



MCH3431 — N-Channel Silicon MOSFET

General-Purpose Switching Device Applications

Features

- Low ON-resistance.
- Ultrahigh-speed switching.
- 2.5V drive.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V _{DSS}		30	V
Gate-to-Source Voltage	V _{GSS}		±12	V
Drain Current (DC)	I _D		3.5	A
Drain Current (Pulse)	I _{DP}	PW≤10μs, duty cycle≤1%	14	A
Allowable Power Dissipation	P _D	Mounted on a ceramic board (900mm ² ×0.8mm)	1	W
Channel Temperature	T _{ch}		150	°C
Storage Temperature	T _{stg}		-55 to +150	°C

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} =0	30			V
Zero-Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0			1	μA
Gate-to-Source Leakage Current	I _{GSS}	V _{GS} =±8V, V _{DS} =0			±10	μA
Cutoff Voltage	V _{GS(off)}	V _{DS} =10V, I _D =1mA	0.4		1.3	V
Forward Transfer Admittance	y _{fs}	V _{DS} =10V, I _D =1.8A	2.8	4.8		S
Static Drain-to-Source On-State Resistance	R _{DS(on)1}	I _D =1.8A, V _{GS} =4V		55	72	mΩ
	R _{DS(on)2}	I _D =1A, V _{GS} =2.5V		70	98	mΩ
Input Capacitance	C _{iss}	V _{DS} =10V, f=1MHz		415		pF
Output Capacitance	C _{oss}	V _{DS} =10V, f=1MHz		60		pF
Reverse Transfer Capacitance	C _{rss}	V _{DS} =10V, f=1MHz		55		pF
Turn-ON Delay Time	t _{d(on)}	See specified Test Circuit.		11		ns
Rise Time	t _r	See specified Test Circuit.		65		ns
Turn-OFF Delay Time	t _{d(off)}	See specified Test Circuit.		54		ns
Fall Time	t _f	See specified Test Circuit.		61		ns

Marking : ZG

Continued on next page.

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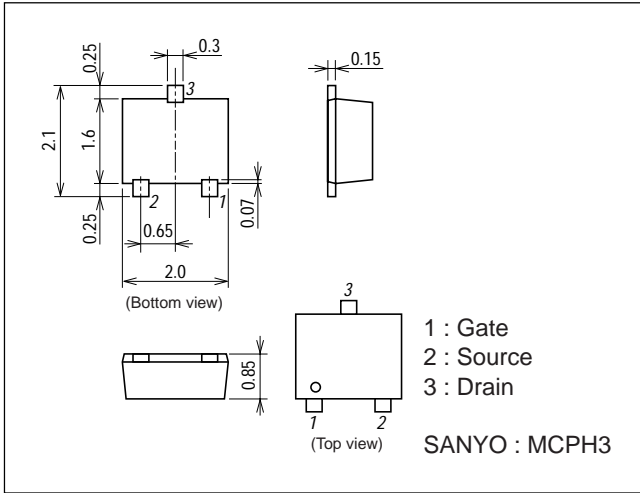
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Total Gate Charge	Qg	$V_{DS}=10V, V_{GS}=4V, I_D=3.5A$		5.1		nC
Gate-to-Source Charge	Qgs	$V_{DS}=10V, V_{GS}=4V, I_D=3.5A$		0.95		nC
Gate-to-Drain "Miller" Charge	Qgd	$V_{DS}=10V, V_{GS}=4V, I_D=3.5A$		1.4		nC
Diode Forward Voltage	V_{SD}	$I_S=3.5A, V_{GS}=0$		0.87	1.2	V

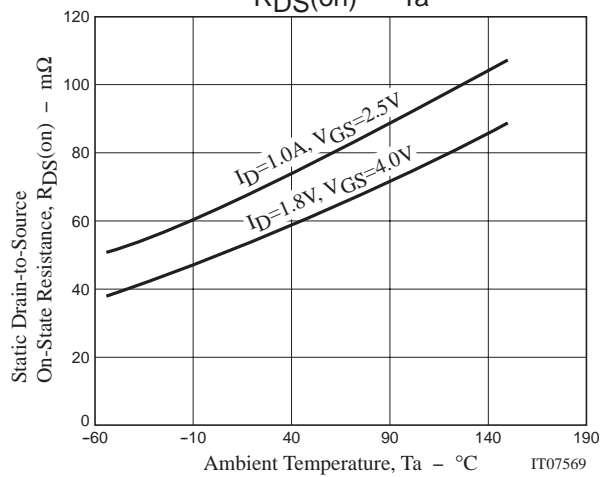
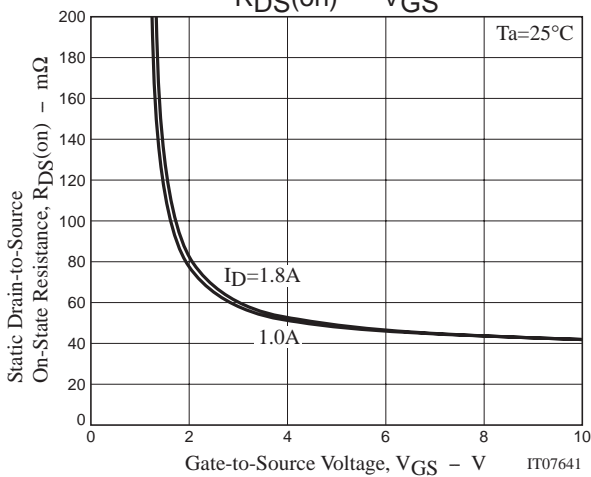
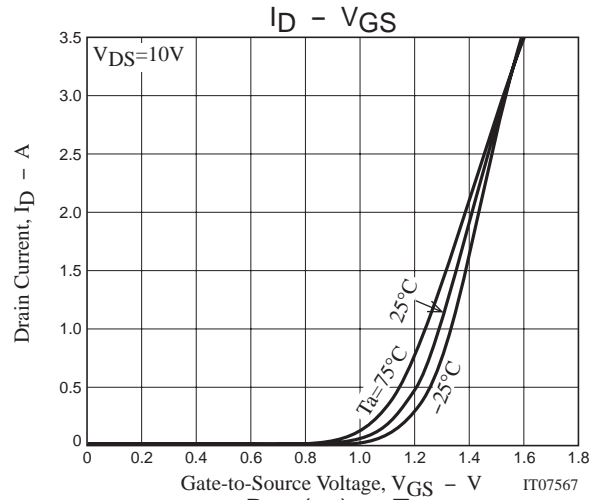
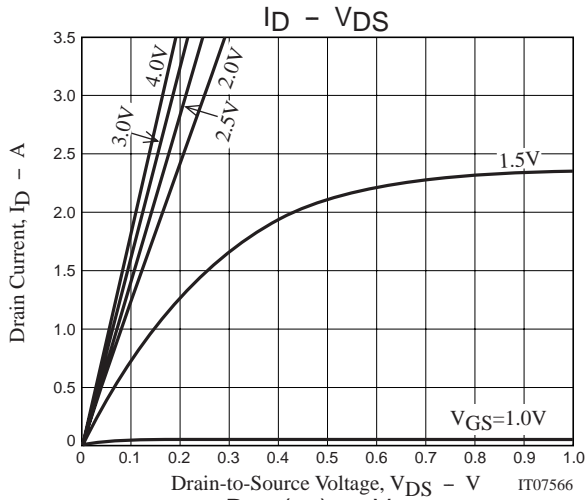
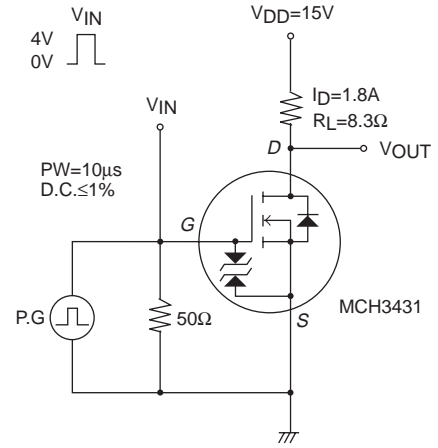
Package Dimensions

unit : mm

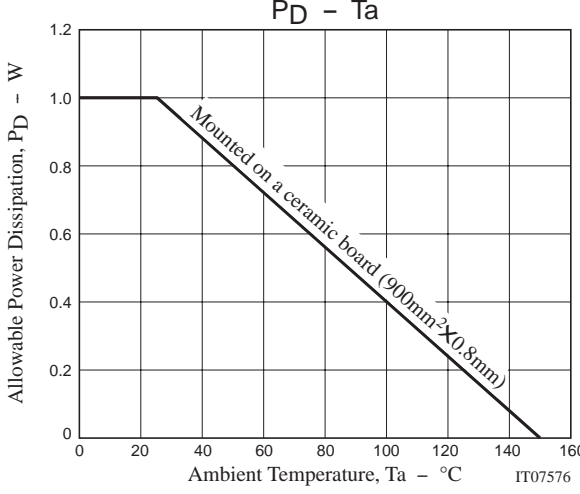
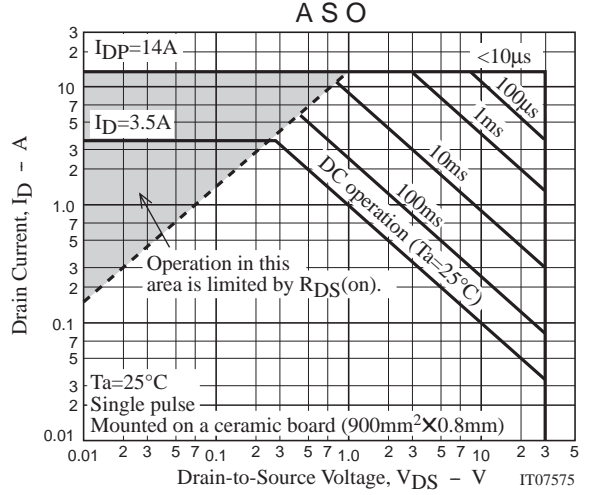
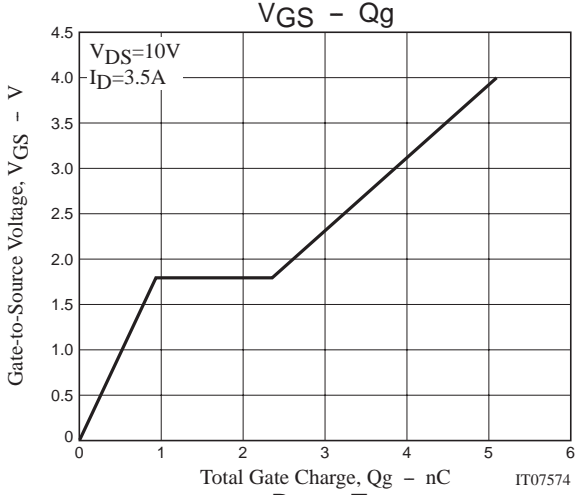
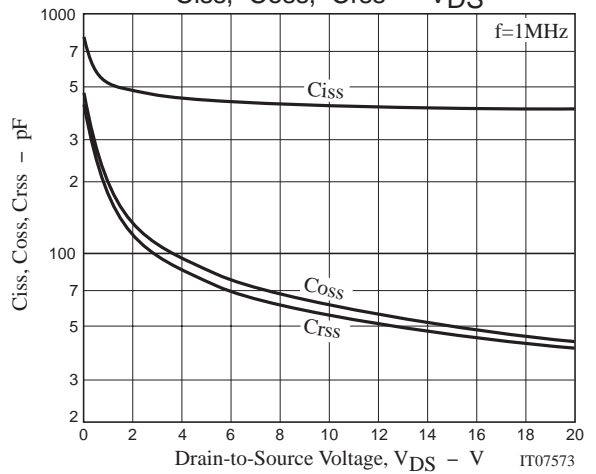
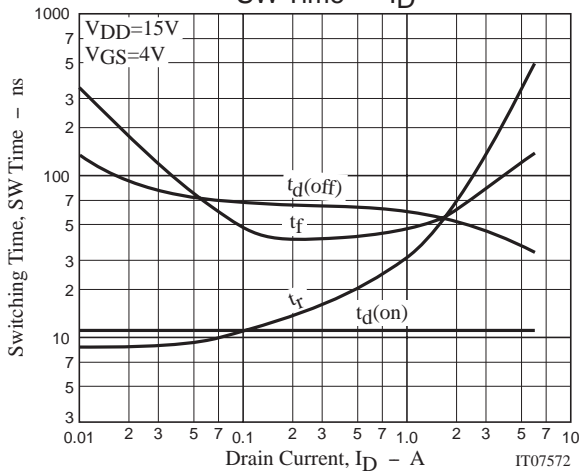
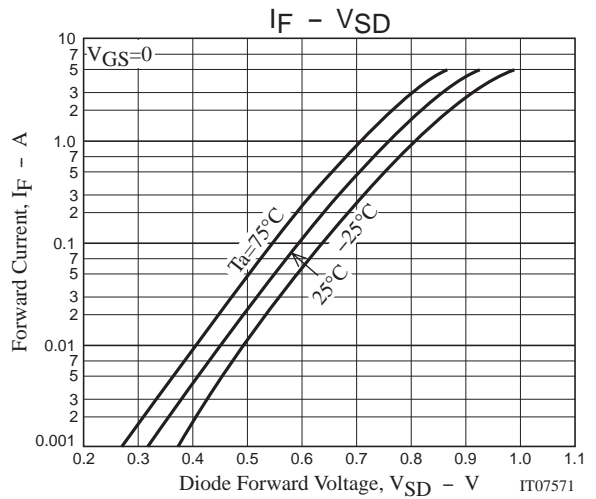
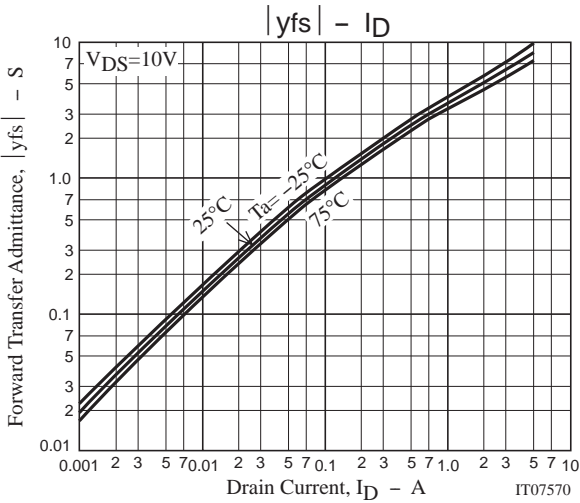
2167A



Switching Time Test Circuit



MCH3431



Note on usage : Since the MCH3431 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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