

# Electronic Devices For Automotive Selection Guide

2023



## Caution

1. We strive to produce reliable and high quality products. Our products are intended for specific applications and require proper maintenance and handling. To enhance the performance and service of our products, the devices, machinery or equipment into which they are integrated should undergo preventative maintenance and inspection at regularly scheduled intervals. Failure to properly maintain equipment and machinery incorporating these products can result in catastrophic system failures.
2. To ensure the highest levels of reliability, our products must always be properly handled. The introduction of external contaminants (e.g. dust, oil or cosmetics) can result in failures of products.
3. We offer a variety of products intended for particular applications. It is important that you select the proper component for your intended application. You may contact our Sales Office if you are uncertain about the products listed in this catalog.
4. Special care is required in designing devices, machinery or equipment which demand high levels of reliability. This is particularly important when designing critical components or systems whose failure can foreseeably result in situations that could adversely affect health or safety. In designing such critical devices, equipment or machinery, careful consideration should be given to, amongst other things, their safety design, fail-safe design, back-up and redundancy systems, and diffusion design.
5. The products listed in the catalog may not be appropriate for use in certain equipment where reliability is critical or where the products may be subjected to extreme conditions. You should consult our sales office before using the products in any of the following types of equipment.
  - Aerospace Equipment
  - Equipment Used in the Deep sea
  - Power Generator Control Equipment (Nuclear, Steam, Hydraulic)
  - Life Maintenance Medical Equipment
  - Fire Alarm/Intruder Detector
  - Vehicle Control Equipment (airplane, railroad, ship, etc.)
  - Various Safety Equipment
6. Our products have been designed and tested to function within controlled environmental conditions. Do not use products under conditions that deviate from methods or applications specified in this catalog. Failure to employ our products in the proper applications can lead to deterioration, destruction or failure of the products. We shall not be responsible for any bodily injury, fires or accident, property damage or any consequential damages resulting from misuse or misapplication of its products. Products are sold without warranty of any kind, either express or implied, including but not limited to any implied Warranty of merchantability or fitness for a particular purpose.
7. Warning about the handling and disposal of products.  
The following products use which are specified as poisonous chemicals by law. For the prevention of a hazard, do not burn, destroy, or process chemically to make them as gas or powder. When the product is disposed, please follow the related regulation and do not mix this with general industrial waste or household waste.
 

-Products	Contained materials
-GaAs MMICs	Gallium(Ga) and Arsenic(As)
-Photo Reflectors	Gallium(Ga) and Arsenic(As)
-SAW Filters	Nickel (Ni), Cobalt (C)
8. The product specifications and descriptions listed in this catalog are subject to change at any time, without notice.

**NISSHINBO**  
Nisshinbo Micro Devices Inc.



Official Site  
<https://www.nisshinbo-microdevices.co.jp/en/>



Buy/Sample  
<https://www.nisshinbo-microdevices.co.jp/en/buy/>

Inquiry and order ...

## 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/>



Quality Grade .....	P.03
Product Longevity Program .....	P.04
Application Block Diagram for Automotive .....	P.05
Automotive Devices Lineup	
Operational Amplifiers (Op-Amp.) .....	P.09
Comparators .....	P.09
Power Management ICs	
LDO Regulators .....	P.10
LDO Regulators (Tracking Regulators) .....	P.14
DC/DC (Buck Converters / SW.REG.) .....	P.15
DC/DC (Boost Converters / SW.REG.) .....	P.17
Clock IC with SSFM for Switching Regulator .....	P.18
Switching Drivers (Gate Drivers) .....	P.18
Switching Drivers (High-side Switch/Low-side Switch) .....	P.19
PMICs .....	P.19
Voltage Detectors (VD), Watchdog Timers (WDT) .....	P.20
LDD (Laser Diode Driver) .....	P.23
Constant Current LED Driver Controller IC .....	P.23
USB High-side Switch ICs .....	P.23
ASSPs .....	P.23
Motor IC .....	P.23
Audio & Video ICs	
Audio Amplifiers (Power Amplifiers) .....	P.24
Audio Amplifiers (Class D Amplifiers) .....	P.24
Audio Amplifiers (Line Amplifiers) .....	P.24
Audio Amplifiers (Microphone Amplifiers) .....	P.24
Video Amplifiers .....	P.24
RF Devices	
RF Switches .....	P.25
Low Noise Amplifiers (LNAs) .....	P.25
Front-End Modules .....	P.26
SAW Filters .....	P.26
Package Lineup .....	P.27
Index of Part No. ....	P.31
myNISD Information .....	P.33
Nisshinbo Micro Devices Companies .....	P.34

# 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 according 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°C to +125°C		-40°C or -50°C to +125°C -40°C or -50°C to +105°C -40°C or -50°C to +85°C	-40°C to +125°C -40°C to +105°C -40°C to +85°C
Qualification	AEC-Q100 *1		JEDEC *1 * Operating life stress test 2000h	JEDEC *1
QMS	IATF16949		ISO9001	
Screening	High voltage stress	High voltage stress	High voltage stress	High 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 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°C to +125°C -40°C to +105°C		-40°C to +105°C
Qualification	AEC-Q100 *1		JEDEC *1
QMS	IATF16949 Correspond to VDA6.3 *1		ISO9001
Screening	High voltage stress		High voltage stress
Test condition	Room Temperature		Room Temperature

\*1 Please contact us for detailed product information.

## Quality grade of former company products (before December 2021)

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

Principal Purpose	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°C to +125°C	●	●	● (T1)	●	●	●	●			●
	-40°C to +110°C					●					
	-40°C to +105°C			● (T)	●				●		●
	-40°C to +85°C									●	●
Test Condition	High Temperature	●	●	●	●	●	●	●	●	●	●
	Room Temperature	●	●	●	●	●	●	●	●	●	●
	Low Temperature	●	●	●		●	●	●	●	●	
QMS	IATF16949/ Correspond to VDA6.3	IATF16949 *2			IATF16949/ Correspond to VDA6.3 *2	IATF16949 *2					
AEC-Q100	All products	The AEC mark <b>AEC</b> shows applicable products			All products	The AEC mark <b>AEC</b> shows applicable products					

\*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.

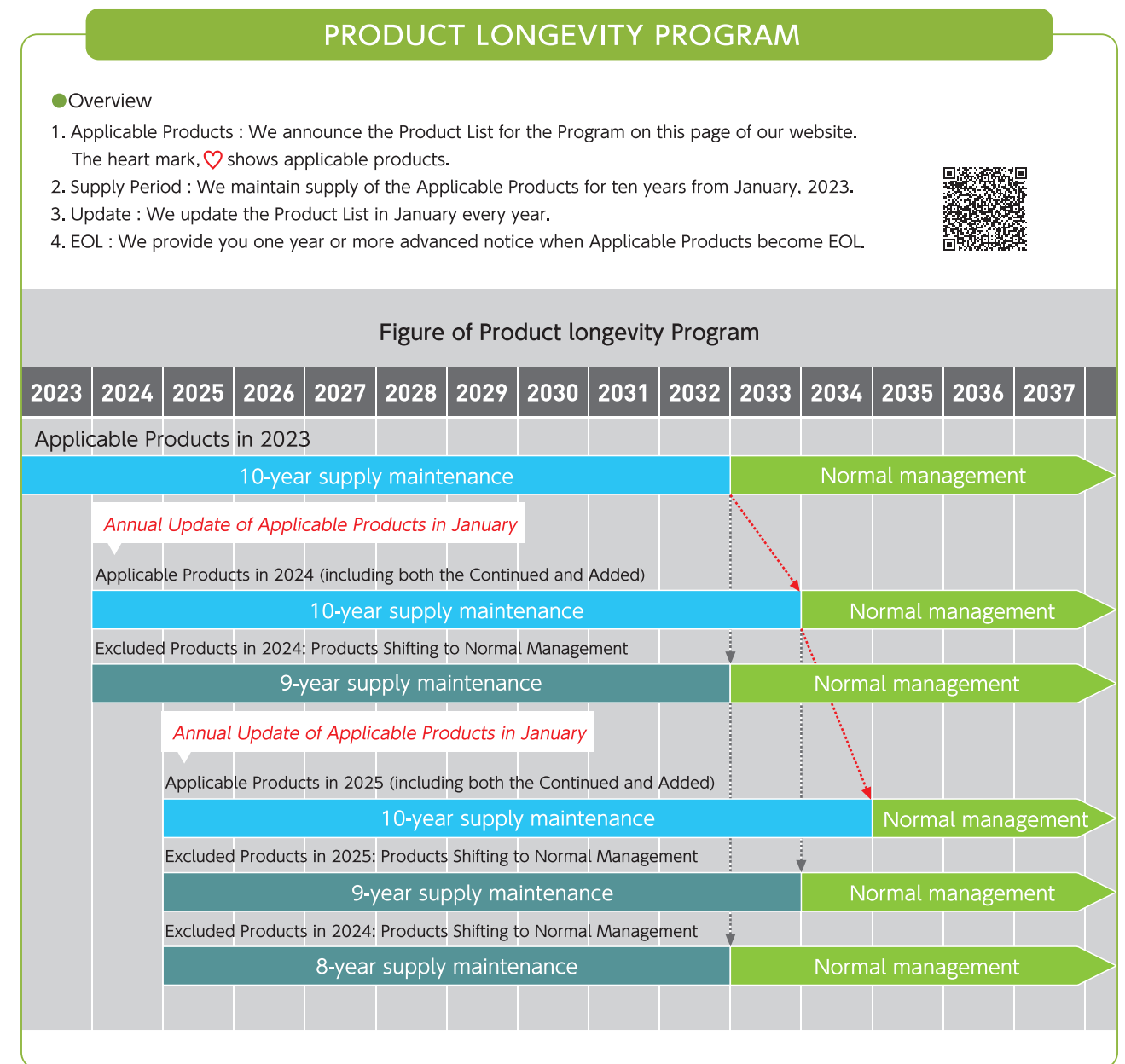
We are operating PLP (Product Longevity Program) to minimize the risk of customers.

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 product 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.

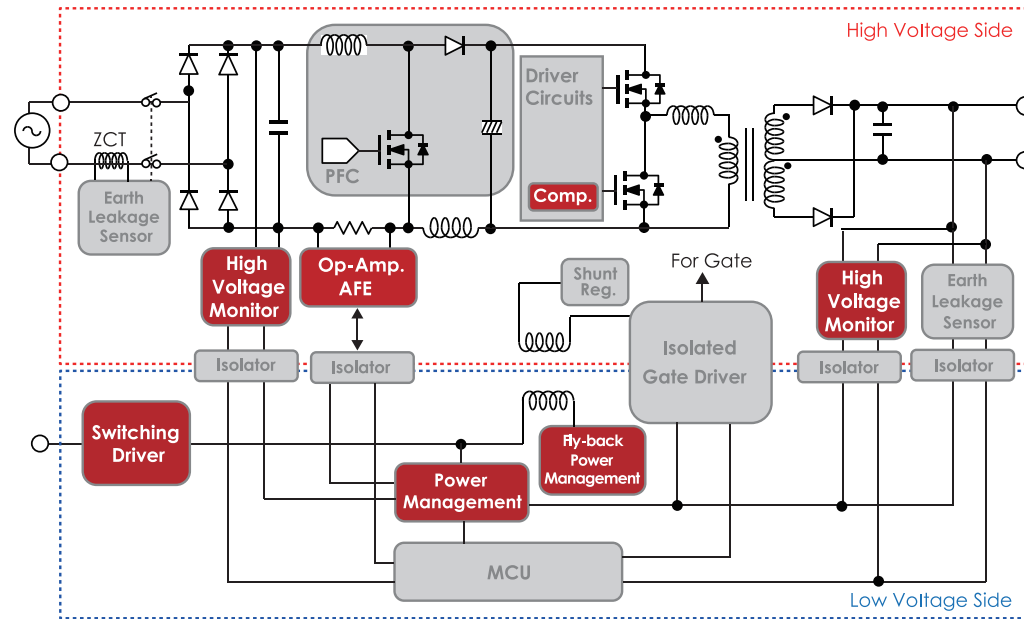


# Application Block Diagram for Automotive

Block diagrams other than this catalog are available on our website "Application Block Diagrams (Automotive)". Please check them.  
<https://www.nisshinbo-microdevices.co.jp/en/applications/automotive/block/>

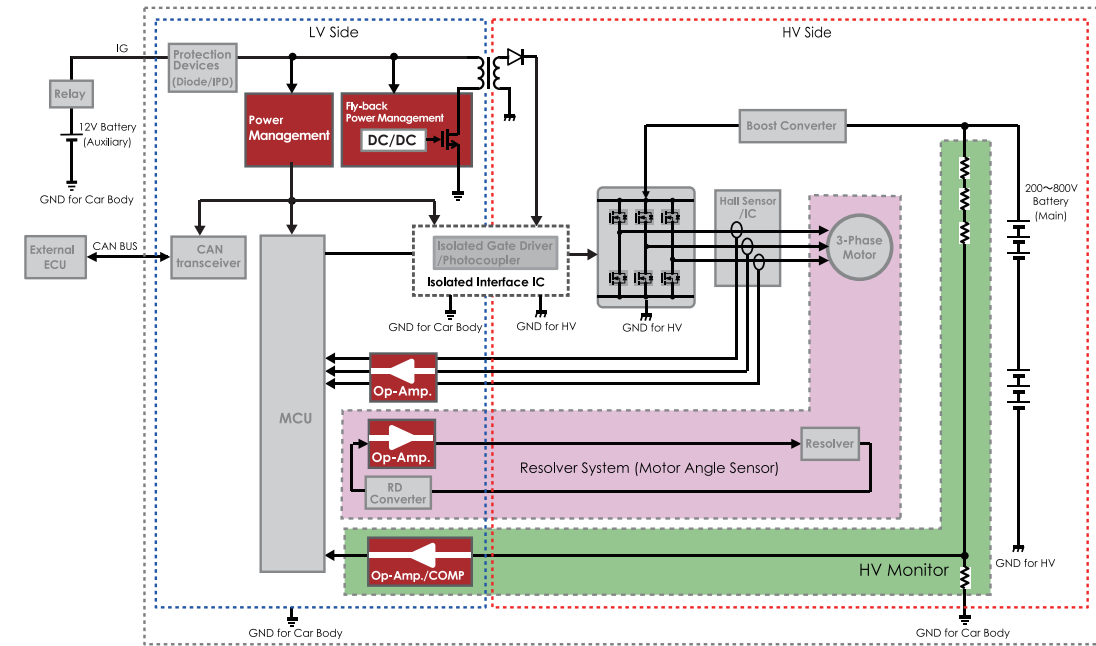


## On Board Chager (OBC)



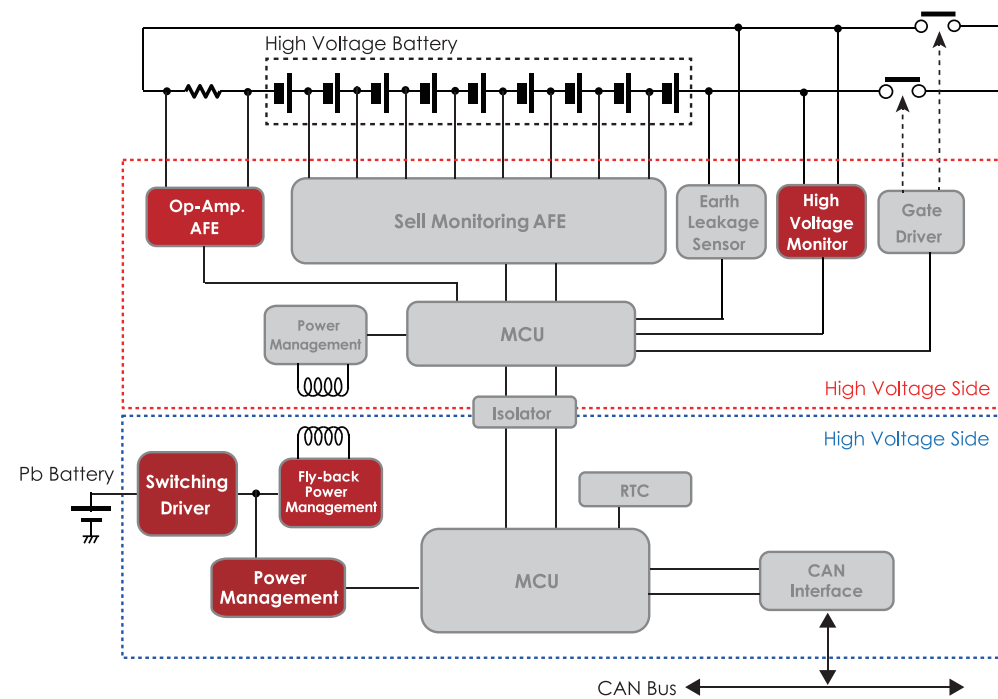
<b>Op-Amp.</b>		
NJM2119		P.09
NJM8208		P.09
<b>High Voltage Monitor</b>		
NJU7890		P.23
<b>Switching Driver</b>		
ND1433 <b>U.D.</b>		P.18
<b>Power Management</b>		
<LDO>		
R8152		P.14
R1513		P.12
<VD/WDT>		
R8356		P.20
<b>Fly-back Power Management</b>		
NJW4140		P.18
NJM2369		P.17

## Inverter



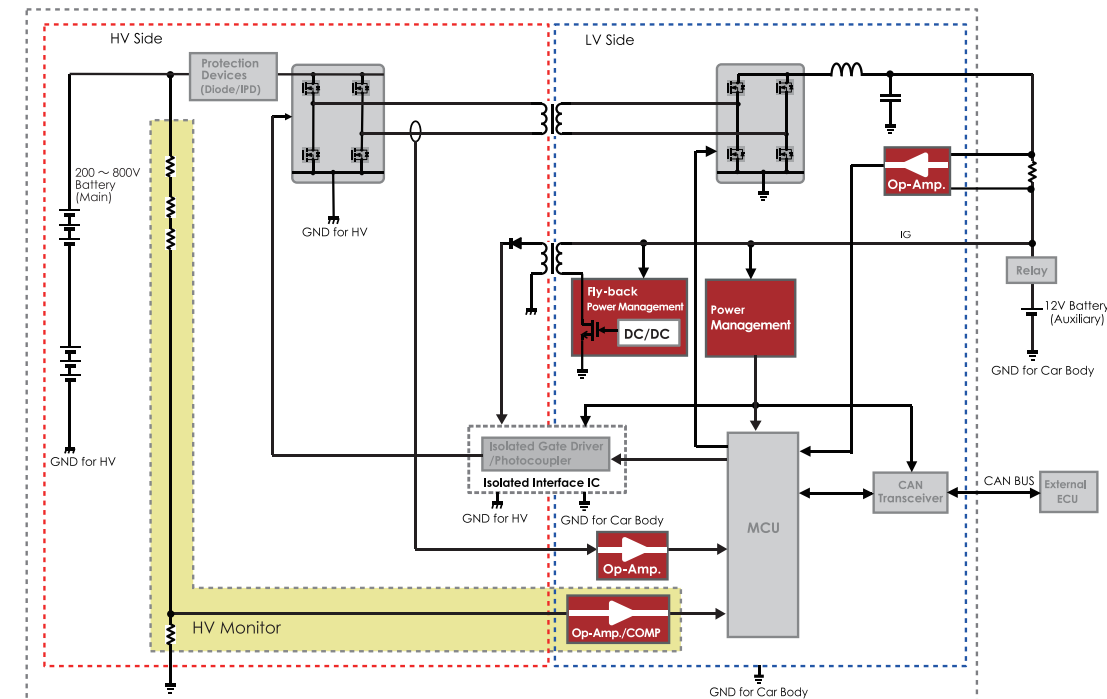
<b>Op-Amp.</b>		
NJM2904B		P.09
NJM8208		P.09
NJU7077		P.09
<b>COMP</b>		
NJM2903		P.09
NJU77242		P.09
<b>Power Management</b>		
<LDO>		
R1525		P.11
R1526		P.12
R1517		P.13
R1518		P.14
<b>Fly-back Power Management</b>		
NJW4140		P.18
NJW4142		P.18

## Battery Management System (BMS)



<b>Op-Amp./AFE</b>		
NJM2904B		P.09
NJM8208		P.09
NJM8532		P.09
NJU7077		P.09
<b>Switching Driver</b>		
ND1433 <b>U.D.</b>		P.18
<b>Power Management</b>		
<DCDC>		
R1271		P.16
<LDO>		
R1517		P.13
R1518		P.14
<Voltage Tracker>		
R1540		P.14
NR4250 <b>U.D.</b>		P.14
NR4254 <b>U.D.</b>		P.14
<VD/WDT>		
R5110		P.12/21
R3152		P.22
R3154		P.22
R3500		P.22
<b>Fly-back Power Management</b>		
NJW4140		P.18
NJW4142		P.18
NJW1871A		P.18
<b>High Voltage Monitor</b>		
NJU7890		P.23

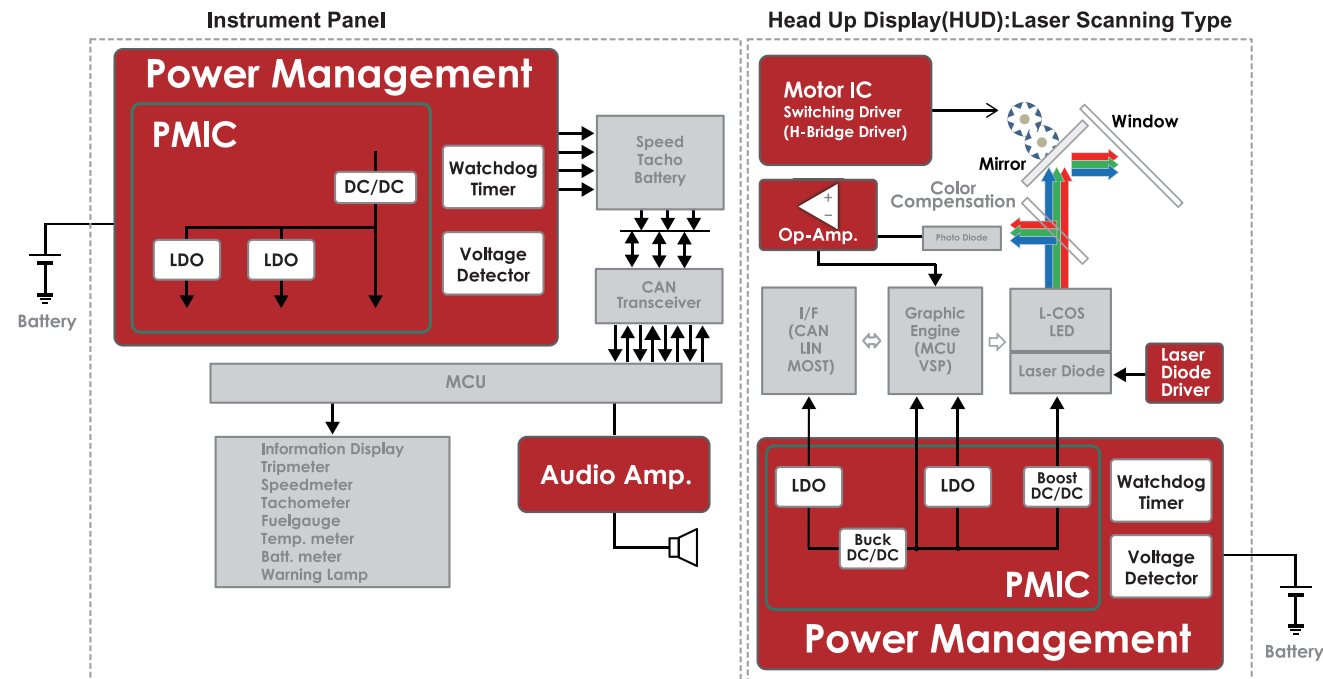
## DC/DC Converter



<b>Op-Amp.</b>		
NJM2904B		P.09
NJM8208		P.09
NJU7077		P.09
<b>COMP</b>		
NJM2903		P.09
NJU77242		P.09
<b>Power Management</b>		
<LDO>		
R1525		P.11
R1526		P.12
R1517		P.13
R1518		P.14
<b>Fly-back Power Management</b>		
NJW4140		P.18
NJW4142		P.18



## Information



### Power Management

<LDO>	
R1525	P.11
R1526	P.12
R1517	P.13
NR1640	P.11
RP170	P.12
RP111	P.12
<DC/DC(Buck)>	
R1271	P.16
R1278	P.16
R1273	P.17
RP550	P.16
RP506	P.16
<DC/DC(Boost)>	
NJW1871A	P.18
NJW4142	P.18
R1294	P.18
<VD/WDT>	
NV3600 <b>U.D.</b>	P.21
NV3601 <b>U.D.</b>	P.21
R3151	P.21
<PMIC>	
NJW4750	P.19
NP8700	P.19
NJW4760	P.19
RN5T569	P.19

### Op-Amp.

NJM8532	P.09
NJU7047	P.09
NJU77552	P.09
NJU77701	P.09

### Laser Diode Driver (LDD)

RN5C750	P.23
---------	------

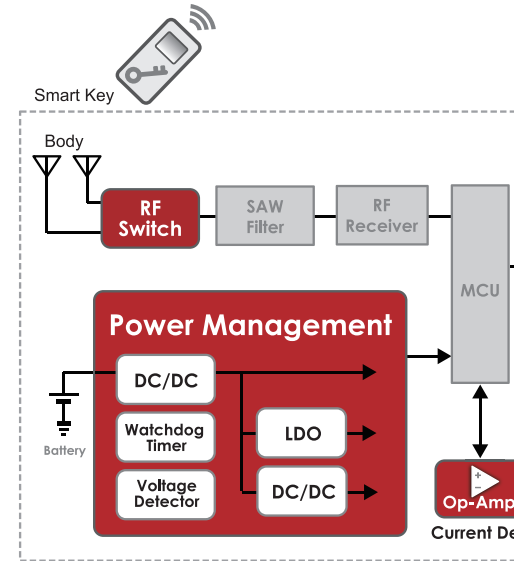
### Audio Amp.

NJU72060	P.24
NJU7089	P.24
NJU8759A	P.24
NA1150 <b>U.D.</b>	P.24

### Motor IC

NJU7367B	P.23
----------	------

## Smart key System



### Power Management

<LDO>	
R1525	P.11
R1526	P.12
R5112	P.11/22
NR1640	P.11
RP170	P.12
<DC/DC(Buck)>	
R1271	P.16
R1276	P.17
RP506	P.16
<VD/WDT>	
R5114	P.11/22
R5115	P.11/22
R5106	P.20
R3118	P.20
R3121	P.21

### Op-Amp.

NJM2904B	P.09
NJU7057	P.09
NJU77552	P.09

### Switching Driver (Gate Driver)

NJW4841	P.18
---------	------

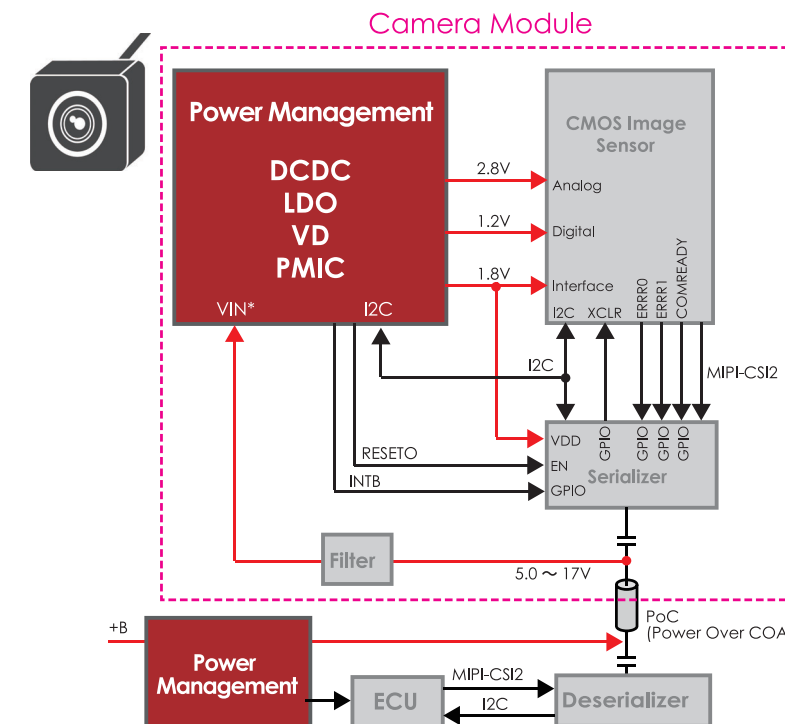
### Switching Driver (High Side Switch/Low Side Switch)

NJW4830	P.19
---------	------

### RF Switch

NJG1801K75	P.25
NJG1801AKGC-A	P.25
NJG1801BKGC-A	P.25
NJG1815K75	P.25
NJG1815AK75-A	P.25
NJG1818K75	P.25

## Camera Module



### Power Management for Camera Module (ADAS Sensing)

<PMIC>	
RN5T5611	P.19
<DCDC>	
R1271	P.16

### Power Management for Camera Module (Viewing)

<PMIC>	
NJW4750	P.19
<DCDC>	
PR550	P.16
<LDO>	
RP154	P.11
NR1640	P.11

### Power Management for PoC

<DCDC>	
R1270	P.16

### Power Management for ECU

<DCDC>	
R1271	P.16
<LDO>	
R1525	P.11
R1526	P.12
<VD/WDT>	
R3152	P.22
R3154	P.22



**U.D.** : Under development **NEW** : New product **AEC** : AEC-Q100 Compliant **AEC** : AEC-Q100 to be Compliant  
**♥** : Products available in PRODUCT LONGEVITY PROGRAM **♥** : 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 [°C]		Automotive Quality Class	Package	Note
			min.	max.	V <sub>IO</sub> [mV]		I <sub>CC</sub> [mA]		SR [V/μs]	min.	max.			
					typ.	max.	typ.	max.						
<b>U.D.</b> MUSES8920A	2	Dual	± 3.5	± 17	0.8	5	9	12	25	-40	125	-	DIP8, SOP8 JEDEC 150mil(EMP8), DFN8-X7(ESON8-X7)	
NJM2119	2	Single	4	36	0.09	0.45	1	1.5	0.3	-40	125	Z	DMP8	
NJM2904B <b>AEC</b>	2	Single	3	36	0.5	3	0.35	0.6	0.4	-40	125	T1, Z2	MSOP8(VSP8)	AEC = T1
NJM8080	2	Dual	± 2	± 18	0.3	3	3	4.5	5	-40	125	-	SSOP8, SOP8, MSOP8(TVSP8)	
NJM8087	2	Dual	± 4	± 16	0.1	0.8	1.3	1.5	20	-40	125	-	SOP9 JEDEC 150mil(EMP8)	
NJM8208 <b>♥</b>	2	Single	3	35	0.15	1	0.45	0.7	0.2	-40	125	Z	MSOP8(VSP8)	
NJM8532 <b>♥</b>	2	Single	1.8	14	1	5	0.29	0.45	0.4	-40	125	T1	MSOP8(VSP8)	
NJM8532 <b>AEC</b> <b>♥</b>	2	Single	1.8	14	1	5	0.29	0.45	0.4	-40	125	Z	MSOP8(VSP8)	
NJU7046 <b>♥</b>	1	Single	2.7	5.5	0.9	5	1.4	2.4	9	-40	125	T1	SOT-23-5	
NJU7047 <b>♥</b>	2	Single	2.7	5.5	0.9	5	1.35	2.25	9	-40	125	T1	MSOP8(TVSP8)	
NJU7057 <b>♥</b>	2	Single	1.8	5.5	0.8	4	0.26	0.42	0.8	-40	125	T1	MSOP8(TVSP8)	
NJU7077 <b>♥</b>	2	Single	2.2	5.5	0.02	0.4	0.6	0.9	0.5	-40	125	Z	MSOP8(VSP8)	
NJU77552 <b>AEC</b> <b>♥</b>	2	Single	2.2	5.5	1	6.5	0.05	0.07	0.8	-40	125	T1	MSOP8(VSP8)	
NJU77701 <b>♥</b>	1	Single	2.4	5.5	0.4	1.8	3.8	4.8	35	-40	125	T1	SOT-23-5	
NJU77572 <b>♥</b>	2	Single	2.7	5.5	0.6	3.5	1.15	2.2	10	-55	125	-	MSOP8(VSP8)	
NJU77582 <b>♥</b>	2	Single	2.7	5.5	0.5	2.5	2.3	3.8	20	-55	125	-	MSOP8(VSP8)	
<b>NEW</b> NL6012 <b>♥</b>	2	Single	2.1	5.5	0.002	0.01	0.015	0.023	0.11	-40	125	-	MSOP8(VSP8)	

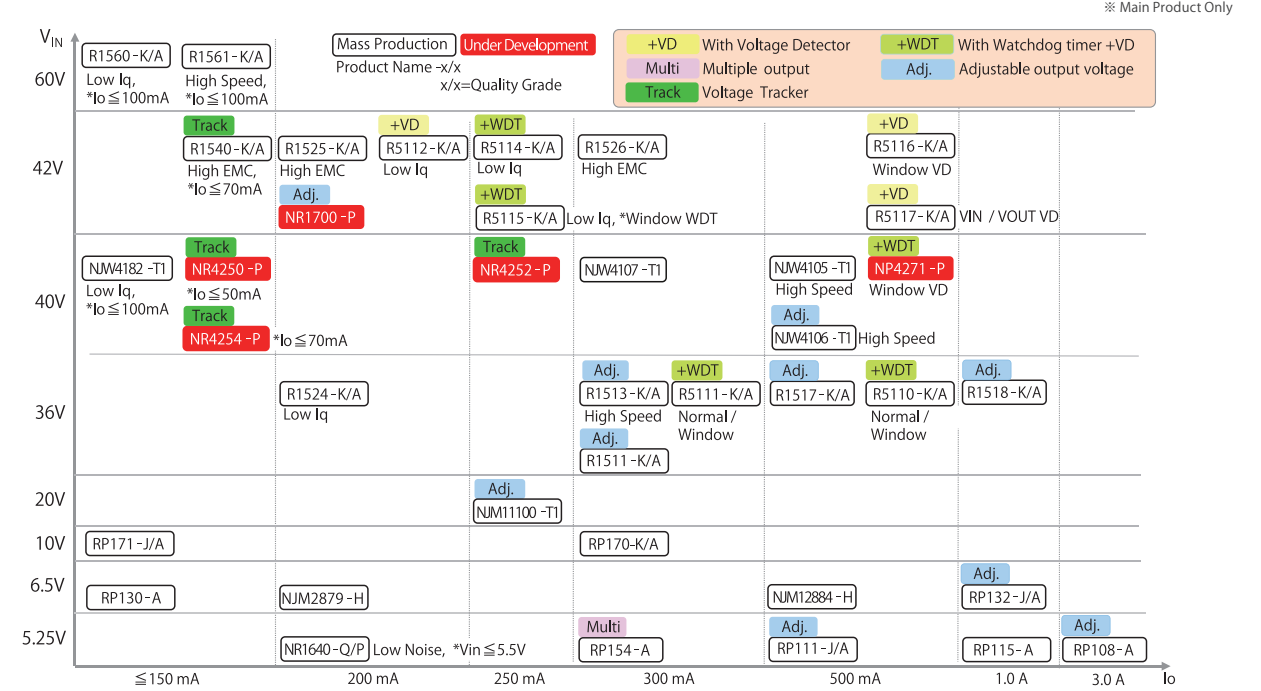
## Comparators

Part No.	No. of Circuit	Power Supply	Supply Voltage [V]		Characteristics					Operating Temp. Range [°C]		Automotive Quality Class	Package	Note
			min.	max.	V <sub>IO</sub> [mV]		I <sub>CC</sub> [mA]		Propagation Delay [μs]	min.	max.			
					typ.	max.	typ.	max.						
NJM2903 <b>♥</b>	2	Single	2	36	2	5	0.2	1.0	1.5	-40	125	Z2	MSOP8(VSP8)	
NJU77242 <b>AEC</b>	2	Single	1.8	5.5	1	7	0.0075	0.0125	1.25	-40	125	Z2	MSOP8(VSP8)	AEC = Z2
NJU77252 <b>♥</b>	2	Single	2.7	5.5	1	7	0.14	0.21	0.042	-40	125	-	MSOP8(VSP8)	

## Power Management ICs

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

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



## 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 Temp. Range [°C]		Automotive Quality Class	Package	Key Features
		min.	max.		min.	max.			Full Temp.	typ.			
<b>R1515</b> <b>AEC</b> <b>♥</b>	50	4	36	50	2	12	± 3.0	9	-40	105	J/A	SOT-89-5 HSOP-6J	Peak : 60V Thermal
<b>R8151</b> <b>AEC</b> <b>♥</b>	50	4	36	50	2	12	± 4.0	9	-40	110	R8	SOT-89-5 HSOP-6J	Peak : 60V Thermal
<b>NJW4182</b> <b>AEC</b>	100	4	40	45	3.3	5	± 3.0	9	-40	125	H	SOT-23-5	Ultra-low current consumption Thermal
<b>NJW4182</b> <b>AEC</b> <b>♥</b>	100	4	40	45	3.3	5	± 3.0	9	-40	125	T1	SOT-23-5	Ultra-low current consumption Thermal
<b>R1560</b> <b>AEC</b> <b>♥</b>	100	5.5	60	80	1.8	14	± 1.5	3	-40	125	K/A	HSOP-6J TO-252-5-P2	Peak : 90V Thermal
<b>R1561</b> <b>AEC</b> <b>♥</b>	100	5.5	60	80	1.8	14	± 1.5	20	-40	125	K/A	HSOP-6J TO-252-5-P2	Peak : 90V Thermal
<b>R1180</b> <b>AEC</b> <b>♥</b>	150	1.7	6	6.5	1.2	3.6	± 2.0 (Ta = 25°C)	1	-40	85	H/A	SOT-23-5	Ultra-low current consumption
<b>R1114</b> <b>♥</b> 2029	150	2	6	6.5	1.5	4	± 2.0 (Ta = 25°C)	75	-40	85	A	SOT-23-5	Ripple : 70dB Discharge : Ver. D
<b>R1163</b> <b>♥</b> 2029	150	2	6	6.5	1.5	5	± 1.5 (Ta = 25°C)	6	-40	85	A	SOT-23-5	Ripple : 70dB Reverse : Manual 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 <sup>*1</sup> [V]		Output Voltage Accuracy [%]	Supply Current [μA]	Operating Temp. Range [°C]		Automotive Quality Class	Package	Key Features	
		min.	max.		min.	max.			min.	max.				
RP130	AEC	150	1.7	6.5	7	1.2	5	± 1.5	38	-40	105	A	DFN1212-4 SOT-23-5	Ripple : 80dB Discharge : Ver. D
RP171	AEC	150	2.6	10	12	1.2	6	-3.5 to 3	23	-40	105	A	SOT-23-5	Ripple : 70dB Thermal : Constant Discharge : Ver. D
R1150	AEC	150	-	24	26	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°C)	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	36	50	2	12	± 3.0	9	-40	105	J/A	SOT-89-5 HSOP-6J	Peak : 60V Thermal
R8150	AEC	150	4	36	50	2	12	± 4.0 (Ta=-40 to 110°C)	9	-40	125	R8	HSOP-6J	Peak : 60V Thermal
R1516	AEC	150	4	36	50	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	1.5	5	± 2.0	150	-40	125	H	SOT-23-5	Discharge : Thermal Reverse
R1524	AEC	200	3.5	36	50	1.8	12	± 1.6	2.2	-40	125	K/A	SOT-23-5 SOT-89-5 HSOP-6J HSOP-8E	Peak : 60V Thermal
R8160	AEC	200	3.5	36	50	3.3	9	± 1.6	2.2	-40	125	R8	SOT-23-5 SOT-89-5 HSOP-6J	Peak : 60V Thermal
NJW4104	AEC	200	4	40	45	3.3	5	± 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	50	1.8	12	± 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	50	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
<b>U.D.</b> NR1700	AEC	200	3.5	42	50	1.2 (Adj)	24 (Adj)	± 1.8	12	-40	125	P	SOT-23-5-DC SOT-89-5-DM	Peak : 60V Thermal
NJM11100	AEC	240	2.1	18	20	1.3	17	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	50	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	50	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
RP154	AEC	300	1.4	5.25	6	0.8	3.7	± 3.0	50	-40	105	A	DFN2020-8 SOT-23-6	2ch. Ripple : 75dB Discharge : Ver. B

\*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 <sup>*1</sup> [V]		Output Voltage Accuracy [%]	Supply Current [μA]	Operating Temp. Range [°C]		Automotive Quality Class	Package	Key Features	
		min.	max.		min.	max.			min.	max.				
R1130	2029	300	2.5	8	9	1.5(Fix) 1.8(Adj)	5.0(Fix) 5.0(Adj)	± 2.0(Fix) ± 36mV(Adj) (Ta=25°C)	50	-40	85	H	SOT-89-5	Absolute Max. Ratings : IOUT=450mA
RP170	AEC	300	2.6	10	12	1.2	6	± 3.0	23	-40	A: 105 K: 125	K/A	SOT-23-5 SOT-89-5	Ripple : 70dB Thermal : Constant Discharge : Ver. D
R1191	AEC	300	3.5	16	18	2	15	± 2.5	6	-40	85	A	SOT-23-5 SOT-89-5	Ripple : 70dB Thermal : Reverse : Manual Discharge : Ver. D
R1513	AEC	300	3.5	36	50	1.2(Fix) 1.2(Adj)	5(Fix) 18(Adj)	1.0	75	-40	125	K/A	HSOP-6J	Ripple : 70dB(f=100Hz) Peak : 60V Thermal Discharge : Ver. D
R8156	AEC	300	3.5	36	50	1.2(Fix) 1.2(Adj)	5(Fix) 18(Adj)	± 1.0	75	-40	125	R8	HSOP-8E	Ripple : 70dB(f=100Hz) Peak : 60V Thermal Discharge : Ver. D
R1510		300	3.5	36	50	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	50	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	300	3.5	36	50	3(Fix) 3(Adj)	9(Fix) 12(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	50	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	40	45	3.3	5	± 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	50	1.8	9	± 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	0.7(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	1.5	5	± 2.0	200	-40	125	H	DFN8-WA(ESON8-WA)	Discharge : Thermal Soft-Start : Reverse
R1500	AEC	500	4	24	36	3	12	± 3.5	70	-40	105	J/A	SOT-89-5	Thermal
R5110	AEC	500	3.5	36	50	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

\*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 <sup>*1</sup> [V]		Output Voltage Accuracy [%] Full Temp.	Supply Current [μA] typ.	Operating Temp. Range [°C]		Auto-motive Quality Class	Package	Key Features
		min.	max.		min.	max.			min.	max.			
<b>R8360</b>	500	3.5	36	50	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
<b>R1517</b>	500	3.5	36	50	2.5(Fix) 2.5(Adj)	9(Fix) 20(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
<b>R8154</b>	500	3.5	36	50	2.5(Fix) 2.5(Adj)	9(Fix) 12(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
<b>NJW4116</b>	500	4	40	45	3.3	5	± 2.0	55	-40	125	T1/Z2	TO-252-5-L3	with Reset Function Thermal
<b>NJW4105</b>	500	4	40	45	3.3	8	± 1.5	65	-40	125	T1	TO-252-5-L5	Fast Transient Response Output voltage accuracy includes regulation Thermal
<b>NJW4106</b>	500	4	40	45	2.5	16	± 2.0(Adj)	65	-40	125	T1	TO-252-5-L5	Fast Transient Response Adjustable Type Output voltage accuracy includes regulation Thermal
<b>U.D.</b> <b>NP4271</b>	500	4	40	45	3.3	5	± 2.0	120	-40	125	P	HSOP-8-AC	WDT Thermal Built-in Window VD
<b>R5116</b>	500	3.5	42	50	3.3 UD: 2.5 OV: 3.3	5.0 UD: 5.0 OV: 5.5	-1.25 to 0.75 UD: -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
<b>R5117</b>	500	3.5	42	50	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
<b>R1170</b>	800	2.1	6	7	1.5	5	± 2.0 (Ta=25°C)	80	-40	85	H/A	SOT-89-5	Thermal
<b>RP115</b>	500 1000	1.4	5.25	6	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/°C Ripple : 75dB, 80dB (VSET ≤ 1.8V) Thermal : Reverse Reverse : Inrush Discharge : Ver. D
<b>R1172</b>	1000	1.4	6	6.5	0.8	5	± 2.0 (Ta=25°C)	60	-40	85	H/A	SOT-23-5 SOT-89-5 HSOP-6J	Ripple : 70dB Thermal : Inrush Discharge : Ver. D
<b>RP132</b>	1000	1.4	6.5	7	0.8(Fix) 0.8(Adj)	5(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

\*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 <sup>*1</sup> [V]		Output Voltage Accuracy [%] Full Temp.	Supply Current [μA] typ.	Operating Temp. Range [°C]		Auto-motive Quality Class	Package	Key Features
		min.	max.		min.	max.			min.	max.			
<b>R1190</b>	1000	3.5	16	18	2	12	± 2.7	150	-40	85	A	HSOP-6J TO-252-5-P2	AEC-Q100 : HSOP-6J Inrush : Adjustable Thermal : Discharge : Ver. D
<b>R1501</b>	1000	3	24	36	3	18	± 3.5	70	-40	105	J/A	HSOP-6J TO-252-5-P2	Thermal
<b>R8152</b>	1000	3	24	36	3	18	± 4.0 (Ta=-40 to 110°C)	70	-40	125	R8	HSOP-6J TO-252-5-P2	Thermal
<b>R1518</b>	1000	3.5	36	50	2.5(Fix) 0.8(Adj)	9(Fix) 20(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
<b>R8155</b>	1000	3.5	36	50	2.5(Fix) 2.5(Adj)	9(Fix) 12(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
<b>R1171</b>	1500	2.1	6	7	1.5	5	± 2.0	130	-40	85	A	HSOP-6J	Thermal
<b>NJM2815</b>	1500	5.5	8	10	5.1	5.15	± 1.0	980	-40	85	-	HSOP8-M1	Built-in Output Voltage Thermal
<b>NJM2816</b>	1800	5.5	8	10	5.1	5.15	± 1.0	1150	-40	85	-	HSOP8-M1	Built-in Output Voltage Thermal
<b>RP108</b>	3000	1.6	5.25	6	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 <sup>*1</sup> [V]		Output Voltage Accuracy [mV] Full Temp.	Supply Current [μA] typ.	Operating Temp. Range [°C]		Auto-motive Quality Class	Package	Key Features
		min.	max.		min.	max.			min.	max.			
<b>U.D.</b> <b>NR4250</b>	50	4	40	45	2.5	36	± 10	40	-40	125	P	SOT-23-5-DC	Foldback Protection Circuit Ripple : 80dB (f=100Hz) Thermal
<b>U.D.</b> <b>NR4254</b>	70	4	40	45	2.5	36	± 10	40	-40	125	P	SOT-89-5-DF	Foldback Protection Circuit Ripple : 80dB (f=100Hz) Thermal
<b>R1540</b>	70	3.5	42	50	2.2	14	± 15	60	-40	125	K/A	SOT-23-5 HSOP-8E	Foldback Protection Circuit Ripple : 80dB (f=100Hz) Thermal : High Immunity
<b>U.D.</b> <b>NR4252</b>	250	4	40	45	1.5	36	± 10	45	-40	125	P	SOT-89-5-DF	Foldback Protection Circuit Ripple : 80dB (f=100Hz) Thermal

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

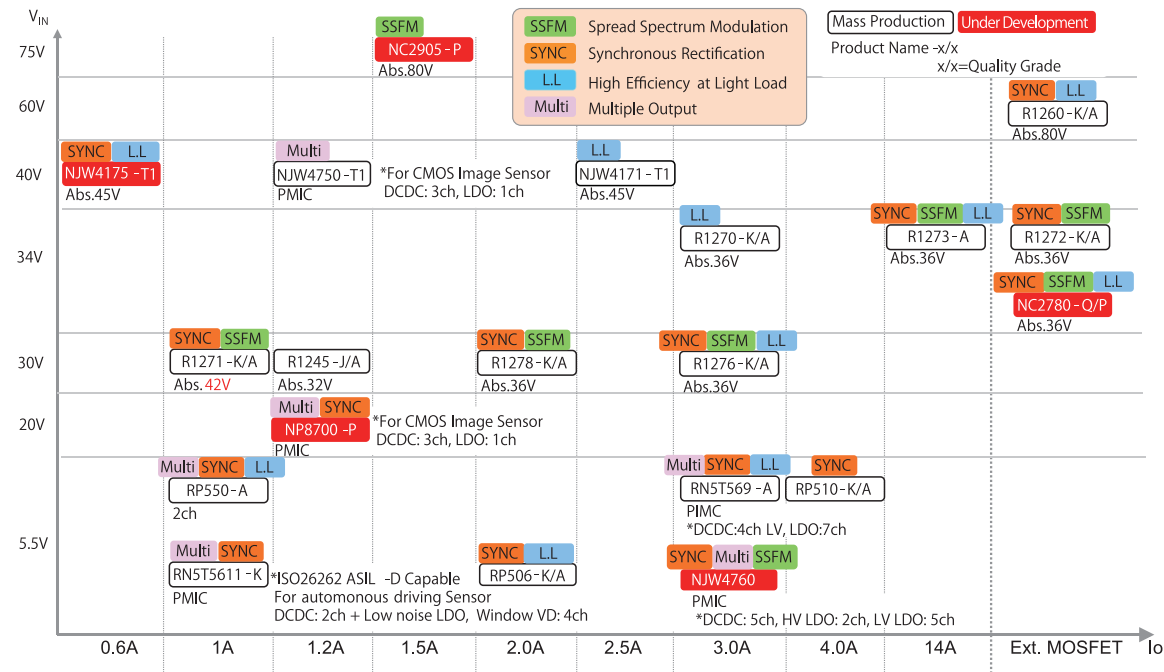




Power Management ICs

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

※ Main Product Only



DC/DC (Buck Converters / SW.REG.)

Part No.	Output Current [mA]	Input Voltage Range [V]		Absolute Max. Ratings [mA]	Output Voltage Range [V]		SW. Device	Rectification	SW. Control	Oscillation Frequency [kHz]		Maximum Duty [%]	External Clock Synchronization	Operating Temp. Range [°C]		Automotive Quality Class	Package	Key Features
		min.	max.		min.	max.				min.	max.			min.	max.			
R1272	AEC	4.0	34	36	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 : Adjustable UVLO : OVP Thermal SSCG : Ver. 03x/ 13x PG Phase : Ext.
U.D. NC2780		4.0	34	36	0.7 (Adj)	5.3 (Adj)	Controller	Synchronous Rectification	Forced PWM PWM/VFM	250	1000	-	Yes	-40	125	Q/P	HSOP-18-AK	Protection Circuit Type : Latch type or Hiccup type Tracking function Soft-Start : Adjustable UVLO : OVP Thermal SSCG : Ver. A/C PG Phase : Ext.
R1260	AEC	5.0	60	80	1 (Adj)	16 (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 : Adjustable UVLO : Thermal SSCG : Ver. xxxB/D PG Phase : Ext.
NJW4152-BA		4.4	40	45	0.8	38	Built-in MOS-FET	Diode Rectification	PWM	300	1000	100	-	-40	125	Z	MSOP8 (VSP8)	Pulse-by-pulse current limit circuit Thermal Soft-Start UVLO Phase : Ext.

Part No.	Output Current [mA]	Input Voltage Range [V]		Absolute Max. Ratings [mA]	Output Voltage Range [V]		SW. Device	Rectification	SW. Control	Oscillation Frequency [kHz]		Maximum Duty [%]	External Clock Synchronization	Operating Temp. Range [°C]		Automotive Quality Class	Package	Key Features
		min.	max.		min.	max.				min.	max.			min.	max.			
U.D. NJW4175		3.4	40	45	0.8	26	Built-in MOS-FET	Synchronous Rectification	PWM/PFM	2100 (Fix)	100	100	Yes	-40	125	T1	HSOP8-M1	Light Load Mode Protection Circuit Type : Hiccup type Soft-Start Phase : Int. PG
RP550	AEC	2.3	4.5 or 5.5	6.5	0.6 (Adj)	3.3 (Adj)	Built-in MOS-FET	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	3.6	30	42	3.3 (Fix) 5.0 (Fix)		Built-in MOS-FET	Synchronous Rectification	Forced PWM	2000 (Fix)	-	-	-	-40	125	K/A	DFN3030-12B HSOP-18	Protection Circuit Type : Latch type or Hiccup type PLP : HSOP-18 Soft-Start : Adjustable UVLO : OVLO Thermal SSCG : Ver. xx1C/D PG
R1245	AEC	4.5	30	32	0.8 (Adj)	27.3 (Adj)	Built-in MOS-FET	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	4.0	75	80	TBD	TBD	Built-in MOS-FET	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.
R1270	AEC	3.6	34	36	0.8 (Adj)	31.6 (Adj)	Built-in MOS-FET	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.
R1278	AEC	3.6	30	36	3.3 (Adj)	5.0 (Adj)	Built-in MOS-FET	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.
RP506	AEC	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 MOS-FET	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
NJW4119		6.5	40	45	5.1	5.185	Built-in MOS-FET	Diode Rectification	PWM	300 (Fix)	92	Yes	Yes	-40	125	-	HTSSOP 24-P1	USB Power Supply Protection Circuit Type : Hiccup type Thermal Soft-Start UVLO Phase : Ext. PG



**Power Management ICs**

**DC/DC (Buck Converters / SW.REG.)**

Part No.	Output Current [mA]	Input Voltage Range [V]		Absolute Max. Ratings [mA]	Output Voltage Range [V]		SW. Device	Rectification	SW. Control	Oscillation Frequency [kHz]		Maximum Duty [%]	External Clock Synchronization	Operating Temp. Range [°C]		Automotive Quality Class	Package	Key Features
		min.	max.		min.	max.				min.	max.			min.	max.			
<b>NJW4171</b>	2500	3.4	40	45	0.8	38	Built-in MOS-FET	Diode Rectification	PWM/PFM(A) PWM(B)	100	2400	100	Yes	-40	125	T1	HSOP8-M1	Light Load Mode(A ver.) External Clock Synchronization Protection Circuit Type: Hiccup type Thermal Soft-Start UVLO Phase : Ext. PG
<b>R1276</b>	3000	3.6	30	36	0.7 (Adj)	6.5 (Adj)	Built-in MOS-FET	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 OVP Thermal SSCG : Ver. 00xC PG Phase : Ext.
<b>NJW4110</b>	3000	2.7	5.5	7.0	0.6	5.0	Built-in MOS-FET	Synchronous Rectification	PWM	100	2400	100	Yes	-40	125	T1	EQFN24-LE	Light Load Mode Protection Circuit Type: Hiccup type Soft-Start : Ext. Adjustable UVLO Thermal PG
<b>NJW4154</b>	3000	4.5	40	45	0.8	35.2	Built-in MOS-FET	Diode Rectification	PWM	300 (External Clock Synchronization)		88	Yes	-40	125	T1	HSOP8-M1	Protection Circuit Type: Hiccup type Thermal Soft-Start UVLO Phase : Int. PG
<b>RP510</b>	4000	2.5	5.5	6.5	0.8 (Fix/Adj)	3.3 (Fix/Adj)	Built-in MOS-FET	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
<b>R1273</b>	14000	4.0	34	36	0.7 (Adj)	5.3 (Adj)	Built-in MOS-FET	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 (Boost Converters / SW.REG.)**

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 Temp. Range [°C]		Automotive Quality Class	Package	Key Features
		min.	max.		min.	max.			min.	max.			min.	max.			
<b>R1211</b>	-	2.5	6	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 Phase : Int. with standby. Diode Soft-Start UVLO	
<b>NJW2369</b>	-	3.6	32	36	3.6	-	Controller	PWM	5	350	-	-	-40	85	-	DIP8, DMP8, SOP8 JEDEC 150mil (EMP8), SSOP8	MOSFET Driver Protection Circuit Type: Latch type Soft-Start : Ext. Adjustable Diode UVLO Diode

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 Temp. Range [°C]		Automotive Quality Class	Package	Key Features
		min.	max.		min.	max.			min.	max.			min.	max.			
<b>NJW4140</b>	-	3.0	40	45	3.0	-	Controller	PWM	40	1000	85	-	-40	125	Z2, T1	MSOP8 (VSP8)	Available for Fly-back AEC=Z2 Pulse-by-pulse current limit circuit Soft-Start UVLO Diode
<b>NJW1871</b>	-	2.5	40	45	2.5	-	Controller	PWM	50	1000	87	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
<b>NJW4142</b>	-	2.5	40	45	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
<b>NJW1871A</b>	-	4.5 (TBD)	40	45	4.5 (TBD)	-	Controller	PWM	1000	2000 (TBD)	(TBD)	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
<b>NJW4132</b>	1.75	4.55	40	45	4.55	38	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
<b>R1290</b>	2	2	5.5	6.5	Up to 20 Adjustable		Built-in MOS-FET	PWM	180	1400	91	Yes	-40	105	A	QFN0404-24	for LCD/CCD/OLED +CP : 1/4th operating frequency Diode Sequencing Soft-Start : Adjustable UVLO
<b>R1294</b>	2	2	5.5	6.5	Up to 20 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 Diode Sequencing Soft-Start : Ext. Adjustable UVLO
<b>NJW4133</b>	5.0	3.0	40	45	3.0	38	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

**Clock IC with SSFM for Switching Regulator**

Part No.	Operating Voltage Range [V]		Absolute Max. Ratings [V]	Clock Frequency [kHz]		Frequency Spreading [%]		Operating Temp. Range [°C]		Automotive Quality Class	Package
	min.	max.		min.	max.	typ.	max.	min.	max.		
<b>NJW4203</b>	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 Temp. Range [°C]		Automotive Quality Class	Features	Function	Package
	min.	max.						min.	max.				
<b>NJW4841</b>	4.0	20	40	2.0	2.0	25	20	-40	125	T1	Built-in Thermal Shut Down Under Voltage Lockout	Low-side Nch. Gate Driver	MSOP8 (VSP8)
<b>NJW4868</b>	4.0	5.5	7.0	1.3	1.3	10	10	-40	125	T1	Built-in Current and Voltage detection circuit Built-in Voltage detection resistors	Low-side Nch. Gate Driver	MSOP8 (VSP8)
<b>ND1433</b>	4.0	45	50	0.002	-	-	-	-40	125	P	Built-in Charge Pump Power Supply anomaly detection (UVLO/OVP/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 [ $\mu$ A]	Input Current [ $\mu$ A]	Drain Current [A]	On-Resistance [ $\Omega$ ]	Operating Temp. Range [°C]		Automotive Quality Class	Function	Package
	Drain-Source Voltage	Input Voltage		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

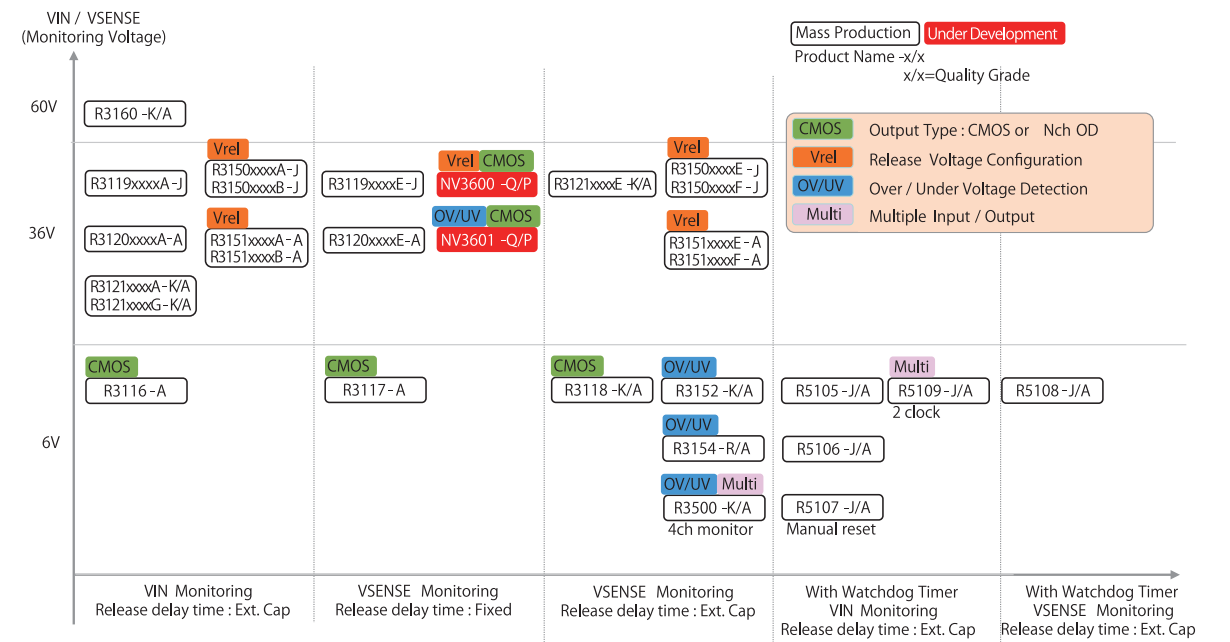
PMICs

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 Temp. Range [°C]		Automotive Quality Class	Package	Key Features	
			min.	max.			min.	max.	Room Temp.	Full Temp.	min.	max.		min.	max.				
RN5T569	11	LV Buck	2.7	5.5	6.0	3.0	0.6	3.5	-	$\pm$ 2.0	2000 (Fix)	-	-	-40	105	A	QFN0707-48-P27	OTP, I <sup>2</sup> C, Sequence Interface, Dynamic Voltage Scaling, Watchdog Timer	
		LV Buck	2.7	5.5	6.0	3.0	0.6	3.5	-	$\pm$ 2.0									
		LV Buck	2.7	5.5	6.0	2.0	0.6	3.5	-	$\pm$ 2.0									
		LV Buck	2.7	5.5	6.0	2.0	0.6	3.5	-	$\pm$ 2.0									
		LV LDO	2.7	5.5	6.0	0.3	0.9	3.5	-	$\pm$ 2.0	-	-	-	-	-	-	-		
		LV LDO	2.7	5.5	6.0	0.3	0.9	3.5	-	$\pm$ 2.0									
		LV LDO	2.7	5.5	6.0	0.3	0.6	3.5	-	$\pm$ 2.0									
		LV LDO	2.7	5.5	6.0	0.2	0.9	3.5	-	$\pm$ 2.0									
		LV LDO	2.7	5.5	6.0	0.2	0.9	3.5	-	$\pm$ 2.0									
		LV LDO	2.7	5.5	6.0	0.03	1.2	3.5	-	$\pm$ 2.0									
LV LDO	2.7	5.5	6.0	0.01	0.9	3.5	-	$\pm$ 2.0											
NEW RN5T5611	3	LV Buck	3.0	5.5	6.5	1.0	1.0	3.3	-	$\pm$ 1.0	2300 (Fix)	-	-	-40	125	K	QFN0505-32-P7 (Wettable Flank)	OTP, I <sup>2</sup> C, Sequence Interface, 4ch. Window Voltage Detector, Analog Built-In Self Test, Logic Built-In Self Test	
		LV Buck	3.0	5.5	6.5	1.0	1.0	3.3	-	$\pm$ 1.0									
		LV LDO	3.0	5.5	6.5	0.2	2.5	3.3	-	$\pm$ 1.0									
U.D. NP8700	4	HV Buck	3.9	20	22	1.2	2.5	5.0	$\pm$ 1.0	$\pm$ 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	4	HV Buck	3.9	40	45	1.2	2.5	5.5	$\pm$ 1.0	$\pm$ 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											
U.D. NJW4760	12	HV LDO	4.5	40	45	0.05	3.3(Fix)	$\pm$ 1.5	TBD	400	2000	-	-	-40	125	-	EQFN48-SN	OTP, I <sup>2</sup> C, 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
		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	3.0	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 (VD) and Watchdog Timers (WDT) Supervisor Features

※ Main Product Only



Voltage Detectors (VD), Watchdog Timers (WDT)

Part No.	Operating Voltage Range [V]		Absolute Max. Ratings [V]	Output Voltage Range [V]		Detector Threshold Accuracy [%]	Re-release Delay Time	LDO	WDT	Supply Current [ $\mu$ A]	Operating Temp. Range [°C]		Automotive Quality Class	Package	Key Features
	min.	max.		min.	max.						Full Temp.	typ.			
R3116	0.5	6	7	0.7	5	$\pm$ 1.5	Adjustable	-	-	0.35	-40	105	A	DFN1212-4 SOT-23-5	
R3134	0.75	6	6.5	1	5	$\pm$ 1.8 (Ta=25°C)	Fix	-	-	0.8	-40	85	A	SOT-23-6	without Hysteresis Type
R5105	0.9	6	7	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	0.9	6	7	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	0.9	6	7	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	0.9	6	7	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	0.9	6	7	1.5	5.5	-2.8 to 1.5	Adjustable	-	Yes	11	-40	125	R8	SOT-23-6	Timeout WDT
R8356	0.9	6	7	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	0.9	6	7	1.5	5.5	-2.8 to 1.5	Adjustable	-	Yes	11	-40	125	R8	SSOP-8G	Timeout WDT MR Pin (Manual Reset)
R8359	0.9	6	7	1.5	5.5	-2.8 to 1.5	Adjustable	-	Yes	11.5	-40	125	R8	SSOP-8G	Timeout WDT 2 clock input type
R3117	1.0	6	7	0.7	5	$\pm$ 2.0	Adjustable	-	-	0.29	-40	105	A	SOT-23-5	Normal type SENSE Pin Detection Type
R3118	1	6	7	0.6	5	$\pm$ 2.5	Adjustable	-	-	0.4	-40	A: 85 K: 125	K/A	SOT-23-6	SENSE Pin Detection Type



Power Management ICs

Voltage Detectors (VD), Watchdog Timers (WDT)

Part No.	Operating Voltage Range [V]		Absolute Max. Ratings [V]	Output Voltage Range [V]		Detector Threshold Accuracy [%] Full Temp.	Re-lease Delay Time	LDO	WDT	Supply Current [ $\mu$ A]	Operating Temp. Range [°C]		Auto-motive Quality Class	Package	Key Features
	min.	max.		min.	max.						typ.	min.			
R5108	1.5	6	7	1.5	5.5	-2.8 to 1.5	Ad-justable	-	Yes	11	-40	J: 105 A: 125	J/A	SSOP-8G	Timeout WDT SENSE Pin Detection Type
R8358	1.5	6	7	1.5	5.5	-2.8 to 1.5	Ad-justable	-	Yes	11	-40	125	R8	SSOP-8G	Timeout WDT SENSE Pin Detection Type
R3119xxxxE	2.1	6	7	2.3	12	-3 to 2	-	-	-	3.3	-40	105	J	SOT-23-5	SENSE Pin Detection Type
R3120xxxxE	2.1	6	7	2.3	12	-3 to 2	-	-	-	3.3	-40	105	A	SOT-23-5	SENSE Pin Detection Type
R3121xxxxE	2.4	6	7	3	12	-2.2 to 2.5	Ad-justable	-	-	3.5	-40	125	K/A	SOT-23-6	SENSE Pin Detection Type
R8300xxxxE	2.4	6	7	3	12	-2.2 to 2.5	Ad-justable	-	-	3.5	-40	125	R8	SOT-23-6	SENSE Pin Detection Type
R3150xxxxE/F	3.6	6	7	5	10	$\pm$ 2	Ad-justable	-	-	3.5	-40	105	J	SOT-23-6	Detect and Release Delay Function SENSE Pin Detection Type
R3151xxxxE/F	3.6	6	7	5	10	$\pm$ 2	Ad-justable	-	-	3.5	-40	105	A	SOT-23-6	Detect and Release Delay Function SENSE Pin Detection Type
R8315xxxxE/F	3.6	6	7	5	10	$\pm$ 2	Ad-justable	-	-	3.5	-40	125	R8	SOT-23-6	Detect and Release Delay Function SENSE Pin Detection Type
 NV3601	2.4(VDD) 0(SENSE)	6(VDD) 42(SENSE)	7(VDD) 50(SENSE)	OV:4.5 UV:3.3	OV:22.2 UV:19.8	-1.25 to 0.75	-	-	-	1.4	-40	125	Q/P	SOT-23-5-DC	Window Voltage Detector
 NV3600	2.4(VDD) 0(SENSE)	6(VDD) 42(SENSE)	7(VDD) 50(SENSE)	3.3	19.8	-1.25 to 0.75	-	-	-	1.4	-40	125	Q/P	SOT-23-5-DC	-VDET & +VDET Individually set voltage, +VDET setting range: 4.5V to 22.2V
R3119xxxxA	1.2	36	50	2.3	12	-3 to 2	Ad-justable	-	-	3.3	-40	105	J	SOT-23-5	
R3120xxxxA	1.2	36	50	2.3	12	-3 to 2	Ad-justable	-	-	3.3	-40	105	A	SOT-23-5	
R3121xxxxA/G	1.4	36	50	3	12	-2.2 to 2.5	Ad-justable	-	-	3.8	-40	125	K/A	SOT-23-6	VDD Pin Detection Type G : without Hysteresis Type
R8300xxxxA/G	1.4	36	50	3	12	-2.2 to 2.5	Ad-justable	-	-	3.8	-40	125	R8	SOT-23-6	VDD Pin Detection Type G : without Hysteresis Type
R3150xxxxA/B	1.4	36	50	5	10	$\pm$ 2	Ad-justable	-	-	3.8	-40	105	J	SOT-23-6	Detect and Release Delay Function VDD Pin Detection Type
R3151xxxxA/B	1.4	36	50	5	10	$\pm$ 2	Ad-justable	-	-	3.8	-40	105	A	SOT-23-6	Detect and Release Delay Function VDD Pin Detection Type
R8315xxxxA/B	1.4	36	50	5	10	$\pm$ 2	Ad-justable	-	-	3.8	-40	125	R8	SOT-23-6	Detect and Release Delay Function VDD Pin Detection Type
R5110	3.5	36	50	1.6	5.5	$\pm$ 1.8	Ad-justable	Yes Io=500mA	Yes	25	-40	125	K/A	HSOP-8E HSOP-18 HQFN0808-28	Timeout or Window WDT Peak : 60V Thermal : Inrush
R5111	3.5	36	50	1.6	5.5	$\pm$ 1.8	Ad-justable	Yes Io=300mA	Yes	25	-40	125	K/A	HSOP-8E HSOP-18 HQFN0808-28	Timeout or Window WDT Peak : 60V Thermal : Inrush

Part No.	Operating Voltage Range [V]		Absolute Max. Ratings [V]	Output Voltage Range [V]		Detector Threshold Accuracy [%] Full Temp.	Re-lease Delay Time	LDO	WDT	Supply Current [ $\mu$ A]	Operating Temp. Range [°C]		Auto-motive Quality Class	Package	Key Features
	min.	max.		min.	max.						typ.	min.			
R8360	3.5	36	50	1.8	5	$\pm$ 1.8	Ad-justable	Yes Io=500mA	Yes	25	-40	125	R8	HSOP-8E HSOP-18	Timeout or Window WDT Peak : 60V Thermal : Inrush
R5104	-	36	50	2.8	4	$\pm$ 2.0 (Ta=25°C)	Ad-justable	-	Yes	60	-40	125	K	SSOP-10	Timeout WDT
 NP4271	4.0	40	45	4.6 4.1	5.6	Low : $\pm$ 2.0 High : $\pm$ 5.0	Ad-justable	Yes Io=500mA	Yes	120	-40	125	P	HSOP-8-AC	Window Voltage Detector Thermal
R3152	3.0	42	50	OV:1.1 UV:1.0	OV:5.9 UV:4.8	-1.25 to 0.75	Ad-justable	-	-	1.5	-40	125	K/A	SOT-23-6	Window Voltage Detector SENSE Pin Detection B: without Hysteresis Type
R3500	3.0	42	50	OV: 1.0 UV: 0.9	OV: 5.9 UV: 5.0	-1.25 to 0.75	Ad-justable	-	-	10	-40	125	K/A	HSOP-18	Applicable to failure diagnosis Window Voltage Detector SENSE Pin Detection Type
R3154	3.0	42	50	OV:0.75 UV:0.55	OV:3.7 UV:3.3	-1.25 to 0.75	Ad-justable	-	-	2	-40	125	R/A	SOT-23-5	Applicable to failure diagnosis 4CH Window Voltage Detector SENSE Pin Detection
R5117	3.5	42	50	BVD:3.5 SVD:2.5	BVD:12 SVD:5.0	BVD:-2 to 1 SVD:-1.25 to 0.75	Ad-justable	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	3.5	42	50	OV:3.3 UV:2.5	OV:5.5 UV:5.0	-1.25 to 0.75	Ad-justable	Yes Io=500mA	-	25	-40	125	K/A	HSOP-8E HQFN0808-28	PLP: HSOP-8E Voltage Regulator with Battery Voltage Detector Peak : 60V Thermal
R5112	3.5	42	50	B:1.6 D:2.9	B:4.8 D:4.8	$\pm$ 1.6	Ad-justable	Yes Io=200mA	-	3.8	-40	125	K/A	HSOP-8E	Voltage Regulator with VD Peak : 60V Thermal
R5114	3.5	42	50	2.5	4.8	$\pm$ 1.6	Ad-justable	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	3.5	42	50	2.5	4.8	$\pm$ 1.6	Ad-justable	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	2.7	60	80	10	48	$\pm$ 1.75*1 $\pm$ 1.5*2	Ad-justable	-	-	1.8	-40	125	K/A	SOT-23-6	*1 Detector Threshold 20V or lower *2 Detector Threshold 20.5 or higher



**Power Management ICs**

**LDD (Laser Diode Driver)**

Part No.	Supply Voltage [V]	CH	Maximum Output Rate Per 1 Channel [Mdot/sec]	Raising/Falling Time [ns]	Maximum Operating Current [mA]		Protection Function	Operating Temp. Range [°C]		Auto-motive Quality Class	Package	Key Features
					LD1	LD2/3/4		min.	max.			
<b>RN5C750</b>	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 Range [V]		Absolute Max. Ratings [V]	Max. SOURCE Pin Voltage Accuracy [mV]	Signal Input Circuit	Dimming Control	Supply Current [μA]	Operating Temp. Range [°C]		Auto-motive Quality Class	Package	Key Features
	min.	max.						typ.	min.			
<b>R1580</b>	3.6	34.0	36	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	  

**USB High-side Switch ICs**

Part No.	Input Voltage Range [V]		Absolute Max. Ratings [V]	Current Limit Threshold [A]		Short Current Limit [A]		ON Resistance [mΩ]	Supply Current [μA]		ON/OFF Control	Operating Temp. Range [°C]		Auto-motive Quality Class	Key Features	Package
	min.	max.		typ.	max.	typ.	max.		typ.	max.		min.	max.			
<b>R5523</b>	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   	SOT-23-5
<b>R5524</b>	2.7	5.5	6	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 Switch IC EN:L     : OFF	SOT-23-5

**ASSPs**

Part No.	Function	Supply Voltage [V]		Automotive Quality Class	Package	Key Features
		min.	max.			
<b>NJU77903</b>	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
<b>NJU7870</b>	Transconductance amplifier for resolver excitation	2.4	5.5	Z2	SSOP16-B3	Transconductance: 13.5mA/Vpp typ. Thermal shutdown External control shutdown function
<b>NJU7890</b>	1000V High Voltage Monitor IC	2.2	5.5	Z	PMAP11-PM	Common mode input voltage range: 1000V High precision attenuation rate: ± 1% High input resistance: 30MΩ min.

**Motor IC**

Part No.	Function	Operating Voltage Range [V]		Maximum Rating		Operating Temp. Range [°C]		Automotive Quality Class	Additional Function	Package
		min.	max.	Supply Voltage [V]	Output Current [mA]	min.	max.			
<b>NJU7367B</b>	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 [°C]		Automotive Quality Class	Package
		min.	max.	Po	V+ [V]	RL [ohm]			min.	max.		
<b>NJU72060</b>	BTL:1ch.	2.7	5.5	500mW typ.	5	8	Yes	Yes	-40	105	T	MSOP8(VSP8), HSOP8-M1, DFN8-V1(ESON8-V1)
<b>NJU7089</b>	BTL:1ch.	1.8	5.5	1.2W typ.	5	8	Yes	Yes	-40	105	T	SSOP20-C3, MSOP8(VSP8), HTSSOP24-P1
<b>NJU7089</b>	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 [°C]		Automotive Quality Class	Package
		min.	max.	Po	V+ [V]	RL [ohm]			min.	max.		
<b>NJU8759A</b>	BTL:1ch.	1.8	5.5	3.0W typ.	5	4	Yes	Yes	-40	105	T	HSOP8-M1
<b>U.D.</b> <b>NA1150</b>	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 [°C]		Automotive Quality Class	Package
		min.	max.	Vom	V+ [V]	RL [ohm]				min.	max.		
<b>NJU72015</b>	2ch.	3	3.6	2.3Vrms typ.	3.3	10k	Yes	Yes	Yes	-40	85	-	SSOP14
<b>NJW1240</b>	6ch.	6	10	5Vrms min.	8	47k	Yes	Yes	Yes	-40	85	-	SSOP32
<b>NJW1241</b>	BTL,3ch.	6	10	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 Adjust	2wire/3wire	Operating Temp. Range [°C]		Auto-motive Quality Class	Key Features	Package
	min.	max.					min.	max.			
<b>NJU7907A</b>	4.5	16	1ch.	+24 to +40	-	2wire	-40	85	-	FET for impedance converter, Standard, Wide Dynamic Range	MSOP10(TVSP10)
<b>NJU7907B</b>	4.5	16	1ch.	+24 to +40	-	2wire	-40	85	-	FET for impedance converter, Standard, Wide Dynamic Range, Small Package	EPFP10-C4
<b>NJU72090</b>	1.8	16	1ch.	+24 to +40	Yes	2wire	-40	105	-	FET for impedance converter, Wide Dynamic Range, Fine Tune Sensitivity	MSOP10(TVSP10)
<b>NJU72097</b>	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 [th order]	Operating Temp. Range [°C]		Automotive Quality Class	Package
		min.	max.							min.	max.		
<b>NJM41001</b>	Low Voltage, Wide Band Video Driver	3.0	7.0	1ch.	6	Yes	-	Yes	-	-40	105	T	SOT-23-6-1
<b>NJM41005</b>	Isolation Amplifier with Video Driver	4.5	5.5	1ch.	0	Yes	Yes	Yes	-	-40	105	T	SOT-23-5
<b>NJU71091</b>	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)
<b>NJU71094</b>	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 Class	Package Size [mm]
<b>NJG1669MD7</b>	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	-	1.6x1.6x0.397
<b>NJG1681MD7</b>	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	-	1.6x1.6x0.397
<b>NJG1682MD7</b>	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	-	1.6x1.6x0.397
<b>NJG1684ME2</b>	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	-	1.8x1.8x0.397
<b>NJG1801AKGC-A</b> <b>NJG1801BKGC-A</b>	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	1.6x1.6x0.78
<b>NJG1801K75</b>	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 30@4.9 to 5.9GHz 20@8.5GHz	0.05 to 8.5	-	1.0x1.0x0.375
<b>NJG1802K51</b>	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	-	2.0x2.0x0.375
<b>NJG1804K64</b>	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	-	1.5x1.5x0.375
<b>NJG1806K75</b>	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	-	1.0x1.0x0.375
<b>NJG1809ME7</b>	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	-	2.0x2.0x0.397
<b>NJG1812AMET-A</b>	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	2.0x2.0x0.78
<b>NJG1814MD7</b>	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	-	1.6x1.6x0.397
<b>NJG1815K75</b>	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	-	1.0x1.0x0.375
<b>NJG1815AK75-A</b>	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	1.0x1.0x0.375
<b>NJG1817ME4</b>	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	-	2.0x2.0x0.397
<b>NEW</b> <b>NJG1818K75</b>	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	-	1.0x1.0x0.375

**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 Class	Package Size [mm]
<b>NJG1144KA1</b>	GNSS	1559 to 1606	2.85/1.8	3.5/1.8	21/18	0.65/0.85	-16.5 /-18.5	-2/-6	-	1.6x1.6x0.55
<b>NJG1150UA2</b>	GNSS	1559 to 1606	2.8/1.8	4.9/4.2	16	0.6	-7/-9	1/-1	-	1.0x1.0x0.37
<b>NJG1155UX2</b>	GNSS	1559 to 1606	2.8/1.8	3.5/3.1	19/18.5	0.75	-12.5/-16	-1.5/-5	-	1.1x0.7x0.37

Part No.	Applications	Frequency Range [MHz]	Operating Voltage [V]	Operating Current [mA]	Gain [dB]	NF [dB]	P-1dB [dBm]	IIP3 [dBm]	Automotive Quality Class	Package Size [mm]
<b>NJG1169UX2</b>	3G/ LTE	880	2.8/1.8	4.8/4.0	12.5/12	0.8	1/-2	0/-0.5	-	1.1x0.7x0.37
<b>NJG1170UX2</b>	3G/ LTE	2000	2.8/1.8	4.8/4.0	15/13.5	0.7/0.9	-8.5/-12	2/-2	-	1.1x0.7x0.37
		2500	2.8/1.8	4.8/4.0	14.5/13.5	0.8/1.1	-8/-11	3.5/-1.5		
<b>NJG1173UX2</b>	3G/ LTE	3500	2.8/1.8	5.0/3.5	13.5/12	1.0/1.3	-10/-12	5/0	-	1.1x0.7x0.37
<b>NJG1175KG1</b>	LTE/ WLAN	4900 to 5950	3.3	13	16	0.95	-5	9	-	1.6x1.6x0.397
<b>NJG1182UX2</b>	LTE/ WLAN	5500	2.8/1.8	5.0/3.5	15/14.5	1.1/1.4	-11/-13	2/-1	-	1.1x0.7x0.37
<b>NJG1187KG1</b>	GNSS	1559 to 1610	3.3	8	34	0.6	-20	-17	-	1.6x1.6x0.397
		1164 to 1300	3.3	8	37	0.65	-21	-17		
<b>NEW</b> <b>NJG1187AKGC-A</b>	GNSS	1559 to 1610	3.3	8	34	0.6	-19	-18	A	1.6x1.6x0.78
		1164 to 1300	3.3	8	37	0.65	-23	-18		
<b>NEW</b> <b>NT1189GDAE3S</b>	5G	3300 to 4200 4400 to 5000	5	50	26 21	0.48 0.63	-6 -1	+11 +16	-	1.6x1.6x0.397
<b>NEW</b> <b>NT1191GEAE3S</b>	GNSS	1164 to 1610	3.3/1.8	5.5/3.5	17.5/16.0	0.75/0.85	-10/-16	0/-6	-	1.6x1.6x0.78
<b>NEW</b> <b>NT1192FAAE1S</b>	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	-	1.1x0.7x0.37

**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 Class	Package Size [mm]
<b>NJG1159PHH-A</b>	GPS	1575	2.8/1.8	3.7/3.0	16.0/15.5	1.50/1.55	55	43	A	1.5x1.1x0.5
	GLONASS	1597 to 1606			16.5/16.0	1.65/1.70				
	BeiDou	1559 to 1591			16.0/15.5	1.70/1.75				
<b>NJG1161PCD</b>	GPS	1575	2.8/1.8	3.3/2.6	18.5/17.5	1.60/1.65	85	75	-	2.5x2.5x0.63
	GLONASS	1597 to 1606			17.0/1.75					
<b>NEW</b> <b>NJG1186PJL</b>	L5/E5/B2/G3	1164 to 1214	2.8/1.8	4.8/3.8	19.5/19.0	1.7/2.0	45	55	-	1.57x1.23x0.47
	L2C	1227.6			19.0/18.5	1.7/2.0				

**SAW Filters**

Part No.	Applications	Center Frequency f0 [MHz]	Passband Width [MHz]	Automotive Quality Class	Package Size [mm]
<b>NSNJ9200A</b>	GPS+GLONASS+Beidou	1582.471	46	-	2.0x1.6x0.65
<b>NSNJ9205</b>	L2	1227.6	20	-	2.0x1.6x0.65
<b>NSNJ9208</b>	L6	1278.75	10	-	2.0x1.6x0.65



● DFN

Pin	Sym- bol	Package	Actual Size Photo	Dimensions (mm)				Quantity/ Reel (pcs)
				Body	Mount Area	Thickness <sup>*1</sup>	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	KW1	DFN8-W1(ESON8-W1)		3.0 × 3.0	3.0 × 3.0	0.705	0.5	1,500
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	Sym- bol	Package	Actual Size Photo	Dimensions (mm)				Quantity/ Reel (pcs)
				Body	Mount Area	Thickness	Pitch	
8	D	DIP8		8.8 × 6.4	-	3.4	2.54	50/Stick

● DMP

Pin	Sym- bol	Package	Actual Size Photo	Dimensions (mm)				Quantity/ Reel (pcs)
				Body	Mount Area	Thickness	Pitch	
8	M	DMP8		5.0 × 5.0	5.0 × 6.8	1.6	1.27	2,000

● EPFFP

Pin	Sym- bol	Package	Actual Size Photo	Dimensions (mm)				Quantity/ Reel (pcs)
				Body	Mount Area	Thickness <sup>*1</sup>	Pitch	
10	UC4	EPFFP10-C4		1.5 × 1.5	1.5 × 1.5	0.375	0.5	5,000

\*1 Maximum Value

● EQFN

Pin	Sym- bol	Package	Actual Size Photo	Dimensions (mm)				Quantity/ Reel (pcs)
				Body	Mount Area	Thickness <sup>*1</sup>	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	0.785	0.5	3,000

\*1 Maximum Value

● HQFN

Pin	Sym- bol	Package	Actual Size Photo	Dimensions (mm)				Quantity/ Reel (pcs)
				Body	Mount Area	Thickness <sup>*1</sup>	Pitch	
28	L	HQFN0808-28		8.0 × 8.0	8.8 × 8.8	1.0	0.8	2,000

\*1 Maximum Value

● HSOP

Pin	Sym- bol	Package	Actual Size Photo	Dimensions (mm)				Quantity/ Reel (pcs)
				Body	Mount Area	Thickness	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	AK	HSOP-18-AK		5.2 × 4.4	5.2 × 6.2	1.5	0.5	1,000
8	GM1	HSOP8-M1		5.2 × 4.4	5.2 × 6.2	1.5	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	Sym- bol	Package	Actual Size Photo	Dimensions (mm)				Quantity/ Reel (pcs)
				Body	Mount Area	Thickness	Pitch	
24	VP1	HTSSOP24-P1		7.8 × 4.4	7.8 × 6.4	0.85	0.65	2,500

● MSOP(TVSP)

Pin	Sym- bol	Package	Actual Size Photo	Dimensions (mm)				Quantity/ Reel (pcs)
				Body	Mount Area	Thickness	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	Sym- bol	Package	Actual Size Photo	Dimensions (mm)				Quantity/ Reel (pcs)
				Body	Mount Area	Thickness	Pitch	
8	R	MSOP8(VSP8)		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








# Package Lineup

## ● PMAP11

Pin	Sym- bol	Package	Actual Size Photo	Dimensions (mm)				Quantity/ Reel (pcs)
				Body	Mount Area	Thickness <sup>*1</sup>	Pitch	
11	YPM	PMAP11-PM		8.1 × 6.6	8.1 × 8.1	1.85	0.65	2,000











\*1 Maximum Value

## ● QFN


Pin	Sym- bol	Package	Actual Size Photo	Dimensions (mm)				Quantity/ Reel (pcs)
				Body	Mount Area	Thickness <sup>*1</sup>	Pitch	
24	K	QFN0404-24		4.0 × 4.0	4.0 × 4.0	0.8	0.5	1,000
24	L	QFN0404-24B		4.0 × 4.0	4.0 × 4.0	0.75	0.5	1,000
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
26	NC	QFN3426-26-NC		3.4 × 2.6	3.4 × 2.6	0.75	0.4	1,500
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	Sym- bol	Package	Actual Size Photo	Dimensions (mm)				Quantity/ Reel (pcs)
				Body	Mount Area	Thickness	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	DF	SOT-89-5-DF		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

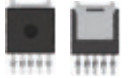

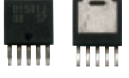
## ● SOP JEDEC(EMP)

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

## ● SSOP

Pin	Sym- bol	Package	Actual Size Photo	Dimensions (mm)				Quantity/ Reel (pcs)
				Body	Mount Area	Thickness	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	Sym- bol	Package	Actual Size Photo	Dimensions (mm)				Quantity/ Reel (pcs)
				Body	Mount Area	Thickness	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	2.3	1.27	3,000



# Index of Part No.

Part No.	Function	Page
MUSES8920A	High Quality Sound J-FET Input Dual Op-Amp	P.09
NA1150	Audio Switching Driver with Load Diagnostics	P.24
NC2780	PWM/VFM Step-down DC/DC Controller	P.15
NC2905	80V/1.5A Step-down DC/DC Converter	P.16
ND1433	H-Side Gate Driver	P.18
NJG1144KA1	LNA for GNSS	P.25
NJG1150UA2	LNA for GNSS	P.25
NJG1155UX2	LNA for GNSS	P.25
NJG1159PHH-A	GNSS Front-End Module	P.26
NJG1161PCD	GPS and GLONASS Front-End Module	P.26
NJG1169UX2	LNA with Bypass for LTE	P.26
NJG1170UX2	LNA with Bypass for LTE	P.26
NJG1173UX2	LNA with Bypass for LTE	P.26
NJG1175KG1	5GHz LNA with Bypass function	P.26
NJG1182UX2	LNA with Bypass for 5 GHz band	P.26
NJG1186PJL	GNSS L5/L2C Band Front-End Module	P.26
NJG1187KG1	GNSS High Gain LNA	P.26
NJG1187AKGC-A	GNSS High Gain Low Noise Amplifier	P.26
NJG1669MD7	SPDT Switch	P.25
NJG1681MD7	High Power SPDT Switch	P.25
NJG1682MD7	High Power SP3T Switch	P.25
NJG1684ME2	High Power SP4T Switch	P.25
NJG1801AKGC-A	SPDT Switch	P.25
NJG1801BKGC-A	SPDT Switch	P.25
NJG1801K75	SPDT Switch	P.25
NJG1802K51	High Power SPDT Switch	P.25
NJG1804K64	SP3T Switch	P.25
NJG1806K75	SPDT Switch	P.25
NJG1809ME7	High Power SP4T Switch	P.25
NJG1812AMET-A	High Power DPDT Switch	P.25
NJG1814MD7	High Power SPDT Switch	P.25
NJG1815AK75-A	SPDT Switch	P.25
NJG1815K75	SPDT Switch	P.25
NJG1817ME4	10W High Power SPDT Switch	P.25
NJG1818K75	1.0 to 7.125 GHz Broad Band SPDT Switch	P.25
NJM11100	Adjustable LDO Regulator	P.11
NJM12884	LDO with Soft Start / Discharge Function	P.12
NJM2119	Dual Single-Supply OP-Amp	P.09
NJM2815	1.0A LDO Regulator	P.14
NJM2816	1.5 A LDO Regulator	P.14
NJM2879	LDO with Discharge Function	P.11
NJM2903	Single Supply Dual Comparator	P.09
NJM2904B	High EMC Performance, Dual Op-Amp	P.09
NJM41001	Low Voltage, Wide Band Video Driver	P.24
NJM41005	Isolation Amplifier with Video Driver	P.24
NJM8080	Dual Audio Op-Amp	P.09
NJM8087	20V/ $\mu$ s, 10nV/ $\sqrt{\text{Hz}}$ , JFET Input Op-Amp	P.09
NJM8208	Precision, Single Supply, Dual Op-Amp	P.09
NJM8532	Rail-to-Rail Input/Output, Dual Op-Amp	P.09
NJU7046	Rail-to-Rail I/O CMOS Op-Amp	P.09
NJU7047	Rail-to-Rail I/O CMOS Op-Amp	P.09
NJU7057	Rail-to-Rail Output CMOS Op-Amp	P.09
NJU7077	Rail-to-Rail Output CMOS Op-Amps	P.09
NJU7089	High-Power & Low-Voltage Audio Power Amplifier	P.24
NJU71091	1ch. Video Driver with Short-to-Battery Protection	P.24

Part No.	Function	Page
NJU71094	Differential Output Video Driver	P.24
NJU72015	2Vrms Ground Referenced Stereo Line Amplifier	P.24
NJU72060	500mW Monaural Speaker Amplifier	P.24
NJU72090	2-wired Monaural Microphone Amplifier	P.24
NJU72097	2-wired Monaural Microphone Amplifier	P.24
NJU7367B	Single-phase DC Brushless Motor Driver IC	P.23
NJU77242	Rail-to-Rail Input Low power CMOS Comparator	P.09
NJU77252	High-Speed, Rail-to-Rail Input CMOS Comparator	P.09
NJU77552	1.7MHz, Rail-to-Rail Input/Output Op-Amp	P.09
NJU77572	10MHz, Low noise, Rail-to-rail I/O, Op-Amp	P.09
NJU77582	20MHz, Low noise, Rail-to-rail I/O, Op-Amp	P.09
NJU77701	High-Speed, Rail-to-Rail I/O CMOS Op-Amp	P.09
NJU77903	Rail-to-Rail I/O Single CMOS Op-Amp	P.23
NJU7870	Amplifier for resolver excitation	P.23
NJU7890	1000V High Voltage Monitor IC	P.23
NJU7907A	Monaural Microphone Amplifier	P.24
NJU7907B	Monaural Microphone Amplifier	P.24
NJU8759A	Monaural Filter Less 3.0W Class-D Amplifier	P.24
NJW1240	6-Channel Line Amplifier	P.24
NJW1241	3-Channels Differential Output Line Amplifier	P.24
NJW1871	Boost / Fly-back Switching Regulator IC	P.18
NJW1871A	Boost / Fly-back Switching Regulator IC	P.18
NJW4104	45V Io=200mA Ultra low Quiescent current LDO	P.11
NJW4105	High Voltage Io=500mA LDO	P.13
NJW4106	High Voltage Io=500mA Adjustable LDO	P.13
NJW4107	45V Io=300mA LDO	P.12
NJW4110	2.4MHz, 3A x 2ch. Synchronous Buck Converter	P.17
NJW4116	Io=500mA LDO with Reset function	P.13
NJW4119	Buck Switching Regulator with Voltage Correction	P.16
NJW4132	Boost Switching Regulator	P.18
NJW4133	Boost Switching Regulator with 45V/5A MOSFET	P.18
NJW4140	Boost / Fly-back Switching Regulator	P.18
NJW4142	Boost / Fly-back Switching Regulator	P.18
NJW4152BA	Buck Switching Regulator	P.15
NJW4154	Buck Switching Regulator	P.17
NJW4171	Buck Switching Regulator with 2.5A MOSFET	P.17
NJW4175	Buck Switching Regulator with 600mA MOSFET	P.16
NJW4182	High Voltage, Io=100mA LDO	P.10
NJW4203	Spread Spectrum Modulation Oscillator IC	P.18
NJW4750	Quad Channel Combination Regulator	P.19
NJW4760	12-channel PMIC	P.19
NJW4830	Single High-side Switch	P.19
NJW4841	1-channel Switching Gate Driver	P.18
NJW4868	Gate Driver with current and voltage detection	P.18
NL6012	Precision Operational Amplifier	P.09
NP4271	LDO+WDT+RESET, CLK Timeout	P.13/22
NP8700	4-channel PMIC for Camera with SSFM	P.19
NR1640	200mA Ultra-low Noise Voltage Regulator	P.11
NR1700	42V Input, Io=200mA Voltage Regulator	P.11
NR4250	45V Input, Io=50mA Voltage Tracker	P.14
NR4252	45V Input, Io=250mA Voltage Tracker	P.14
NR4254	45V Input, Io=70mA Voltage Tracker	P.14
NSNJ9200A	SAW Filter for GNSS	P.26
NSNJ9205	High ATT Type SAW Filter for GPS L2	P.26
NSNJ9208	Low Loss Type SAW Filter for GPS L6	P.26

Part No.	Function	Page
NT1191GEAE3S	GNSS Wideband Low Noise Amplifier	P.26
NT1192FAAE1S	1.2 GHz band GNSS Low Noise Amplifier	P.26
NV3600	CMOS Output, SENSE High-voltage Resistant VD	P.21
NV3601	CMOS Output, SENSE High-voltage Resistant VD	P.21
R1114	150mA Voltage Regulator	P.10
R1130	8V Input 300mA Voltage Regulator	P.12
R1150	24V Input 90mA to 150mA Voltage Regulator	P.11
R1163	150mA Voltage Regulator	P.10
R1170	800mA Voltage Regulator	P.13
R1171	1.5A Voltage Regulator	P.14
R1172	Low Voltage 1A Voltage Regulator	P.13
R1180	Low Supply Current 150mA Voltage Regulator	P.10
R1190	16V Input 1A Voltage Regulator	P.14
R1191	16V Input 300mA Voltage Regulator	P.12
R1211	PWM Step-up DC/DC Controller	P.17
R1245	30V Input 1.2A PWM Buck DC/DC Converter	P.16
R1260	60V Input Synchronous Buck DC/DC Controller	P.15
R1270	34V Input 3A PWM/VFM Buck DC/DC Converter	P.16
R1271	30V Input 1A PWM Buck DC/DC Converter	P.16
R1272	34V Input PWM/VFM Buck DC/DC Controller	P.15
R1273	34V Input 14A Buck DC/DC Converter	P.17
R1276	30V Input 3A Buck DC/DC Converter	P.17
R1278	30V Input 2A PWM Buck DC/DC Converter	P.16
R1290	Triple Output DC/DC Converter for LCD/CCD	P.18
R1294	Triple Output DC/DC Converter for LCD/CCD	P.18
R1500	24V Input 500mA Voltage Regulator	P.12
R1501	24V Input 1A Voltage Regulator	P.14
R1510	36V Input 300mA Voltage Regulator with VD	P.12
R1511	36V Input 300mA Voltage Regulator	P.12
R1513	36V Input 300mA Voltage Regulator	P.12
R1514	36V Input 150mA Voltage Regulator	P.11
R1515	36V Input 50mA Voltage Regulator	P.10
R1516	36V Input 150mA Voltage Regulator	P.11
R1517	36V Input 500mA Voltage Regulator	P.13
R1518	36V Input 1A Voltage Regulator	P.14
R1524	36V Input 200mA Voltage Regulator	P.11
R1525	42V Input 200mA Voltage Regulator	P.11
R1526	42V Input 300mA Voltage Regulator	P.12
R1540	42V Input 70mA Voltage Tracker	P.14
R1560	60V Input 100mA Voltage Regulator	P.10
R1561	60V Input 100mA Voltage Regulator	P.10
R1580	Constant Current LED Driver	P.23
R3116	0.5V Voltage Detector with Delay Function	P.20
R3117	Voltage Detector with SENSE pin	P.20
R3118	Low Voltage Detector with Delay Function	P.20
R3119xxxA	36V Input Voltage Detector with Delay Function	P.21
R3119xxxB	36V Input Voltage Detector with Delay Function	P.21
R3120xxxA	36V Input Voltage Detector with Delay Function	P.21
R3120xxxE	36V Input Voltage Detector with Delay Function	P.21
R3121xxxA/G	Voltage Detector with Release Delay Function	P.21
R3121xxxE	Voltage Detector with Release Delay Function	P.21
R3134	Voltage Detector with Delay Function	P.20
R3150xxxA/B	Voltage Detector with Release Delay Function	P.21
R3150xxxE/F	Voltage Detector with Release Delay Function	P.21
R3151xxxA/B	Voltage Detector with Release Delay Function	P.21

Part No.	Function	Page
R3151xxxE/F	Voltage Detector with Release Delay Function	P.21
R3152	42V Input Window Voltage Detector	P.22
R3154	42V Input Window Voltage Detector	P.22
R3160	Low Supply Current 60V Input Voltage Detector	P.22
R3500	42V Input 4ch. Window Voltage Detector	P.22
R5104	36V Input System Power Supply with WDT	P.22
R5105	Watchdog Timer with VD	P.20
R5106	WDT Equipped with Inhibit Pin with VD	P.20
R5107	WDT Equipped with Manual Reset with VD	P.20
R5108	WDT Equipped with SENSE Pin with VD	P.21
R5109	WDT Equipped with 2-Clock Monitoring with VD	P.20
R5110	36V Input System Power Supply with WDT	P.12/21
R5111	36V Input System Power Supply with WDT	P.12/21
R5112	42V Input 200mA Voltage Regulator with VD	P.11/22
R5114	42V Input System Power Supply with WDT	P.11/22
R5115	42V Input System Power Supply with WDT	P.11/22
R5116	42V Input Voltage Regulator with Window VD	P.13/22
R5117	42V Input Voltage Regulator with Battery VD	P.13/22
R5523	USB Pch High-side Switch IC	P.23
R5524	USB High-side Power Switch / Load Switch	P.23
R8150	36V Input 150mA Voltage Regulator	P.11
R8151	36V Input 50mA Voltage Regulator	P.10
R8152	24V Input 1A Voltage Regulator	P.14
R8153	36V Input 300mA Voltage Regulator	P.12
R8154	36V Input 500mA Voltage Regulator	P.13
R8155	36V Input 1A Voltage Regulator	P.14
R8156	36V Input 300mA Voltage Regulator	P.12
R8160	36V Input 200mA Voltage Regulator	P.11
R8300xxxxA/G	Voltage Detector with Release Delay Function	P.21
R8300xxxxE	Voltage Detector with Release Delay Function	P.21
R8315xxxxA/B	Voltage Detector with Release Delay Function	P.21
R8315xxxE/F	Voltage Detector with Release Delay Function	P.21
R8355	WDT Equipped with Inhibit Pin with VD	P.20
R8356	WDT Equipped with Inhibit Pin with VD	P.20
R8357	WDT Equipped with Manual Reset with VD	P.20
R8358	WDT Equipped with SENSE Pin with VD	P.21
R8359	WDT Equipped with 2-Clock Monitoring with VD	P.20
R8360	36V Input System Power Supply with WDT	P.13/22
RN5C750	4ch. RGB Laser Diode Driver for Display System	P.23
RN5T5611	Programmable Power Management IC	P.19
RN5T569	Programmable Power Management IC	P.19
RP108	3A LDO with Reverse Current Protection	P.14
RP111	Good Load Transient Response 500mA LDO	P.12
RP115	Low Voltage 500mA/1A LDO Regulator	P.13
RP130	Low Noise 150mA LDO Regulator	P.11
RP132	Low Voltage 1A LDO Regulator	P.13
RP154	Low Voltage Dual 300mA LDO Regulator	P.11
RP170	10V Input 300mA LDO Regulator	P.12
RP171	10V Input 150mA LDO Regulator	P.11
RP506	2A PWM/VFM Buck DC/DC Converter	P.16
RP510	4A Forced PWM Buck DC/DC Converter	P.17
RP550	Dual 1A PWM/VFM Buck DC/DC Converter	P.16

# What is myNISD?

**myNISD** <https://www.nisshinbo-microdevices.co.jp/en/mynisd/benefit.html>

"myNISD" provides electronic component users with a variety of information and services, including technical documents and exclusive tools. It is available free of charge with only account registration.



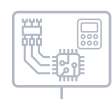
- Benefit 1** Download SPICE models (OrCAD PSpice®) to streamline your circuit design
- Benefit 2** Available for full version of Prime Designer, a DC/DC online simulation
- Benefit 3** Web tool to support complicated circuit design calculations
- Benefit 4** Download members-only contents
- Benefit 5** Personalization of parametric search results and favorite pages
- Benefit 6** Email alerts for new product information, webinars, etc.

## Service



### Provide SPICE Models for Effective Circuit Design

It covers OrCAD Capture®, the industry standard schematic entry tool, and OrCAD PSpice®, the world's most widely used circuit simulation.



### Online Simulation of DC/DC Converters

Full-function simulation such as circuit design and analysis of electronic components, and the change of electrical characteristics by selecting external components can be performed on the web without installing any programs.



### Essential Calculation Tools for Circuit Design on Web

This convenient tool makes it easy to perform complicated calculations such as generating frequency response graphs from low-pass filter values, calculating capacitor charge/discharge times and generating graphs, and calculating parameters for voltage dividers and parallel/series resistors.

## Nisshinbo Micro Devices Companies (JAPAN)

- **Head Office**  
NB Nihonbashi Bldg., 3-10 Nihonbashi Yokoyama-cho, Chuo-ku, Tokyo 103-8456, Japan  
TEL:+81-3-5642-8222 FAX:+81-3-5642-8220
- **Nagoya Sales office**  
8th Floor, NUP-Fushimi Bldg., 2-2-12 Sakae, Naka-ku, Nagoya City, Aichi 460-0008, Japan  
TEL:+81-52-217-8800 FAX:+81-52-222-0708
- **Ikeda Office**  
13-1 Himemuro-cho, Ikeda-shi, Osaka 563-8501 Japan  
TEL:+81-72-748-6266
- **Fukuoka Sales office**  
Rm 1003, 10th Floor, Asako Hakata Bldg., 1-1-5 Hakataeki-higashi, Hakata-ku, Fukuoka City, Fukuoka 812-0013, Japan  
TEL:+81-92-433-5815 FAX:+81-92-433-5816
- **Nagasaki Technical Center**  
Miuracho Alpha bldg., NO.302,2-1, Miura-cho, Sasebo City, Nagasaki 857-0863, Japan  
TEL:+81-956-23-0555 FAX:+81-956-23-0554
- **Kawagoe Plant**  
2-1-1 Fukuoka, Fujimino, Saitama 356-8510, Japan  
TEL:+81-49-264-2111 FAX:+81-49-264-4241
- **Yashiro Plant**  
30-1, Saho, Kato City, Hyogo 673-1447, Japan  
TEL:+81-795-42-6111
- **Nisshinbo Micro Devices Fukuoka Co., Ltd.**  
1-1-2, Imajuku-higashi, Nishi-ku, Fukuoka City, Fukuoka 819-0161, Japan  
TEL:+81-92-805-4660 FAX:+81-92-805-4669
- **Nisshinbo Micro Devices AT Co., Ltd.**  
950 Tateno, Yoshinogari-cho, Kanzaki-gun, Saga 842-0032, Japan  
TEL:+81-952-52-3181 FAX:+81-952-52-3214

● Business Location  
● Manufacturing Site  
● Sales Site  
● Development Site

## Nisshinbo Micro Devices Companies (GLOBAL)

- **Nisshinbo Micro Devices Americas Inc.**  
2107 North First Street, Suite 520, San Jose, CA 95131, U.S.A.  
TEL:+1-408-320-2873(Main) FAX:+1-408-320-2874
- **Nisshinbo Micro Devices Europe GmbH**  
Theodor-Heuss-Allee 112, 60486 Frankfurt am Main, Germany  
TEL:+49-69-6677-41-360 FAX:+49-69-6677-41-364
- **Nisshinbo Micro Devices (Thailand) Co., Ltd.**  
88 Mu 13, Tambol Makhuajae, Amphur Muang, Lamphun 51000 Thailand  
TEL:+66-53-581-260(Main) FAX:+66-53-581-266
- **Nisshinbo Micro Devices Singapore Pte Ltd**  
61 Ubi Avenue 2, #07-01 Automobile Megamart Singapore 408898  
TEL:+65-6744-4143(Main) FAX:+65-6744-9439
- **Nisshinbo Micro Devices Korea Co., Ltd.**  
3F, Seongji building, 5, Bangbaecheon-ro 2-gil, Seocho-gu, Seoul, 06693, Republic of Korea  
TEL:+82-2-2135-5700 FAX:+82-2-2051-5713
- **Nisshinbo Micro Devices (Shanghai) Co., Ltd.**  
Room 403, No.2 Building, 690#Bibo Road, Zhangjiang Hi-Tech Park, Pudong New District, Shanghai, People's Republic of China  
TEL:+86-21-5027-3200 FAX:+86-21-5027-3299
- **Nisshinbo Micro Devices (Shanghai) Co., Ltd. Shenzhen Branch**  
33F Room06-07 Shunhing Square Diwang commercial center, 5002 Shennan Dong Road, Shenzhen, People's Republic of China  
TEL:+86-755-8233-6527
- **Nisshinbo Micro Devices Inc. Taipei Office**  
8F-7, Lane 211, Civic Blvd. Sec. 1, Datong District, Taipei City 103, Taiwan  
TEL:+886-2-2552-6778 FAX:+886-2-2552-6800

● Manufacturing Site  
● Sales Site