



ON Semiconductor®

**ON Semiconductor**  
**DATA SHEET****CPH6414** — N-Channel Silicon MOSFET  
**General-Purpose Switching Device**  
**Applications****Features**

- Low ON-resistance.
- 4V drive.

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

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DS}$		30	V
Gate-to-Source Voltage	$V_{GS}$		$\pm 20$	V
Drain Current (DC)	$I_D$		5	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycles $\leq 1\%$	20	A
Allowable Power Dissipation	$P_D$	Mounted on a ceramic board (1200mm <sup>2</sup> ×0.8mm)	1.6	W
Channel Temperature	$T_{ch}$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1\text{mA}$ , $V_{GS}=0\text{V}$	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} $	$V_{DS}=10\text{V}$ , $I_D=3\text{A}$	3.1	4.5		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=3\text{A}$ , $V_{GS}=10\text{V}$		37	48	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D=1.5\text{A}$ , $V_{GS}=4\text{V}$		63	88	$\text{m}\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=10\text{V}$ , $f=1\text{MHz}$		460		pF
Output Capacitance	$C_{oss}$	$V_{DS}=10\text{V}$ , $f=1\text{MHz}$		95		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=10\text{V}$ , $f=1\text{MHz}$		75		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		11		ns
Rise Time	$t_r$	See specified Test Circuit.		12		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		31		ns
Fall Time	$t_f$	See specified Test Circuit.		18		ns

Marking : KQ

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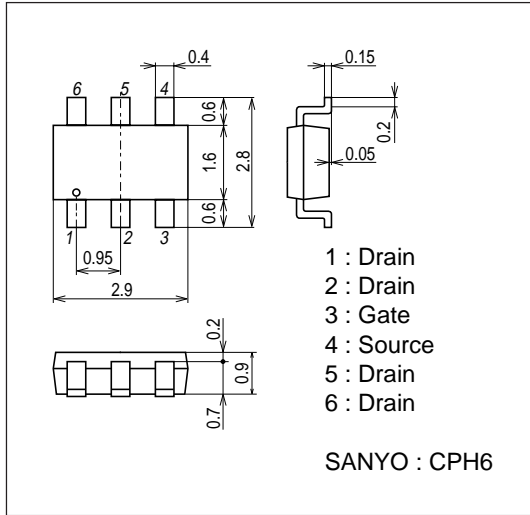
# CPH6414

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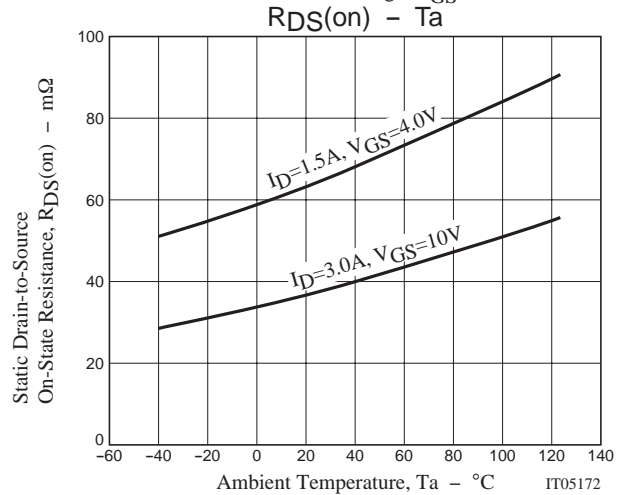
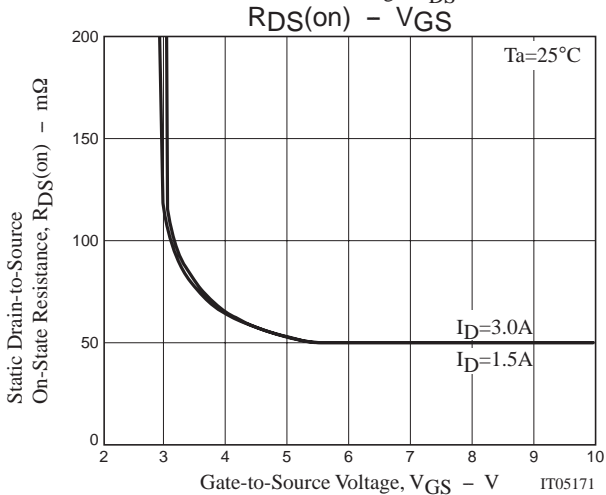
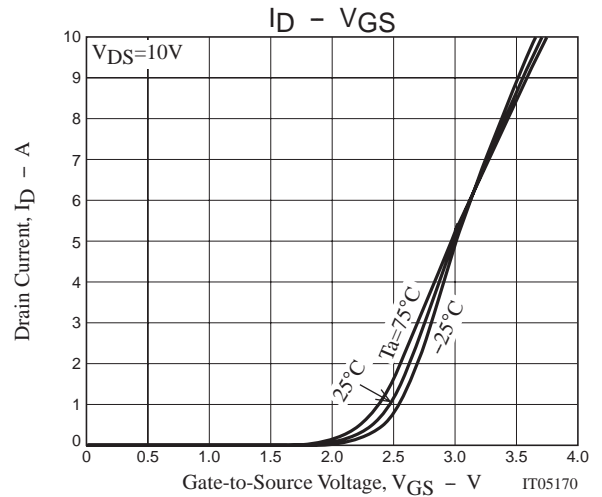
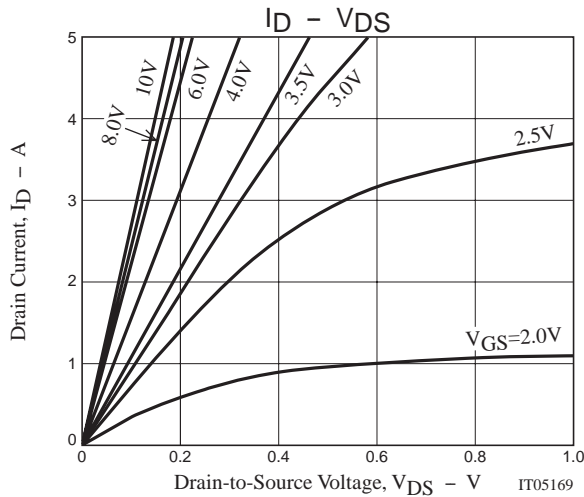
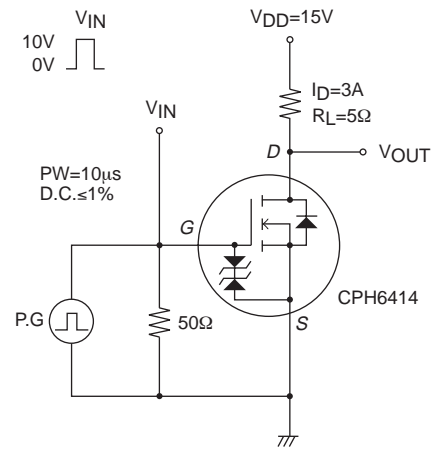
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Total Gate Charge	Qg	V <sub>DS</sub> =10V, V <sub>GS</sub> =10V, I <sub>D</sub> =5A		8.5		nC
Gate-to-Source Charge	Qgs	V <sub>DS</sub> =10V, V <sub>GS</sub> =10V, I <sub>D</sub> =5A		1.8		nC
Gate-to-Drain "Miller" Charge	Qgd	V <sub>DS</sub> =10V, V <sub>GS</sub> =10V, I <sub>D</sub> =5A		1.3		nC
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =5A, V <sub>GS</sub> =0V		0.86	1.2	V

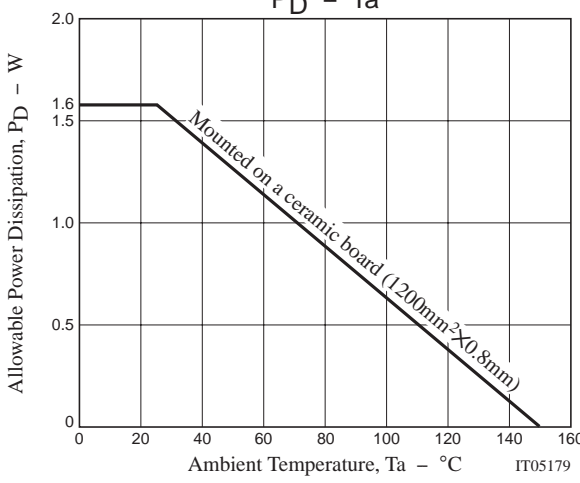
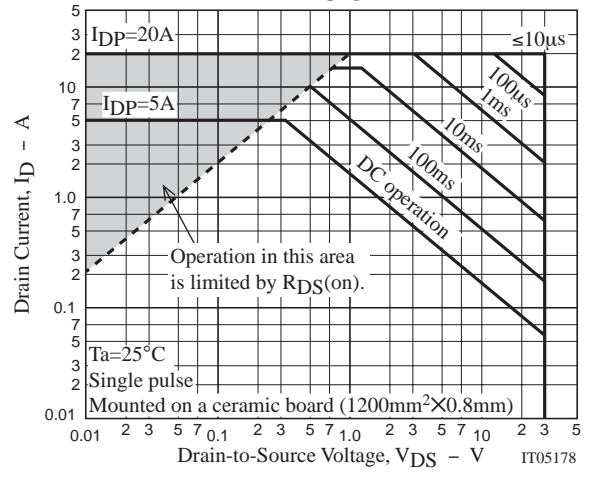
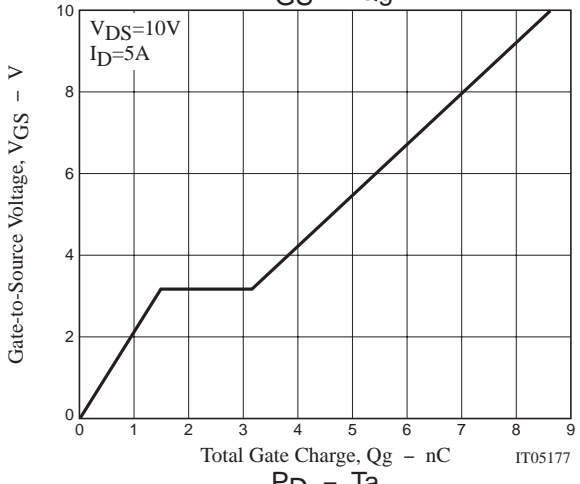
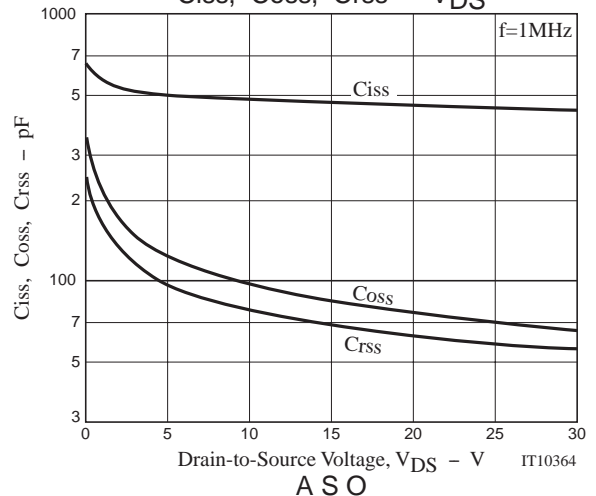
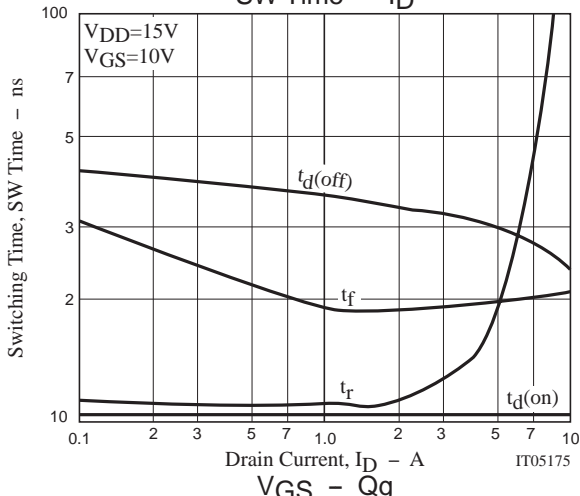
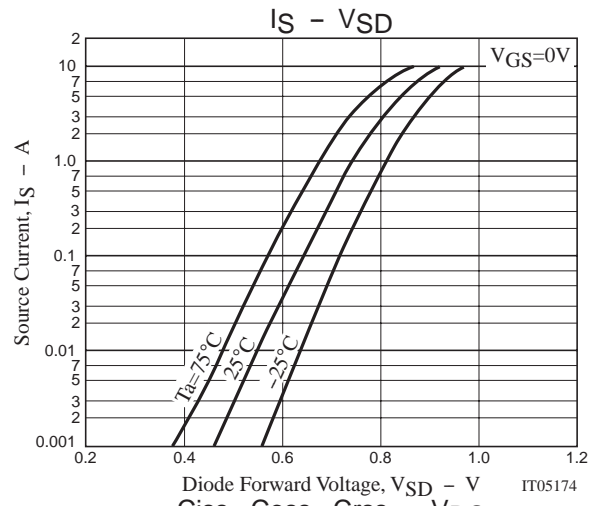
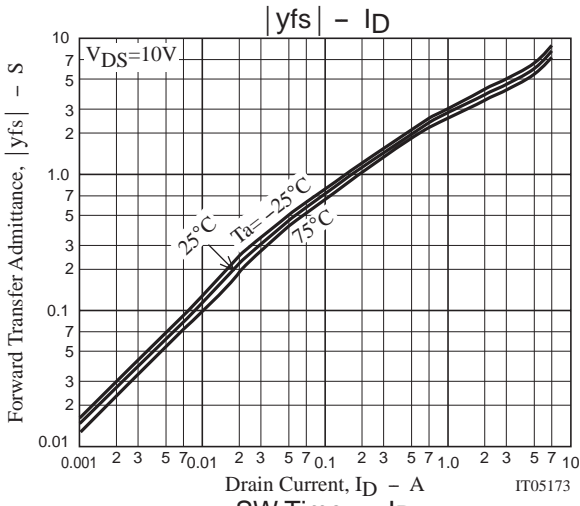
## Package Dimensions

unit : mm  
7018-003



## Switching Time Test Circuit





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