



ON Semiconductor®

ON Semiconductor DATA SHEET

CPH6412 — 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}		30	V
Gate-to-Source Voltage	V_{GS}		± 20	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	When mounted on ceramic substrate (900mm ² ×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	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 16\text{V}$, $V_{DS}=0\text{V}$			± 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} $	$V_{DS}=10\text{V}$, $I_D=3\text{A}$	4.2	6		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=3\text{A}$, $V_{GS}=10\text{V}$		25	33	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D=1.5\text{A}$, $V_{GS}=4.5\text{V}$		35	49	$\text{m}\Omega$
	$R_{DS(on)3}$	$I_D=1.5\text{A}$, $V_{GS}=4\text{V}$		37	52	$\text{m}\Omega$

Marking : KN

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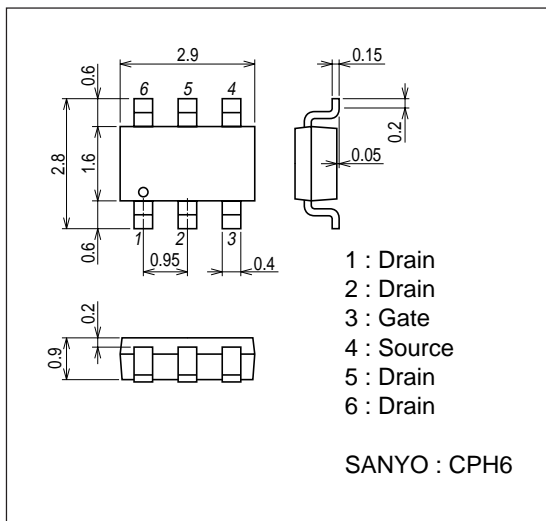
CPH6412

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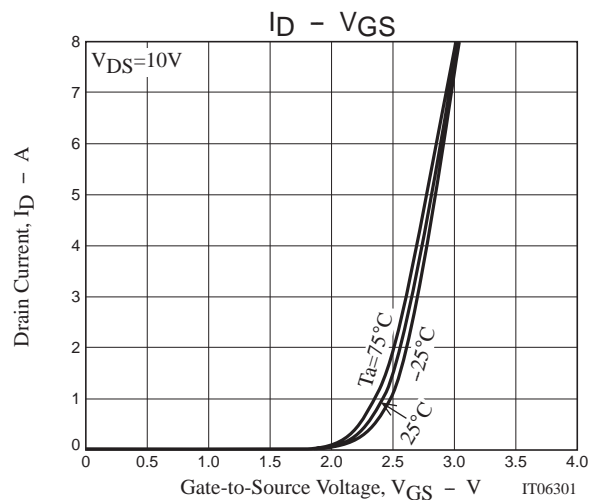
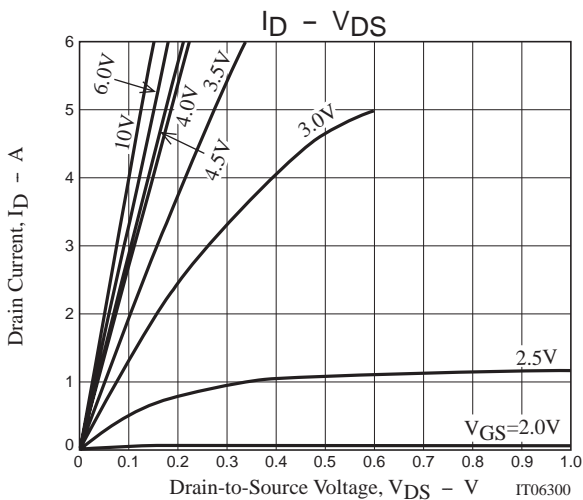
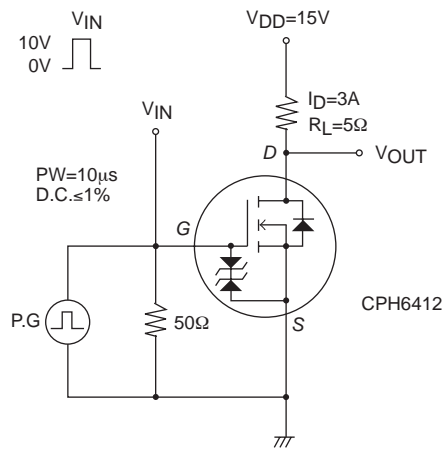
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	V _{DS} =10V, f=1MHz		690		pF
Output Capacitance	Coss	V _{DS} =10V, f=1MHz		160		pF
Reverse Transfer Capacitance	Crss	V _{DS} =10V, f=1MHz		88		pF
Turn-ON Delay Time	t _{d(on)}	See specified Test Circuit.		11		ns
Rise Time	t _r	See specified Test Circuit.		45		ns
Turn-OFF Delay Time	t _{d(off)}	See specified Test Circuit.		60		ns
Fall Time	t _f	See specified Test Circuit.		35		ns
Total Gate Charge	Qg	V _{DS} =10V, V _{GS} =10V, I _D =5A		16		nC
Gate-to-Source Charge	Qgs	V _{DS} =10V, V _{GS} =10V, I _D =5A		3.4		nC
Gate-to-Drain "Miller" Charge	Qgd	V _{DS} =10V, V _{GS} =10V, I _D =5A		2.4		nC
Diode Forward Voltage	V _{SD}	I _S =6A, V _{GS} =0V	0.84	1.2		V

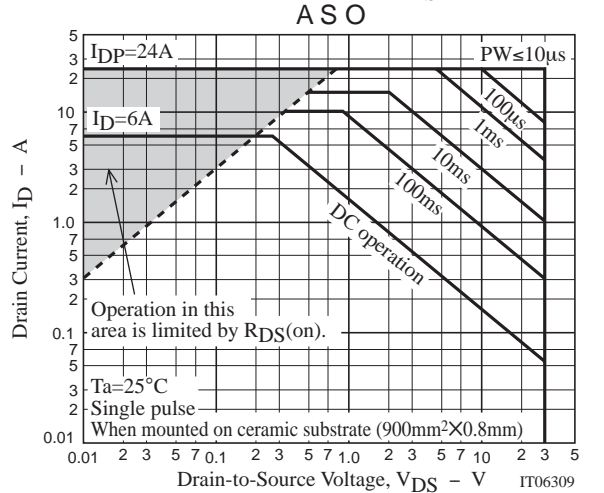
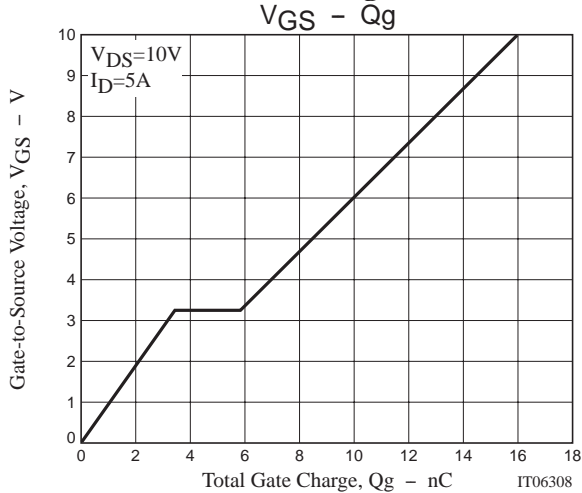
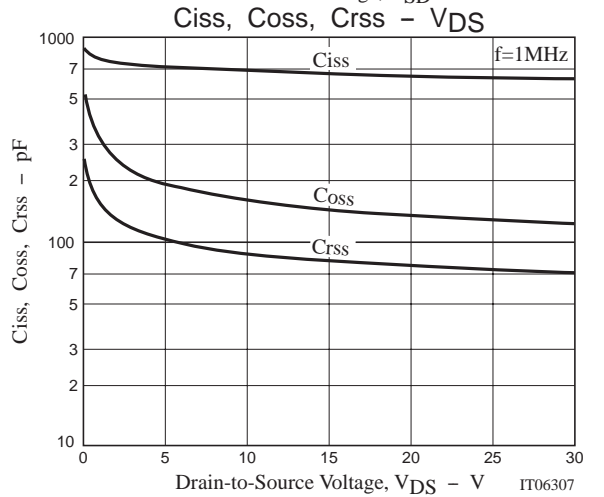
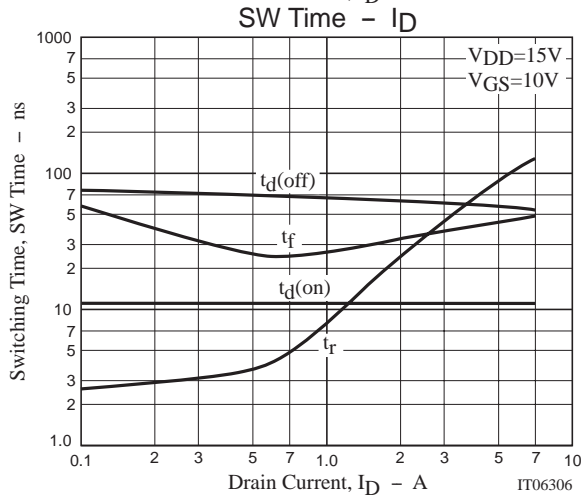
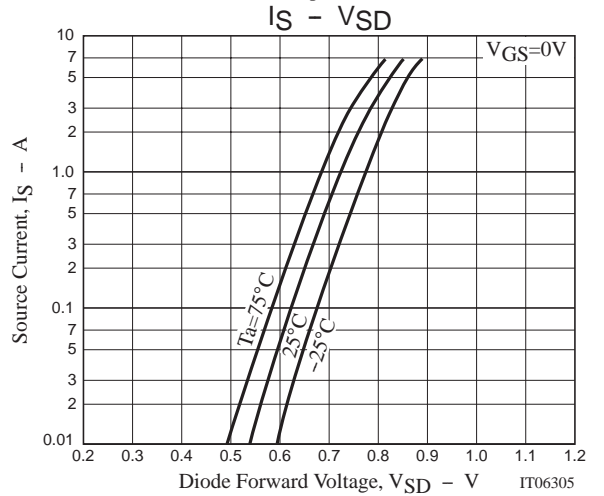
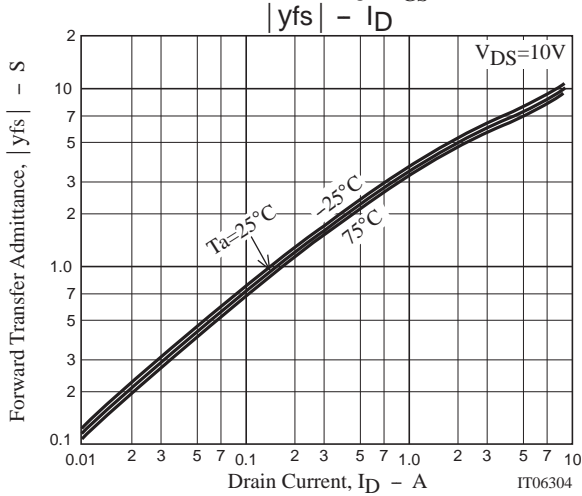
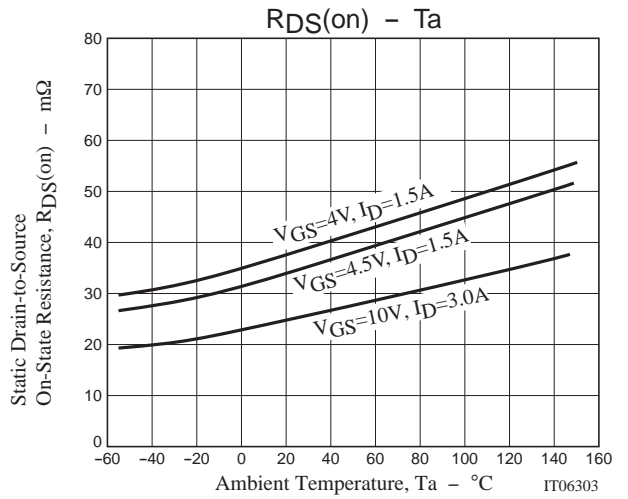
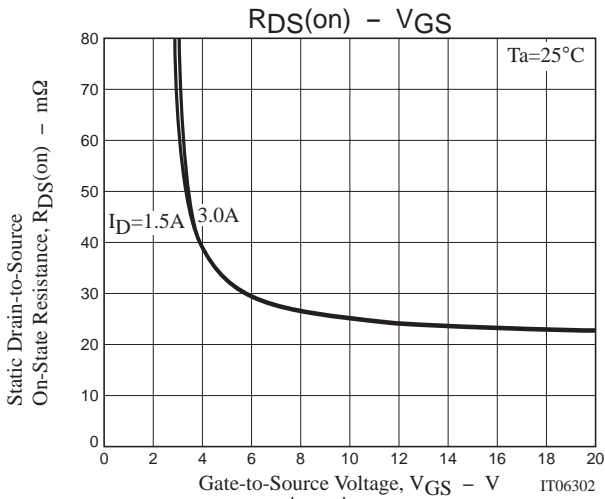
Package Dimensions

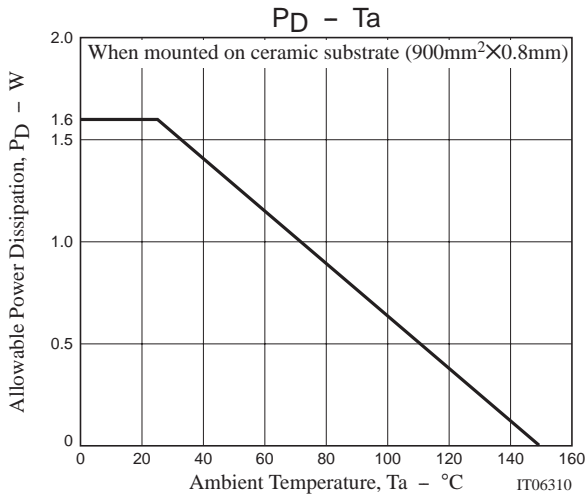
unit : mm (typ)
7018A-003



Switching Time Test Circuit







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