



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

N-Channel Silicon MOSFET

## MCH6431 — General-Purpose Switching Device Applications

### Features

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

### Specifications

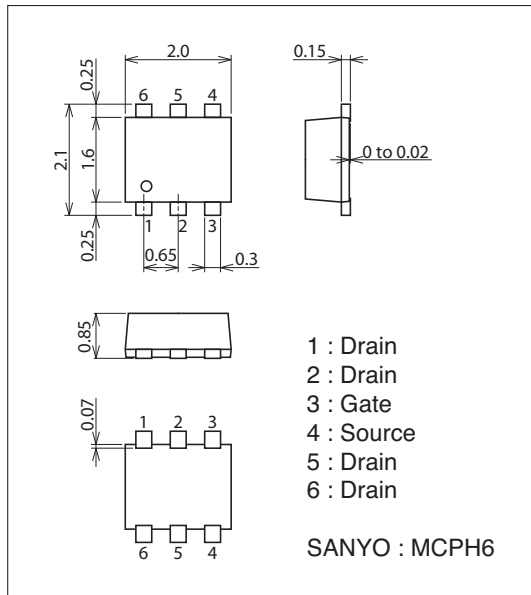
Absolute Maximum Ratings at  $T_a=25^\circ C$

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

### Package Dimensions

unit : mm (typ)

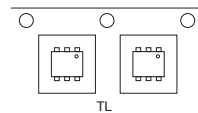
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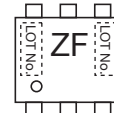
### Product & Package Information

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

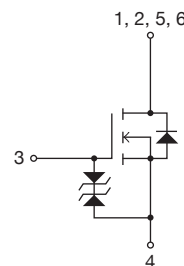
Packing Type : TL



Marking



### Electrical Connection

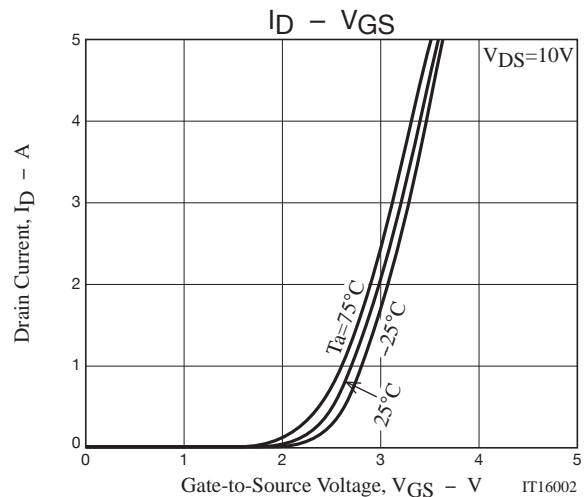
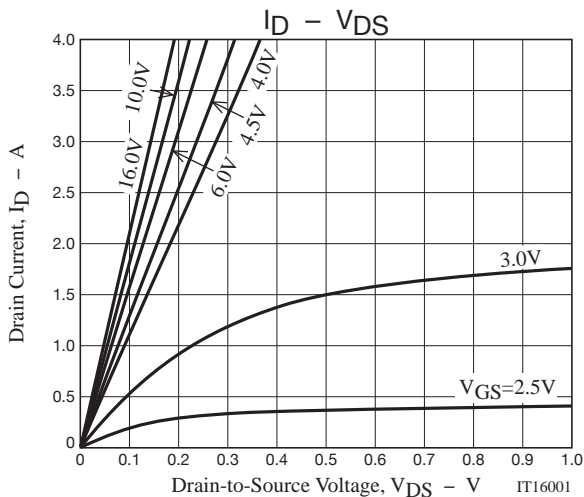
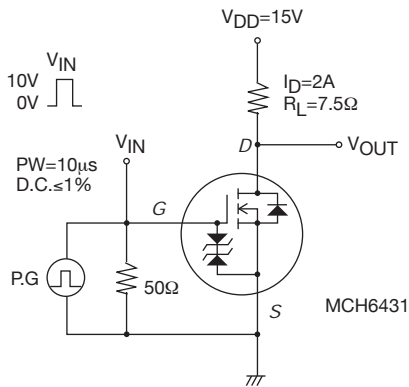


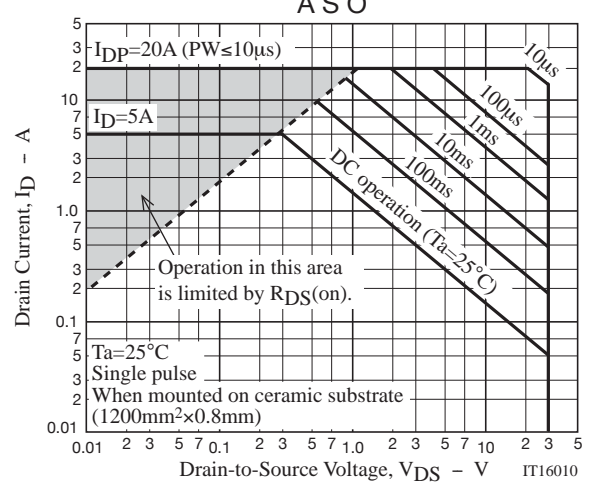
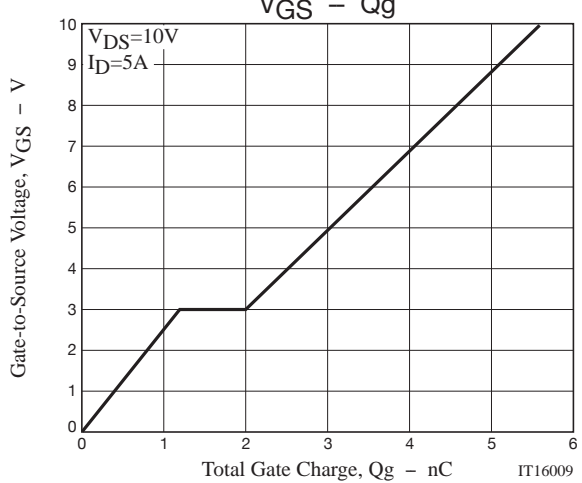
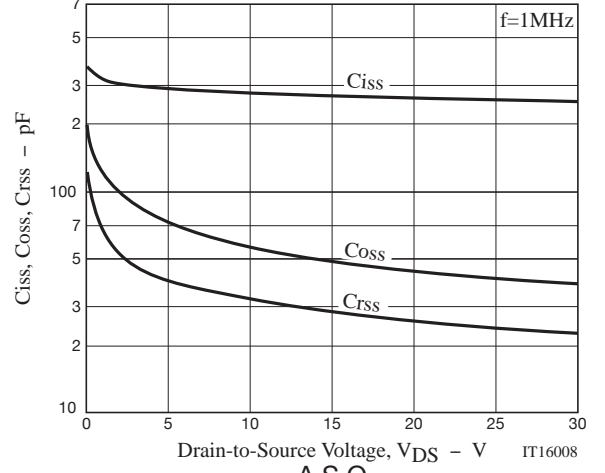
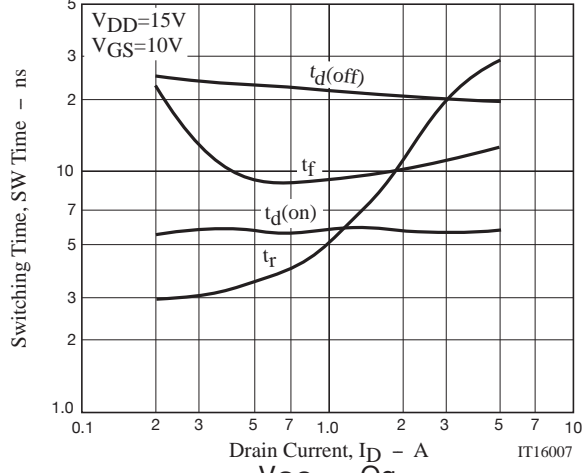
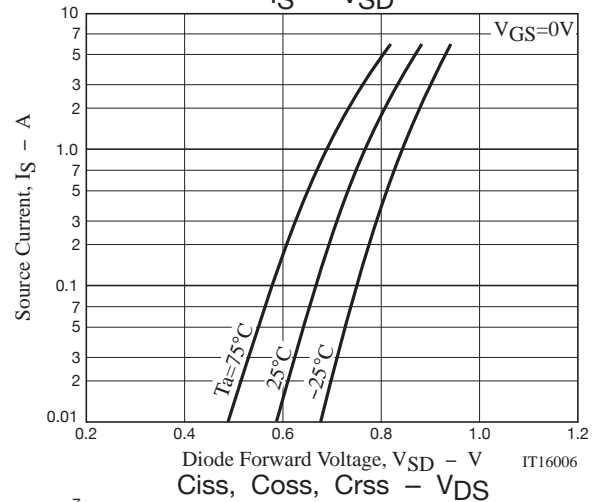
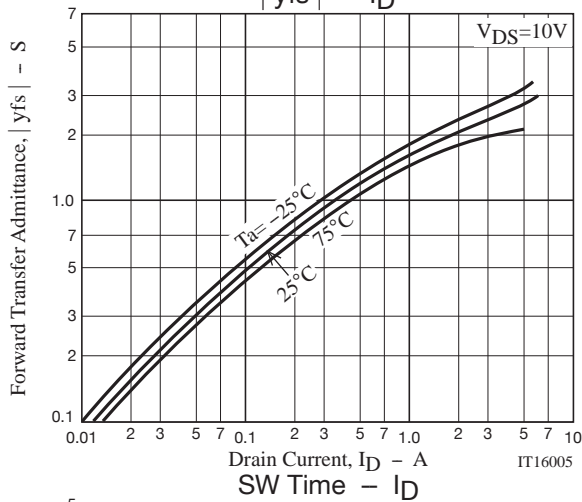
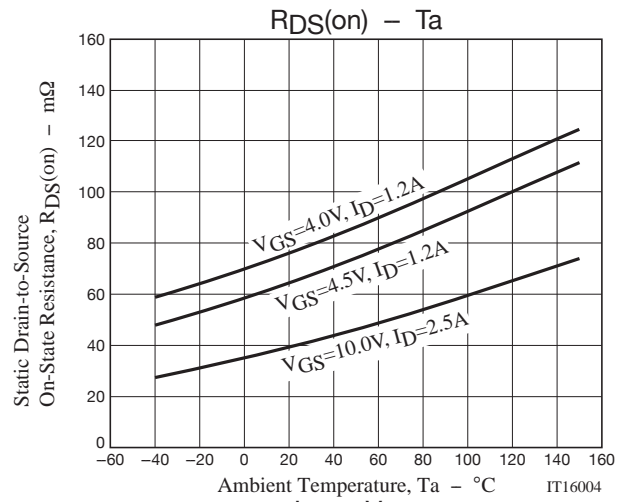
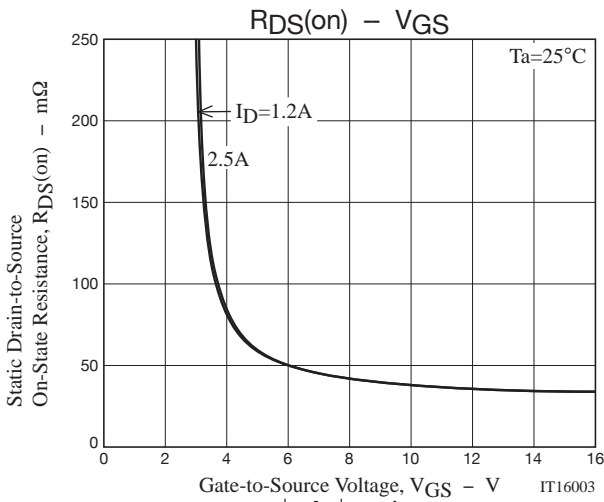
# MCH6431

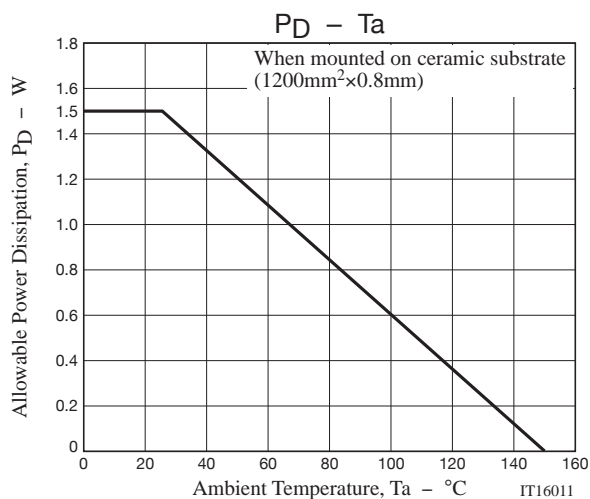
## Electrical Characteristics at $T_a=25^\circ\text{C}$

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

## Switching Time Test Circuit







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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