



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

N-Channel and P-Channel Silicon MOSFET

## MCH6660 — General-Purpose Switching Device Applications

### Features

- ON-resistance Nch :  $R_{DS(on)1}=105m\Omega$ (typ.)  
Pch :  $R_{DS(on)1}=205m\Omega$ (typ.)
- 1.8V drive
- Halogen free compliance
- Protection diode in

### Specifications

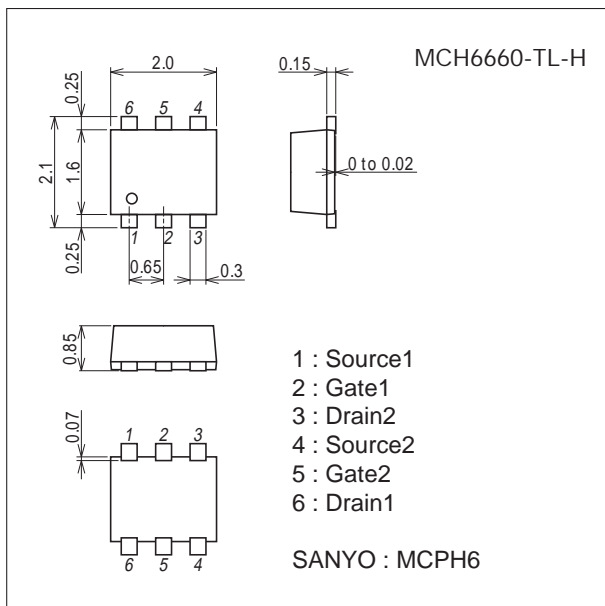
Absolute Maximum Ratings at  $T_a=25^\circ C$

Parameter	Symbol	Conditions	N-channel	P-channel	Unit
Drain-to-Source Voltage	$V_{DSS}$		20	-20	V
Gate-to-Source Voltage	$V_{GSS}$		$\pm 10$	$\pm 10$	V
Drain Current (DC)	$I_D$		2	-1.5	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu s$ , duty cycles $\leq 1\%$	8	-6	A
Allowable Power Dissipation	$P_D$	When mounted on ceramic substrate (900mm <sup>2</sup> x0.8mm) 1unit	0.8		W
Channel Temperature	$T_{ch}$		150		$^\circ C$
Storage Temperature	$T_{stg}$		-55 to +150		$^\circ C$

### Package Dimensions

unit : mm (typ)

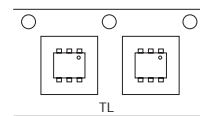
7022A-006



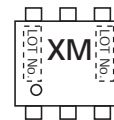
### Product & Package Information

- Package : MCPH6
- JEITA, JEDEC : SC-88, SC-70-6, SOT-363
- Minimum Packing Quantity : 3,000 pcs./reel

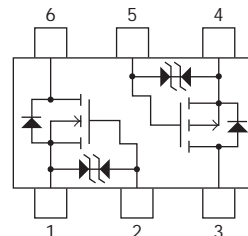
### Packing Type : TL



### Marking



### Electrical Connection



# MCH6660

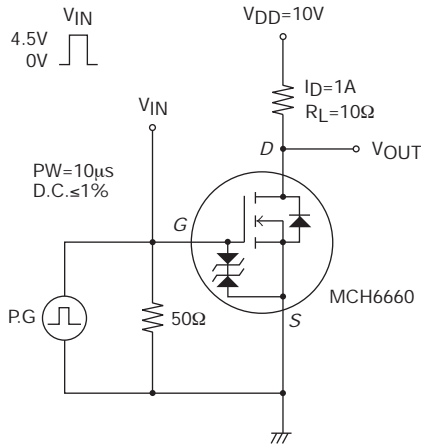
## Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[N-channel]						
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=1mA, VGS=0V	20			V
Zero-Gate Voltage Drain Current	IDSS	VDS=20V, VGS=0V			1	μA
Gate-to-Source Leakage Current	IGSS	VGS=±8V, VDS=0V			±10	μA
Cutoff Voltage	VGS(off)	VDS=10V, ID=1mA	0.4		1.3	V
Forward Transfer Admittance	yfs	VDS=10V, ID=1A		1.9		S
Static Drain-to-Source On-State Resistance	RDS(on)1	ID=1A, VGS=4.5V		105	136	mΩ
	RDS(on)2	ID=0.5A, VGS=2.5V		147	205	mΩ
	RDS(on)3	ID=0.3A, VGS=1.8V		212	318	mΩ
Input Capacitance	Ciss	VDS=10V, f=1MHz		128		pF
Output Capacitance	Coss			28		pF
Reverse Transfer Capacitance	Crss			21		pF
Turn-ON Delay Time	t <sub>d(on)</sub>		See specified Test Circuit.		5.1	
Rise Time	t <sub>r</sub>			11		ns
Turn-OFF Delay Time	t <sub>d(off)</sub>			14.5		ns
Fall Time	t <sub>f</sub>			12		ns
Total Gate Charge	Qg	VDS=10V, VGS=4.5V, ID=2A			1.8	
Gate-to-Source Charge	Qgs			0.3		nC
Gate-to-Drain "Miller" Charge	Qgd			0.55		nC
Diode Forward Voltage	VSD		IS=2A, VGS=0V		0.85	1.2
[P-channel]						
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=-1mA, VGS=0V	-20			V
Zero-Gate Voltage Drain Current	IDSS	VDS=-20V, VGS=0V			-1	μA
Gate-to-Source Leakage Current	IGSS	VGS=±8V, VDS=0V			±10	μA
Cutoff Voltage	VGS(off)	VDS=-10V, ID=-1mA	-0.4		-1.4	V
Forward Transfer Admittance	yfs	VDS=-10V, ID=-750mA		1.9		S
Static Drain-to-Source On-State Resistance	RDS(on)1	ID=-750mA, VGS=-4.5V		205	266	mΩ
	RDS(on)2	ID=-300mA, VGS=-2.5V		295	413	mΩ
	RDS(on)3	ID=-100mA, VGS=-1.8V		430	645	mΩ
Input Capacitance	Ciss	VDS=-10V, f=1MHz		120		pF
Output Capacitance	Coss			26		pF
Reverse Transfer Capacitance	Crss			20		pF
Turn-ON Delay Time	t <sub>d(on)</sub>		See specified Test Circuit.		5.3	
Rise Time	t <sub>r</sub>			9.7		ns
Turn-OFF Delay Time	t <sub>d(off)</sub>			16		ns
Fall Time	t <sub>f</sub>			14		ns
Total Gate Charge	Qg	VDS=-10V, VGS=-4.5V, ID=-1.5A			1.7	
Gate-to-Source Charge	Qgs			0.28		nC
Gate-to-Drain "Miller" Charge	Qgd			0.47		nC
Diode Forward Voltage	VSD		IS=-1.5A, VGS=0V		-0.89	-1.2

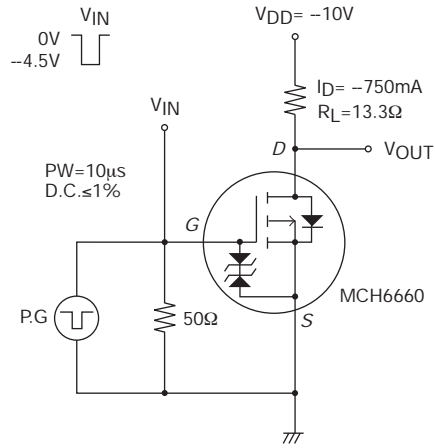
# MCH6660

## Switching Time Test Circuit

[N-channel]

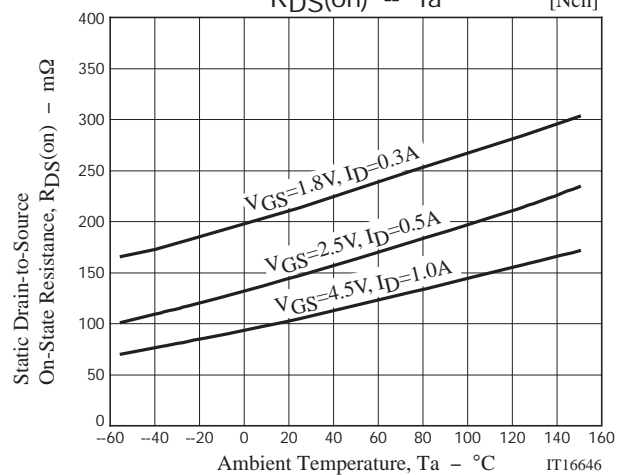
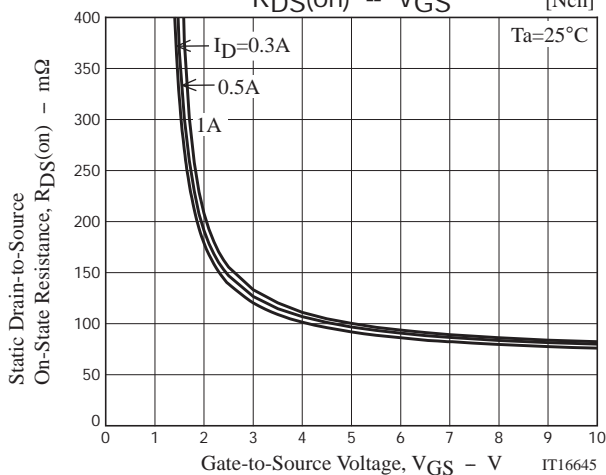
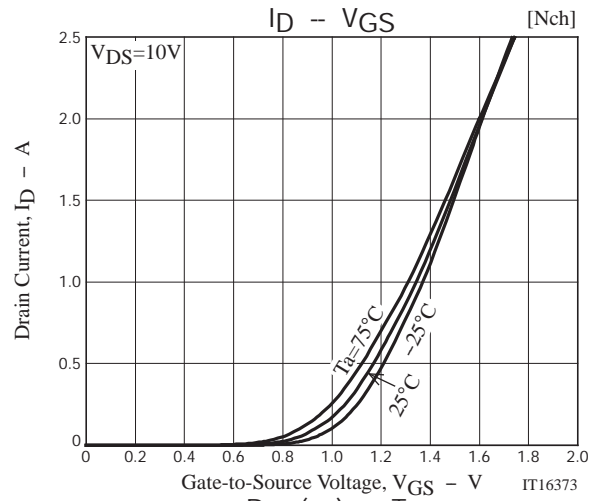
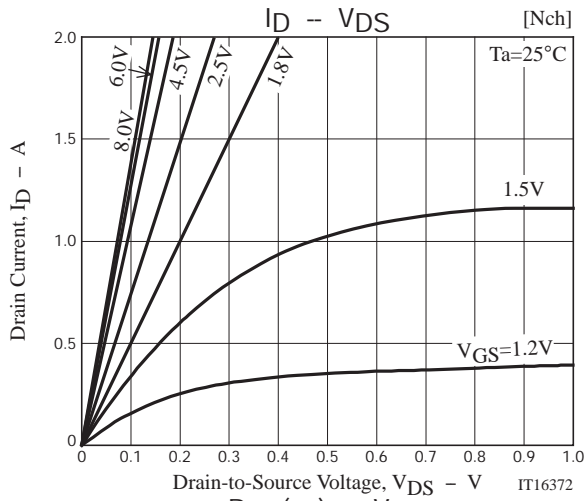


[P-channel]

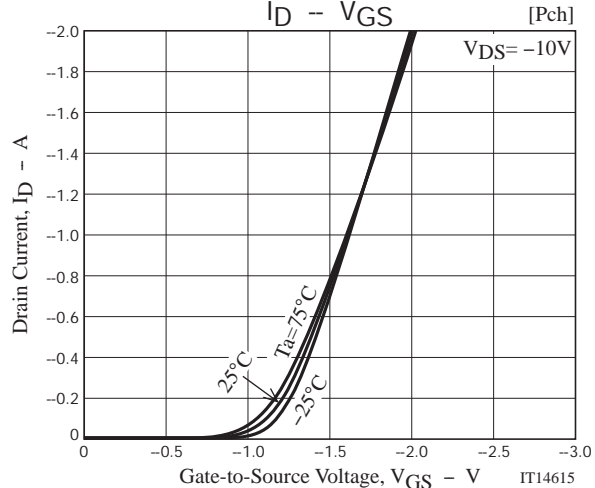
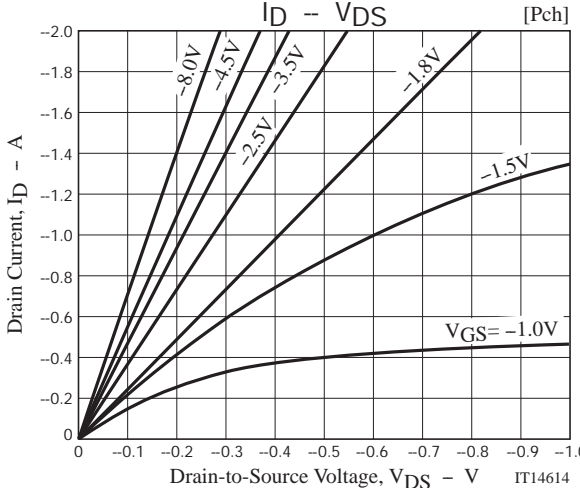
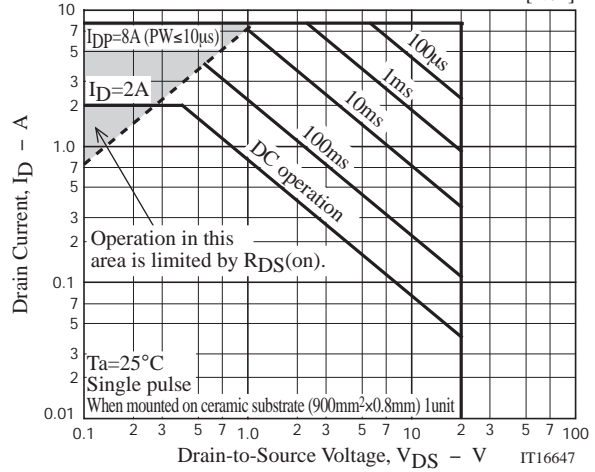
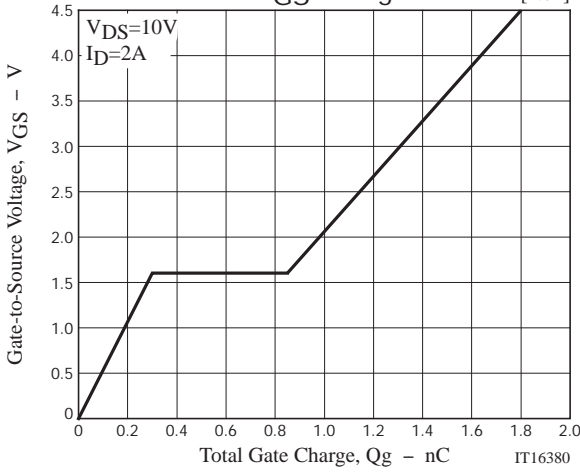
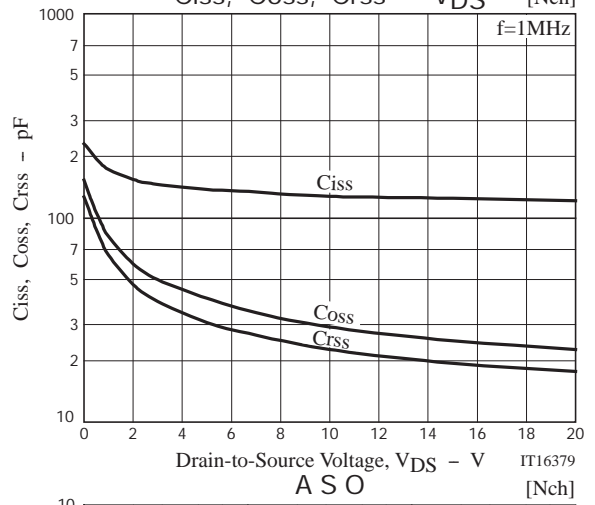
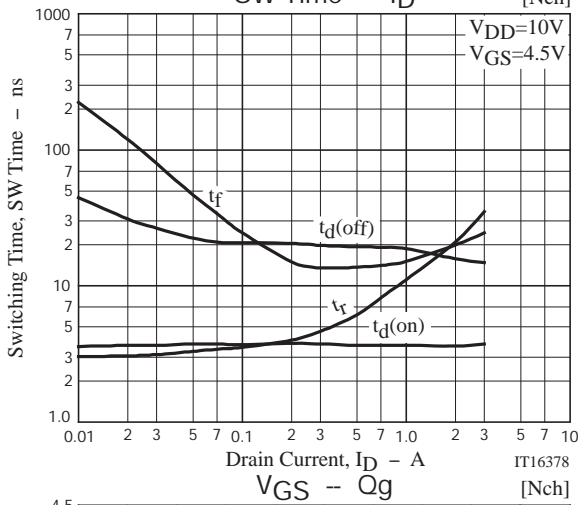
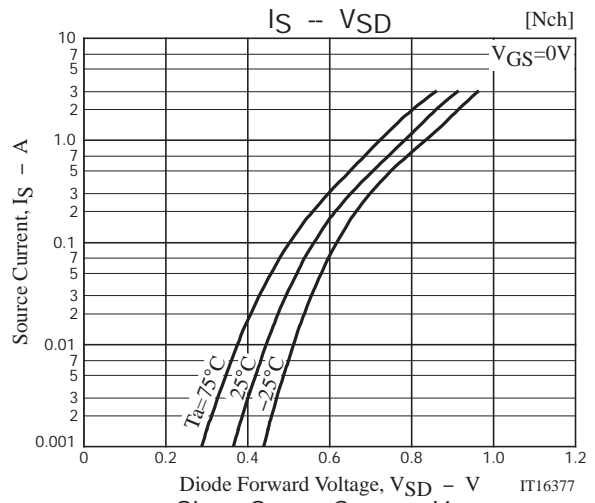
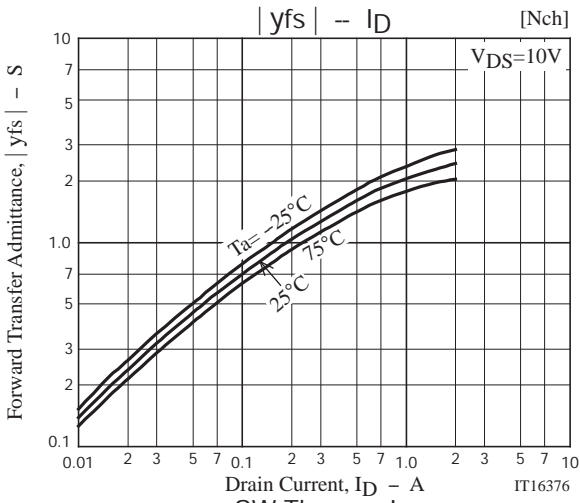


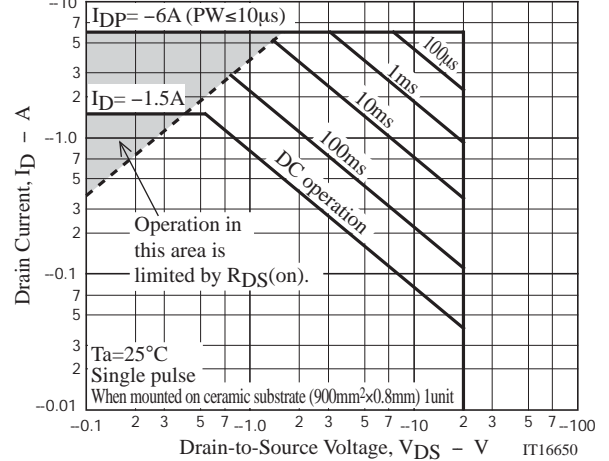
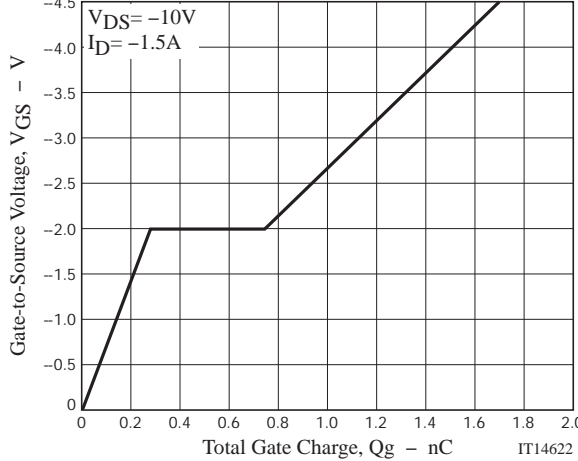
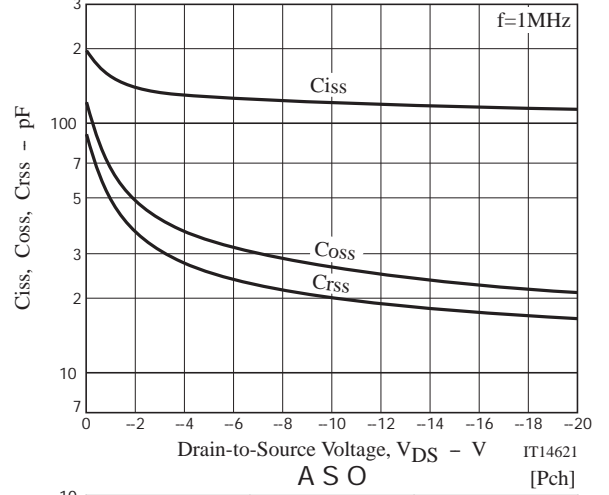
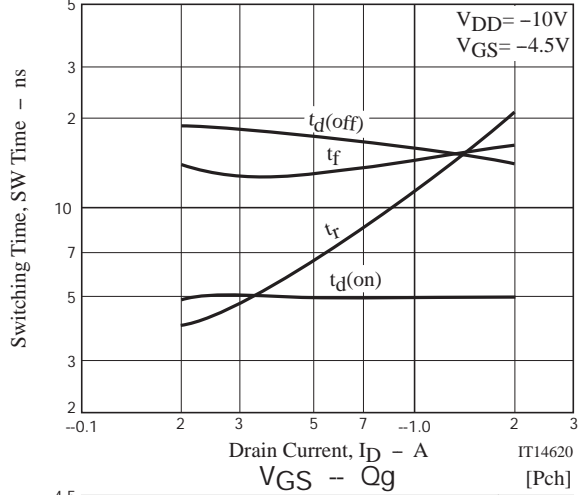
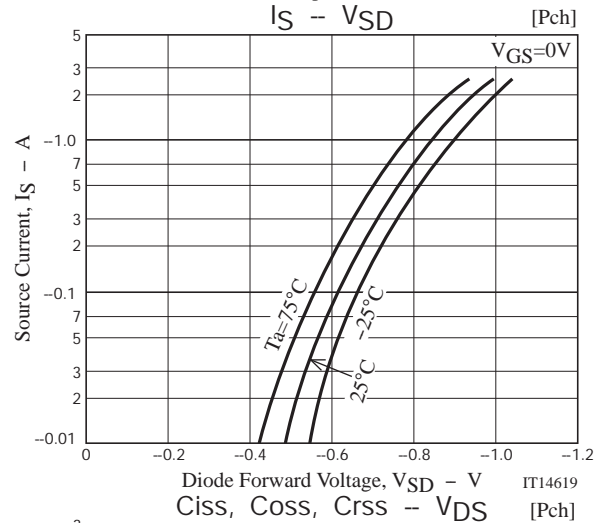
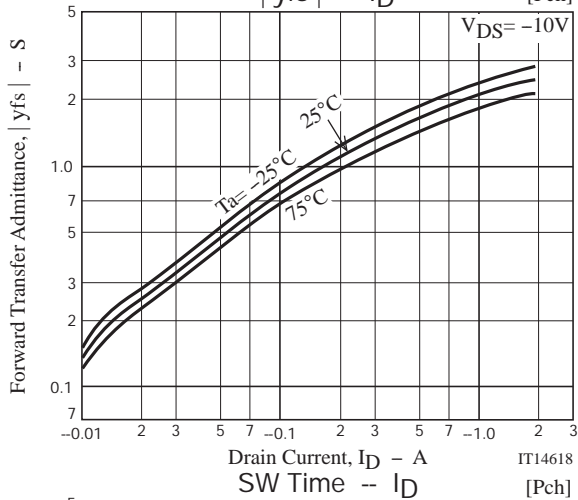
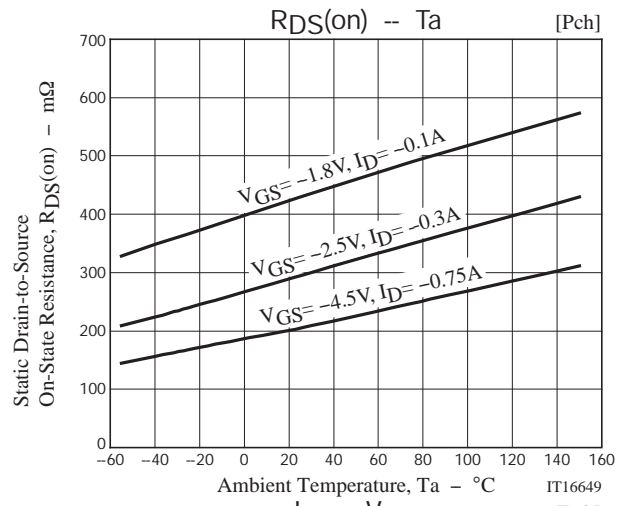
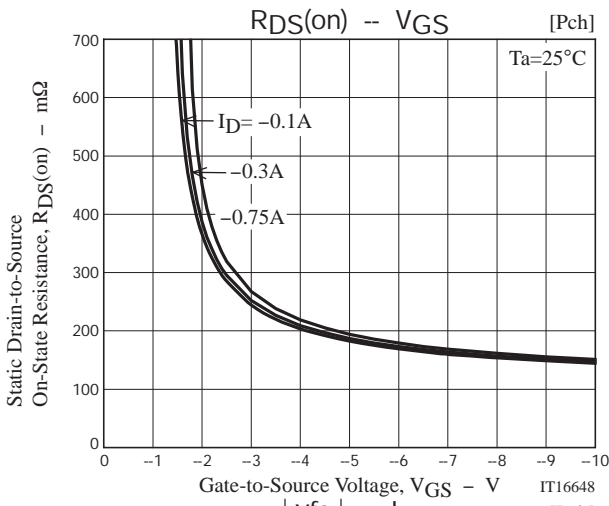
## Ordering Information

Device	Package	Shipping	memo
MCH6660-TL-H	MCPH6	3,000pcs./reel	Pb Free and Halogen Free

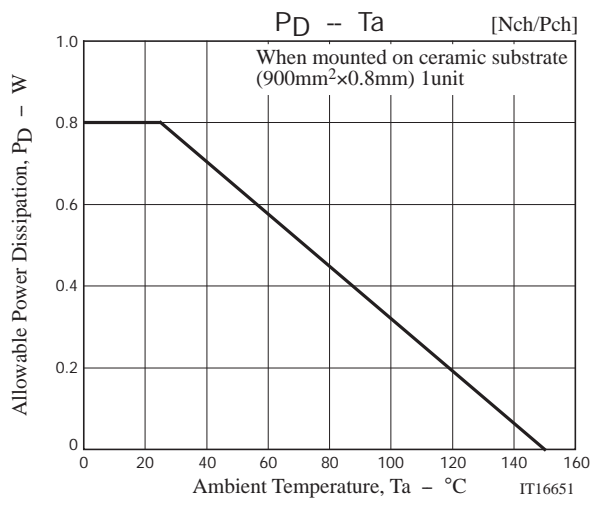


# MCH6660





# MCH6660



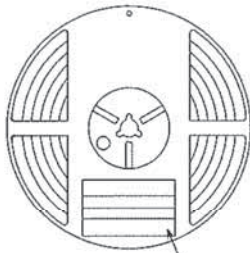
Embossed Taping Specification

MCH6660-TL-H

1. Packing Format

Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	Inner BOX (C-1)	Outer BOX (A-7)
MCPH6	MCP4	3,000	15,000	90,000	5 reels contained Dimensions:mm (external) 183×72×185	6 inner boxes contained Dimensions:mm (external) 440×195×210

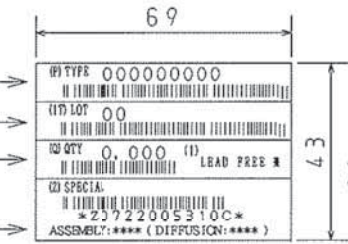
Packing method



Type No.  
LOT No.  
Quantity  
Origin

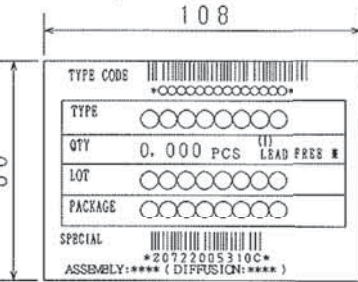
Reel label

Reel label, Inner box label  
(unit:mm)



Outer box label

(It is a label at the time of factory shipments. The form of a label may change in physical distribution process.)



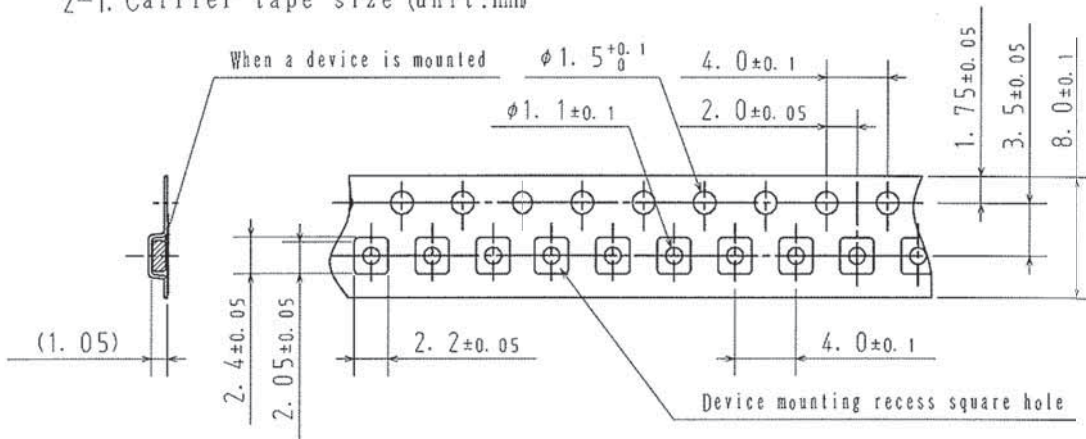
NOTE (1)

The LEAD FREE \* description shows that the surface treatment of the terminal is lead free.

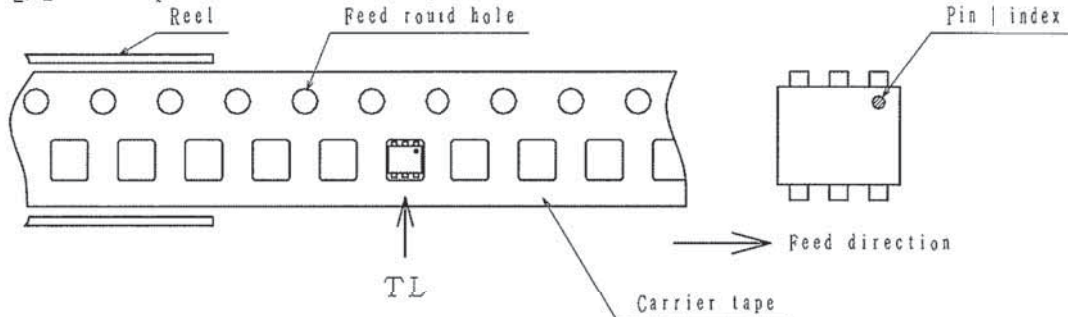
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

2-1. Carrier tape size (unit:mm)



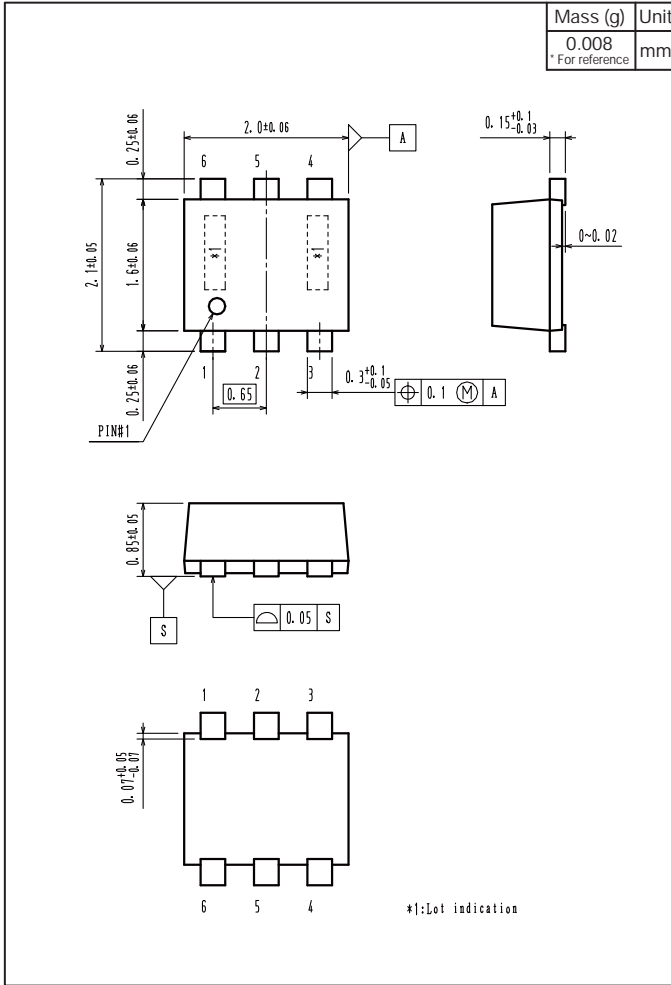
2-2. Device placement direction



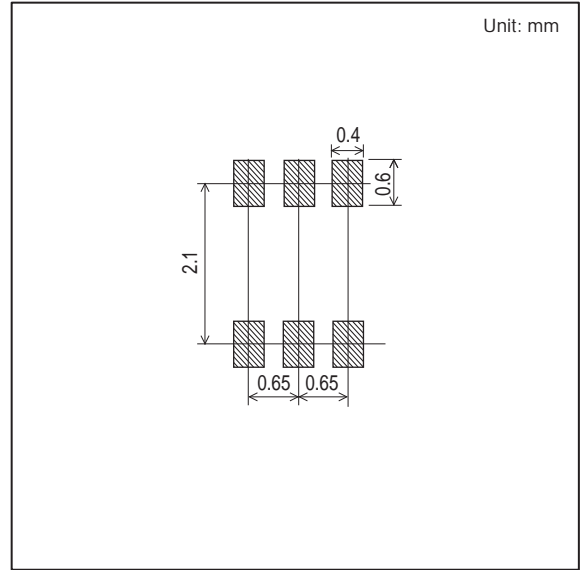
Those with pin | index on the feed hole side.....TL

# MCH6660

## Outline Drawing MCH6660-TL-H



## Land Pattern Example





Note on usage : Since the MCH6660 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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