



ON Semiconductor®

# ON Semiconductor DATA SHEET

## MCH3421 — N-Channel Silicon MOSFET General-Purpose Switching Device Applications

### Features

- Low ON-resistance.
- Ultrahigh-speed switching.
- 4V drive.

### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DS}$		100	V
Gate-to-Source Voltage	$V_{GS}$		$\pm 20$	V
Drain Current (DC)	$I_D$		0.8	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	3.2	A
Allowable Power Dissipation	$P_D$	Mounted on a ceramic board (900mm <sup>2</sup> ×0.8mm)	0.9	W
Channel Temperature	$T_{ch}$		150	°C
Storage Temperature	$T_{stg}$		-55 to +150	°C

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1\text{mA}$ , $V_{GS}=0$	100			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=100\text{V}$ , $V_{GS}=0$			1	$\mu\text{A}$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 16\text{V}$ , $V_{DS}=0$			$\pm 10$	$\mu\text{A}$
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} $	$V_{DS}=10\text{V}$ , $I_D=400\text{mA}$	0.5	1.0		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=400\text{mA}$ , $V_{GS}=10\text{V}$		0.68	0.89	$\Omega$
	$R_{DS(on)2}$	$I_D=400\text{mA}$ , $V_{GS}=4\text{V}$		0.85	1.2	$\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=20\text{V}$ , $f=1\text{MHz}$		165		pF
Output Capacitance	$C_{oss}$	$V_{DS}=20\text{V}$ , $f=1\text{MHz}$		13		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=20\text{V}$ , $f=1\text{MHz}$		8.0		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		7		ns
Rise Time	$t_r$	See specified Test Circuit.		3		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		22		ns
Fall Time	$t_f$	See specified Test Circuit.		10		ns

Marking : KW

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# MCH3421

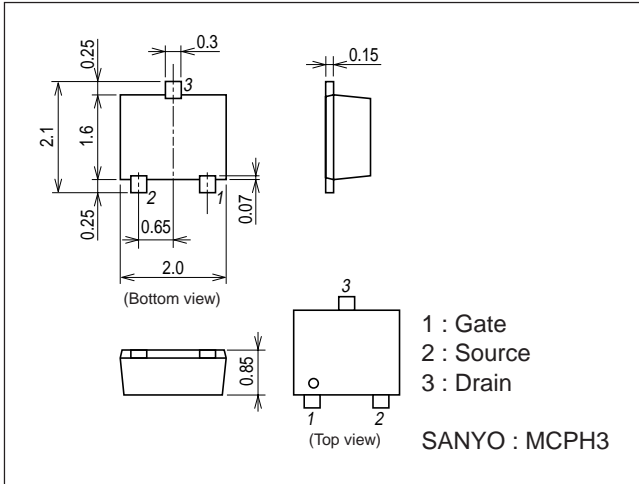
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Total Gate Charge	Qg	$V_{DS}=50V, V_{GS}=10V, I_D=0.8A$		4.8		nC
Gate-to-Source Charge	Qgs	$V_{DS}=50V, V_{GS}=10V, I_D=0.8A$		0.9		nC
Gate-to-Drain "Miller" Charge	Qgd	$V_{DS}=50V, V_{GS}=10V, I_D=0.8A$		0.9		nC
Diode Forward Voltage	$V_{SD}$	$I_S=0.8A, V_{GS}=0$		0.86	1.2	V

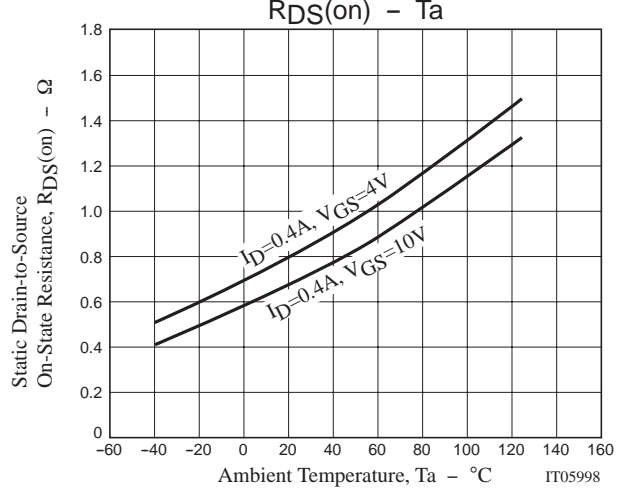
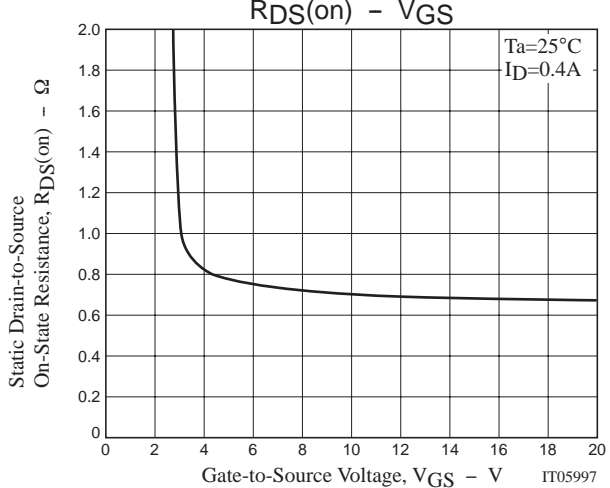
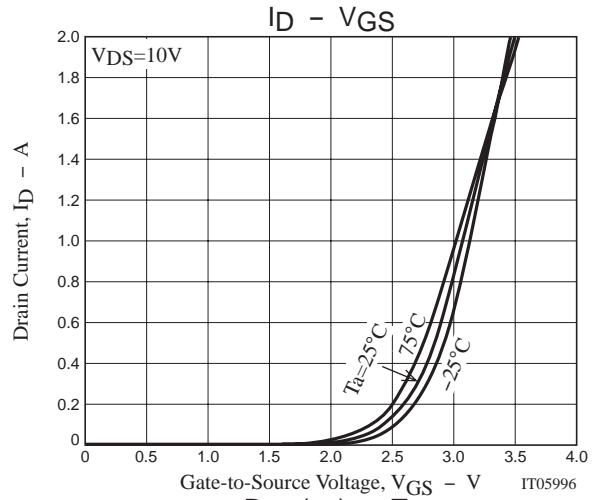
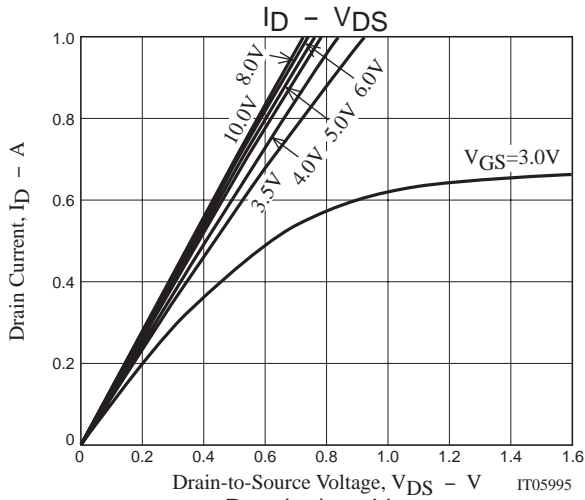
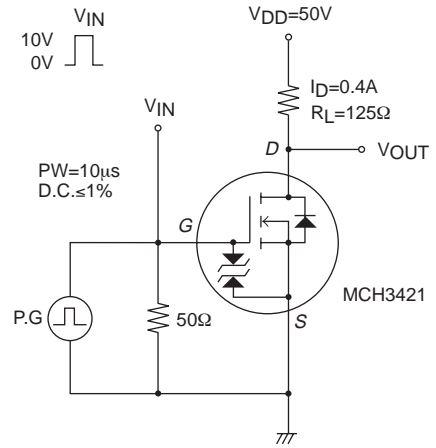
## Package Dimensions

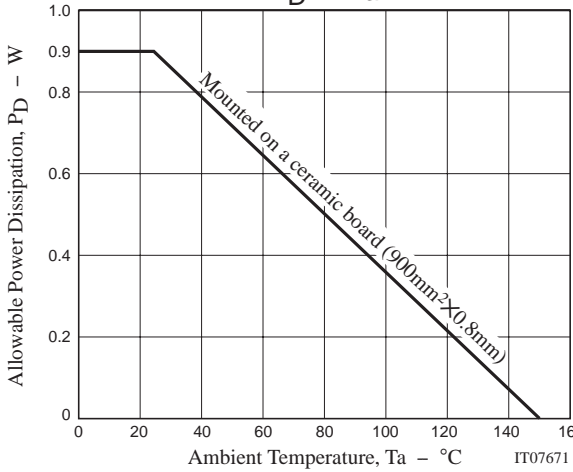
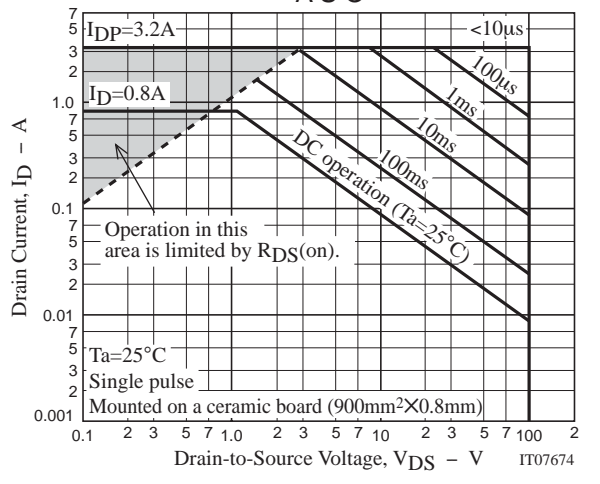
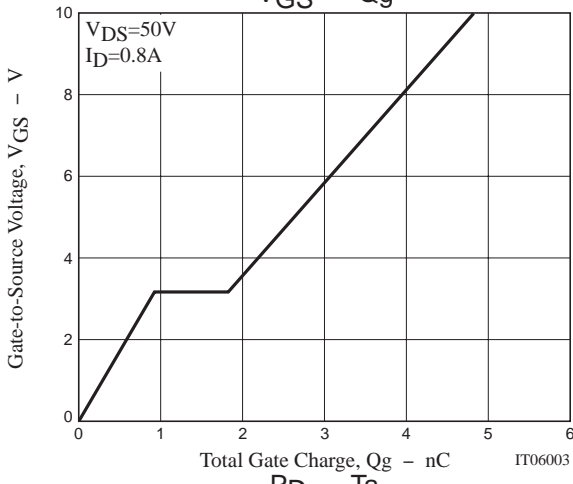
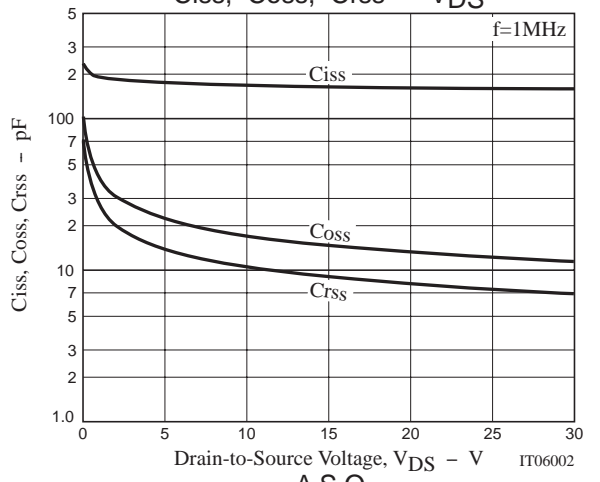
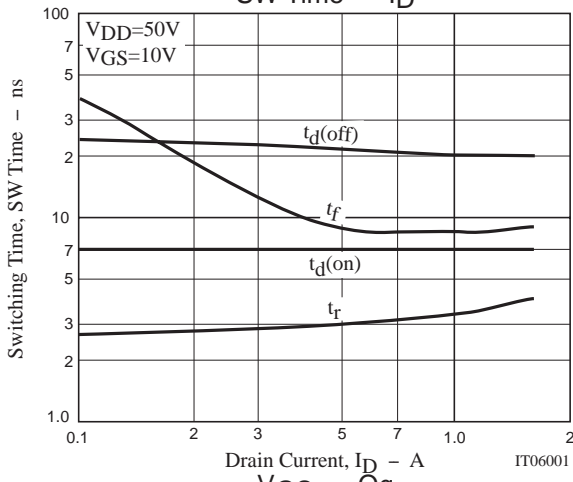
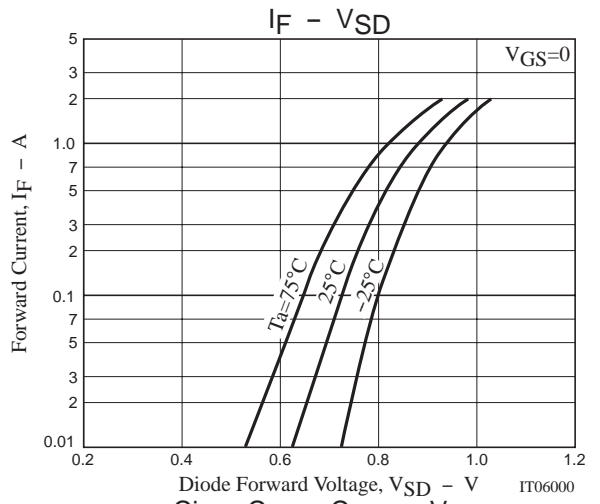
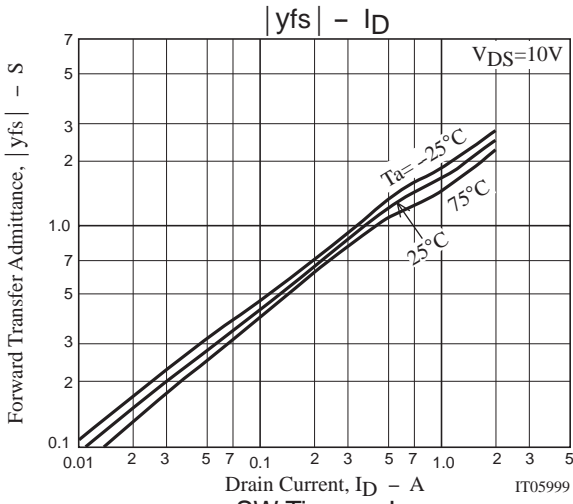
unit : mm

2167A



## Switching Time Test Circuit





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