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MCH6431

N-Channel Power MOSFET 30V, 5A, 55mΩ, Single MCPH6

Features

- ON-resistance $R_{DS(on)1}=42\text{m}\Omega$ (typ.)
- 4V drive
- Halogen free compliance
- Protection diode in

Specifications

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

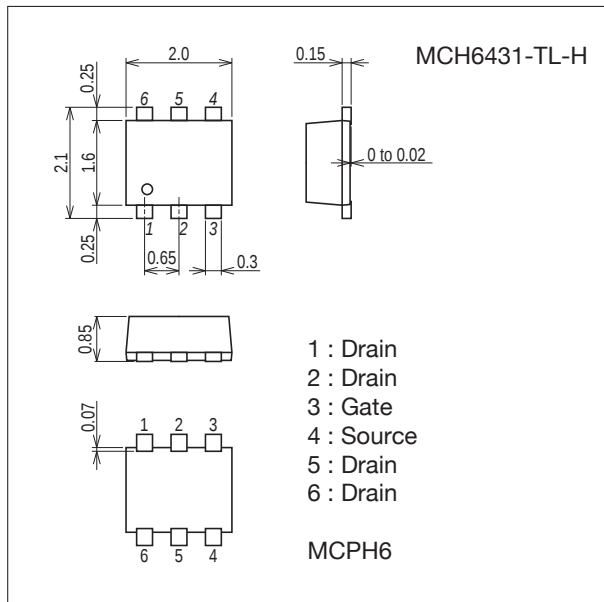
Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		30	V
Gate-to-Source Voltage	V_{GSS}		± 20	V
Drain Current (DC)	I_D		5	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	20	A
Allowable Power Dissipation	P_D	When mounted on ceramic substrate ($1200\text{mm}^2 \times 0.8\text{mm}$)	1.5	W
Channel Temperature	T_{ch}		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Package Dimensions

unit : mm (typ)

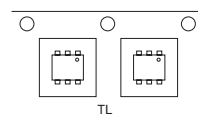
7022A-009



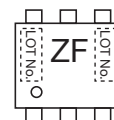
Product & Package Information

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

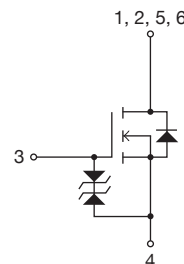
Packing Type : TL



Marking



Electrical Connection

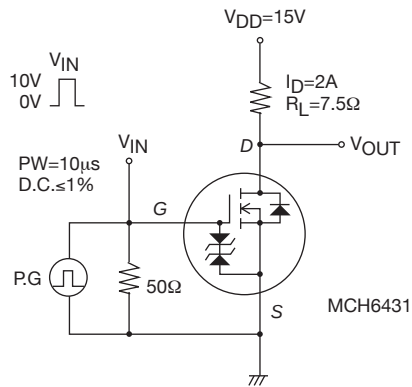


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Electrical Characteristics at Ta=25°C

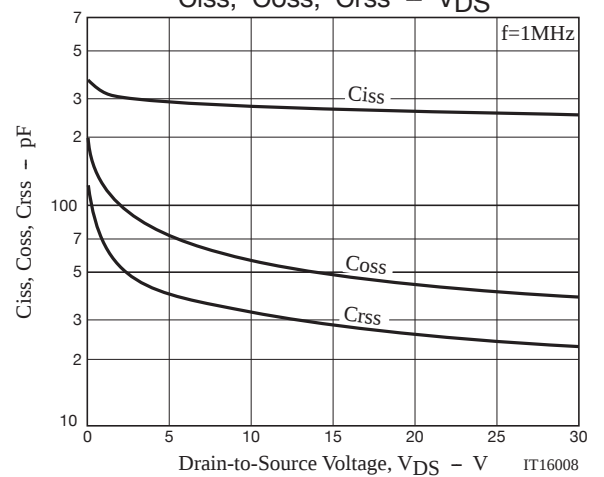
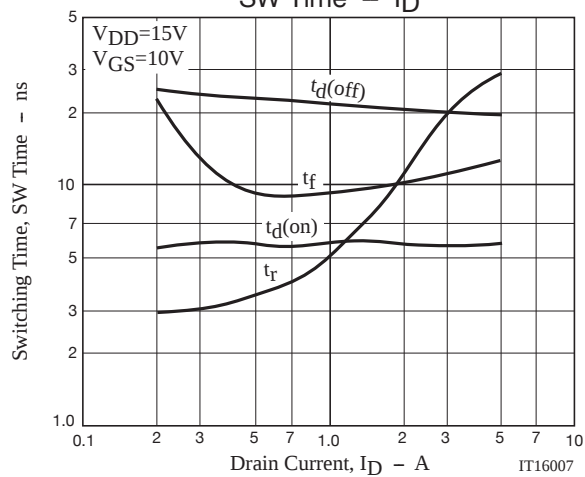
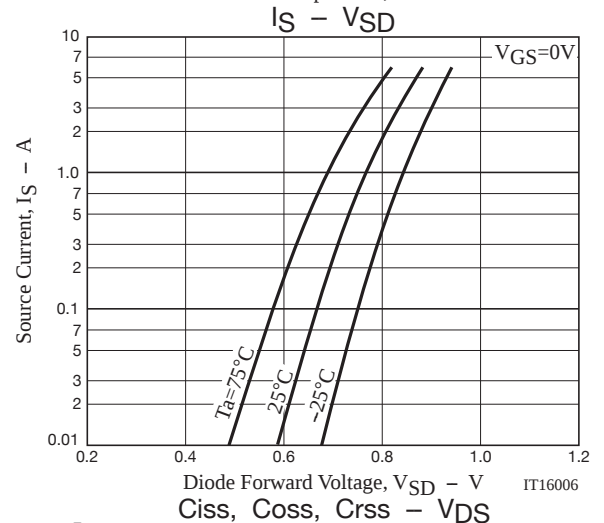
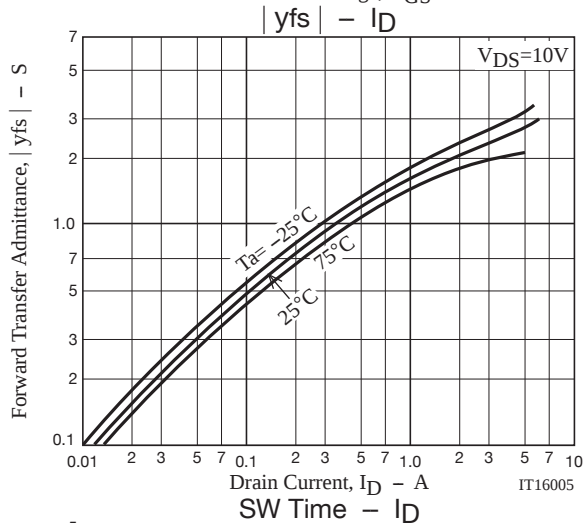
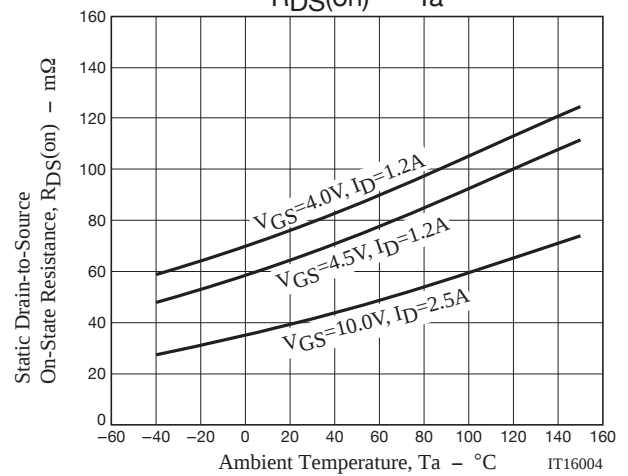
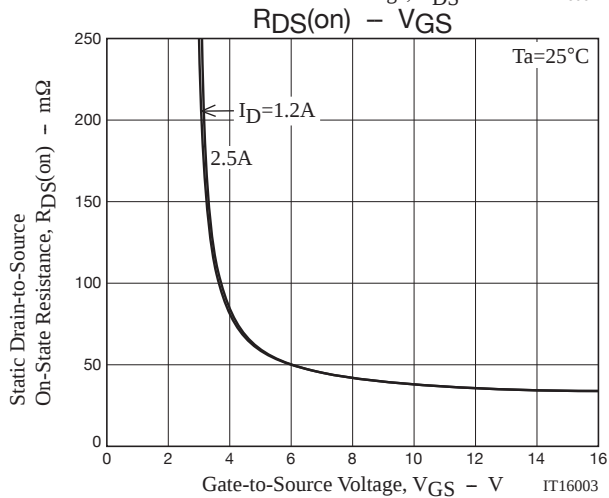
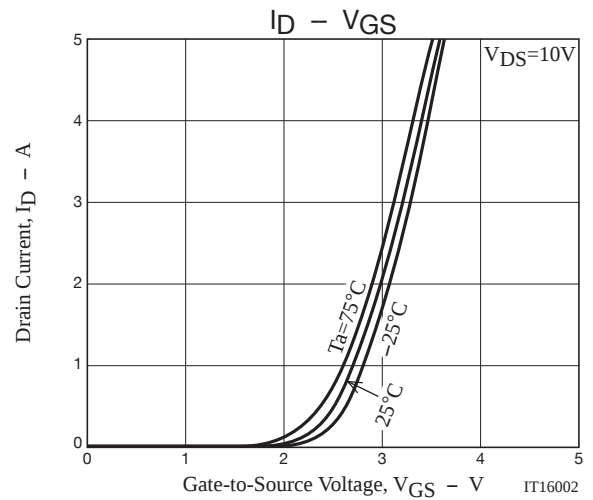
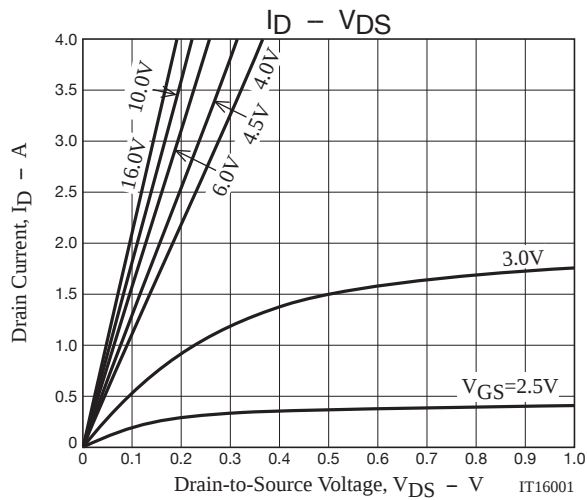
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1mA, V_{GS}=0V$	30			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$			1	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 16V, V_{DS}=0V$			± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10V, I_D=1mA$	1.2		2.6	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=2.5A$		2.2		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=2.5A, V_{GS}=10V$		42	55	$m\Omega$
	$R_{DS(on)2}$	$I_D=1.2A, V_{GS}=4.5V$		65	91	$m\Omega$
	$R_{DS(on)3}$	$I_D=1.2A, V_{GS}=4V$		78	109	$m\Omega$
Input Capacitance	C_{iss}	$V_{DS}=10V, f=1MHz$		280		pF
Output Capacitance	C_{oss}			60		pF
Reverse Transfer Capacitance	C_{rss}			30		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		5.7		ns
Rise Time	t_r			11		ns
Turn-OFF Delay Time	$t_{d(off)}$			21		ns
Fall Time	t_f			10		ns
Total Gate Charge	Q_g	$V_{DS}=15V, V_{GS}=10V, I_D=5A$		5.6		nC
Gate-to-Source Charge	Q_{gs}			1.2		nC
Gate-to-Drain "Miller" Charge	Q_{gd}			0.8		nC
Diode Forward Voltage	V_{SD}	$I_S=5A, V_{GS}=0V$		0.85	1.2	V

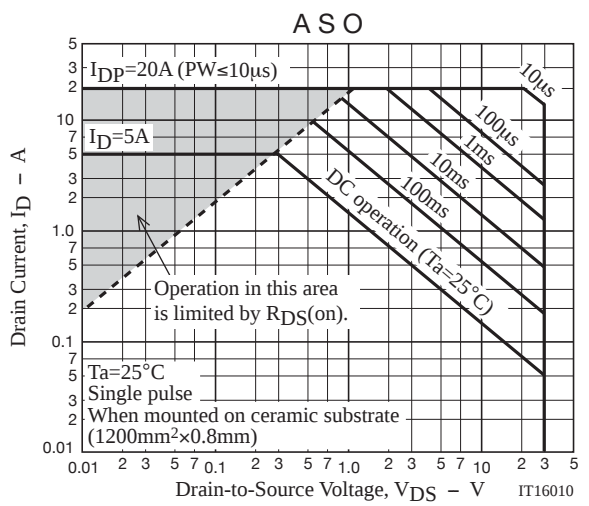
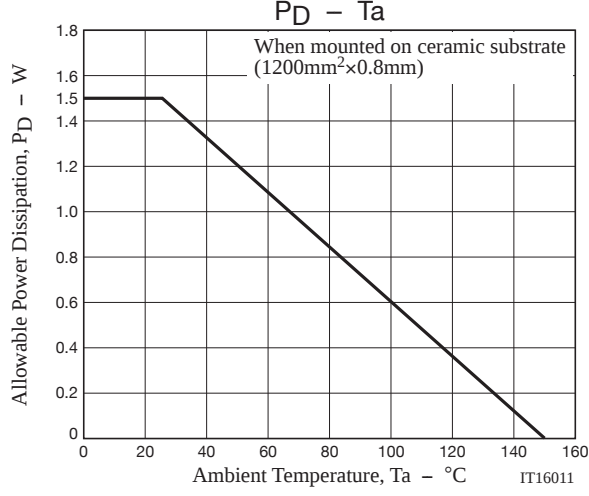
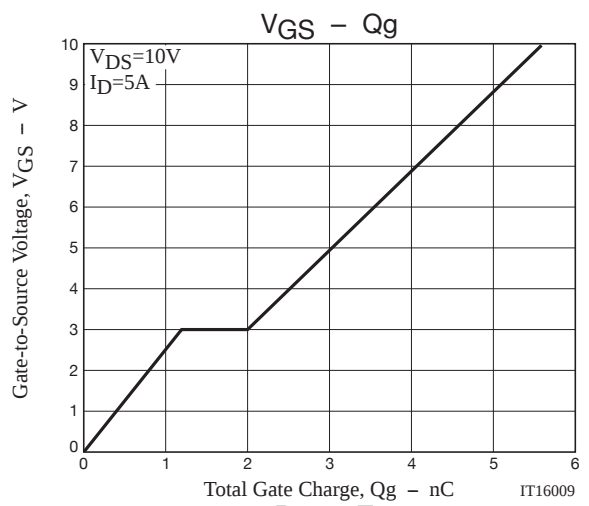
Switching Time Test Circuit



Ordering Information

Device	Package	Shipping	memo
MCH6431-TL-H	MCPH6	3,000pcs./reel	Pb Free and Halogen Free





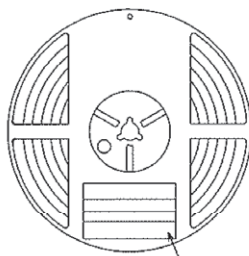
Taping Specification

MCH6431-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

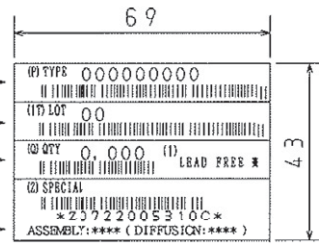
Packing method



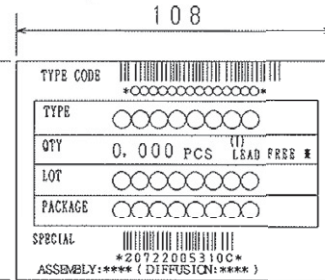
Reel label

Type No.
LOT No.
Quantity
Origin

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.



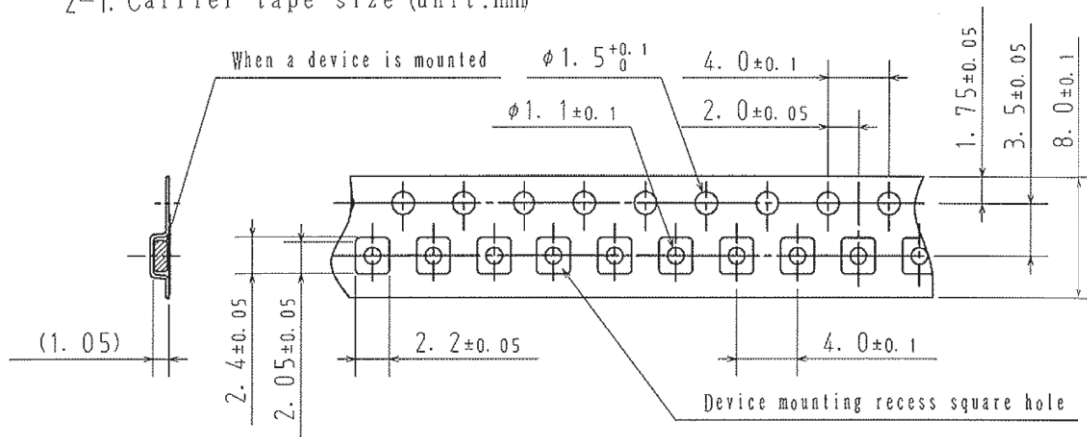
NOTE (1)

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

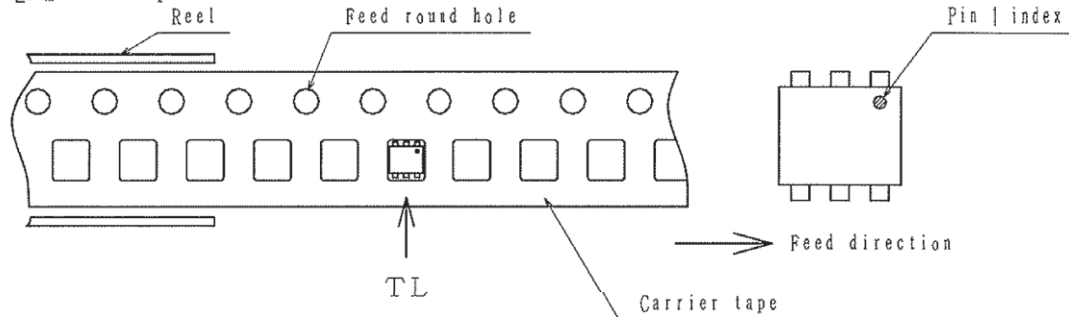
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



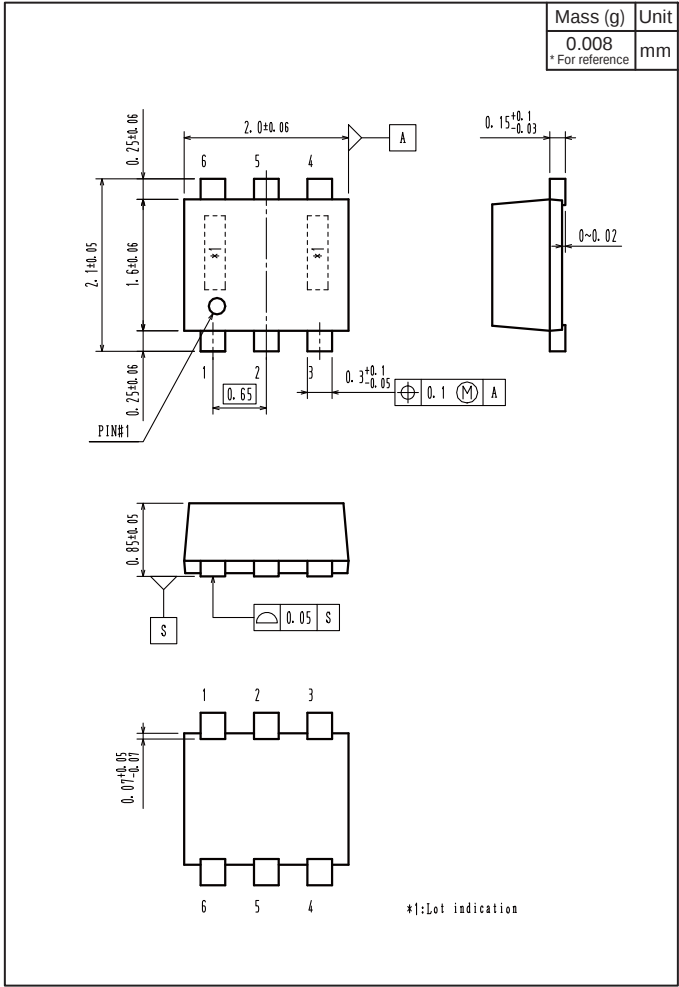
2-2. Device placement direction



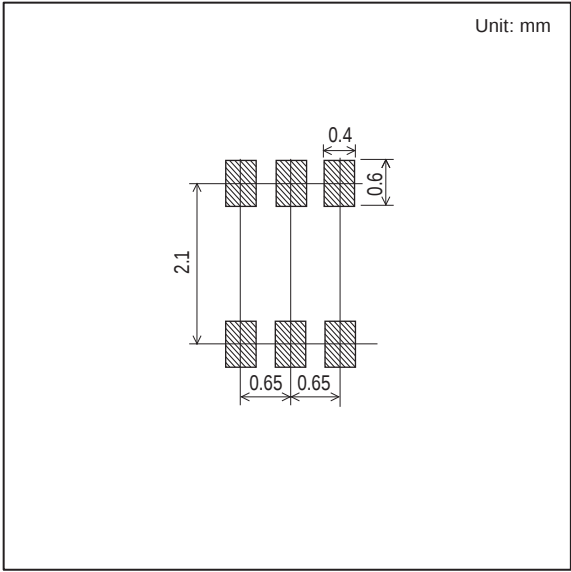
Those with pin 1 index on the feed hole side.....TL

MCH6431

Outline Drawing
MCH6431-TL-H



Land Pattern Example



Note on usage : Since the MCH6431 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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