



ON Semiconductor®

ON Semiconductor
DATA SHEET**MCH3414** — 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}		60	V
Gate-to-Source Voltage	V_{GS}		± 20	V
Drain Current (DC)	I_D		1	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	4	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (900mm ² ×0.8mm)	0.8	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	$V_{(BR)DSS}$	$I_D=1\text{mA}$, $V_{GS}=0$	60			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60\text{V}$, $V_{GS}=0$			1	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 16\text{V}$, $V_{DS}=0$			± 10	μA
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} $	$V_{DS}=10\text{V}$, $I_D=0.5\text{A}$	0.45	0.9		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=0.5\text{A}$, $V_{GS}=10\text{V}$		480	630	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D=0.5\text{A}$, $V_{GS}=4\text{V}$		640	900	$\text{m}\Omega$
Input Capacitance	C_{iss}	$V_{DS}=20\text{V}$, $f=1\text{MHz}$		70		pF
Output Capacitance	C_{oss}	$V_{DS}=20\text{V}$, $f=1\text{MHz}$		9.0		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS}=20\text{V}$, $f=1\text{MHz}$		6.5		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		5		ns
Rise Time	t_r	See specified Test Circuit.		4		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		12		ns
Fall Time	t_f	See specified Test Circuit.		12		ns

Marking : KP

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MCH3414

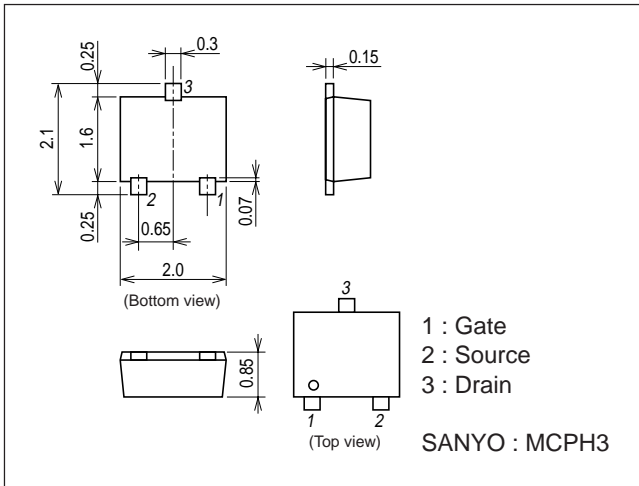
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Total Gate Charge	Qg	$V_{DS}=30V, V_{GS}=10V, I_D=1A$		3.0		nC
Gate-to-Source Charge	Qgs	$V_{DS}=30V, V_{GS}=10V, I_D=1A$		0.6		nC
Gate-to-Drain "Miller" Charge	Qgd	$V_{DS}=30V, V_{GS}=10V, I_D=1A$		0.6		nC
Diode Forward Voltage	VSD	$I_S=1A, V_{GS}=0$		0.9	1.2	V

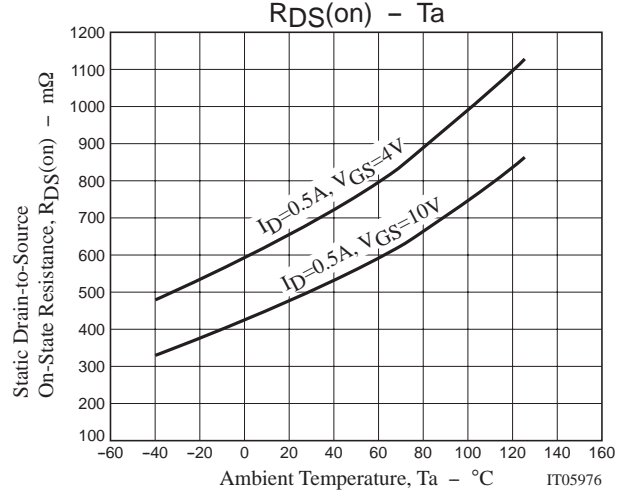
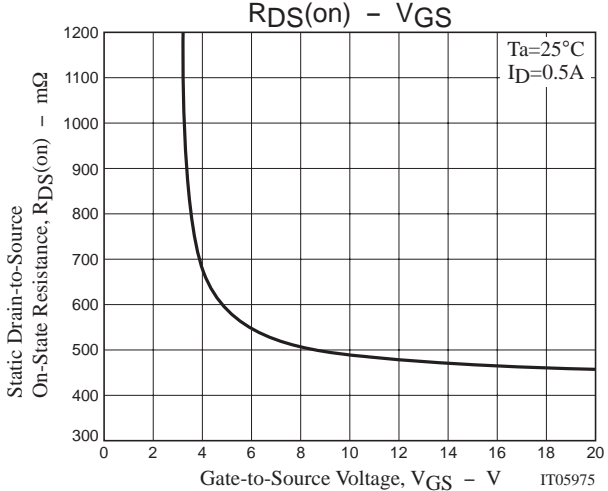
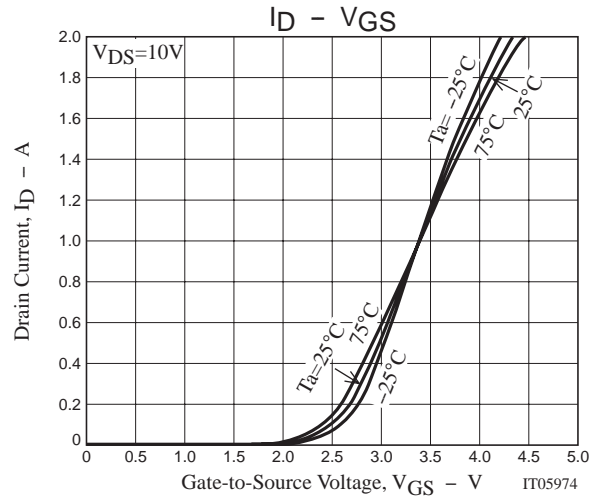
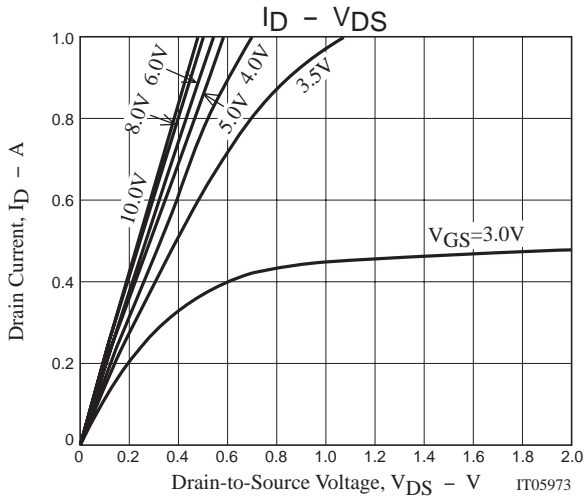
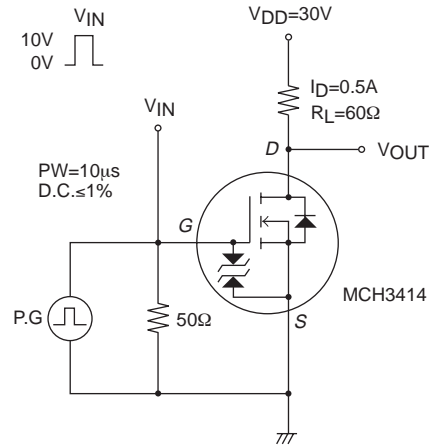
Package Dimensions

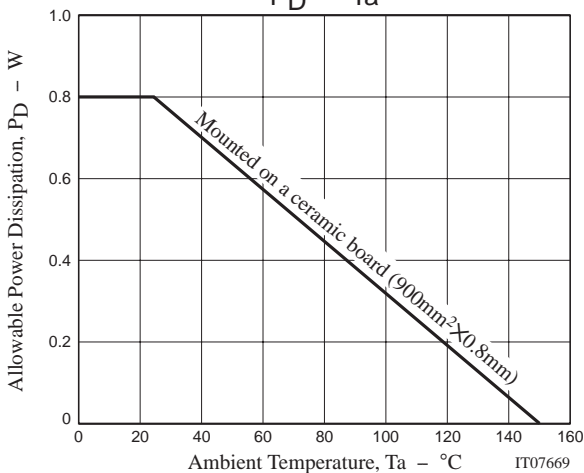
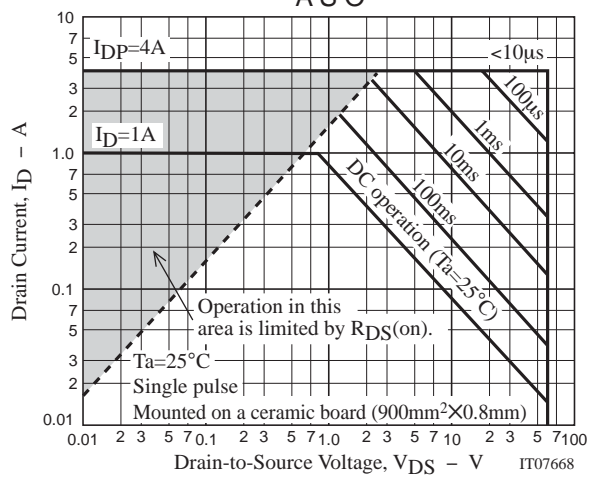
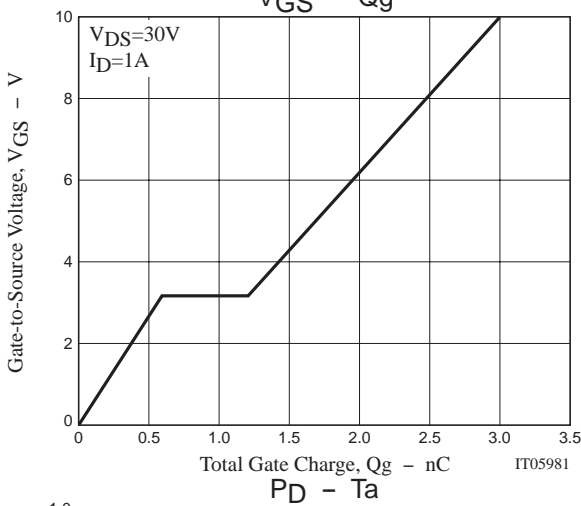
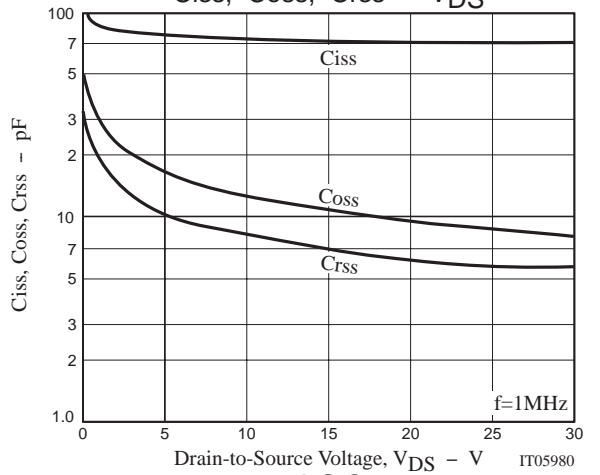
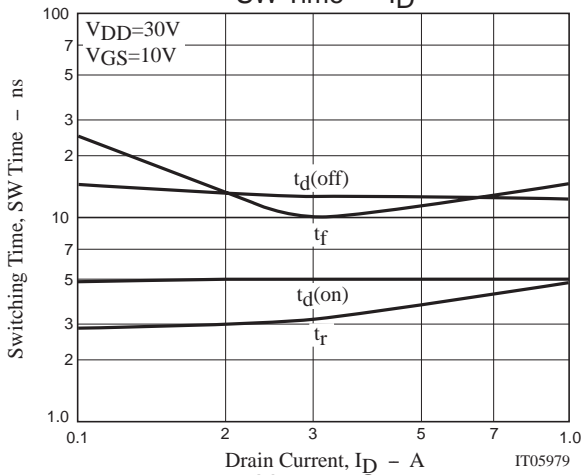
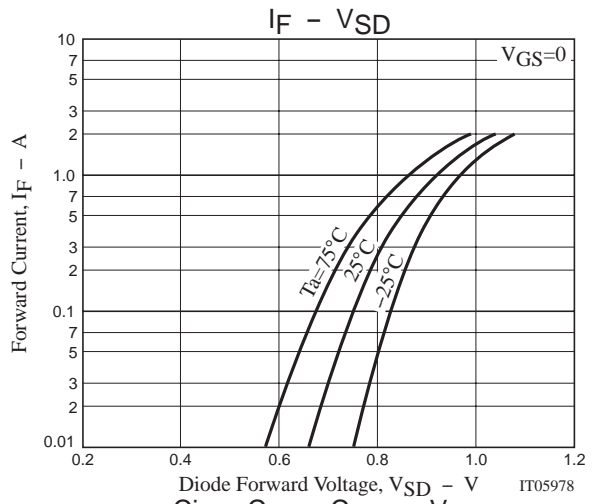
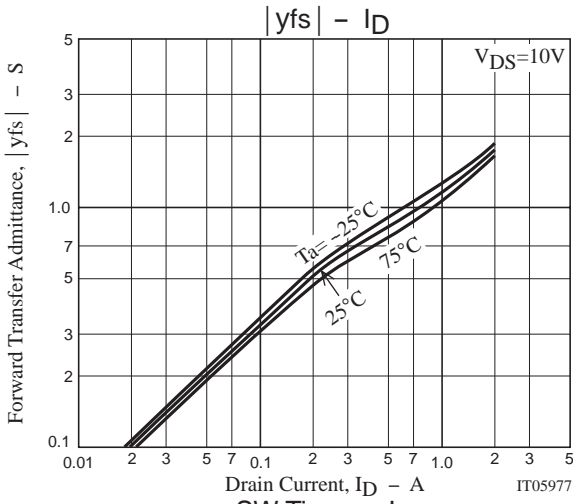
unit : mm

2167A



Switching Time Test Circuit





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