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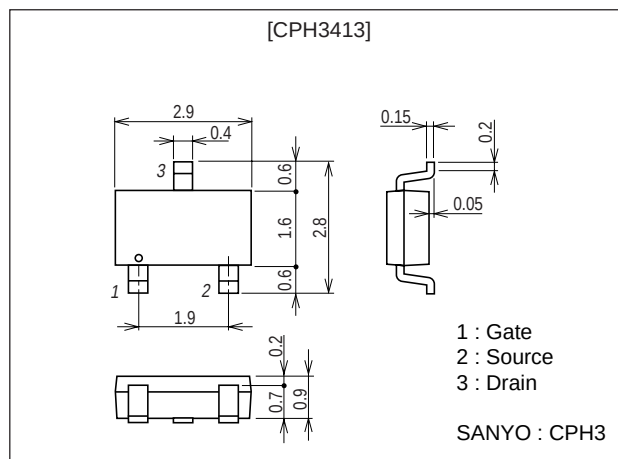
ON Semiconductor DATA SHEET

CPH3413 — N-Channel Silicon MOSFET Ultrahigh-Speed Switching Applications

Features

- Low ON-resistance.
- Ultrahigh-speed switching.
- 2.5V drive.

Package Dimensions

unit : mm
2152A

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DS}		20	V
Gate-to-Source Voltage	V_{GS}		±10	V
Drain Current (DC)	I_D		2.2	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu s$, duty cycle $\leq 1\%$	8.8	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (900mm ² ×0.8mm)	1.0	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		-55 to +150	°C

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1mA$, $V_{GS}=0$	20			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=20V$, $V_{GS}=0$			1	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 8V$, $V_{DS}=0$			±10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10V$, $I_D=1mA$	0.4		1.3	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V$, $I_D=1A$	2.4	3.5		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=1A$, $V_{GS}=4V$		100	130	mΩ
	$R_{DS(on)2}$	$I_D=0.5A$, $V_{GS}=2.5V$		130	180	mΩ

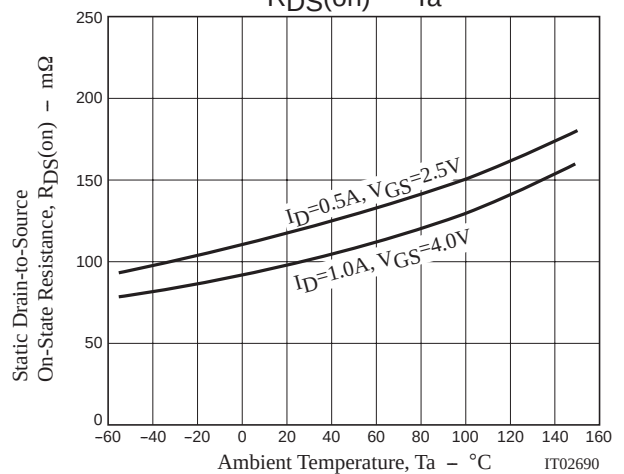
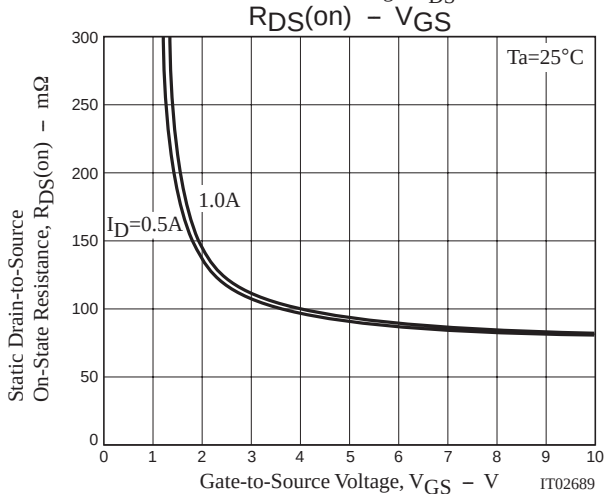
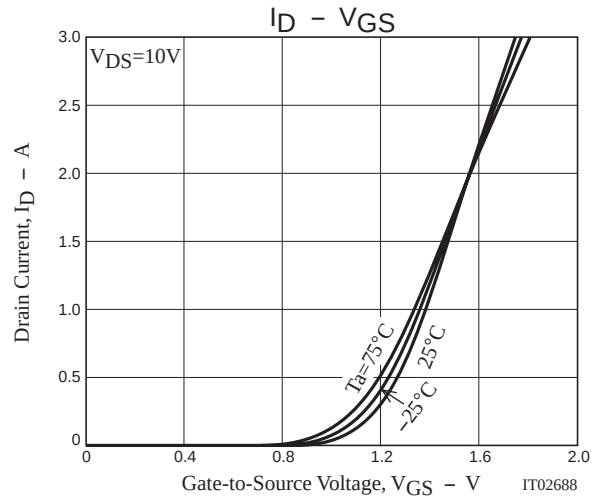
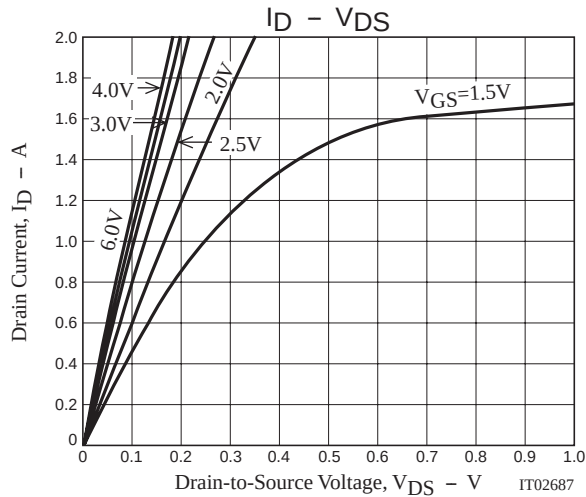
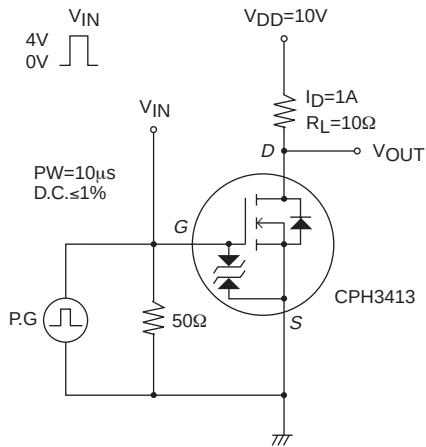
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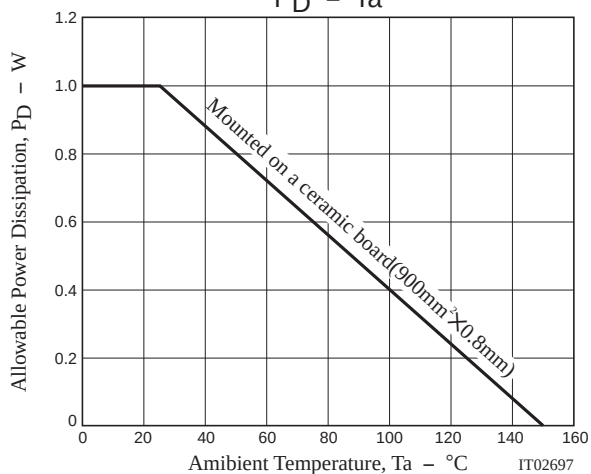
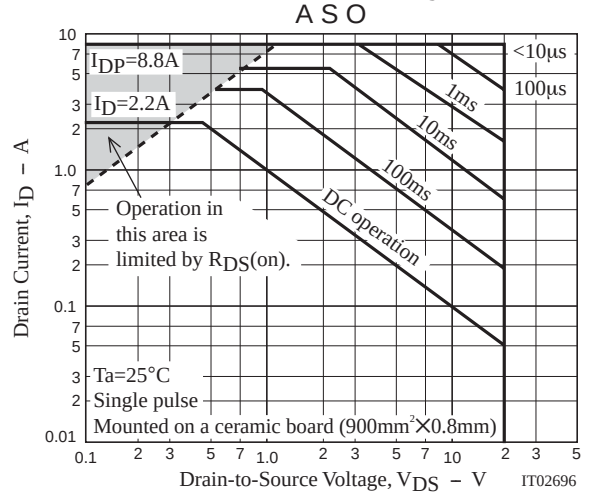
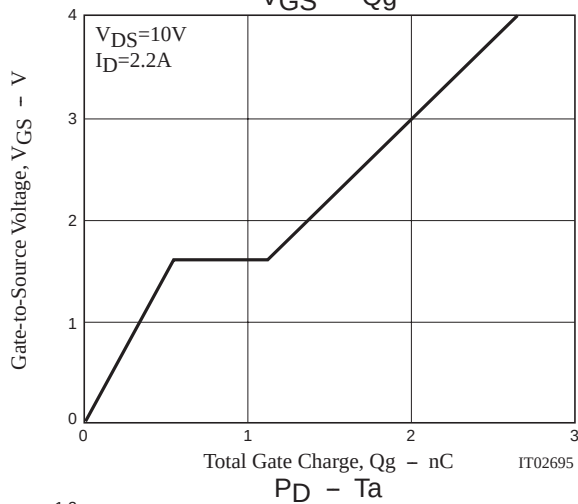
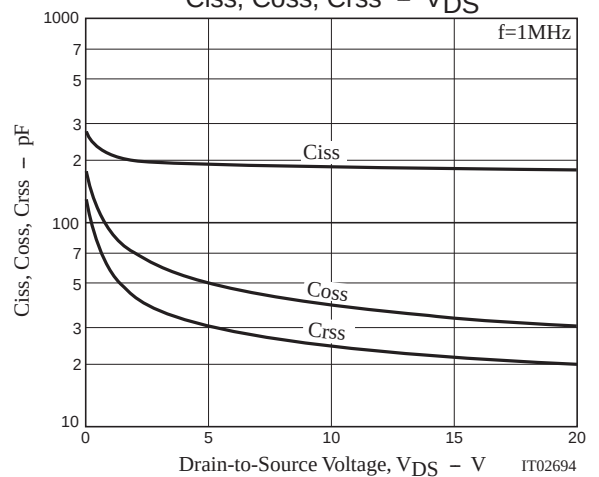
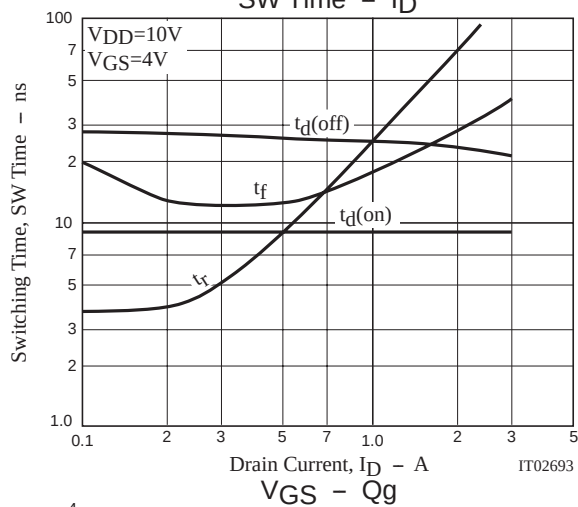
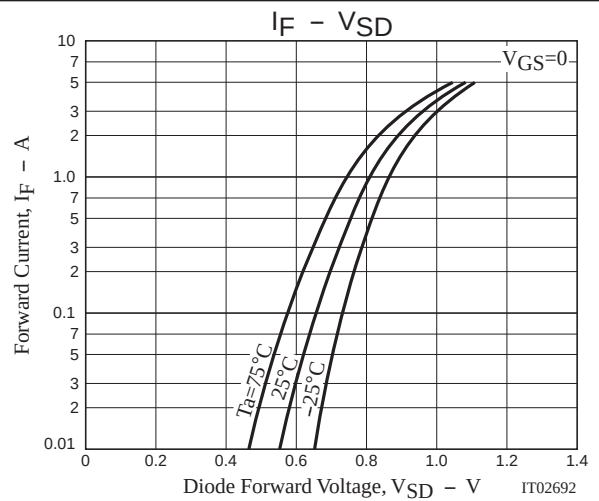
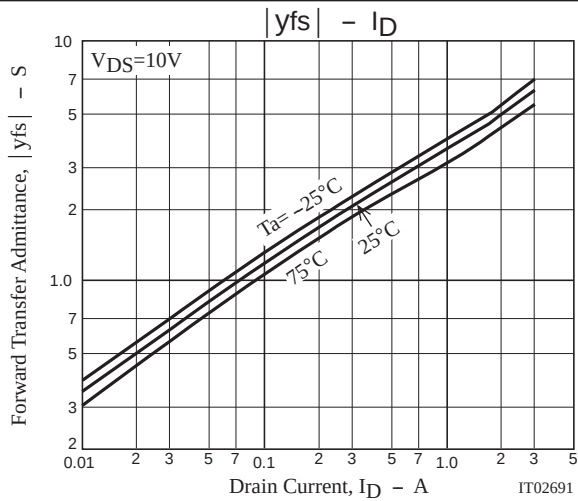
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	C_{iss}	$V_{DS}=10V, f=1MHz$		190		pF
Output Capacitance	C_{oss}	$V_{DS}=10V, f=1MHz$		40		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS}=10V, f=1MHz$		25		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit		9		ns
Rise Time	t_r	See specified Test Circuit		25		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit		25		ns
Fall Time	t_f	See specified Test Circuit		18		ns
Total Gate Charge	Q_g	$V_{DS}=10V, V_{GS}=4V, I_D=2.2A$		2.7		nC
Gate-to-Source Charge	Q_{gs}	$V_{DS}=10V, V_{GS}=4V, I_D=2.2A$		0.6		nC
Gate-to-Drain "Miller" Charge	Q_{gd}	$V_{DS}=10V, V_{GS}=4V, I_D=2.2A$		0.6		nC
Diode Forward Voltage	V_{SD}	$I_S=2.2A, V_{GS}=0$		0.89	1.2	V

Switching Time Test Circuit





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