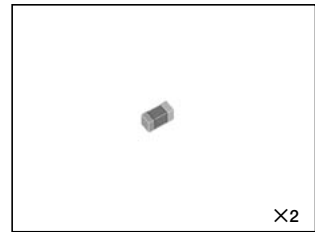


1608(0603)Size chip capacitors : MCH18

- Miniture, light weight
- Achieved high capacitance by thin and multi layer technology
- Lead-free plating terminal
- No polarity

Quick Reference

The design and specifications are subject to change without prior notice. Before ordering or using, please check the latest technical specifications. For more detail information regarding temperature characteristic code and packaging style code, please check product destination.



Range of thermal compensation capacitors

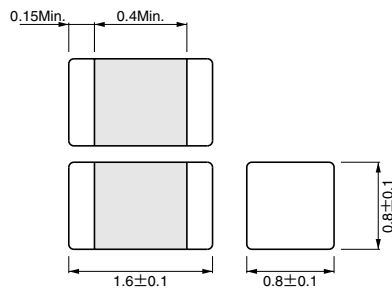
MCH18	Temperature	A,AN (CG) (C0G) (CH) Characteristic		Packing style code
	Rated voltage(V)	50V		
	Product thickness(mm)	0.8± 0.1		
	Capacitance(pF)	0.5～820、1,000		
Capacitance tolerance		〈11pF 以上〉: J(± 5%), 〈0.5 ～ 5pF〉: C(± 0.25pF), 〈5.1 ～ 10pF〉: D(± 0.5pF)		K, L, C
Nominal capacitance series		E24		

Range of high dielectric constant capacitors

MCH18	Temperature	CN(R) (B) (X7R) Characteristic		CN(X5R) Characteristic	Packing style code
	Rated voltage(V)	50V	25V	10V	
	Product thickness(mm)	0.8± 0.1			
	Capacitance(pF)	220~22,000	33,000~100,000	150,000~1,000,000	
Capacitance tolerance		K(±10%)			K, L, C
Nominal capacitance series		E6			

MCH18	Temperature	FN(F) (Y5V) Characteristic				Packing style code
	Rated voltage(V)	50V	25V	16V	10V	
	Product thickness(mm)	0.8± 0.1				
	Capacitance(pF)	1,000~100,000	100,000	220,000	470,000~1,000,000	
Capacitance tolerance		Z (+80%, -20%)				K, L, C
Nominal capacitance series		E3				

External dimensions (Unit : mm)



Code	Product thickness	Packing specification	Reel	Basic ordering unit(pcs.)
K	0.8mm	Paper tape(width 8mm, pitch 4mm)	φ 180mm (7in.)	4,000
L	0.8mm	Paper tape(width 8mm, pitch 4mm)	φ 330mm (13in.)	16,000
C	0.8mm	Bulk case	—	15,000

Reel(φ 180, φ 330mm):compatible with EIAJ ET-7200A
Bulk case:compatible with EIAJ ET-7201A

Production designation

Part No.



Rated voltage

Code	Voltage
4	10V
3	16V
2	25V
5	50V

Capacitance-temperature characteristics				Nominal capacitance	Capacitance tolerance	
Code	EIA code	Operating temp. range(°C)	Temp. coefficient or percent change		Code	Tolerance
A,AN	CG (C0G)	-55~+125	0±30ppm/°C	3-digit designation according to IEC	C	±0.25pF (0.5~5pF)
	CH	-55~+125	0±60ppm/°C		D	±0.5pF (5.1~10pF)
CN	R	-55~+125	±15%		J	±5% (11pF or more)
	B (X5R)	-25~+85	±10%		K	±10%
	(X7R)	(-55~+85)	(±15%)		Z	+80%, -20%
	(X7R)	(-55~+125)	(±15%)			
FN	F	-25~+85	+30%, -80%			
	(Y5V)	(-30~+85)	(+22%, -82%)			



■Product No. list

●Thermal compensation capacitors

Capacitance(pF)	Temperature		A・AN(CG) (COG) (CH) Characteristic
	Rated voltage(V)		
	Tolerance	Product thickness(mm)	
0.5	C(±0.25pF)	0.8±0.1	MCH185A (AN) 0R5C*
0.75			MCH185A (AN) R75C*
1.0			MCH185A (AN) 010C*
1.1			MCH185A (AN) 1R1C*
1.2			MCH185A (AN) 1R2C*
1.3			MCH185A (AN) 1R3C*
1.5			MCH185A (AN) 1R5C*
1.6			MCH185A (AN) 1R6C*
1.8			MCH185A (AN) 1R8C*
2.0			MCH185A (AN) 020C*
2.2			MCH185A (AN) 2R2C*
2.4			MCH185A (AN) 2R4C*
2.7			MCH185A (AN) 2R7C*
3.0			MCH185A (AN) 030C*
3.3			MCH185A (AN) 3R3C*
3.6			MCH185A (AN) 3R6C*
3.9			MCH185A (AN) 3R9C*
4.0			MCH185A (AN) 040C*
4.3			MCH185A (AN) 4R3C*
4.7			MCH185A (AN) 4R7C*
5.0			MCH185A (AN) 050C*
5.1	D(±0.5pF)	0.8±0.1	MCH185A (AN) 5R1D*
5.6			MCH185A (AN) 5R6D*
6			MCH185A (AN) 060D*
6.2			MCH185A (AN) 6R2D*
6.8			MCH185A (AN) 6R8D*
7			MCH185A (AN) 070D*
7.5			MCH185A (AN) 7R5D*
8			MCH185A (AN) 080D*
8.2			MCH185A (AN) 8R2D*
9			MCH185A (AN) 090D*
9.1	J(±5%)	0.8±0.1	MCH185A (AN) 9R1D*
10			MCH185A (AN) 100D*
11			MCH185A (AN) 110J*
12			MCH185A (AN) 120J*
13			MCH185A (AN) 130J*
15			MCH185A (AN) 150J*
16			MCH185A (AN) 160J*
18			MCH185A (AN) 180J*
20			MCH185A (AN) 200J*

Capacitance(pF)	Temperature		A・AN(CG) (COG) (CH) Characteristic	
	Rated voltage(V)			50V
	Tolerance	Product thickness(mm)		
22	J(±5%)	0.8±0.1	MCH185A (AN) 220J*	
24			MCH185A (AN) 240J*	
27			MCH185A (AN) 270J*	
30			MCH185A (AN) 300J*	
33			MCH185A (AN) 330J*	
36			MCH185A (AN) 360J*	
39			MCH185A (AN) 390J*	
43			MCH185A (AN) 430J*	
47			MCH185A (AN) 470J*	
51			MCH185A (AN) 510J*	
56			MCH185A (AN) 560J*	
62			MCH185A (AN) 620J*	
68			MCH185A (AN) 680J*	
75			MCH185A (AN) 750J*	
82			MCH185A (AN) 820J*	
91			MCH185A (AN) 910J*	
100			MCH185A (AN) 101J*	
110			MCH185A (AN) 111J*	
120			MCH185A (AN) 121J*	
130			MCH185A (AN) 131J*	
150			MCH185A (AN) 151J*	
160			MCH185A (AN) 161J*	
180			MCH185A (AN) 181J*	
200			MCH185A (AN) 201J*	
220			MCH185A (AN) 221J*	
240			MCH185A (AN) 241J*	
270			MCH185A (AN) 271J*	
300			MCH185A (AN) 301J*	
330			MCH185A (AN) 331J*	
360			MCH185A (AN) 361J*	
390	MCH185A (AN) 391J*			
430	MCH185A (AN) 431J*			
470	MCH185A (AN) 471J*			
510	MCH185A (AN) 511J*			
560	MCH185A (AN) 561J*			
620	MCH185A (AN) 621J*			
680	MCH185A (AN) 681J*			
750	MCH185A (AN) 751J*			
820	MCH185A (AN) 821J*			
1,000	MCH185A (AN) 102J*			

●High dielectric constant capacitors

* : Packaging Code

Capacitance(pF)	Temperature		CN(R) (B) (X7R) Characteristic		CN(X5R) Characteristic
	Rated voltage(V)		50V	25V	10V
	Tolerance	Product thickness(mm)	Product No.	Product No.	Product No.
220	K(±10%)	0.8±0.1	MCH185CN221K*		
330			MCH185CN331K*		
470			MCH185CN471K*		
680			MCH185CN681K*		
1,000			MCH185CN102K*		
1,500			MCH185CN152K*		
2,200			MCH185CN222K*		
3,300			MCH185CN332K*		
4,700			MCH185CN472K*		
6,800			MCH185CN682K*		
10,000			MCH185CN103K*		
15,000			MCH185CN153K*		
22,000			MCH185CN223K*		
33,000				MCH182CN333K*	
47,000				MCH182CN473K*	
68,000				MCH182CN683K*	
100,000				MCH182CN104K*	
150,000					MCH184CN154K*
220,000					MCH184CN224K*
330,000					MCH184CN334K*
470,000					MCH184CN474K*
680,000					MCH184CN684K*
1,000,000					MCH184CN105K*

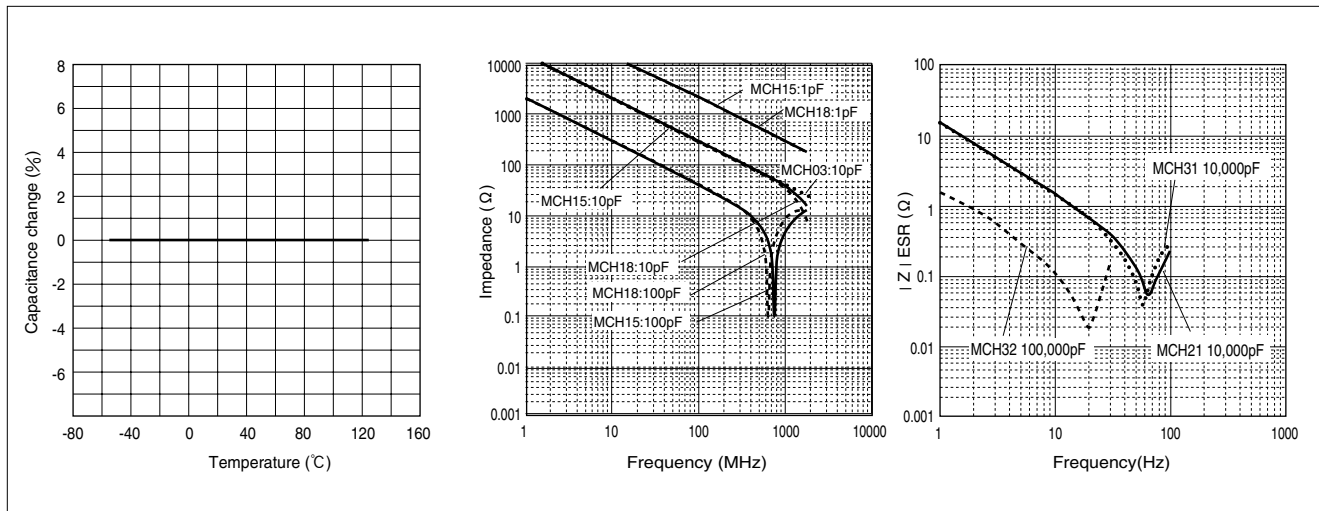
* : Packaging Code

Capacitance(pF)	Temperature		FN(F) (Y5V) Characteristic			
	Rated voltage(V)		50V	25V	16V	10V
	Tolerance	Product thickness(mm)	Product No.	Product No.	Product No.	Product No.
1,000	Z(+80%, -20%)	0.8±0.1	MCH185FN102Z*			
2,200			MCH185FN222Z*			
4,700			MCH185FN472Z*			
10,000			MCH185FN103Z*			
22,000			MCH185FN223Z*			
47,000			MCH185FN473Z*			
100,000			MCH185FN104Z*	MCH182FN104Z*		
220,000					MCH183FN224Z*	
470,000						MCH184FN474Z*
1,000,000						MCH184FN105Z*

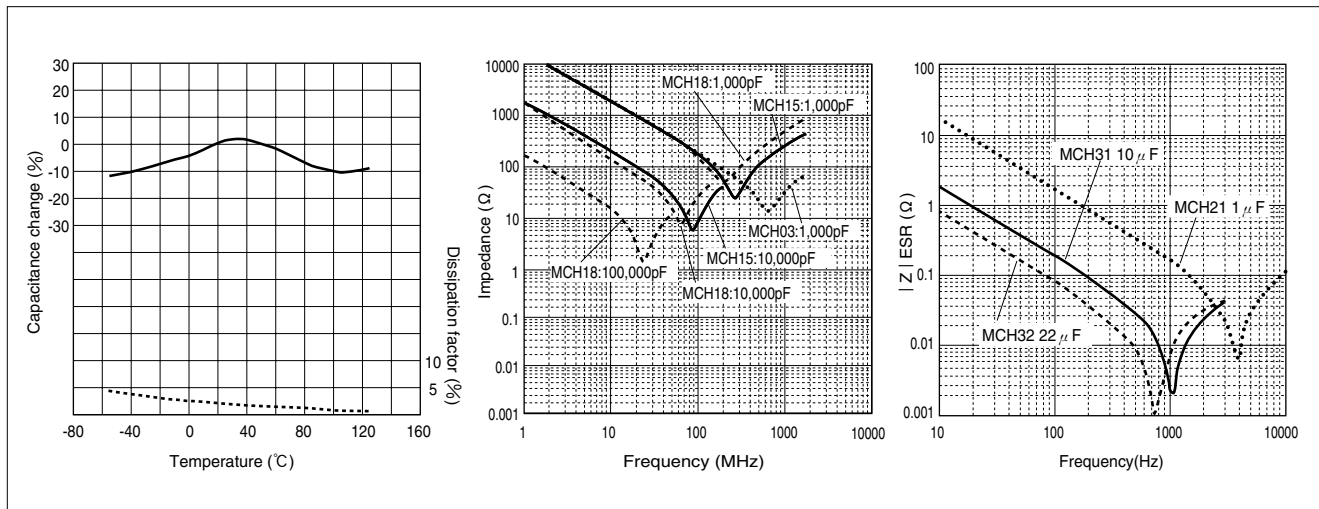
* : Packaging Code

■ Characteristics

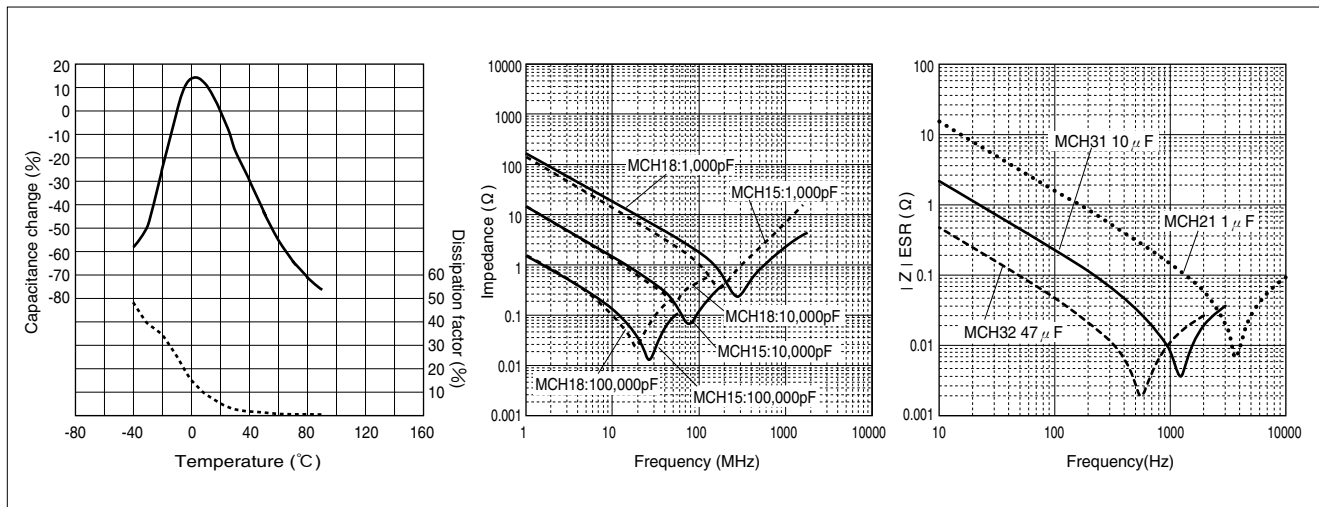
● A (CG) (C0G) (CH) Characteristics



● CN (R) (B) (X5R) (X7R) Characteristics



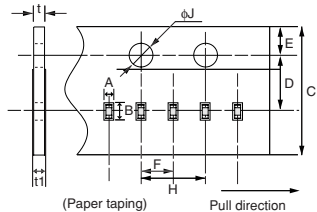
● FN (F) (Y5V) Characteristics



■ Packing specification

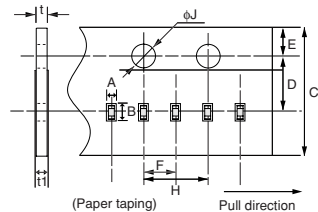
● Carrier tape dimensions (Unit:mm)

MCH03



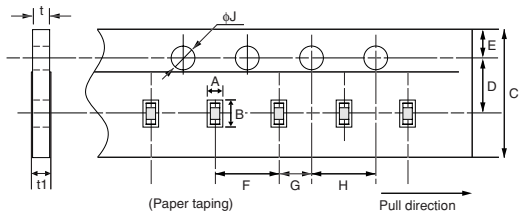
Code	A	B	C	D	E	F	H	J	t	t1
MCH03	0.37 ±0.03	0.67 ±0.03	8.0 ±0.2	3.5 ±0.05	1.75 ±0.1	2.0 ±0.05	4.0 ±0.1	φ1.5 +0.1 0	0.42 ±0.02	0.5 MAX

MCH15



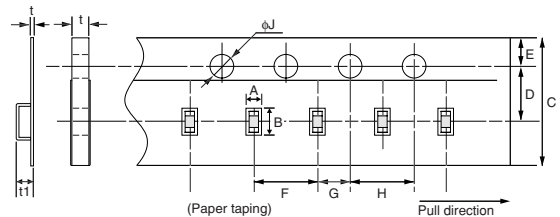
Code	A	B	C	D	E	F	H	J	t	t1
MCH15	0.65 ±0.05	1.15 ±0.05	8.0 ±0.2	3.5 ±0.05	1.75 ±0.1	2.0 ±0.05	4.0 ±0.1	φ1.5 +0.1 0	0.7 ±0.05	0.8 MAX

MCH18



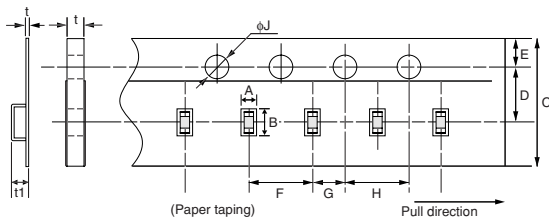
Code	A	B	C	D	E	F	G	H	J	t	t1
MCH18	1.0 ±0.05	1.8 ±0.05	8.0 ±0.3	3.5 ±0.05	1.75 ±0.1	4.0 ±0.1	2.0 ±0.05	4.0 ±0.1	φ1.5 +0.1 0	1.05 MAX.	1.2 MAX.

MCH21



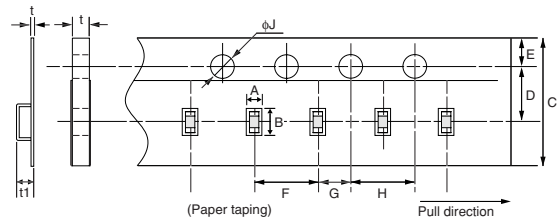
Code	A	B	C	D	E	F	G	H	J	t	t	t1
										Paper	Pulastic	
MCH21	1.5 ±0.2	2.3 ±0.2	8.0 ±0.3	3.5 ±0.05	1.75 ±0.1	4.0 ±0.1	2.0 ±0.05	4.0 ±0.1	φ1.5 +0.1 0	1.1 MAX.	0.3 MAX.	2.5 MAX.

MCH31



Code	A	B	C	D	E	F	G	H	J	t	t	t1
										Paper	Pulastic	
MCH31	1.9 ±0.2	3.5 ±0.2	8.0 ±0.3	3.5 ±0.05	1.75 ±0.1	4.0 ±0.1	2.0 ±0.05	4.0 ±0.1	φ1.5 +0.1 0	1.1 MAX.	0.3 MAX.	2.5 MAX.

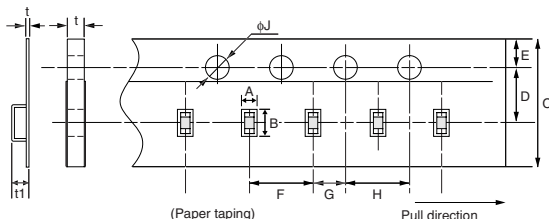
MCH32



Code	A	B	C	D	E	F	G	H	J	t	t1
										Pulastic	
MCH32	2.9	3.6	8.0 (12.0±0.3)	3.5±0.05 (5.0±0.03)	1.75 ±0.1	4.0 ±0.1	2.0 ±0.05	4.0 ±0.1	φ1.5 +0.1 0	0.6 MAX.	2.5MAX. (6.5MAX.)

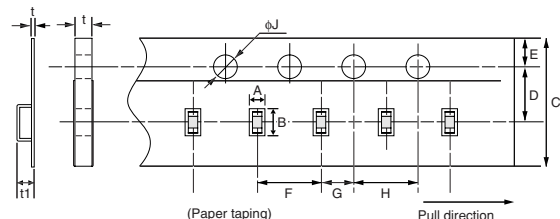
() 内は製品厚みの2.5mmに適用

MCH43



Code	A	B	C	D	E	F	G	H	J	t	t1
										Pulastic	
MCH43	3.6	4.9	12.0 ±0.3	5.5 ±0.05	1.75 ±0.1	8.0 ±0.1	2.0 ±0.05	4.0 ±0.1	φ1.5 +0.1 0	0.6 MAX.	6.5 MAX.

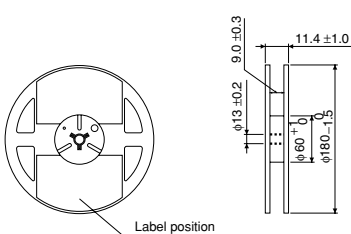
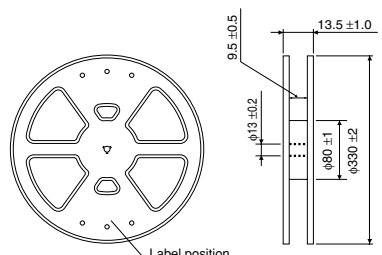
MCH55



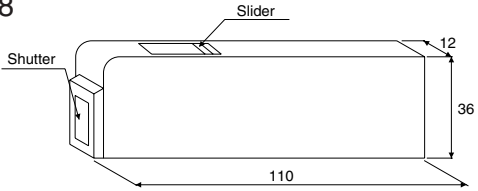
Code	A	B	C	D	E	F	G	H	J	t	t1
										Pulastic	
MCH55	5.4	6.1	12.0 ±0.3	5.5 ±0.05	1.75 ±0.1	8.0 ±0.1	2.0 ±0.05	4.0 ±0.1	φ1.5 +0.1 0	0.6 MAX.	6.5 MAX.

■ Packing specification

● Reel dimensions (Unit:mm)

φ 180mm Plastic reel	φ 330mm Plastic reel
MCH03 MCH15 MCH18 MCH21 MCH31 MCH32 MCH43 MCH55 	MCH15 MCH18 

● Bulk case dimensions (Unit:mm)

EIAJ ET-7201A compliant
MCH15 MCH18 

- For fundamental considerations on capacitors, refer to Electric Industries Association of Japan, technical report, "EIAJ RCR-2333, Guideline of notabilia for fixed multilayer ceramic capacitors for use in electronic equipment".

● The contents described herein are correct as of Sep, 2003.

● ROHM assumes no responsibility for the use of any circuits described herein, conveys no license under any patent or other right, and makes no representations that the circuits are free from patent infringement. Specifications subject to change without notice for the purpose of improvement.

The products listed in this catalog are designed to be used with ordinary electronic equipment or devices (such as audio visual equipment, office-automation equipment, communications devices, electrical appliances and electronic toys). Should you intend to use these products with equipment or devices which require an extremely high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), please be sure to consult with our sales representative in advance.

Excellence in Electronics

ROHM

ROHM CO., LTD.

21, Saiin Mizosaki-cho, Ukyo-ku, Kyoto
615-8585, Japan
TEL: (075)311-2121 FAX: (075)315-0172
URL: <http://www.rohm.com>

Contact us for further information about the products.

Atlanta U.S.A. / ROHM ELECTRONICS EASTERN SALES DIVISION
(DIVISION OF ROHM ELE.U.S.A.,LLC.)
TEL: +1(770)754-5972 FAX: +1(770)754-0691

Dallas U.S.A. / ROHM ELECTRONICS CENTRAL SALES DIVISION
(DIVISION OF ROHM ELE.U.S.A.,LLC.)
TEL: +1(972)312-8818 FAX: +1(972)312-0330

San Diego U.S.A. / ROHM ELECTRONICS WESTERN SALES DIVISION
(DIVISION OF ROHM ELE.U.S.A.,LLC.)
TEL: +1(858)625-3630 FAX: +1(858)625-3670

Germany / ROHM ELECTRONICS GERMANY SALES DIVISION
(DIVISION OF ROHM ELECTRONICS GMBH)
TEL: +49(2154)9210 FAX: +49(2154)921400

United Kingdom / ROHM ELECTRONICS UK SALES DIVISION
(DIVISION OF ROHM ELECTRONICS GMBH)
TEL: +44(1)908-282-666 FAX: +44(1)908-282-528

France / ROHM ELECTRONICS FRANCE SALES DIVISION
(DIVISION OF ROHM ELECTRONICS GMBH)
TEL: +33(1)41 23 14 00 FAX: +33(1)41 23 14 30

Hong Kong China / ROHM ELECTRONICS (H.K.) CO., LTD.
TEL: +852(2)7406262 FAX: +852(2)3758971

Shanghai China / ROHM ELECTRONICS (SHANGHAI) CO., LTD.
TEL: +86(21)6279-2727 FAX: +86(21)6247-2066

Dalian China / ROHM ELECTRONICS TRADING (DALIAN) CO., LTD.
TEL: +86(41)1230-8549 FAX: +86(41)1230-8537

Beijing China / BEIJING REPRESENTATIVE OFFICE
TEL: +86(10)8451-2426 FAX: +86(10)6460-9518

Taiwan / ROHM ELECTRONICS TAIWAN CO., LTD.
TEL: +886(2)2500-6956 FAX: +886(2)2503-2869

Korea / ROHM ELECTRONICS KOREA CORPORATION
TEL: +82(2)8182-700 FAX: +82(2)8182-715

Singapore / ROHM ELECTRONICS ASIA PTE. LTD. (RES / REI)
TEL: +65-332-2322 FAX: +65-332-5662

Malaysia / ROHM ELECTRONICS (MALAYSIA) SDN. BHD.
TEL: +60(3)7958-8355 FAX: +60(3)7958-8377

Philippines / ROHM ELECTRONICS (PHILIPPINES) SALES CORPORATION
TEL: +63(2)807-6872 FAX: +63(2)809-1422

Thailand / ROHM ELECTRONICS (THAILAND) CO., LTD.
TEL: +66(2)254-4890 FAX: +66(2)256-6334

Notes

- No technical content pages of this document may be reproduced in any form or transmitted by any means without prior permission of ROHM CO.,LTD.
- The contents described herein are subject to change without notice. The specifications for the product described in this document are for reference only. Upon actual use, therefore, please request that specifications to be separately delivered.
- Application circuit diagrams and circuit constants contained herein are shown as examples of standard use and operation. Please pay careful attention to the peripheral conditions when designing circuits and deciding upon circuit constants in the set.
- Any data, including, but not limited to application circuit diagrams information, described herein are intended only as illustrations of such devices and not as the specifications for such devices. ROHM CO.,LTD. disclaims any warranty that any use of such devices shall be free from infringement of any third party's intellectual property rights or other proprietary rights, and further, assumes no liability of whatsoever nature in the event of any such infringement, or arising from or connected with or related to the use of such devices.
- Upon the sale of any such devices, other than for buyer's right to use such devices itself, resell or otherwise dispose of the same, no express or implied right or license to practice or commercially exploit any intellectual property rights or other proprietary rights owned or controlled by
- ROHM CO., LTD. is granted to any such buyer.
- Products listed in this document use silicon as a basic material.
Products listed in this document are no antiradiation design.

The products listed in this document are designed to be used with ordinary electronic equipment or devices (such as audio visual equipment, office-automation equipment, communications devices, electrical appliances and electronic toys).

Should you intend to use these products with equipment or devices which require an extremely high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), please be sure to consult with our sales representative in advance.

About Export Control Order in Japan

Products described herein are the objects of controlled goods in Annex 1 (Item 16) of Export Trade Control Order in Japan.

In case of export from Japan, please confirm if it applies to "objective" criteria or an "informed" (by MITI clause) on the basis of "catch all controls for Non-Proliferation of Weapons of Mass Destruction.