Ordering number : EN6446C

SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

P-Channel Silicon MOSFET

MCH6603 — General-Purpose Switching Device Applications

Features

- Low ON-resistance
- Ultrahigh-speed switching
- 1.5V drive
- Composite type with 2 MOSFETs contained in a single package, facilitating high-density mounting
- Halogen free conplaiance

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		−50	V
Gate-to-Source Voltage	V_{GSS}		±10	V
Drain Current (DC)	I_D		−0.14	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	−0.56	A
Allowable Power Dissipation	P_D	When mounted on ceramic substrate (900mm^2×0.8mm)1unit	0.8	W
Channel Temperature	Tch		150	℃
Storage Temperature	Tstg		−55 to +150	℃

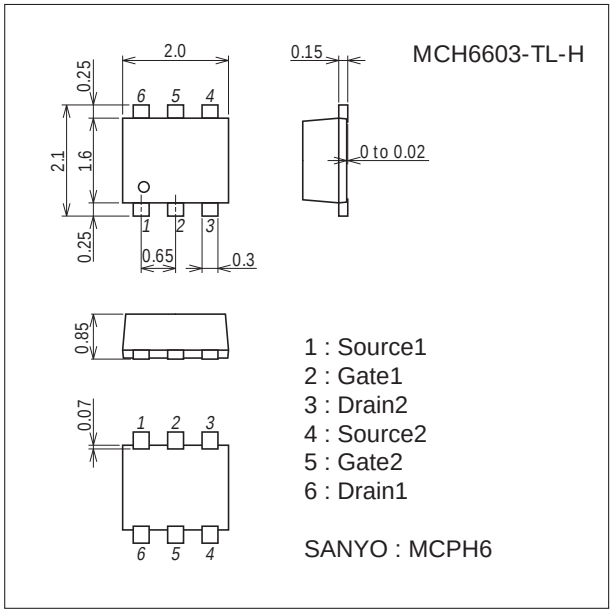
This product is designed to “ESD immunity < 200V*”, so please take care when handling.

* Machine Model

Package Dimensions

unit : mm (typ)

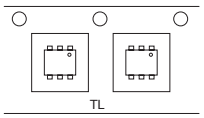
7022A-006



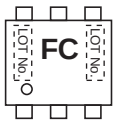
Product & Package Information

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

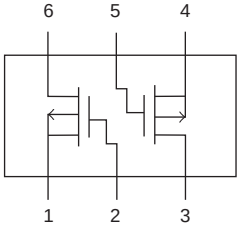
Packing Type : TL



Marking



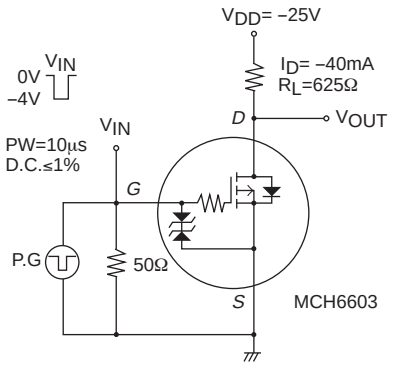
Electrical Connection



Electrical Characteristics at Ta=25°C

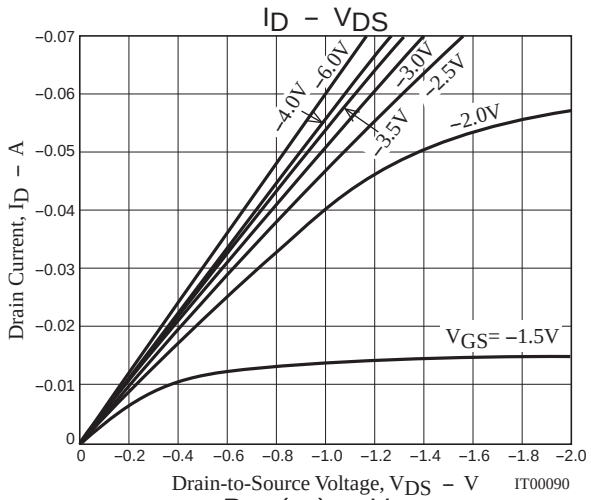
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=−1mA, V_{GS}=0V	−50			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=−50V, V_{GS}=0V			−1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0V			±10	μA
Cutoff Voltage	V_{GS}(off)	V_{DS}=−10V, I_D=−100μA	−0.4		−1.4	V
Forward Transfer Admittance	| yfs |	V_{DS}=−10V, I_D=−40mA	70	110		mS
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=−40mA, V_{GS}=−4V		18	23	Ω
	R_{DS}(on)2	I_D=−20mA, V_{GS}=−2.5V		20	28	Ω
	R_{DS}(on)3	I_D=−5mA, V_{GS}=−1.5V		30	60	Ω
Input Capacitance	Ciss	V_{DS}=−10V, f=1MHz		7.4		pF
Output Capacitance	Coss			4.2		pF
Reverse Transfer Capacitance	Crss			1.3		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		20		ns
Rise Time	t_r			35		ns
Turn-OFF Delay Time	t_d(off)			160		ns
Fall Time	t_f			150		ns
Total Gate Charge	Qg	V_{DS}=−10V, V_{GS}=−10V, I_D=−70mA		1.40		nC
Gate-to-Source Charge	Qgs			0.16		nC
Gate-to-Drain “Miller” Charge	Qgd			0.23		nC
Diode Forward Voltage	V_{SD}	I_S=−70mA, V_{GS}=0V		−0.85	−1.2	V

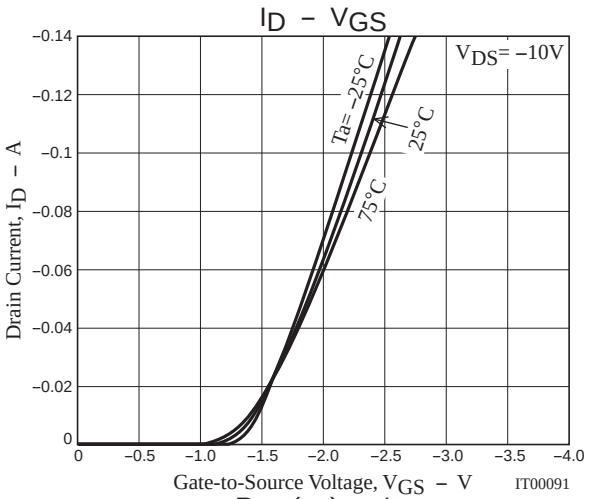
Switching Time Test Circuit

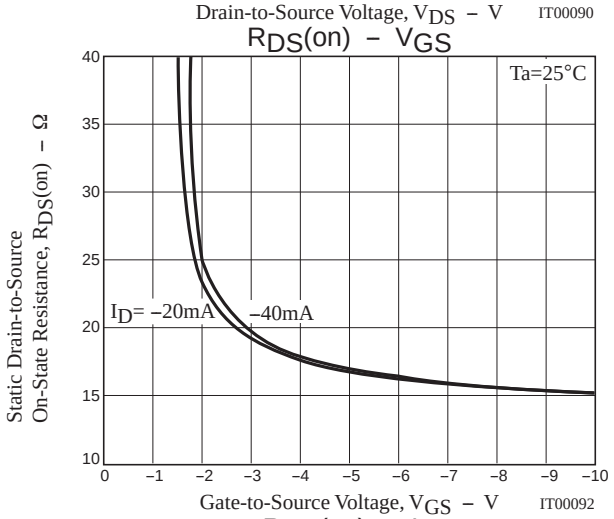


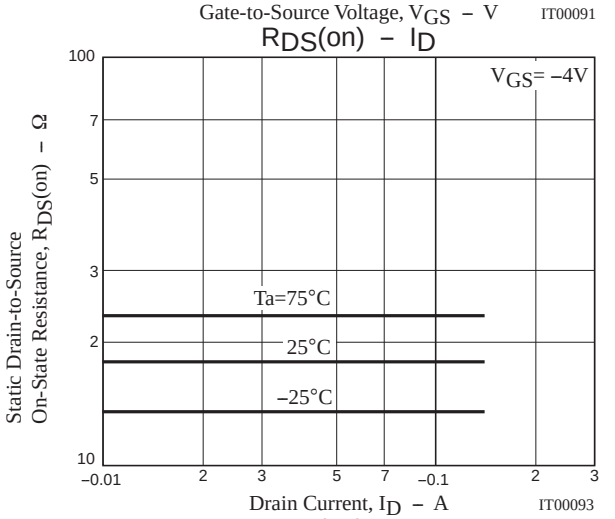
Ordering Information

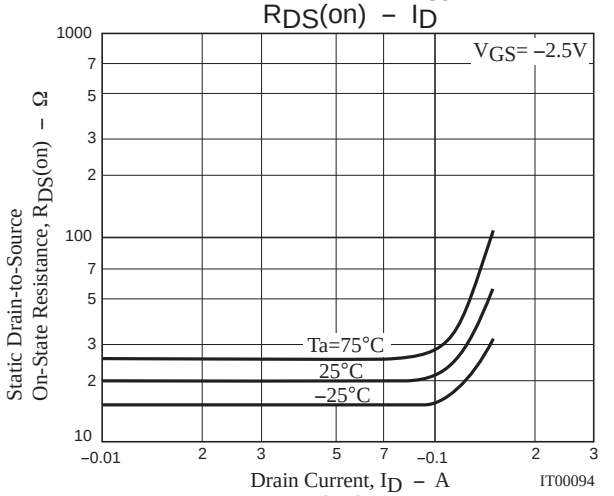
Device	Package	Shipping	memo
MCH6603-TL-H	MCPH6	3,000pcs./reel	Pb Free and Halogen Free

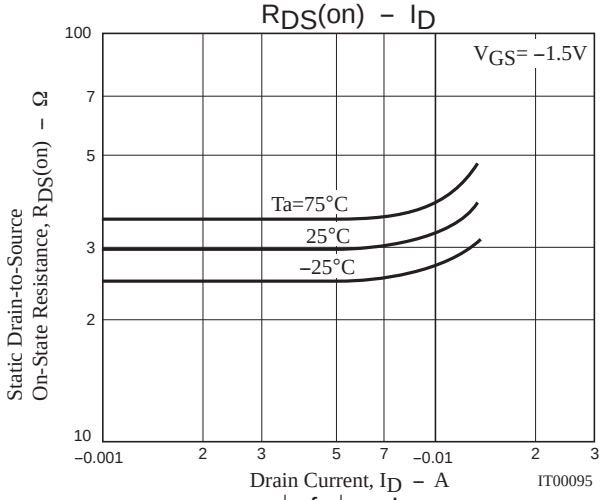

ID – VDS
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT00090
–4.0V
–6.0V
–3.0V
–2.5V
–3.5V
–2.0V
VGS= –1.5V

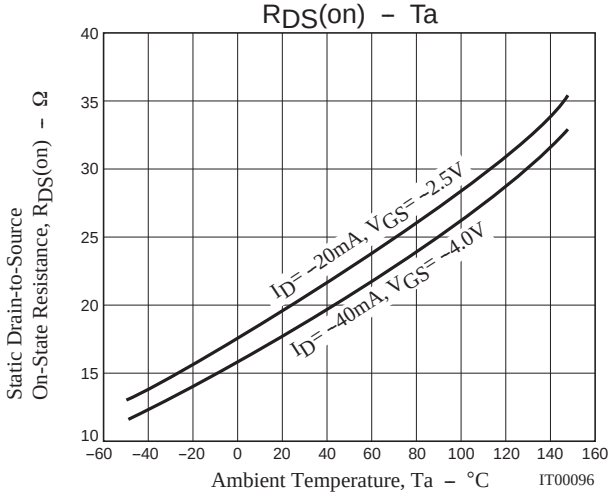

ID – VGS
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
IT00091
VDS= –10V
Ta= –25°C
25°C
75°C

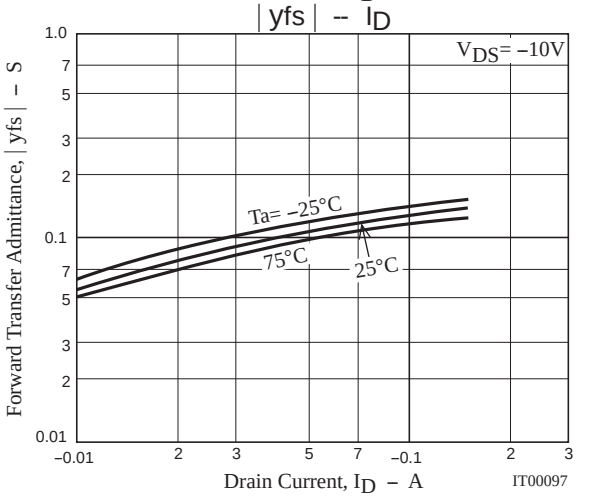

RDS(on) – VGS
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Gate-to-Source Voltage, VGS – V
IT00092
Ta=25°C
ID= –20mA
–40mA

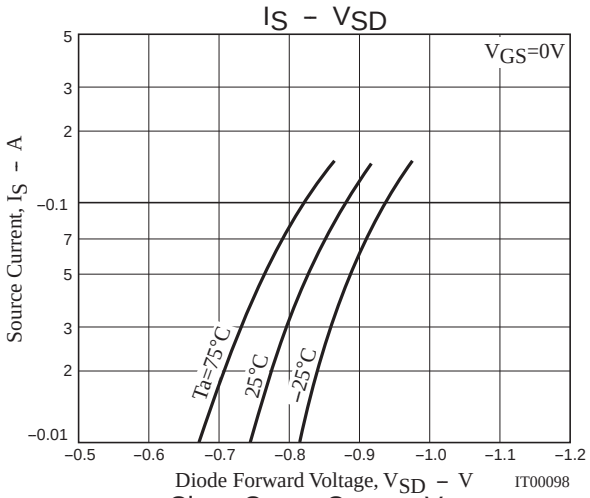

RDS(on) – ID
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Drain Current, ID – A
IT00093
VGS= –4V
Ta=75°C
25°C
–25°C

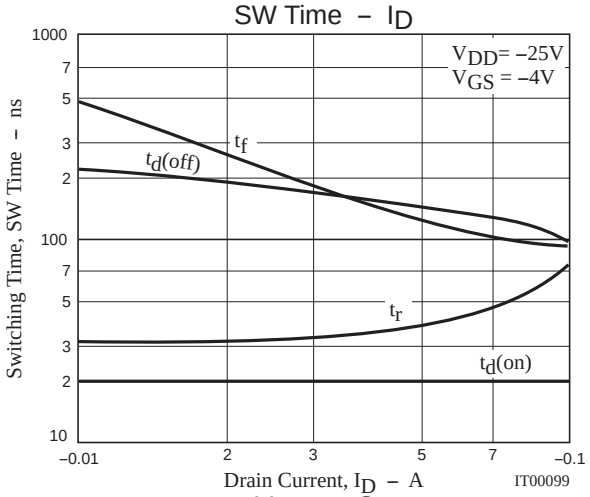

RDS(on) – ID
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Drain Current, ID – A
IT00094
VGS= –2.5V
Ta=75°C
25°C
–25°C

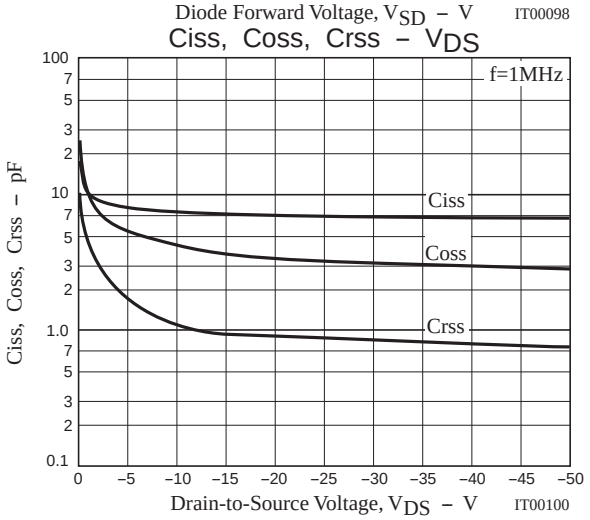

RDS(on) – ID
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Drain Current, ID – A
IT00095
VGS= –1.5V
Ta=75°C
25°C
–25°C

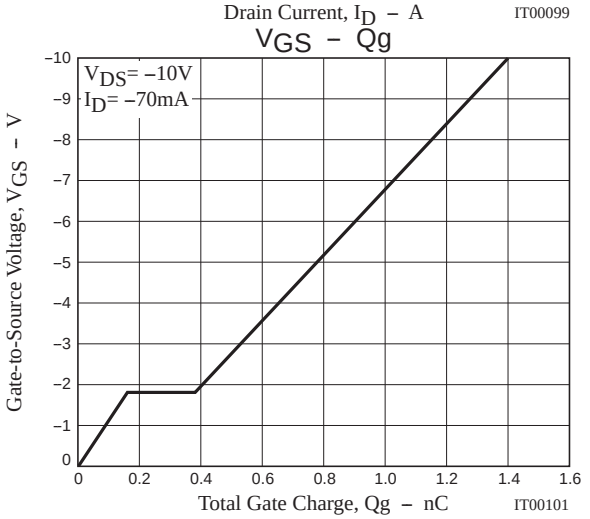

RDS(on) – Ta
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Ambient Temperature, Ta – °C
IT00096
ID= –20mA, VGS= –2.5V
ID= –40mA, VGS= –4.0V

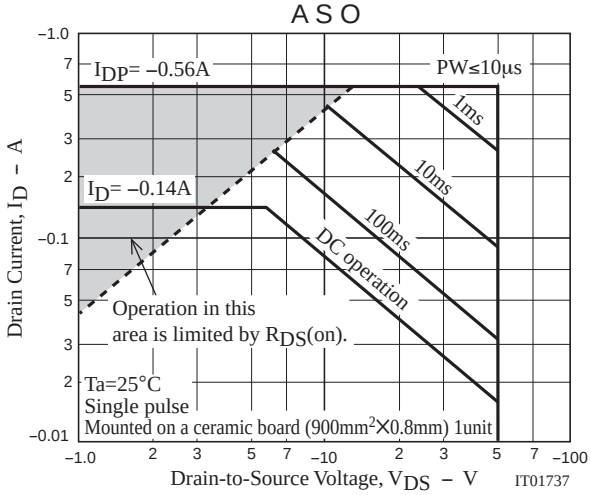

| yfs | – ID
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
IT00097
VDS= –10V
Ta= –25°C
75°C
25°C

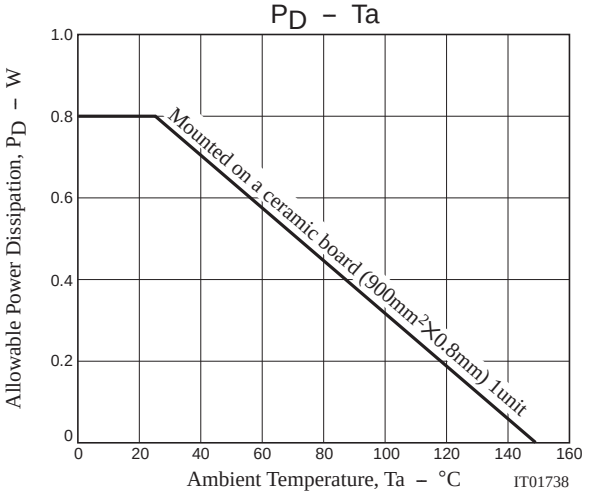

IS – VSD
VGS=0V
Source Current, IS – A
Ta=75°C
25°C
–25°C
Diode Forward Voltage, VSD – V
IT00098


SW Time – ID
VDD= –25V
VGS = –4V
tf
td(off)
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT00099


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT00100


VGS – Qg
VDS= –10V
ID= –70mA
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT00101


A S O
IDP= –0.56A
PW≤10μs
1ms
10ms
100ms
DC operation
ID= –0.14A
Operation in this
area is limited by RDS(on).
Ta=25°C
Single pulse
Mounted on a ceramic board (900mm2×0.8mm) 1unit
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT01737


PD – Ta
Mounted on a ceramic board (900mm2×0.8mm) 1unit
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT01738

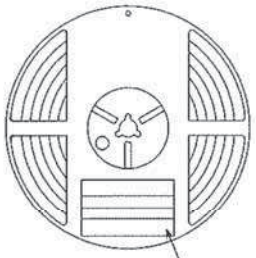
Taping Specification

MCH6603-TL-H

1. Packing Format

Package Name	Carrier Tape Type	Maximun 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

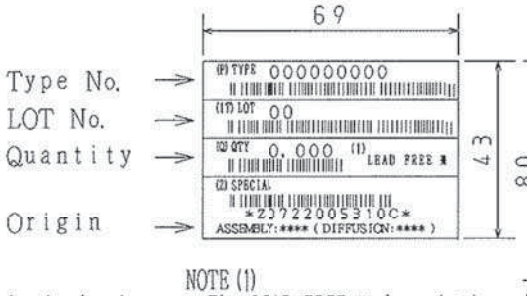
Packing method



Reel label

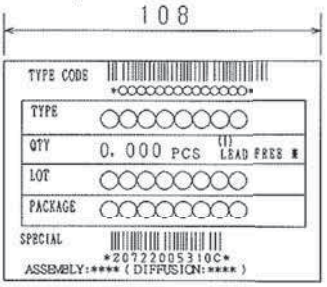
Reel label, Inner box label

(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.

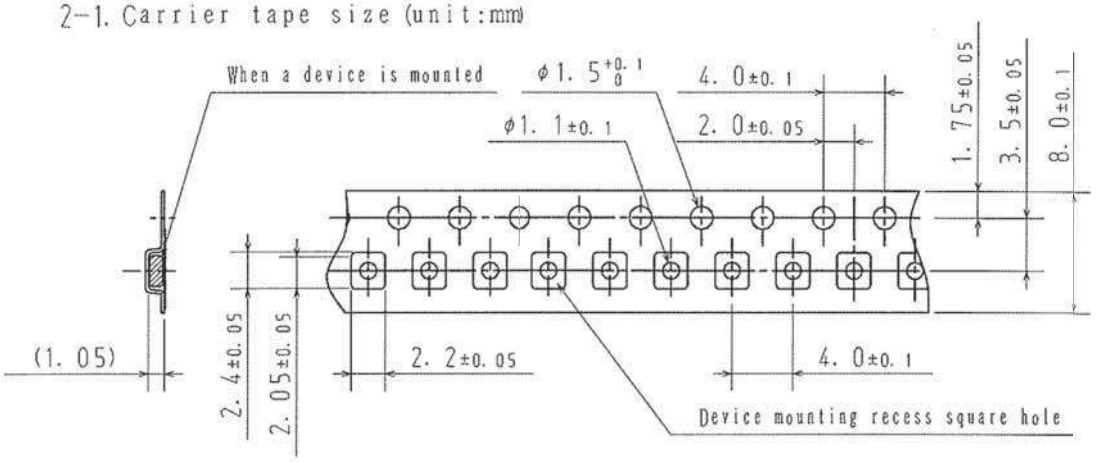


NOTE (1)
The LEAD FREE ※ description shows that the surface treatment of the terminal is lead free.

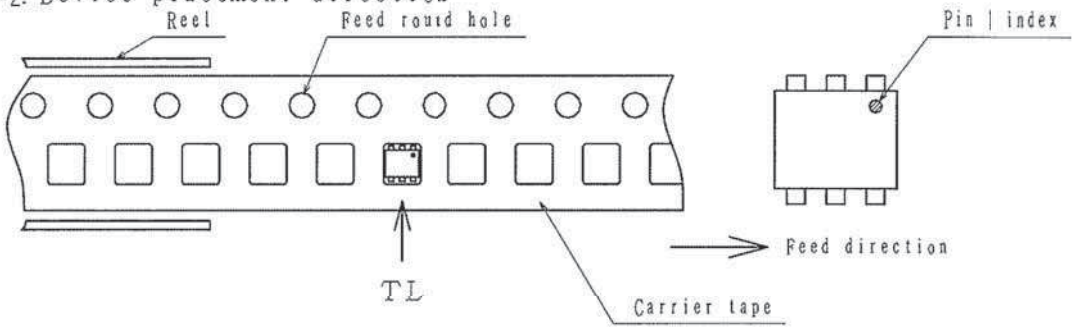
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



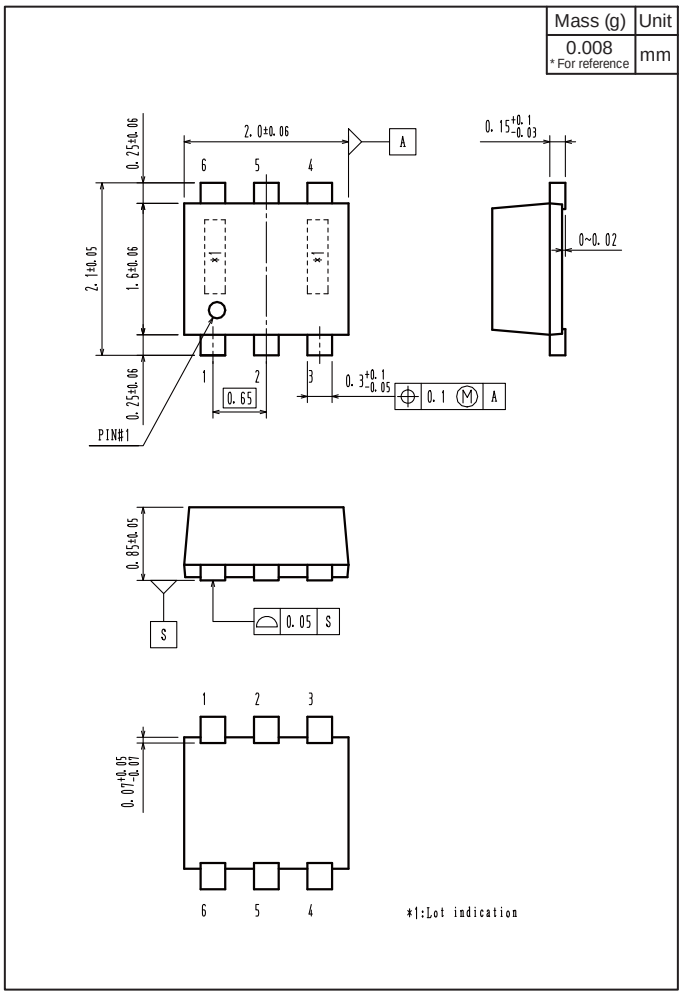
2-2. Device placement direction



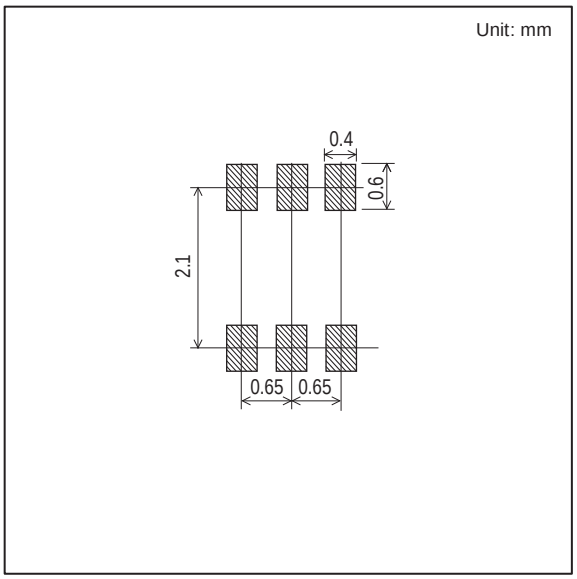
Those with pin 1 index on the feed hole side·····TL

Outline Drawing

MCH6603-TL-H



Land Pattern Example



Note on usage : Since the MCH6603 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

This catalog provides information as of July, 2012. Specifications and information herein are subject to change without notice.