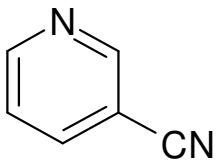
3-Cyanopyridine
Safety Data Sheet
according to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

PRODUCT NAME	:3-Cyanopyridine
CAS RN	:100-54-9
EC#	:202-863-0
SYNONYMS	:3-Azabenzonitrile, 3-Cyanopyridine, Nicotinic acid nitrile 3-Pyridinecarbonitrile, 3-Pyridinenitrile, 3-Pyridylcarbonitrile
SYSTEMATIC NAME	:3-Pyridinecarbonitrile, Nicotinonitrile
MOLECULAR FORMULA	:$C_6H_4N_2$
STRUCTURAL FORMULA	



1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

- The primary use of 3-Cyanopyridine is as an intermediate in the manufacturing of Pharmaceuticals. It is also used as an intermediate in the agrochemical industries, as a cosmetic additive and as a food chemical in the manufacture of nicotinic acid and nicotinamide.

Uses advised against: None

1.3. Details of the supplier of the safety data sheet

Jubilant Life Sciences India
FACTORY & REGISTERED OFFICE: Jubilant Life Sciences Ltd., Bhartiagram, Gajraula, District: Amroha, Uttar Pradesh-244223, India

HEAD OFFICE: Jubilant Life Sciences Ltd., Plot 1-A, Sector 16-A,Institutional Area, Noida, Uttar Pradesh, 201301 - India
T: FACTORY & REGISTERED OFFICE:T +91-5924-252353 to 252360 Contact Department-Safety: Ext. 7424
HEAD OFFICE: T +91-120-4361000 E-mail: support@jubl.com

1.4. Emergency telephone number

Emergency number : +91-9997022412; +91-9359674864

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification
Combustible liquid: Category 4
Skin corrosion / irritant: Category 2
Serious eye damage/eye irritation: Category 1
Acute toxicity oral: Category 4

2.2. Label Elements

Hazard Pictogram: *GHS 05*

Signal Word: Danger!

HAZARD AND PRECAUTIONARY STATEMENTS:

HAZARD STATEMENTS

- H227: Combustible liquid.
- H318: Causes serious eye damage.
- H302: Harmful if swallowed.

PRECAUTIONARY STATEMENTS

- P210: Keep away from heat/sparks/open flames/hot surfaces – No smoking.
- P280: Wear protective gloves/protective clothing/eye protection/face protection.
- P264: Wash hands thoroughly after handling.
- P270: Do not eat, drink or smoke when using this product.
- P370+378: In case of fire: Use water for extinction.

- P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P310: Immediately call a POISON CENTER or doctor/physician.
- P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
- P330: Rinse mouth**.**
- P501: Dispose of contents/container to local/regional/national/international regulations.

SECTION 3: Composition/information on ingredients

Chemical	CAS #	Purity	GHS-US classification
3-Cyanopyridine	100-54-9	>98%	Combustible liquid: Category 4 Skin corrosion / irritant: Category 2 Serious eye damage/eye irritation: Category 1 Acute toxicity oral: Category 4

SECTION 4: First aid measures

4.1. Description of first aid measures

Key symptoms

Acute effects

- 3-Cyanopyridine causes serious eye damage. It is harmful if swallowed .Symptoms of overexposure includes weakness, dizziness, headache, nausea, loss of appetite and unconsciousness. Extended exposure may lead to irritation and possibly systemic poisoning.

Chronic effects:

- To the best of our knowledge, the chronic health effects of this product have not been thoroughly investigated.

FIRST AID

- **Eyes**: Symptoms: Lachrymator, redness, severe burns.
  If in eyes rinse cautiously with water for at least 15 minutes. Remove contact lenses if easy to do so. Continue rinsing. Seek immediate medical attention.
- **Skin:** Corrosive. Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse.
- **Inhalation**: Symptoms: Symptoms of overexposure include weakness, dizziness, headache, nausea, loss of appetite and unconsciousness. Extended exposure may lead to irritation and possibly systemic poisoning. Cough. Laboured breathing. Shortness of breath. Sore throat. Symptoms may be delayed. The symptoms of lung oedema often do not become manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation are therefore essential. Remove to fresh air and keep at rest in a position comfortable for breathing. Call a physician if you feel unwell.
- **Ingestion**: Symptoms: Corrosive. Abdominal pain. Sore throat. Collapse. If swallowed call a poison center if you feel unwell. Rinse mouth. Do NOT induce vomiting by use of emetics. Seek prompt/immediate medical attention.

SECTION 5 : FIRE-FIGHTING MEASURES

Extinguishing media

- *Appropriate extinguishing media*: Dry chemical powder, carbon dioxide, and alcohol resistant foam. Water may also be used. Water sprays can be effective in cooling down the fire-exposed containers and knocking down the vapors. Water jets may be used to flush spills away and dilute the same to non-flammable mixtures.

Special Protective Equipment and Precautions for Fire Fighter

- Evacuate the area and fight fires from a safe distance.
- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions or as per locally valid procedures.
- Fire fighters must wear Self Contained Breathing Apparatus (SCBA) and full protective clothing. The chemical is harmful in contact with skin.
- Report any run-off of fire waters contaminated with this chemical as per local and federal procedures applicable.

Unusual fire and explosion hazard

- Toxic Vapor may flow long distance to distant ignition sources and flash back. Forms explosive mixtures in air. Emits toxic fumes under fire conditions. Toxic vapors may be released upon thermal decomposition (cyanides, nitrogen oxides, carbon monoxide).
- Consider isolating the fire when it involves the material and permitting it to burn itself out. Do not allow water to enter container, because of exothermic reaction.
- Flashback along vapor trail may occur. Closed container exposed to heat may explode. Irritating vapors and toxic fumes of carbon monoxide may be released in fore conditions.
- Consider isolating the fire when it involves the material and permitting it to burn itself out. Move all personnel out of the fire area. Move away in event of any explosion. Keep at safe distance.

SECTION 6 : ACCIDENTAL RELEASE MEASURES

- **Minor Spills**
  - Clean up all spills immediately following relevant Standard Operating Procedures.
  - Avoid breathing vapors and contact with skin and eyes.
  - Shut off leak source if possible.
  - Shut off all possible sources of ignition.
  - Wear protective clothing, boots, impervious gloves and safety glasses.
  - Wipe up.
  - Decontaminate all equipment.
  - Use non-sparking tools.
- **Major Spill**
  - Alert Emergency Responders and tell them location and nature of hazard.
  - Shut off all possible sources of ignition and increase ventilation.
  - Wear protective clothing, full boots, impervious gloves, safety glasses and Self Contained Breathing Apparatus (SCBA), as may be deemed appropriate.
  - Clear area of personnel and move upwind.
  - Stop leaks if possible.
  - Prevent, by any means available, spillage from entering drains or water and watercourses.
  - Collect recoverable product into labeled containers for recycling, recovery or disposal.
  - Contain spill with sand, earth or vermiculite.
  - Spread area with lime or absorbent material, and leave for at least 1 hour before washing.
  - Clean up all tools and equipment.
  - Inform authorities in event of contamination of any public sewers, drains or water bodies.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling

- Do not breathe vapor or mist.
- Wear protective gloves/clothing and eye/face protection.
- Wash thoroughly after handling.
- Ground and secure containers when dispensing or pouring product.
- Avoid contact with incompatible materials.
- When handling,DO NOT eat, drink or smoke.
- Launder contaminated clothing before re-use.
- If on skin or hair, IMMEDIATELY remove all contaminated clothing and rinse/shower with plenty of water.
- Use in a well ventilated place/Use protective clothing commensurate with exposure levels.

Storage

- Store in a cool, well ventilated place.
- Store away from incompatible materials.
- Keep container tightly closed.
- Keep securely closed when not in use.

SECTION 8 : EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

- **Exposure Limits Values**

Chemical name	WEL 8hr TWA (ppm)	STEL (ppm)	NIOSH	OSHA - Final PELs
3-Cyanopyridine	None	None	None	None

Exposure Controls

- 3-Cyanopyridine is a Transported Isolated Intermediate.
- Provide exhaust ventilation or other engineering controls to keep the relevant airborne concentrations below their respective occupational exposure limits. Local ventilation is usually preferred. Ensure that eyewash stations and safety showers are close to the workstation location.
- The substance is rigorously contained by technical means during its whole life cycle including use, purification, cleaning, maintenance of equipment, sampling, analysis, loading and unloading of equipment vessels, waste disposal or purification and storage
- Procedural and control technologies are used that minimize emission and any resulting exposure
- Only properly trained and authorized personnel handle this susbstance.

- In the case of cleaning and maintenance works, special procedures such as purging and washing are applied before the system is opened and entered.

Personal Protection

- Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled. The resistance of the protective clothing to chemicals should be ascertained with the respective supplier.
- **Hands**: Wear appropriate protective gloves to prevent skin exposure.
- **Eyes**: Wear impact resistance eye protection with side shields or goggles.Wear a face shield along with goggles when working with corrosive, highly irritating or toxic substances.Safety goggles/ Chemical Safety glasses and Face shield.
- **Clothing**: Boots and Impervious clothing to prevent contact.
- **Respirator**: Follow the OSHA respirator regulations found in 29CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

General Industrial hygiene

- Immediately change contaminated clothing.
- Wash hands and face after working with the substance.
- Under no circumstances eat or drink at the workplace.

SECTION 9 : PHYSICAL AND CHEMICAL PROPERTIES

- **Information on basic physical and chemical properties.**

Sr.No.	Parameter	Typical value
1.	Appearance	3-Cyanopyridine is a liquid or, when cool, a waxy solid which is not available to be inhaled as particles. It is used as a liquid in all post-manufacturing applications
2.	Odor	Characteristic
3.	Odor Threshold	Not available
4.	pH	Not available
5.	Melting point/Freezing point	51°C
6.	Boiling point	206.9 deg C @ 760.00mmHg
7.	Flash point	84^{0}C
8.	Evaporation rate (n-BuAc=1)	Not available
9.	Flammability (Solid, gas)	Not available
10.	Upper/lower flammability or Explosive limits	Not available
11.	Vapor pressure	0.296 mm Hg, or 0.395 hPa, at 25 ℃.
12.	Vapor density (air=1)	Not available
13.	Relative density	1.159
14.	Solubility	Soluble in water, alcohol, benzene, ether, hot petrol ether.
15.	Log Pow, partition coefficient (Octonol /water)	0.36@25^{o}C
16.	Auto-ignition temperature	> 600℃
17.	Decomposition temperature	Not available
18.	Viscosity	Not available
19.	Explosive property	Not available
20.	Oxidizing property	Not available

SECTION 10: STABILITY AND REACTIVITY

- **Chemical stability:** Stable under normal temperature and pressure.

- **Possibility of hazardous reactions:** Thermal decomposition may produce Cyanide, nitrogen oxides and carbon monoxide.
- **Conditions to avoid:** Keep away from heat, sparks, flame, high temperature and incompatible chemicals.
- **Incompatible materials:** Acids and acid chlorides, Oxidizing materials like hydrogen peroxide and sulphuric acid and Chloroformates.
- **Hazardous decomposition products:** Thermal decomposition may produce Cyanide, nitrogen oxides and carbon monoxide.
- **Hazardous Polymerization:** Will not occur.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

- ***Acute toxicity***
- 3-Cyanopyridine causes serious eye damage. It is harmful if swallowed .Symptoms of overexposure includes weakness, dizziness, headache, nausea, loss of appetite and unconsciousness. Extended exposure may lead to irritation and possibly systemic poisoning.

CHRONIC EFFECTS:

- Damage to the liver and kidneys.
- **Target Organs**: Liver and Kidney.

TOXICITY:

RTECS#: QT3030000
Acute Oral Rat LD50 = 1185 mg/kg
Acute Dermal LDLo:(Rabbit) = 4000 mg/kg
Eye Irritation Draize Test (Rabbit) **=** Highly irritating
Genetic Toxicity In Vitro (Ames Test) = Negative

- **Oral**

Method	Result	Reference
Rat (Sherman-Wistar) male Oral: gavage no information on method	LD50: 1100 mg/kg bw (male) based on: test mat	Karnatz, R. A., R. A. Kattau and P. Mackell (1973)

- **Dermal**

Method	Result	Reference
Rabbit (Albino) male/female Coverage: occlusive not stated	LD50: 2 gm/kg (male) based on: test mat. LD50: 2 — 4 gm/kg (female) based on: test mat.	Gabriel KL (1978)

a) SKIN CORROSION/IRRITATION

Method	Result	Reference
Rabbit (Albino) Coverage: occlusive 52 FR 42964; U.S. Department of Transportation	not irritating qualitative assessment of corrosion: (mean) (Time point: 48 h) (qualitative assessment for skin corrosion)	FitzGerald GB (1991)

The conduct of in vitro testing for skin irritation is not scientifically indicated. Existing data on skin irritation generated in vivo indicates that this substance is not irritating to the skin.

b) SERIOUS EYE DAMAGE/IRRITATION

Method	Result	Reference
equivalent or similar to no information on method	irritating : (mean) (qualitative assessment))	International Labour Office (1983)

The conduct of in vitro testing for eye irritation is not scientifically indicated. Existing data on eye irritation generated in vivo indicates that this substance is irritating to the eye.

Summary: 3-Cyanopyridine was found to be non-irritating to the skin of rabbits after 3 or 60 minutes, and 4 hours. However, application of 0.1 ml into the eyes of rabbits resulted in severe damage which persisted throughout 21 days. There is no data available for respiratory irritation.

c) RESPIRATORY OR SKIN SENSITIZATION;

- **Skin**

Method	Result	Reference
Guinea pig (Hartley HsdPOC: DH) female Buehler test Induction: epicutaneous, occlusive Challenge: epicutaneous, occlusive OECD Guideline 406 (Skin Sensitisation) (Also EC Guideline 96/54/EEC)	Not sensitising No. with positive reactions: 1st reading: 0 out of 10 (negative control); 24 h after chall.; dose: 0.5 ml water 2nd reading: 0 out of 10 (negative control); 48 h after chall.; dose: 0.5 ml water 1st reading: 0 out of 20 (test group); 24 h after chall.; dose: 0.5 ml 2nd reading: 0 out of 20 (test group); 48 h after chall.; dose: 0.5 ml	Berthold K

- **Respiratory: No data is available**

3 -Cyanopyridine is not a dermal sensitiser when tested in vivo in OECD guideline procedures. There is no indication that it is a respiratory sensitiser. It is thus not classified.

d) GERM CELL MUTAGENICITY

Method	Results	Reference
Bacterial reverse mutation assay (e.g. Ames test) (gene mutation) S. typhimurium TA 1535, TA 1537, TA 98 and TA 100 (met. act.: with and without) E. coli WP2 uvr A (met. act.: with and without) Doses: 313, 625, 1250, 2500, 5000 micromole/plate (common ratio of 2). Maximum concentration of 50 mg/mL of 3-cyanopyridine in injection-use water, the solution was diluted with the same solvent at a common ration of 2 for use. equivalent or similar to OECD Guideline 471 (Bacterial Reverse Mutation Assay)	Evaluation of results:Negative Test results:Negative for S. typhimurium TA 1535, TA 1537, TA 98 and TA 100(all strains/cell types tested); met. act.: with and without; cytotoxicity: yes negative for E. coli WP2 uvr A(all strains/cell types tested); met. act.: with and without; cytotoxicity: yes	Mizuno, F, Enomoto Y, IshigeY (2001)

e) CARCINOGENICITY

- Not listed byACGIH, NTP, IARC and OSHA.

f) REPRODUCTIVE TOXICITY

- No information is available.

g) STOT-SINGLE EXPOSURE

- No information is available.

h) STOT- REPEATED EXPOSURE

- No information available.

i) ASPIRATION HAZARD.

- No information available.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity

- **Ecotoxicity:**
- No firm data available.

Chronic Toxicity to Fish:

- No information is available.

Persistence and degradability

- A vapor pressure of 0.296 mm Hg at 25 deg C suggests that 3-cyanopyridine will exist solely as a vapor in the ambient- atmosphere.
- Vapor-phase 3-pyridinecarbonitrile will be degraded in the atmosphere by reaction with photo chemically-produced hydroxyl radicals. The half-life for this reaction in air is estimated to be 246 days.

Bioaccumulative potential(Predicted)

- An estimated BCF of 3 suggests that the potent bioconcentration in aquatic organisms is low.
- Chemical hydrolysis is expected to be low.

Mobility in soil

- If released to soil, 3-pyridinecarbonitrile is expected to have very high mobility based upon an estimated Koc of 37.
- Volatilization from surfaces is not expected to be an important fate process based upon Henry's Law constant of 2.74X10-7 atm-cu m/mole.
- Log Pow=0.36@25°C
- Based on a classification scheme(1), an estimated value of 37 (SRC), determined from a measured log Kow of 0.36 indicates that 3-Cyanopyridine is expected to have very high mobility in soil.

Other adverse effects

- **Environment Fate:**
- Based on environmental modeling, this material is not expected to be persistent in the environment, has a low potential to bioaccumulate. The biodegradability of the substance has been adequately characterized .Since this is an estimated result it is recommended that the material should not be disposed into the environment. The material should never be disposed into the sewage.

SECTION 13: Disposal considerations

- **Waste treatment methods**
- Burn in a chemical incinerator equipped with an afterburner and scrubber.
- Exert extra care in igniting, as this material is combustible material.
- Dispose of this material in accordance with standard practice for disposal of potentially hazardous materials as required by applicable federal, state or local laws. Note that disposal regulations may also apply to empty containers and equipment rinsates.

SECTION 14: Transport information

- This substance is considered to be Non Hazardous for transport by Air/Rail/Road and Sea and thus notregulated by IATA/ICAO/ARD/RID/IMO/IMDG.

Environmental hazards

- It is expected that this chemical is not a marine pollutant and is not Harmful to the Aquatic environment.

SECTION 15: REGULATORY INFORMATION

- **European Union Information**

Classification as per CLP Regulation 1272/2008:

- **Hazards Class and Category**: Acute Tox.Oral Cat.4, Serious eye damage Cat.1
- **Hazard Statements:** *H302; H318*

US information

- **TSCA**

CAS# 100-54-9 is listed on the TSCA inventory.

- **Health & Safety Reporting List**

CAS# 100-54-9: Effective Date: June 1, 1987; Sunset Date: December 29,1988

- **Chemical Test Rules**

None of the chemicals in this product are under a Chemical Test Rule.

- **Section 12b**

None of the chemicals are listed under TSCA Section 12b.

- **TSCA Significant New Use Rule**

None of the chemicals in this material have a SNUR under TSCA.

- **SARA**

Section 302 (RQ)
None of the chemicals in this material have an RQ.

- **Section 302 (TPQ)**

None of the chemicals in this product have a TPQ.

- **Section 313**

No chemicals are reportable under Section 313.

- **Clean Air Act:**

This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.

- **Clean Water Act:**

None of the chemicals in this product are listed as HazardousSubstances under the CWA.
None of the chemicals in this product are listed as PriorityPollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

- **OSHA:**

None of the chemicals in this product are considered highly hazardous by OSHA.

- **STATE:**

3-Cyanopyridine, 98% is not present on state lists from CA, PA, MN, MA, FL, or NJ.

- **California**

No Significant Risk Level: None of the chemicals in this product are listed.

- **WGK (Water Danger/Protection)**

CAS# 100-54-9: 1

- **CANADA**

None of the chemicals in this product are listed on the DSL/NDSL list.
This product does not have a WHMIS classification.
AS# 100-54-9 is not listed on Canada's Ingredient Disclosure List.

Chemical Inventory Lists:

Status	
TSCA:	Present
EINECS:	202-863-0
Canada(DSL/NDSL):	NDSL
Japan:	(5)-742
Korea:	KE-29932
Australia:	Present
New Zealand:	Present
China:	Present
Philippines:	Present
Switzerland:	Not Listed

New Zealand GHS Classification: 6.1D oral, 6.3A, 6.4A, 9.3C (Approval number: HSR005023)
Japan GHS Classification :Not classified by this country.
Korea (MOL) GHS Classification: Not classified by this country.
Australia GHS Classification:Not classified by this country.
Taiwan GHS Classification:Not classified by this country.
Indonesia GHS Classification:Not classified by this country.
SARA 313:Not listed.
Reportable Quantities:Not listed.
State Regulations: Not applicable.
Other Regulatory Listings:Not applicable.

SECTION 16: OTHER INFORMATION

a) Compilation information of safety data sheet

Date of compilation	: April 04,2012
Chemical	: 3-Cyanopyridine
CAS #	:100-54-9
File Name	: 0021Gj Ghs12 Div.2sds 3-Cyanopyridine
Revision Number	: 12
Date of Revision	: January 14, 2016
Revision Due Date	: December, 2017
Supersedes date	: September10, 2015

b) A key or legend to aberrations and acronyms used in the safety data sheet

- PBT =Persistent Bioaccumulative and Toxic.
- vPvB= Very Persistent and Very Bioaccumulative.
- SCBA= Self Contained Breathing Apparatus.
- NIOSH REL= National Institute for Occupational Safety and Health Recommended Exposure Limit. OSHA PEL=Occupational Safety and Health Adminstration Permissible Exposure Limit.
- OELTWA= Occupational Exposure Limit Time Weighted Averages.
- IDLH= Immediately Dangerous to Life or Health.
- UEL= Upper Explosive Limit.
- LEL= Lower Explosive Limit.
- RTECS= Registry of Toxic Effects of Chemical Substances.
- NTP=National Toxicology Programm.

- IARC= International Agency for Research on Cancer.
- EPA=Environmental Protection Agency.
- TSCA= Toxic Substances Control Act.
- CERCLA= Comprehensive Environmental Response, Compensation, and Liability Act.
- SARA= Superfund Amendments and Reauthorization Act.
- NFPA= National Fire Protection Association.
- WHIMS= Workplace Hazardous Materials Information System.
- DSL/NDSL= Domestic/Non-Domestic Substances List.
- CSR=Chemical Safety Report.
- BCF = Bio Concentration Factor.
- DNEL = Derived No Effect Level.
- PNEC = Predicted No Effect Concentration.
- TLV = Threshhold Limit Value.
- ACGIH = American Conference of Governmental Industrial Hygienists.
- REACH = Registration, Evaluation .Authorisation and Restriction of Chemicals.
- CLP = Classification, Labelling and Packaging.
- LD / LC = Lethal Doses / Lethal Concentration.
- GHS = Globally Harmonised System.
- ADR = Accord europeen relative au transport international de marchandises.
- IMDG-Code = International Maritime Code for Dangerous Goods.
- EmS = Emergency measures on Sea.
- ICAO = International Civil Aviation Organization.
- IATA/DGR= International Air Transport Association/Dangerous Goods Regulation.

c) Key Literature reference and sources for data

Biographical reference and data sources

- CLP REG (regulation) (EC) no. 1272/2008, last modification by regulation (EC) no. 790/2009
- DIR 67/548/EWG, last modification by DIR 2009/2/EC
- REG (EC) no. 1907/2006, last modification by REG (EC) Nr. 453/2009.

SDS US (GHS HazCom 2012)

This information is based on our current knowledge and is intented to describe the product for the purposes of health, safety and environmental requirements only.It should not therefore be construed as guaranteeing any specific property of the product.

(End of Safety Data Sheet)