85	–	DIP8, DMP8, SOP8 JEDEC 150mil (EMP8), SSOP8	MOSFET Driver Protection Circuit Type: Latch-type Maxduty: Ext.Adjustable Diode Soft-Start : Ext.Adjustable Ver.E/F UVLO Phase : Ext.
NJW4140 ♡	–	3.0	40.0	45.0	3.0	–	Controller	PWM	40	1000	85	–	-40	125	T1	MSOP8 (VSP8)	Available for Fly-Back Pulse-by-pulse current limit circuit Diode Soft-Start UVLO Phase : Ext.
NJW4140 AEC ♡	–	3.0	40.0	45.0	3.0	–	Controller	PWM	40	1000	85	–	-40	125	Z2	MSOP8 (VSP8)	Available for Fly-Back Pulse-by-pulse current limit circuit Diode Soft-Start UVLO Phase : Ext.

Part No.	Switching Current [A]	Input Voltage Range [V]		Absolute Max. Ratings [V]	Output Voltage Range [V]		SW. Device	SW. Control	Oscillation Frequency [kHz]		Maximum Duty [%]	External clock synchronization	Operating Temperature Range [℃]		Automotive Quality Classification	Package	key Features
		min.	max.		min.	max.			min.	max.			min.	max.			
NJW4148 ♡	—	7.0	40.0	45.0	7.0	—	Controller	PWM	40	1000	55	—	-40	125	Z	MSOP8 (VSP8)	5.3V Gate Drive Abailable for Fly-back With Load SW. function Pulse-by-pulse current limit circuit Diode Soft-Start UVLO Phase : Ext.
NJW1871 AEC ♡	—	2.5	40.0	45.0	2.5	—	Controller	PWM	50	1000	87	Yes	-40	125	T1	MSOP10 (VSP10)	5.2V Gate Drive Abailable for Fly-back With Load SW. function Protection Circuit Type: Hiccup-type Diode Soft-Start UVLO Phase : Ext. OVP Thermal
NJW4142 AEC ♡	—	2.5	40.0	45.0	2.5	—	Controller	PWM	50	1000	87	Yes	-40	125	T1	MSOP10 (VSP10)	10V Gate Drive Available for Fly-Back RUN function Protection Circuit Type: Hiccup-type Diode Thermal Soft-Start UVLO OVP Phase : Ext.
NEW **NJW1871A** AEC	—	4.5	40.0	45.0	4.5	—	Controller	PWM	1000	2000	89.5	Yes	-40	125	T1	MSOP10 (VSP10)	5.2V Gate Drive Available for Fly-Back RUN function Protection Circuit Type: Hiccup type Diode Thermal Soft-Start UVLO OVP Phase : Ext.
NJW4132 ♡	1.75	4.55	40.0	45.0	4.55	38.0	Built-in MOS-FET	PWM	2000 (Fix)		80	Yes	-40	125	T1	SOT-89-5-2	PWM, External Clock Synchronization Protection Circuit Type: Hiccup-type Diode Thermal Soft-Start UVLO Phase
R1290 ♡ 2032	2.0	2.0	5.5	6.5	Up to 20.0 Adjustable		Built-in MOS-FET	PWM	180	1400	91	Yes	-40	105	A	QFN0404-24	for LCD/CCD/OLED +CP : 1/4th operating frequency Maxduty: Ext. Adjustable Sequencing Diode Soft-Start : Ext. Adjustable UVLO Phase : Ext.
R1294 AEC ♡	2.0	2.0	5.5	6.5	Up to 20.0 Adjustable		Built-in MOS-FET	PWM	210	1400	91	Yes	-40	105	J/A	QFN0404-24B	for LCD/CCD/OLED +CP : 1/4th operating frequency Maxduty: Ext. Adjustable Diode Sequencing Soft-Start : Ext. Adjustable UVLO Phase : Ext.
NJW4133 AEC	5.0	3.0	40.0	45.0	3.0	38.0	Built-in MOS-FET	PWM	100	2400	92	Yes	-40	125	T1	HSOP8-M1	Protection Circuit Type: Hiccup-type Diode Thermal Soft-Start OVP UVLO Phase : Ext.

Clock IC with SSFM for Switching Regulator

Part No.	Operating Voltage Range [V]		Absolute Max. Ratings [V]	Clock Frequency [kHz]		Frequency Spreading [%]		Operating Temperature Range [℃]		Automotive Quality Classification	Package
	min.	max.		min.	max.	typ.	max.	min.	max.		
U.D. **NJW4203** AEC	2.7	5.5	7.0	120	2400	± 2.7	± 4.4	-40	125	T1	MSOP8(VSP8)

Switching Drivers (Gate Drivers)

Part No.	Supply Voltage [V]		Absolute Max. Ratings [V]	Output Current (Source) [A]	Output Current (Sink) [A]	Output Rise Time [nsec]	Output Fall Time [nsec]	Operating Temperature Range [℃]		Automotive Quality Classification	Features	Function	Package
	min.	max.		typ.	typ.	typ.	typ.	min.	max.				
NJW4841 ♡	4.0	20	40	2.0	2.0	25	20	-40	125	T1	Thermal UVLO	Low side Nch. Gate Driver	MSOP8(VSP8)
NJW4868	4.0	5.5	7.0	1.3	1.3	10	10	-40	125	T1	Thermal UVLO Equipped with independent current/voltage detection circuits	Low side Nch. Gate Driver	MSOP8(VSP8)
U.D. **ND1433** AEC	4.0	45	50	0.0007	—	—	—	-40	125	P	Thermal UVLO OVP Built-in Charge Pump Power Supply anomaly detection (Reverse Battery protection/Ground Loss protection) Back to Back configuration	High side Nch. Gate Driver	SSOP16

Power Management ICs

Switching Driver (High-side Switch / Low-side Switch)

Part No.	Absolute Max. Ratings [V]		Drain-Source Voltage [V]	Supply Voltage Range [V]		Input Voltage Range [V]		Quiescent Current [μA]	Input Current [μA]	Drain Current [A]	On-Resistance [Ω]	Operating Temperature Range [℃]		Automotive Quality Classification	Function	Package
	Drain-Source Voltage	Input Voltage	max.	min.	max.	min.	max.					min.	max.			
NJW4830 ♡	45	6.0	40	4.6	40	2.64	5.5	110	150	0.5	0.35	-40	125	T1	High-side Switch (P ch.)	SOT-89-5-2

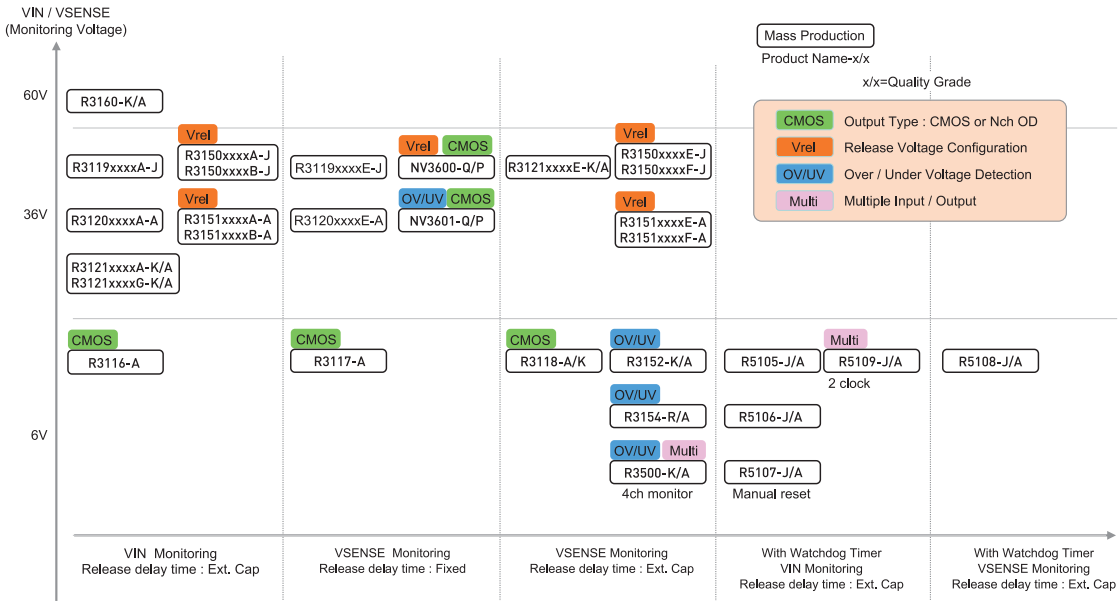
PMICs

Part No.	Number of Outputs	Configuration	Operating Voltage Range [V]		Absolute Max. Ratings [V]	Output Current [A]	Output Voltage Range [V]		Reference Voltage / Output Voltage Accuracy [%]		Oscillation Frequency [kHz]		External clock synchronization	Operating Temperature Range [℃]		Automotive Quality Classification	Package	key Features
			min.	max.			min.	max.	Room Temp.	Full Temp.	min.	max.		min.	max.			
RN5T569 AEC	11	LV Buck	2.7	5.5	6.0	3.0	0.6	3.5	—	± 2.0	2000 (Fix)		—	-40	105	A	QFN0707-48-P27	OTP, I²C, Sequence Interface, Dynamic Voltage Scaling, Watchdog Timer
		LV Buck	2.7	5.5	6.0	3.0	0.6	3.5	—	± 2.0								
		LV Buck	2.7	5.5	6.0	2.0	0.6	3.5	—	± 2.0								
		LV Buck	2.7	5.5	6.0	2.0	0.6	3.5	—	± 2.0								
		LV LDO	2.7	5.5	6.0	0.3	0.9	3.5	—	± 2.0	—		—					
		LV LDO	2.7	5.5	6.0	0.3	0.9	3.5	—	± 2.0								
		LV LDO	2.7	5.5	6.0	0.3	0.6	3.5	—	± 2.0								
		LV LDO	2.7	5.5	6.0	0.2	0.9	3.5	—	± 2.0								
		LV LDO	2.7	5.5	6.0	0.2	0.9	3.5	—	± 2.0								
		LV LDO	2.7	5.5	6.0	0.03	1.2	3.5	—	± 2.0								
		LV LDO	2.7	5.5	6.0	0.01	0.9	3.5	—	± 2.0								
RN5T5611 AEC	3	LV Buck	3.0	5.5	6.5	1.0	1.0	3.3	—	± 1.0	2300 (Fix)		—	-40	125	K	QFN0505-32-P7 (Wettable Flank)	OTP, I²C, Sequence Interface, 4ch. Window Voltage Ditector, Analog Built-In Self Test, Logic Built-In Self Test
		LV Buck	3.0	5.5	6.5	1.0	1.0	3.3	—	± 1.0			—					
		LV LDO	3.0	5.5	6.5	0.2	2.5	3.3	—	± 1.0	—		—					
U.D. **NP8700** AEC	4	HV Buck	3.9	20	22	1.2	2.5	5.0	± 1.0	± 2.0	2000 (Fix)		Yes	-40	125	P	QFN3426-26-NC	SSFM
		LV Buck	2.4	5.5	7.0	1.0	0.8	3.3										
		LV Buck	2.4	5.5	7.0	1.0	0.8	3.3										
		LV LDO	2.4	5.5	7.0	0.3	0.8	3.3					—					
NJW4750 AEC ♡	4	HV Buck	3.9	40	45	1.2	2.5	5.5	± 1.0	± 2.0	280	2400	Yes	-40	125	T1	EQFN26-HH	Ch3 Selectable Reg
		LV Buck	2.4	5.5	7.0	0.6	1.1	3.6										
		LV Buck	2.4	5.5	7.0	0.6	1.1	3.6										
		LV LDO	2.4	5.5	7.0	0.3	1.1	3.6					—					
NEW **NJW4760** ♡	12	HV LDO	4.5	40	45	0.05	3.3 (Fix)		± 1.5	—	400	2000	—	-40	125	—	EQFN48-SN	OTP, I²C, Sequence Interface, SSFM, Digital Watchdog Timer
		HV LDO	4.5	40	45	0.05	1.8 (Fix)											
		LV Buck	2.4	5.5	7.0	3.0	0.6	3.6					Yes					
		LV Buck	2.4	5.5	7.0	3.0	0.6	3.6										
		LV Buck	2.4	5.5	7.0	3.0	0.6	3.6										
		LV Buck	2.4	5.5	7.0	3.0	0.6	3.6										
		LV Buck	2.4	5.5	7.0	2.0	0.6	3.6										
		LV LDO	2.4	5.5	7.0	0.1	1.0	3.3					—					
		LV LDO	2.4	5.5	7.0	0.1	1.0	3.3										
		LV LDO	2.4	5.5	7.0	0.1	1.0	3.3										
		LV LDO	2.4	5.5	7.0	0.1	1.0	3.3										
		LV LDO	2.4	5.5	7.0	0.5	1.0	3.3										

Power Management ICs

Voltage Detectors (Reset ICs) and Watchdog Timers Supervisor Features

※ Main Product Only



Voltage Detectors (Reset ICs), Watchdog Timers

Part No.	Operating Voltage Range [V]		Absolute Max. Ratings [V]	Output Voltage Range [V]		Detector Threshold Accuracy [%]	Release Delay Time	LDO	WDT	Supply Current [μA]	Operating Temperature Range [℃]		Automotive Quality Classification	Package	key Features
	min.	max.		min.	max.	Full Temp.				typ.	min.	max.			
R3116 AEC ♡	0.5	6.0	7.0	0.7	5.0	±1.5	Adjustable	—	—	0.35	-40	105	A	DFN1212-4 SOT-23-5	
R3134 AEC ♡	0.7	6.0	6.5	1.0	5.0	±1.8 (Ta=25℃)	Fix	—	—	0.8	-40	85	A	SOT-23-6	without Hysteresis Type
R5105 AEC ♡	0.9	6.0	7.0	1.5	5.5	-2.8 to 1.5	Adjustable	—	Yes	11	-40	J: 105 A: 125	J/A	SOT-23-6	Timeout WDT
R5106 AEC ♡	0.9	6.0	7.0	1.5	5.5	-2.8 to 1.5	Adjustable	—	Yes	11	-40	J: 105 A: 125	J/A	SOT-23-6	Timeout WDT CD pin and CTW pin are combined.
R5107 AEC ♡	0.9	6.0	7.0	1.5	5.5	-2.8 to 1.5	Adjustable	—	Yes	11	-40	J: 105 A: 125	J/A	SSOP-8G	Timeout WDT MR Pin (Manual Reset)
R5109 AEC ♡2032	0.9	6.0	7.0	1.5	5.5	-2.8 to 1.5	Adjustable	—	Yes	11.5	-40	J: 105 A: 125	J/A	SSOP-8G	Timeout WDT 2 clock input type
R8355 AEC ♡2032	0.9	6.0	7.0	1.5	5.5	-2.8 to 1.5	Adjustable	—	Yes	11	-40	125	R8	SOT-23-6	Timeout WDT
R8356 AEC ♡2032	0.9	6.0	7.0	1.5	5.5	-2.8 to 1.5	Adjustable	—	Yes	11	-40	125	R8	SOT-23-6	Timeout WDT CD Pin and CTW Pin are combined.
R8357 AEC ♡2032	0.9	6.0	7.0	1.5	5.5	-2.8 to 1.5	Adjustable	—	Yes	11	-40	125	R8	SSOP-8G	Timeout WDT MR Pin (Manual Reset)
R8359 AEC ♡2032	0.9	6.0	7.0	1.5	5.5	-2.8 to 1.5	Adjustable	—	Yes	11.5	-40	125	R8	SSOP-8G	Timeout WDT 2 clock input type

Power Management ICs

Voltage Detectors (Reset ICs), Watchdog Timers

Part No.	Operating Voltage Range [V]		Absolute Max. Ratings [V]	Output Voltage Range [V]		Detector Threshold Accuracy [%]	Release Delay Time	LDO	WDT	Supply Current [μA]	Operating Temperature Range [℃]		Auto motive Quality Classifi cation	Package	key Features
	min.	max.		min.	max.	Full Temp.				typ.	min.	max.			
R3117 AEC ♡	1.0	6.0	7.0	0.7	5.0	± 2.0	Ad-just-able	—	—	0.29	-40	105	A	SOT-23-5	Normal type SENSE Pin Detection Type
R3118 AEC ♡	1.0	6.0	7.0	0.6	5.0	± 2.5	Ad-just-able	—	—	0.4	-40	A: 85 K: 125	K/A	SOT-23-6	SENSE Pin Detection Type
R5108 AEC ♡2032	1.5	6.0	7.0	1.5	5.5	-2.8 to 1.5	Ad-just-able	—	Yes	11	-40	J: 105 A: 125	J/A	SSOP-8G	Timeout WDT SENSE Pin Detection Type
R8358 AEC ♡2032	1.5	6.0	7.0	1.5	5.5	-2.8 to 1.5	Ad-just-able	—	Yes	11	-40	125	R8	SSOP-8G	Timeout WDT SENSE Pin Detection Type
R3119xxxxE AEC ♡	2.1	6.0	7.0	2.3	12.0	-3 to 2	—	—	—	3.3	-40	105	J	SOT-23-5	SENSE Pin Detection Type
R3120xxxxE AEC ♡	2.1	6.0	7.0	2.3	12.0	-3 to 2	—	—	—	3.3	-40	105	A	SOT-23-5	SENSE Pin Detection Type
R3121xxxxE AEC ♡	2.4	6.0	7.0	3.0	12.0	-2.2 to 2.5	Ad-just-able	—	—	3.5	-40	125	K/A	SOT-23-6	SENSE Pin Detection Type
R8300xxxxE AEC ♡2032	2.4	6.0	7.0	3.0	12.0	-2.2 to 2.5	Ad-just-able	—	—	3.5	-40	125	R8	SOT-23-6	SENSE Pin Detection Type
NEW **NV3600** AEC ♡	2.4 (VDD) 0 (SENSE)	6.0 (VDD) 42.0 (SENSE)	7.0 (VDD) 50.0 (SENSE)	3.3	19.8	± 1.5	—	—	—	1.4	-40	125	Q/P	SOT-23-5-DC	-VDET & +VDET Indibidually set voltage, +VDET setting range: 4.5V to 22.2V
NEW **NV3601** AEC ♡	2.4 (VDD) 0 (SENSE)	6.0 (VDD) 42.0 (SENSE)	7.0 (VDD) 50.0 (SENSE)	OV:4.5 UV:3.3	OV:22.2 UV:19.8	± 1.5	—	—	—	1.4	-40	125	Q/P	SOT-23-5-DC	Window Voltage Detector
R3150xxxxE/F AEC ♡	3.6	6.0	7.0	5.0	10.0	± 2	Ad-just-able	—	—	3.5	-40	105	J	SOT-23-6	Detect and Release Delay Function SENSE Pin Detection Type
R3151xxxxE/F AEC ♡	3.6	6.0	7.0	5.0	10.0	± 2	Ad-just-able	—	—	3.5	-40	105	A	SOT-23-6	Detect and Release Delay Function SENSE Pin Detection Type
R8315xxxxE/F AEC ♡2032	3.6	6.0	7.0	5.0	10.0	± 2	Ad-just-able	—	—	3.5	-40	125	R8	SOT-23-6	Detect and Release Delay Function SENSE Pin Detection Type
R3119xxxxA AEC ♡	1.2	36.0	50.0	2.3	12.0	-3 to 2	Ad-just-able	—	—	3.3	-40	105	J	SOT-23-5	
R3120xxxxA AEC ♡	1.2	36.0	50.0	2.3	12.0	-3 to 2	Ad-just-able	—	—	3.3	-40	105	A	SOT-23-5	
R3121xxxxA/G AEC ♡	1.4	36.0	50.0	3.0	12.0	-2.2 to 2.5	Ad-just-able	—	—	3.8	-40	125	K/A	SOT-23-6	VDD Pin Detection Type G : without Hysteresis Type
R8300xxxxA/G AEC ♡2032	1.4	36.0	50.0	3.0	12.0	-2.2 to 2.5	Ad-just-able	—	—	3.8	-40	125	R8	SOT-23-6	VDD Pin Detection Type G : without Hysteresis Type
R3150xxxxA/B AEC ♡	1.4	36.0	50.0	5.0	10.0	± 2	Ad-just-able	—	—	3.8	-40	105	J	SOT-23-6	Detect and Release Delay Function VDD Pin Detection Type
R3151xxxxA/B AEC ♡	1.4	36.0	50.0	5.0	10.0	± 2	Ad-just-able	—	—	3.8	-40	105	A	SOT-23-6	Detect and Release Delay Function VDD Pin Detection Type

Part No.	Operating Voltage Range [V]		Absolute Max. Ratings [V]	Output Voltage Range [V]		Detector Threshold Accuracy [%]	Release Delay Time	LDO	WDT	Supply Current [μA]	Operating Temperature Range [℃]		Auto motive Quality Classifi cation	Package	key Features
	min.	max.		min.	max.	Full Temp.				typ.	min.	max.			
R8315xxxxA/B AEC ♡2032	1.4	36.0	50.0	5.0	10.0	± 2	Ad-just-able	—	—	3.8	-40	125	R8	SOT-23-6	Detect and Release Delay Function VDD Pin Detection Type
R5110 AEC ♡	3.5	36.0	50.0	1.6	5.5	± 1.8	Ad-just-able	Yes Io=500mA	Yes	25	-40	125	K/A	HSOP-8E HSOP-18 HQFN0808-28	Timeout or Window WDT Peak : 60V Thermal Inrush
R5111 AEC ♡	3.5	36.0	50.0	1.6	5.5	± 1.8	Ad-just-able	Yes Io=300mA	Yes	25	-40	125	K	HSOP-8E HSOP-18 HQFN0808-28	Timeout or Window WDT Peak : 60V Thermal Inrush
R8360 AEC ♡2032	3.5	36.0	50.0	1.8	5.0	± 1.8	Ad-just-able	Yes Io=500mA	Yes	25	-40	125	R8	HSOP-8E HSOP-18	Timeout or Window WDT Peak : 60V Thermal Inrush
R5104 ♡2029	—	36.0	50.0	2.8	4.0	± 2.0 (Ta=25℃)	Ad-just-able	—	Yes	60	-40	125	K	SSOP-10	Timeout WDT
NEW **NP4271** AEC	4.0	40.0	45.0	UV: 2.6 OV: 3.4	UV: 4.7 OV: 6.0	UV: ± 2.0 OV: ± 5.0	Ad-just-able	Yes Io=500mA	Yes	120	-40	125	P	HSOP-8-AC	WDT Built-in Window VD Thermal
R3152 AEC ♡	3.0	42.0	50.0	OV:1.1 UV:1.0	OV:5.9 UV:4.8	-1.25 to 0.75	Ad-just-able	—	—	1.5	-40	125	K/A	SOT-23-6	Window Voltage Detector SENSE Pin Detection B: without Hysteresis Type
R3500 AEC ♡	3.0	42.0	50.0	OV: 1.0 UV: 0.9	OV: 5.9 UV: 5.0	-1.25 to 0.75	Ad-just-able	—	—	10	-40	125	K/A	HSOP-18	Applicable to failure diagnosis Window Voltage Detector SENSE Pin Detection Type
R3154 AEC ♡	3.0	42.0	50.0	OV:0.75 UV:0.55	OV:3.7 UV:3.3	-1.25 to 0.75	Ad-just-able	—	—	2	-40	125	R/A	SOT-23-5	Applicable to failure diagnosis 4CH Window Voltage Detector SENSE Pin Detection
R5117 AEC ♡2032	3.5	42.0	50.0	BVD:3.5 SVD:2.5	BVD:12 SVD:5.0	BVD:-2.0 to 1.0 SVD:-1.25 to 0.75	Ad-just-able	Yes Io=500mA	—	35	-40	125	K/A	HSOP-8E HQFN0808-28	PLP♡ : HSOP-8E Voltage Regulator with Battery Voltage Detector Peak : 60V Thermal
R5116 AEC ♡	3.5	42.0	50.0	OV:3.3 UV:2.5	OV:5.5 UV:5.0	-1.25 to 0.75	Ad-just-able	Yes Io=500mA	—	25	-40	125	K/A	HSOP-8E HQFN0808-28	PLP♡ : HSOP-8E Voltage Regulator with Window Voltage Detector Peak : 60V Thermal
R5112 AEC ♡	3.5	42.0	50.0	B:1.6 D:2.9	B:4.8 D:4.8	± 1.6	Ad-just-able	Yes Io=200mA	—	3.8	-40	125	K/A	HSOP-8E	Voltage Regulator with VD Peak : 60V Thermal
R5114 AEC ♡	3.5	42.0	50.0	2.5	4.8	± 1.6	Ad-just-able	Yes Io=250mA	Yes	8.5	-40	125	K/A	HSOP-8E HSOP-18 HQFN0808-28	PLP♡ : HSOP-8E, HSOP-18 Timeout WDT Peak : 60V Thermal
R5115 AEC ♡	3.5	42.0	50.0	2.5	4.8	± 1.6	Ad-just-able	Yes Io=250mA	Yes	8.5	-40	125	K/A	HSOP-8E HSOP-18 HQFN0808-28	PLP♡ : HSOP-8E, HSOP-18 Window WDT Peak : 60V Thermal
R3160 AEC ♡	2.7	60.0	80.0	10.0	48.0	± 1.75*1 ± 1.5*2	Ad-just-able	—	—	1.8	-40	125	K/A	SOT-23-6	*1 Detector Threshold 20V or lower *2 Detector Threshold 20.5V or higher

Power Management ICs

LDD(Laser Diode Driver)

Part No.	Supply Voltage [V]	CH	Maximum Output Rate Per 1 Channel [Mdots/sec]	Raising/ Falling Time [ns]	Maximum Operating Current [mA]		Protection Function	Operating Temperature Range [℃]		Auto motive Quality Classification	Package	key Features
					LD1	LD2/3/4		min.	max.			
RN5C750 AEC	1.8 / 3.3	4CH	200	1.0	800	400	LD Over Current Detection LD Pin Short Circuit Detection PDI Current Error Detection Thermal Shutdown	-40	105	J	QFN0808-56	Wettable Flank

Constant-Current LED Driver Controller IC

Part No.	Input Voltage rang [V]		Absolute Max. Ratings [V]	Max. SOURCE Pin Voltage Accuracy [mV]	Signal Input Circuit	Dimming Control	Supply Current [μA]	Operating Temperature Range [℃]		Auto motive Quality Classification	Package	Key Features
	min.	max.					typ.	min.	max.			
R1580 AEC ♡	3.6	34.0	36.0	001A: 400 ± 8 002A: 800 ± 16 003A: 400 ± 8	001A: Comparator, H=1.3V, L=1.1V 003A: Comparator, H=1.3V, L=1.1V 003A: Inverter Input, H=1.2V, L=0.4V	001A: 1% to 100% 002A: 0.5% to 100% 003A: 1% to 100%	320	-40	105	A	SOT-23-6	Thermal UVLO OVP

USB High-side Switch ICs

Part No.	Input Voltage rang [V]		Absolute Max. Ratings [V]	Current Limit Threshold [A]		Short Current Limit [A]		ON Resistance [mΩ]	Supply Current [μA]		ON/OFF Control	Operating Temperature Range [℃]		Automotive Quality Classification	Key Features	Package
	min.	max.		typ.	max.	typ.	max.		typ.	max.		min.	max.			
R5523 ♡ 2032	2.2	5.5	6.5	1	1.8	0.75	1.5	130	20	45	Yes	-40	85	H	P-ch MOS High-side Switch IC EN: H/L Soft-Start Thermal UVLO	SOT-23-5
R5524 ♡	2.7	5.5	6.0	001/ 002: 0.8 004: 1.55	001/ 002: 0.98 004: 1.85	0.65	0.8	100	110	180	Yes	-40	85	A	N-ch MOS High-side Switch IC Load SW IC EN: H Soft-Start Thermal UVLO Discharge Reverse : OFF	SOT-23-5

ASSPs

Part No.	Key Features	Supply Voltage [V]		Automotive Quality Classification	Package	Note
		min.	max.			
NJU77903 AEC ♡	High Output Current, Rail-to-Rail Input/Output, Single CMOS Operational Amplifier	6.8	36	H	TO-252-5-L3	High output current : ± 100mA typ. (200mApp typ.) Thermal shutdown Current limit
NJU7870 AEC	Transconductance amplifier for resolver excitation	2.4	5.5	Z2	SSOP16-B3	Transconductance: 13.5mAp/Vpp typ. Thermal shutdown External control shutdown function
NJU7890 AEC ♡	1000V High Voltage Monitor IC	2.2	5.5	Z	PMAP11-PM	Common mode input voltage range: 1000V High precision attenuation rate: ± 1% attenuation rate: 1/205, 1/311 High input resistance: 30M Ω min.
U.D. **NL9000** AEC	1000V High Voltage Monitor IC	2.2	5.5	Q	PMAP11-GP	Common mode input voltage range: 1000V High precision attenuation rate: ± 1% Attenuation rate: 1/100, 1/200, 1/140 High input resistance: 30M Ω min. Full scale output: Vo=5V to 0V (V+=5V)

Motor IC

Part No.	Function	Operating Temp. Range [℃]		Maximum Rating		Operating Voltage Range [V]		Automotive Quality Classification	Additional Function	Package
		min.	max.	Supply Voltage [V]	Output Current [mA]	min.	max.			
NJU7367B ♡	Single-phase DC Brushless Motor Driver	-40	125	7	1000	2.0	5.5	T1	TSD, OCP, Lock Protection	MSOP8(TVSP8)

Audio & Video ICs

Audio Amplifiers (Power Amplifiers)

Part No.	Channel	Operating Voltage Range [V]		Output Power			Stand-by	Mute	Operating Temp. Range [℃]		Automotive Quality Classification	Package
		min.	max.	Po	V+ [V]	RL [ohm]			min.	max.		
NJU72060	BTL:1ch	2.7	5.5	500mW typ.	5	8	Yes	Yes	-40	105	T	MSOP8(VSP8), HSOP8-M1, DFN8-V1(ESON8-V1)
NJU7089 ♡	BTL:1ch.	1.8	5.5	1.2W typ.	5	8	Yes	Yes	-40	105	T	SSOP20-C3, MSOP8(VSP8), HTSSOP24-P1
NJU7089 AEC ♡	BTL:1ch.	1.8	5.5	1.2W typ.	5	8	Yes	Yes	-40	105	T	DFN8-V1(ESON8-V1)

Audio Amplifiers (Class D Amplifiers)

Part No.	Channel	Operating Voltage Range [V]		Output Power			Stand-by	Mute	Operating Temp. Range [℃]		Automotive Quality Classification	Package
		min.	max.	Po	V+ [V]	RL [ohm]			min.	max.		
NJU8759A	BTL:1ch.	1.8	5.5	3.0W typ.	5	4	Yes	Yes	-40	105	T	HSOP8-M1
U.D. **NA1150** AEC	BTL:1ch.	2.6	5.5	1.2W typ.	5	8	Yes	Yes	-40	125	P	MSOP8(VSP8), DFN8-V1(ESON8-V1)

Audio Amplifiers (Line Amplifiers)

Part No.	Channel	Operating Voltage Range [V]		Output Voltage			Output Coupling Capacitor-less	POP Noise Suppression Circuit	Mute	Operating Temp. Range [℃]		Automotive Quality Classification	Package
		min.	max.	Vom	V+ [V]	RL [ohm]				min.	max.		
NJU72015	2ch.	3.0	3.6	2.3Vrms typ.	3.3	10k	Yes	Yes	Yes	-40	85	—	SSOP14
NJW1240	6ch.	6.0	10.0	5Vrms min.	8	47k	Yes	Yes	Yes	-40	85	—	SSOP32
NJW1241	BTL,3ch.	6.0	10.0	5Vrms min.	8	47k	Yes	Yes	Yes	-40	85	—	SSOP32

Audio Amplifiers (Microphone Amplifiers)

Part No.	Operating Voltage Range [V]		Channel	Voltage Gain (*) [dB]	Sensitivity Adjustment	2wire /3wire	Operating Temp. Range [℃]		Automotive Quality Classification	Key Features	Package
	min.	max.					min.	max.			
NJU7907A	4.5	16	1ch.	+24 to +40	—	2wire	-40	85	—	FET for impedance converter, Standard, Wide Dynamic Range	MSOP10(TVSP10)
NJU7907B	4.5	16	1ch.	+24 to +40	—	2wire	-40	85	—	FET for impedance converter, Standard, Wide Dynamic Range, Small Package	EPFFP10-C4
NJU72090	1.8	16	1ch.	+24 to +40	Yes	2wire	-40	105	—	FET for impedance converter, Wide Dynamic Range, Fine Tune Sensitivity	MSOP10(TVSP10)
NJU72097	2.7	16	1ch.	+24 to +40	Yes	2wire	-40	105	—	Fine Tune Sensitivity, Wide Dynamic Range Regulator for Microphone Capsule	MSOP10(TVSP10)

※ Set by external resistors

Video Amplifiers

Part No.	Function	Operating Voltage Range [V]		Channel	Gain [dB]	Clamp	Bias	75ohm Driver	LPF	Operating Temp. Range [℃]		Automotive Quality Classification	Package
		min.	max.							min.	max.		
NJM41001	Low Voltage, Wide Band Video Driver	3.0	7.0	1ch.	6	Yes	—	Yes	—	-40	105	T	SOT-23-6-1
NJM41005 AEC	Isolation Amplifier with Video Driver	4.5	5.5	1ch.	—	Yes	Yes	Yes	—	-40	105	T	SOT-23-5
NJU71091	1ch. Video Driver with Short to Battery Protection, Output Capacitor is unnecessary	2.65	3.45	1ch.	6	—	Yes	Yes	6	-40	125	T1	DFN8-U1 (ESON8-U1)
NJU71094	Differential Output Video Driver with Short to Battery Protection, Output Capacitor is unnecessary	2.65	3.45	2ch.	6	—	Yes	Yes	6	-40	125	T1	DFN8-W2 (ESON8-W2)

RF Devices

RF Switches

Part No.	Function	P-0.2dB [dBm]	Insertion Loss [dB]	Isolation [dB]	Frequency Range [GHz]	Automotive Quality Classification	Package Size*1 [mm]
NJG1669MD7 ♡	SPDT	37@0.9GHz 37@5.9GHz	0.3 @0.9GHz 0.45@5.9GHz	32@0.9GHz 25@5.9GHz	0.05 to 6	—	1.6 × 1.6 × 0.427
NJG1681MD7 ♡	SPDT	>36@0.9GHz >36@2.7GHz >36@5.9GHz	0.18@0.9GHz 0.23@2.7GHz 0.45@5.9GHz	45@0.9GHz 30@2.7GHz 20@5.9GHz	0.2 to 6	—	1.6 × 1.6 × 0.427
NJG1682MD7 ♡	SP3T	>36@0.9GHz >36@2.7GHz	0.22@0.9GHz 0.30@2.7GHz	35@0.9GHz 27@2.7GHz	0.2 to 3	—	1.6 × 1.6 × 0.427
NJG1684ME2	SP4T	>36@0.9GHz >36@2.7GHz	0.25@0.9GHz 0.35@2.7GHz	37@0.9GHz 25@2.7GHz	0.2 to 3	—	1.8 × 1.8 × 0.427
NJG1801AKGC-A AEC ♡ NJG1801BKGC-A AEC ♡	SPDT	30@2.5GHz 30@5.9GHz	0.35@2.4 to 2.5GHz 0.45@4.9 to 5.9GHz 0.6@8.5GHz	28@2.4 to 2.5GHz 27@4.9 to 5.9GHz 18@8.5GHz	0.3 to 8.5	A	1.6 × 1.6 × 0.83
NJG1801K75 ♡	SPDT	30@2.5GHz 30@5.9GHz	0.35@2.4 to 2.5GHz 0.45@4.9 to 5.9GHz	28@2.4 to 2.5GHz 30@4.9 to 5.9GHz	0.05 to 8.5	—	1.0 × 1.0 × 0.425
NJG1802K51 ♡	SPDT	>36@0.9GHz >36@2.7GHz >36@5.9GHz	0.18@0.9GHz 0.23@2.7GHz 0.45@5.9GHz	50@0.9GHz 30@2.7GHz 20@5.9GHz	0.2 to 6	—	2.0 × 2.0 × 0.425
NJG1804K64 ♡	SP3T	28@2.5GHz 27@5.9GHz	0.50@2.4 to 2.5GHz 0.60@4.9 to 5.9GHz	30@2.4 to 2.5GHz 26@4.9 to 5.9GHz	0.05 to 6	—	1.5 × 1.5 × 0.425
NJG1806K75 ♡	SPDT	30@2.5GHz 30@5.9GHz	0.35@2.4 to 2.5GHz 0.40@4.9 to 5.9GHz	25@2.4 to 2.5GHz 25@4.9 to 5.9GHz	0.05 to 6	—	1.0 × 1.0 × 0.425
NJG1809ME7 ♡	SP4T	>33@0.9GHz >33@2.7GHz >33@5.9GHz	0.35@0.9GHz 0.40@2.7GHz 0.50@5.9GHz	36@0.9GHz 27@2.7GHz 23@5.9GHz	0.2 to 6	—	2.0 × 2.0 × 0.427
NJG1812AMET-A AEC	DPDT	>36@0.9GHz >36@2.7GHz	0.25@0.9GHz 0.45@2.7GHz	25@0.9GHz 17@2.7GHz	0.7 to 3.0	A	2.0 × 2.0 × 0.83
NJG1814MD7 ♡	SPDT	>33@0.9GHz >36@2.7GHz >33@5.9GHz	0.35@0.9GHz 0.40@2.7GHz 0.45@5.9GHz	42@0.9GHz 34@2.7GHz 33@5.9GHz	0.2 to 6	—	1.6 × 1.6 × 0.427
NJG1815K75 ♡	SPDT	30@2.5GHz 30@5.9GHz	0.45@2.4 to 2.5GHz 0.40@4.9 to 6GHz	25@2.4 to 2.5GHz 25@4.9 to 6GHz	1 to 6	—	1.0 × 1.0 × 0.425
NJG1815AK75-A AEC ♡	SPDT	30@2.5GHz 30@3.8GHz 30@6.0GHz	0.45@2.4 to 2.5GHz 0.45@3.4 to 3.8GHz 0.40@4.9 to 6.0GHz	25@2.4 to 2.5GHz 25@3.4 to 3.8GHz 25@4.9 to 6.0GHz	2.4 to 6	A	1.0 × 1.0 × 0.425
NJG1817ME4 ♡	SPDT	40@6.0GHz	0.35@3.85GHz 0.40@4.7GHz 0.45@6.0GHz	27@3.85GHz 27@4.7GHz 25@6.0GHz	0.05 to 6	—	2.0 × 2.0 × 0.427
NJG1818K75 ♡	SPDT	30@2.5GHz 30@5.9GHz 30@7.125GHz	0.50@2.4 to 2.5GHz 0.50@4.9 to 5.9GHz 0.55@5.9 to 7.125GHz	25@2.4 to 2.5GHz 25@4.9 to 5.9GHz 25@5.9 to 7.125GHz	1 to 7.125	—	1.0 × 1.0 × 0.425

*1 The thickness is the maximum value.

Low Noise Amplifiers (LNAs)

Part No.	Applications	Frequency Range [MHz]	Operating Voltage [V]	Operating Current [mA]	Gain [dB]	NF [dB]	P-1dB [dBm]	IIP3 [dBm]	Automotive Quality Classification	Package Size*1 [mm]
NJG1144KA1 ♡	GNSS	1559 to 1606	2.85/1.8	3.5/1.8	21/18	0.65/0.85	-16.5 /-18.5	-2/-6	—	1.6 × 1.6 × 0.55
NJG1150UA2	GNSS	1559 to 1606	2.8/1.8	4.9/4.2	16	0.6	-7/-9	1/-1	—	1.0 × 1.0 × 0.39
NJG1155UX2	GNSS	1559 to 1606	2.8/1.8	3.5/3.1	19/18.5	0.75	-12.5/-16	-1.5/-5	—	1.1 × 0.7 × 0.39
NJG1175KG1 ♡	LTE/ WLAN	4900 to 5950	3.3	13	16	0.95	-5	9	—	1.6 × 1.6 × 0.427

*1 The thickness is the maximum value.

Part No.	Applications	Frequency Range [MHz]	Operating Voltage [V]	Operating Current [mA]	Gain [dB]	NF [dB]	P-1dB [dBm]	IIP3 [dBm]	Automotive Quality Classification	Package Size*1 [mm]
NJG1182UX2	LTE/ WLAN	5500	2.8/1.8	5.0/3.5	15/14.5	1.1/1.4	-11/-13	2/-1	—	1.1 × 0.7 × 0.39
NJG1187KG1 ♡	GNSS	1559 to 1610	3.3	8	34	0.6	-20	-17	—	1.6 × 1.6 × 0.427
		1164 to 1300	3.3	8	37	0.65	-21	-17		
NJG1187AKGC-A AEC ♡	GNSS	1559 to 1610	3.3	8	34	0.6	-19	-18	A	1.6 × 1.6 × 0.83
		1164 to 1300	3.3	8	37	0.65	-23	-18		
NT1191GEAE3S ♡	GNSS	1164 to 1610	3.3/1.8	5.5/3.5	17.5/16.0	0.75/0.85	-10/-16	0/-6	—	1.6 × 1.6 × 0.83
U.D. **NT1191GEAE3A** AEC	GNSS	1164 to 1610	3.3	5.5	17.5	0.75	-10	0	A	1.6 × 1.6 × 0.83
NT1192FAAE1S	GNSS	1164 to 1300	2.8/1.8	4.5/3.5	20.0/19.5	0.70/0.75	-13/-17	-2.0/-5.5	—	1.1 × 0.7 × 0.39
U.D. **NT1193FAAE1S**	GNSS	1164 to 1610	1.5/3.7	5	21.5	0.75	-16	-6	—	1.1 × 0.7 × 0.39
U.D. **NT1195FAAE1S**	GNSS	1164 to 1610	1.5/3.3	1.9	18	0.95	-23	-12	—	1.1 × 0.7 × 0.39

*1 The thickness is the maximum value.

Front-End Modules

Part No.	Applications	Frequency Range [MHz]	Operating Voltage [V]	Operating Current [mA]	Gain [dB]	NF [dB]	Low Band Rejection [dBc]	High Band Rejection [dBc]	Automotive Quality Classification	Package Size*1 [mm]
NJG1159PHH-A AEC ♡	GPS	1575	2.8	3.7	16.0	1.50	55	43	A	1.5 × 1.1 × 0.5
	GLONASS	1597 to 1606			16.5	1.65				
	BeiDou	1559 to 1591			16.0	1.70				
NJG1161PCD ♡	GPS	1575	2.8/1.8	3.3/2.6	18.5/17.5	1.60/1.65	85	75	—	2.5 × 2.5 × 0.63
	GLONASS	1597 to 1606				1.70/1.75				
U.D. **NJG1186PJL-A** AEC	L5/E5/B2/G3	1164 to 1214	2.8	4.8	19.5	1.7	45	55	A	1.57 × 1.23 × 0.47
	L2C	1227.6			19.0	2.0				

*1 The thickness is the maximum value.

SAW Filters

Part No.	Applications	Center Frequency f0 [MHz]	Passband Width [MHz]	Automotive Quality Classification	Package Size [mm]
NSNJ9200A	GPS+GLONASS+Beidou	1582.471	46	—	2.0 × 1.6 × 0.70
NSNJ9205	L2	1227.6	20	—	2.0 × 1.6 × 0.70
NSNJ9208	L6	1278.75	10	—	2.0 × 1.6 × 0.70

● DFN

Pin	Symbol	Package	Actual Size Photo	Dimensions [mm]				Quantity/ Reel [pcs]
				Body	Mount Area	Thick-ness *1	Pitch	
4	L	DFN1212-4		1.2 × 1.2	1.2 × 1.2	0.8	0.5	3,000
8	L	DFN2020-8		2.0 × 2.0	2.0 × 2.0	0.8	0.5	3,000
8	L	DFN2020-8B		2.0 × 2.0	2.0 × 2.0	0.8	0.5	3,000
12	L	DFN3030-12		3.0 × 3.0	3.0 × 3.0	0.8	0.5	3,000
12	L	DFN3030-12B		3.0 × 3.0	3.0 × 3.0	0.8	0.5	3,000
8	KU1	DFN8-U1(ESON8-U1)		2.0 × 2.0	2.0 × 2.0	0.4	0.5	3,000
8	KV1	DFN8-V1(ESON8-V1)		2.3 × 2.3	2.3 × 2.3	0.4	0.5	3,000
8	KW2	DFN8-W2(ESON8-W2)		3.0 × 3.0	3.0 × 3.0	0.705	0.65	1,500
8	KWA	DFN8-WA(ESON8-WA)		3.0 × 3.0	3.0 × 3.0	0.705	0.65	3,000
8	KX7	DFN8-X7(ESON8-X7)		3.5 × 4.0	3.5 × 4.0	0.705	0.65	1,500

*1 Maximum Value

● DIP

Pin	Symbol	Package	Actual Size Photo	Dimensions [mm]				Quantity/ Reel [pcs]
				Body	Mount Area	Thick-ness	Pitch	
8	D	DIP8		8.8 × 6.4	—	3.95	2.54	50/stick

● DMP

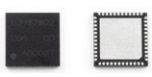
Pin	Symbol	Package	Actual Size Photo	Dimensions [mm]				Quantity/ Reel [pcs]
				Body	Mount Area	Thick-ness	Pitch	
8	M	DMP8		5.0 × 5.0	5.0 × 6.8	1.6	1.27	2,000

● EPFFP

Pin	Symbol	Package	Actual Size Photo	Dimensions [mm]				Quantity/ Reel [pcs]
				Body	Mount Area	Thick-ness *1	Pitch	
10	UC4	EPFFP10-C4		1.5 × 1.5	1.5 × 1.5	0.375	0.5	5,000

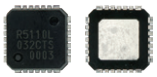
*1 Maximum Value

● EQFN

Pin	Symbol	Package	Actual Size Photo	Dimensions [mm]				Quantity/ Reel [pcs]
				Body	Mount Area	Thick-ness *1	Pitch	
24	MLE	EQFN24-LE		4.0 × 4.0	4.0 × 4.0	0.75	0.5	1,000
26	MHH	EQFN26-HH		3.4 × 2.6	3.4 × 2.6	0.75	0.4	1,500
48	MSN	EQFN48-SN		7.0 × 7.0	7.0 × 7.0	0.83	0.5	3,000

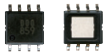
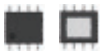
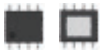
*1 Maximum Value

● HQFN

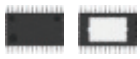
Pin	Symbol	Package	Actual Size Photo	Dimensions [mm]				Quantity/ Reel [pcs]
				Body	Mount Area	Thick-ness *1	Pitch	
28	L	HQFN0808-28		8.0 × 8.0	8.8 × 8.8	1.0	0.8	2,000

*1 Maximum Value

● HSOP

Pin	Symbol	Package	Actual Size Photo	Dimensions [mm]				Quantity/ Reel [pcs]
				Body	Mount Area	Thick-ness	Pitch	
6	S	HSOP-6J		5.02 × 3.9	5.02 × 6.0	1.5	1.905	1,000
8	S	HSOP-8E		5.2 × 4.4	5.2 × 6.2	1.45	1.27	1,000
18	S	HSOP-18		5.2 × 4.4	5.2 × 6.2	1.45	0.5	1,000
18	S	HSOP-18-AK		5.2 × 4.4	5.2 × 6.2	1.45	0.5	1,000
8	GM1	HSOP8-M1		5.2 × 4.4	5.2 × 6.2	1.55	1.27	3,000
8	AC	HSOP-8-AC		5.2 × 4.4	5.2 × 6.2	1.5	1.27	3,000

● HTSSOP

Pin	Symbol	Package	Actual Size Photo	Dimensions [mm]				Quantity/ Reel [pcs]
				Body	Mount Area	Thick-ness	Pitch	
24	VP1	HTSSOP24-P1		7.8 × 4.4	7.8 × 6.4	0.85	0.65	2,500

● MSOP(TVSP)

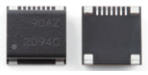
Pin	Symbol	Package	Actual Size Photo	Dimensions [mm]				Quantity/ Reel [pcs]
				Body	Mount Area	Thick-ness	Pitch	
8	RB1	MSOP8(TVSP8)		2.9 × 2.8	2.9 × 4.0	0.9	0.65	2,000
10	RB2	MSOP10(TVSP10)		2.9 × 2.8	2.9 × 4.0	0.9	0.5	2,000

● MSOP(VSP)

Pin	Symbol	Package	Actual Size Photo	Dimensions [mm]				Quantity/ Reel [pcs]
				Body	Mount Area	Thick-ness	Pitch	
8	R	MSOP8(VSP8)		2.9 × 2.8	2.9 × 4.0	1.1	0.65	2,000
8	AF	VSP-8-AF		2.9 × 2.8	2.9 × 4.0	1.1	0.65	2,000
10	R	MSOP10(VSP10)		2.9 × 2.8	2.9 × 4.0	1.1	0.5	2,000

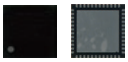
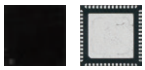
(Note) MSOP(TVSP) : MEET JEDEC MO-187-DA THIN TYPE, MSOP(VSP) : MEET JEDEC MO-187-DA

● PMAP11

Pin	Symbol	Package	Actual Size Photo	Dimensions [mm]				Quantity/ Reel [pcs]
				Body	Mount Area	Thick-ness *1	Pitch	
8	YPM	PMAP11-PM		8.1 × 6.6	8.1 × 8.1	1.85	0.65	2,000
8	YGP	PMAP11-GP		8.1 × 6.6	8.1 × 8.1	1.85	0.65	2,000

*1 Maximum Value

● QFN

Pin	Symbol	Package	Actual Size Photo	Dimensions [mm]				Quantity/ Reel [pcs]
				Body	Mount Area	Thick-ness *1	Pitch	
24	K	QFN0404-24		4.0 × 4.0	4.0 × 4.0	0.75	0.5	1,000
24	L	QFN0404-24B		4.0 × 4.0	4.0 × 4.0	0.75	0.5	1,000
26	NC	QFN3426-26-NC		3.4 × 2.6	3.4 × 2.6	0.75	0.4	1,500
32	L	QFN0505-32B		5.0 × 5.0	5.0 × 5.0	0.85	0.5	1,000
32	L	QFN0505-32-P7		5.0 × 5.0	5.0 × 5.0	0.75	0.5	1,000
48	L	QFN0707-48-P27		7.0 × 7.0	7.0 × 7.0	0.9	0.5	2,000
56	L	QFN0808-56		8.0 × 8.0	8.0 × 8.0	0.8	0.5	1,040

*1 Maximum Value

● SOT

Pin	Symbol	Package	Actual Size Photo	Dimensions [mm]				Quantity/ Reel [pcs]
				Body	Mount Area	Thick-ness	Pitch	
5	DC	SOT-23-5-DC		2.9 × 1.6	2.9 × 2.8	1.1	0.95	3,000
5	F	SOT-23-5		2.9 × 1.6	2.9 × 2.8	1.1	0.95	3,000
5	N	SOT-23-5		2.9 × 1.6	2.9 × 2.8	1.1	0.95	3,000
6	F1	SOT-23-6-1		2.9 × 1.6	2.9 × 2.8	1.1	0.95	3,000
6	N	SOT-23-6		2.9 × 1.6	2.9 × 2.8	1.1	0.95	3,000
6	N	SOT-23-6W		2.9 × 1.8	2.9 × 2.8	1.1	0.95	3,000
3	U3	SOT-89-3		4.5 × 2.5	4.5 × 4.25	1.5	1.5	1,000
5	DM	SOT-89-5-DM		4.5 × 2.5	4.5 × 4.5	1.5	1.5	1,000
5	H	SOT-89-5		4.5 × 2.5	4.5 × 4.35	1.5	1.5	1,000
5	U2	SOT-89-5-2		4.5 × 2.5	4.5 × 4.5	1.5	1.5	1,000

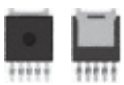
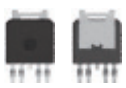
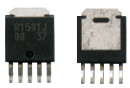
● SOP JEDEC(EMP)

Pin	Symbol	Package	Actual Size Photo	Dimensions [mm]				Quantity/ Reel [pcs]
				Body	Mount Area	Thick-ness	Pitch	
8	E	SOP8 JEDEC 150mil(EMP8)		5.0 × 3.9	5.0 × 6.0	1.5	1.27	2,000

● SSOP

Pin	Symbol	Package	Actual Size Photo	Dimensions [mm]				Quantity/ Reel [pcs]
				Body	Mount Area	Thick-ness	Pitch	
8	G	SSOP-8G		2.9 × 2.8	2.9 × 4.0	1.1	0.65	3,000
10	V	SSOP-10		3.1 × 4.4	3.1 × 6.4	1.15	0.5	2,000
8	V	SSOP8		3.5 × 4.4	3.5 × 6.4	1.15	0.65	2,000
14	V	SSOP14		5.0 × 4.4	5.0 × 6.4	1.15	0.65	2,000
16	VB3	SSOP16-B3		5.0 × 4.4	5.0 × 6.4	1.15	0.65	2,000
16	BD	SSOP-16-BD		5.0 × 4.4	5.0 × 6.4	1.15	0.65	2,000
16	V	SSOP16		5.0 × 4.4	5.0 × 6.4	1.15	0.65	2,000
20	VC3	SSOP20-C3		6.5 × 4.4	6.5 × 6.4	1.15	0.65	2,000
32	V	SSOP32		11.0 × 5.6	11.0 × 7.6	1.15	0.65	2,000

● TO

Pin	Symbol	Package	Actual Size Photo	Dimensions [mm]				Quantity/ Reel [pcs]
				Body	Mount Area	Thick-ness	Pitch	
5	DL3	TO-252-5-L3		6.54 × 6.04	6.54 × 9.68	2.29	1.27	3,000
5	DL5	TO-252-5-L5		6.54 × 6.04	6.54 × 9.68	2.29	1.14	3,000
5	J	TO-252-5-P2		6.6 × 6.1	6.6 × 9.9	2.30	1.27	3,000

Index of Part No.

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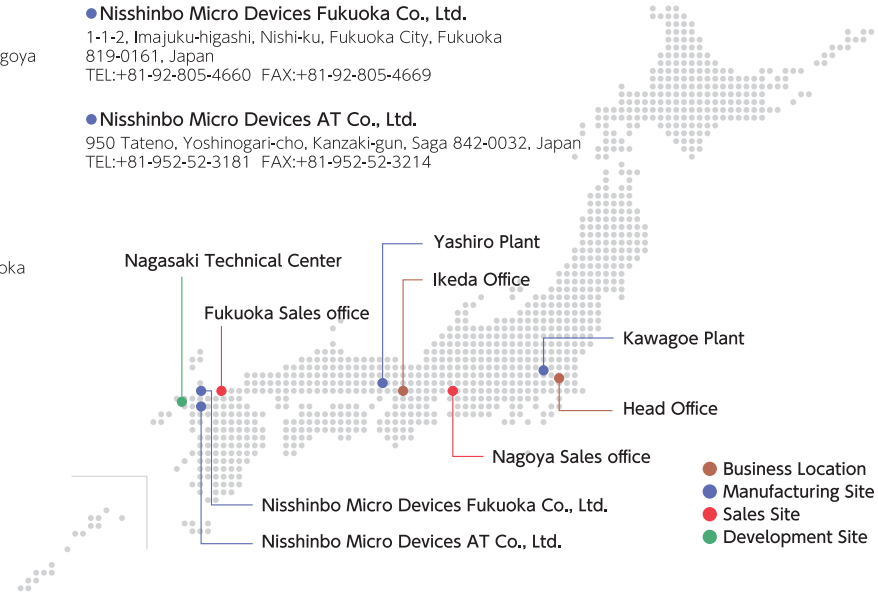

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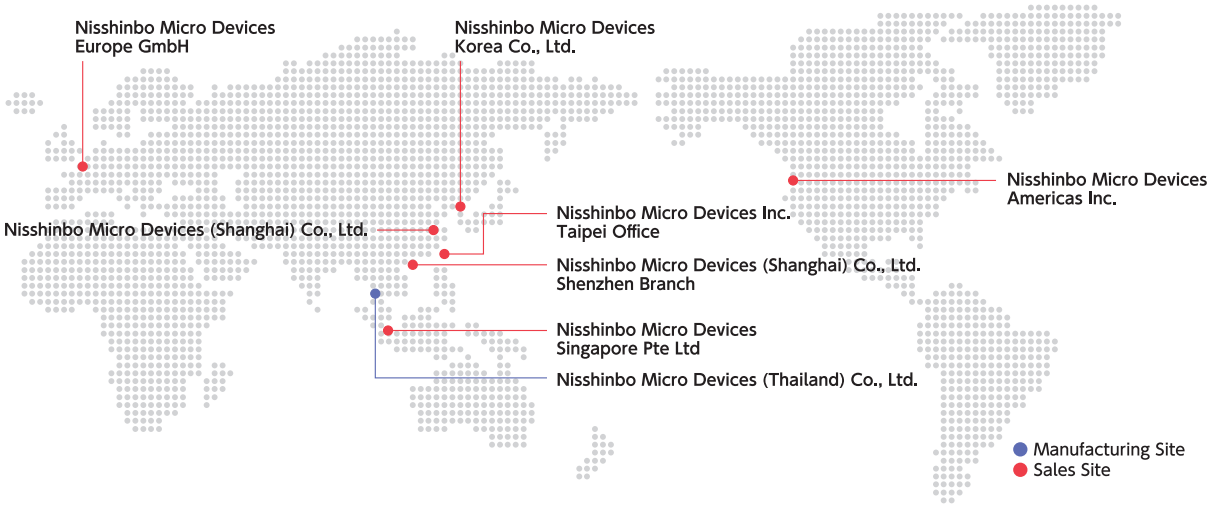

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