



ON Semiconductor®

Ordering number : ENA0443

## ON Semiconductor DATA SHEET

N-Channel Silicon MOSFET

# CPH6434 — General-Purpose Switching Device Applications

### Features

- Ultrahigh-speed switching.
- 1.8V drive.

### Specifications

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

Parameter	Symbol	Conditions	Ratings		Unit
Drain-to-Source Voltage	$V_{DSS}$			30	V
Gate-to-Source Voltage	$V_{GSS}$			$\pm 10$	V
Drain Current (DC)	$I_D$			6	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$		24	A
Allowable Power Dissipation	$P_D$	Mounted on a ceramic board (900mm <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	$I_{GSS}$	$V_{GS}=\pm 8\text{V}$ , $V_{DS}=0\text{V}$			$\pm 10$	$\mu\text{A}$
Cutoff Voltage	$V_{GS(\text{off})}$	$V_{DS}=10\text{V}$ , $I_D=1\text{mA}$	0.4		1.3	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10\text{V}$ , $I_D=3\text{A}$	4.4	7.4		S
Static Drain-to-Source On-State Resistance	$R_{DS(\text{on})1}$	$I_D=3\text{A}$ , $V_{GS}=4\text{V}$		31	41	$\text{m}\Omega$
	$R_{DS(\text{on})2}$	$I_D=1.5\text{A}$ , $V_{GS}=2.5\text{V}$		40	57	$\text{m}\Omega$
	$R_{DS(\text{on})3}$	$I_D=0.3\text{A}$ , $V_{GS}=1.8\text{V}$		55	90	$\text{m}\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=10\text{V}$ , $f=1\text{MHz}$		790		$\text{pF}$
Output Capacitance	$C_{oss}$	$V_{DS}=10\text{V}$ , $f=1\text{MHz}$		125		$\text{pF}$
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=10\text{V}$ , $f=1\text{MHz}$		110		$\text{pF}$
Turn-ON Delay Time	$t_{d(\text{on})}$	See specified Test Circuit.		16.5		ns
Rise Time	$t_r$	See specified Test Circuit.		78		ns
Turn-OFF Delay Time	$t_{d(\text{off})}$	See specified Test Circuit.		77		ns
Fall Time	$t_f$	See specified Test Circuit.		125		ns

Marking : ZL

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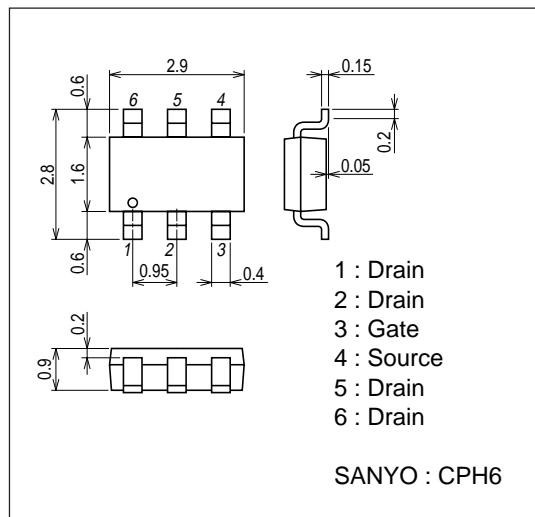
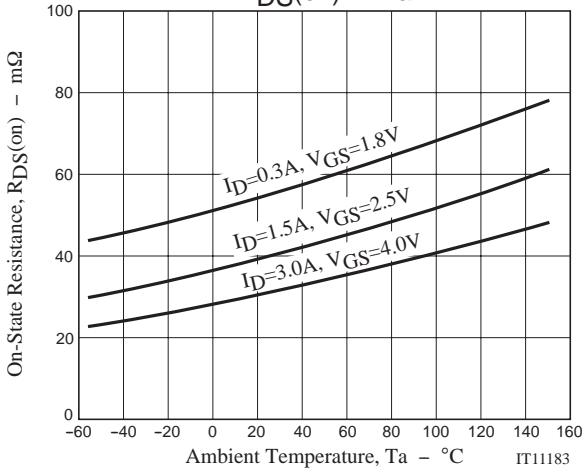
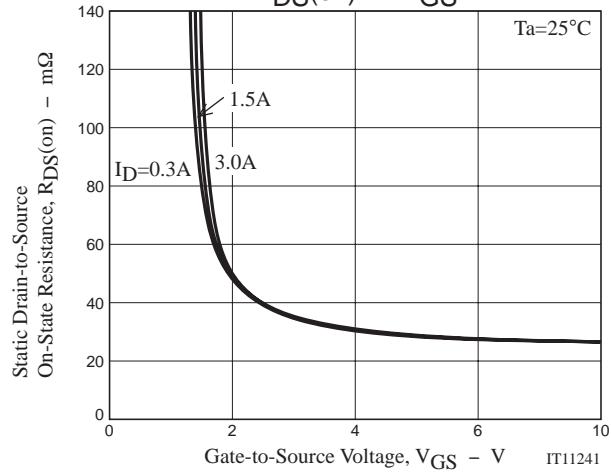
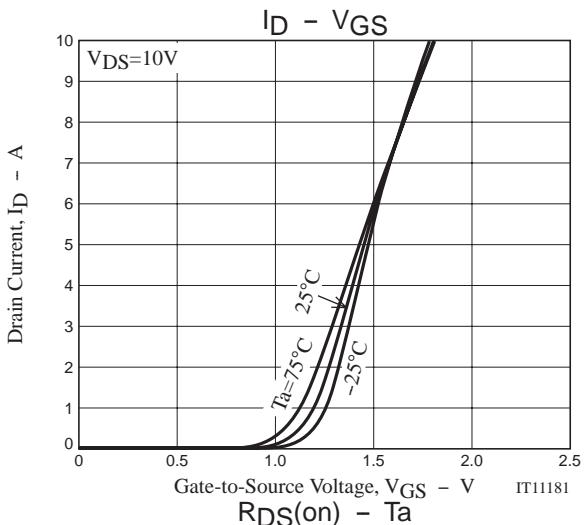
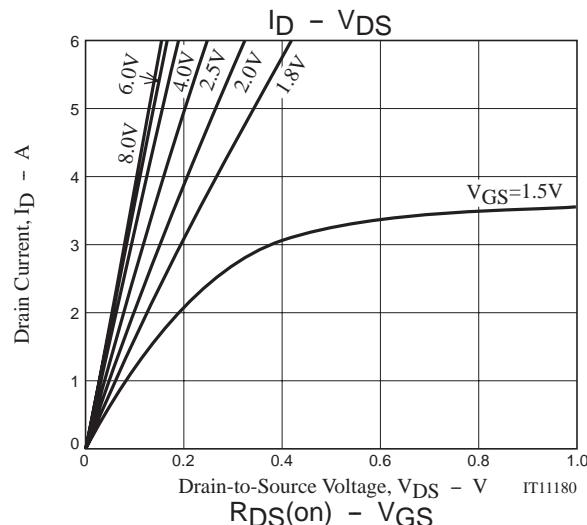
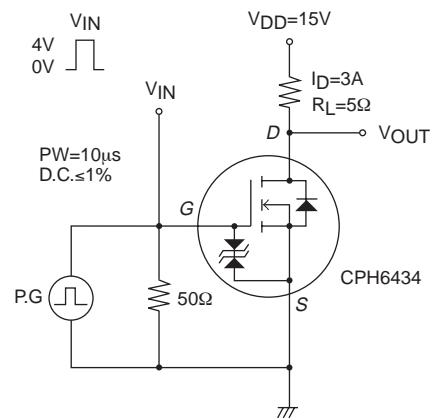
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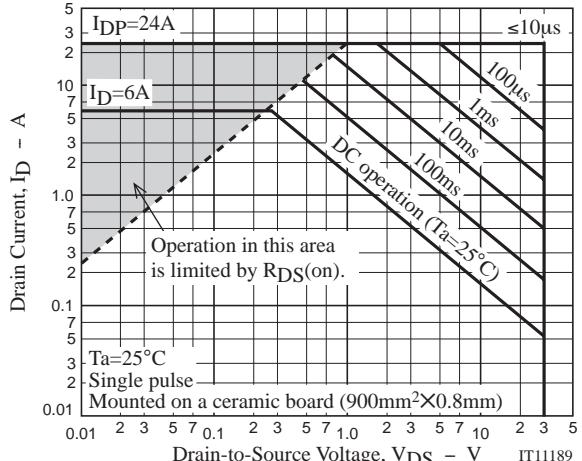
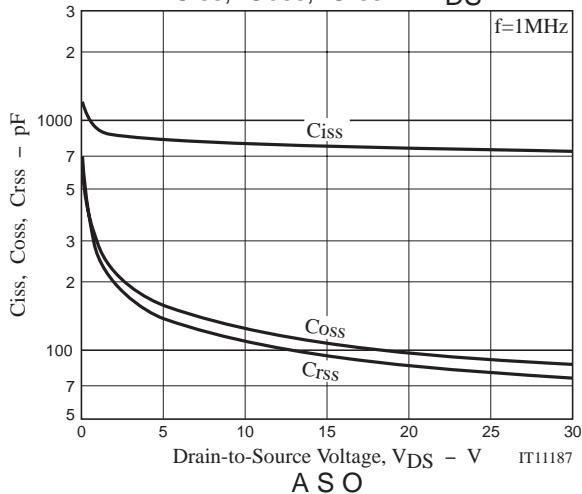
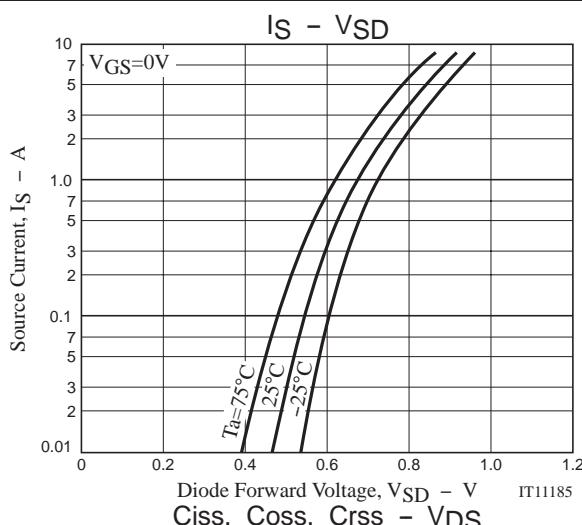
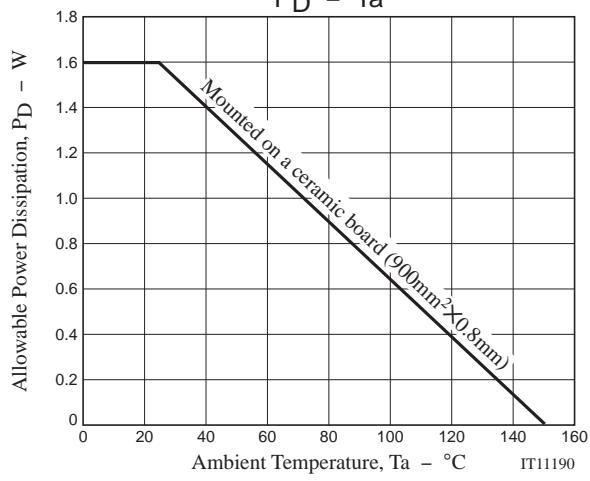
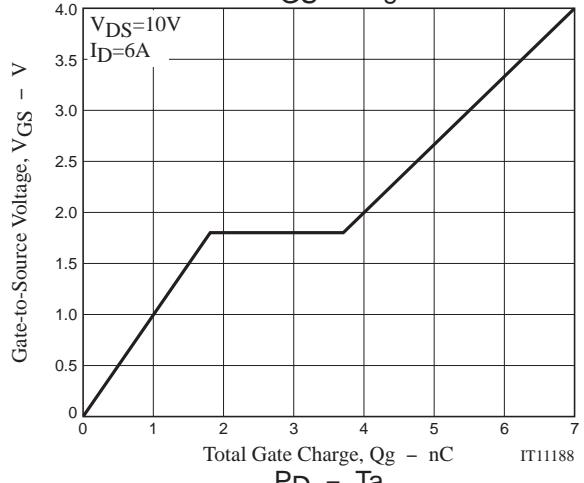
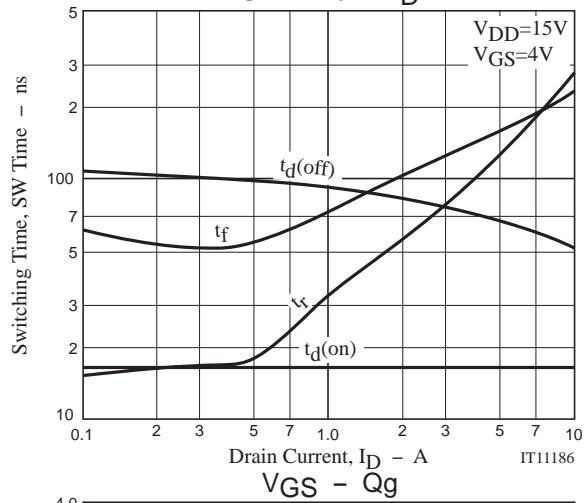
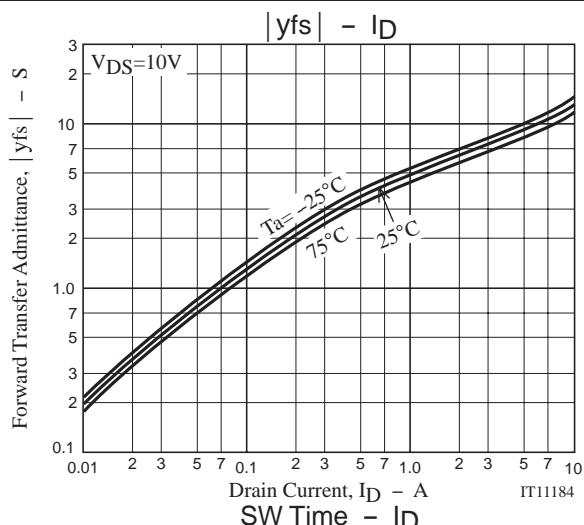
Parameter	Symbol	Conditions	Ratings			Unit	
			min	typ	max		
Total Gate Charge	$Q_g$	$V_{DS}=10V, V_{GS}=4V, I_D=6A$			7.0	nC	
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=10V, V_{GS}=4V, I_D=6A$			1.8	nC	
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=10V, V_{GS}=4V, I_D=6A$			1.9	nC	
Diode Forward Voltage	$V_{SD}$	$I_S=6A, V_{GS}=0V$			0.86	1.2	V

**Package Dimensions**

unit : mm

7018A-003

**Switching Time Test Circuit**



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