



# CPH6619

## N-Channel and P-Channel Silicon MOSFETs

### General-Purpose Switching Device Applications

#### Features

- Composite type of a low on-resistance ultra-high switching P-channel MOSFET and a small signal N-channel MOSFET for driving P-channel MOSFET enables high-density mounting.
- Excellent ON-resistance characteristic.
- Best suited for load switches.
- N-channel 1.5V drive, P-channel 1.8V drive.

#### Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	N-channel	P-channel	Unit
Drain-to-Source Voltage	V <sub>DSS</sub>		30	-12	V
Gate-to-Source Voltage	V <sub>GSS</sub>		±10	±8	V
Drain Current (DC)	I <sub>D</sub>		0.4	-2	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	1.6	-8	A
Allowable Power Dissipation	P <sub>D</sub>	Mounted on a ceramic board (90mm <sup>2</sup> X0.8mm) 1unit	0.8		W
Channel Temperature	T <sub>ch</sub>		150		°C
Storage Temperature	T <sub>stg</sub>		-55 to +150		°C

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[N-channel]						
Drain-to-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	I <sub>D</sub> =1mA, V <sub>GS</sub> =0V	30			V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V			1	μA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±8V, V <sub>DS</sub> =0V			±10	μA
Cutoff Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =100μA	0.4		1.3	V
Forward Transfer Admittance	y <sub>fs</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =80mA	0.13	0.22		S
Static Drain-to-Source On-State Resistance	R <sub>DS(on)1</sub>	I <sub>D</sub> =80mA, V <sub>GS</sub> =4V		2.9	3.7	Ω
	R <sub>DS(on)2</sub>	I <sub>D</sub> =40mA, V <sub>GS</sub> =2.5V		3.7	5.2	Ω
	R <sub>DS(on)3</sub>	I <sub>D</sub> =10mA, V <sub>GS</sub> =1.5V		6.4	12.8	Ω
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =10V, f=1MHz		7		pF
Output Capacitance	C <sub>oss</sub>	V <sub>DS</sub> =10V, f=1MHz		5.9		pF
Reverse Transfer Capacitance	C <sub>rss</sub>	V <sub>DS</sub> =10V, f=1MHz		2.3		pF

Marking : WF

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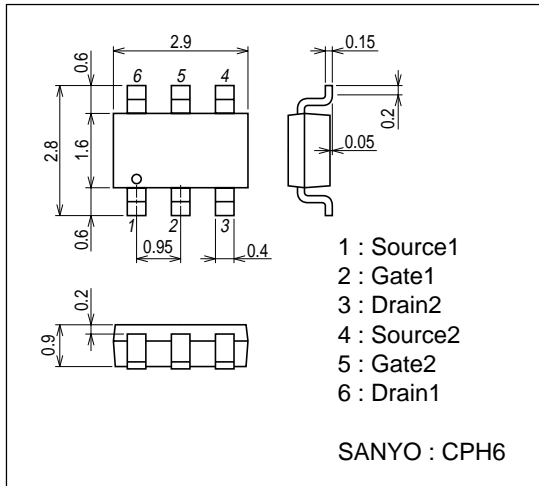
# CPH6619

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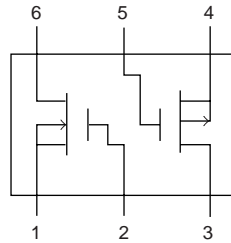
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		19		ns
Rise Time	$t_r$	See specified Test Circuit.		65		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		155		ns
Fall Time	$t_f$	See specified Test Circuit.		120		ns
Total Gate Charge	$Q_g$	$V_{DS}=10V, V_{GS}=10V, I_D=150mA$		1.58		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=10V, V_{GS}=10V, I_D=150mA$		0.26		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=10V, V_{GS}=10V, I_D=150mA$		0.31		nC
Diode Forward Voltage	$V_{SD}$	$I_S=150mA, V_{GS}=0V$		0.87	1.2	V
[P-channel]						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=-1mA, V_{GS}=0V$	-12			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-12V, V_{GS}=0V$			-10	$\mu A$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 6.4V, V_{DS}=0V$			$\pm 10$	$\mu A$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=-6V, I_D=-1mA$	-0.3			V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=-6V, I_D=-1A$	1.74	2.9		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=-1A, V_{GS}=-4.5V$		130	165	$m\Omega$
	$R_{DS(on)2}$	$I_D=-0.5A, V_{GS}=-2.5V$		180	245	$m\Omega$
	$R_{DS(on)3}$	$I_D=-0.2A, V_{GS}=-1.8V$		240	350	$m\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=-6V, f=1MHz$		310		pF
Output Capacitance	$C_{oss}$	$V_{DS}=-6V, f=1MHz$		90		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=-6V, f=1MHz$		80		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		14		ns
Rise Time	$t_r$	See specified Test Circuit.		53		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		53		ns
Fall Time	$t_f$	See specified Test Circuit.		52		ns
Total Gate Charge	$Q_g$	$V_{DS}=-6V, V_{GS}=-4.5V, I_D=-2.0A$		4.6		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=-6V, V_{GS}=-4.5V, I_D=-2.0A$		0.7		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=-6V, V_{GS}=-4.5V, I_D=-2.0A$		1.3		nC
Diode Forward Voltage	$V_{SD}$	$I_S=-2.0A, V_{GS}=0V$		-0.89	-1.5	V

## Package Dimensions

unit : mm (typ)  
7018A-007



## Electrical Connection

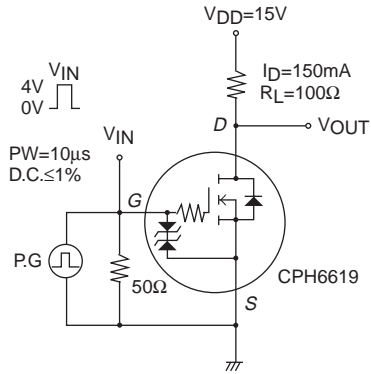


- 1 : Source1
- 2 : Gate1
- 3 : Drain2
- 4 : Source2
- 5 : Gate2
- 6 : Drain1

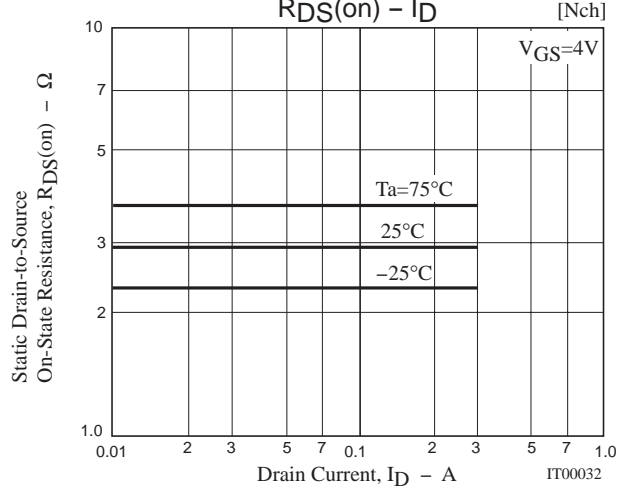
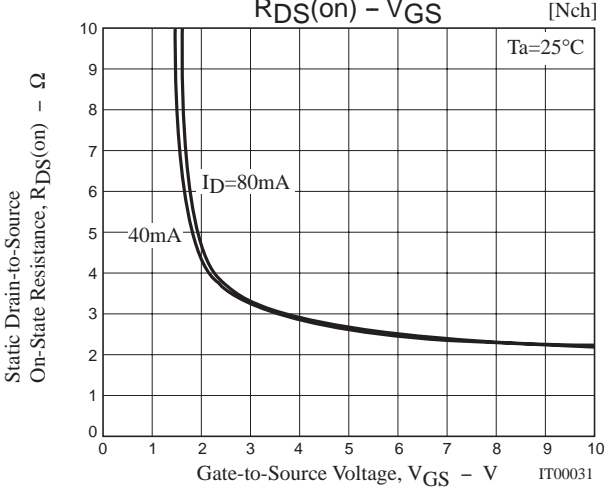
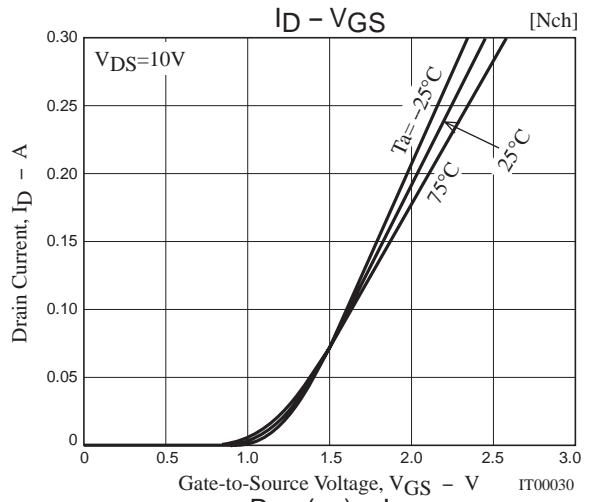
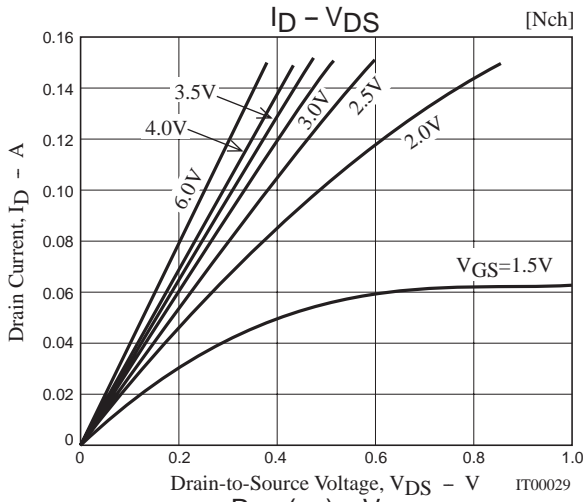
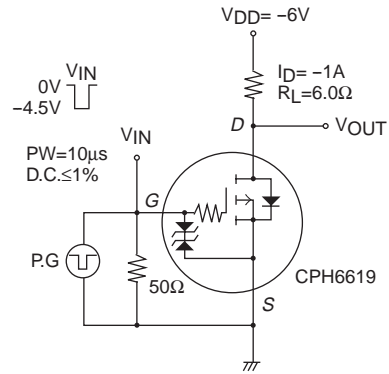
Top view

Switching Time Test Circuit

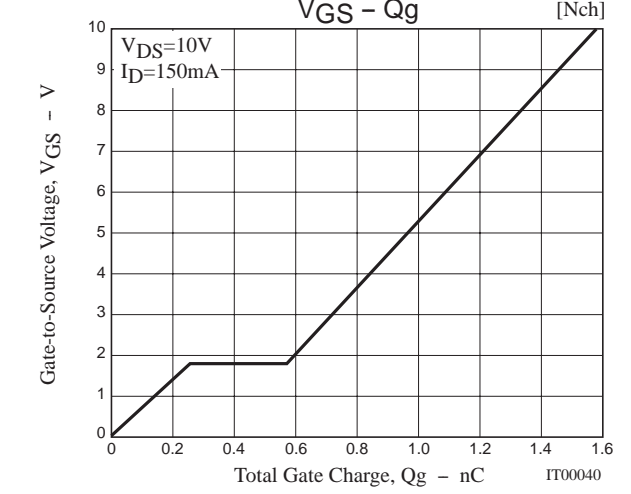
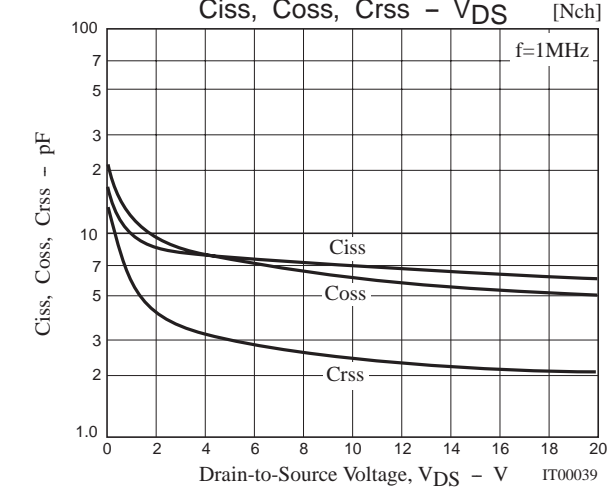
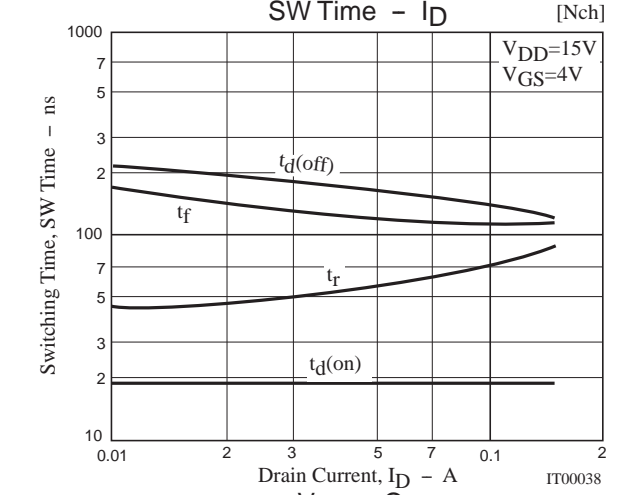
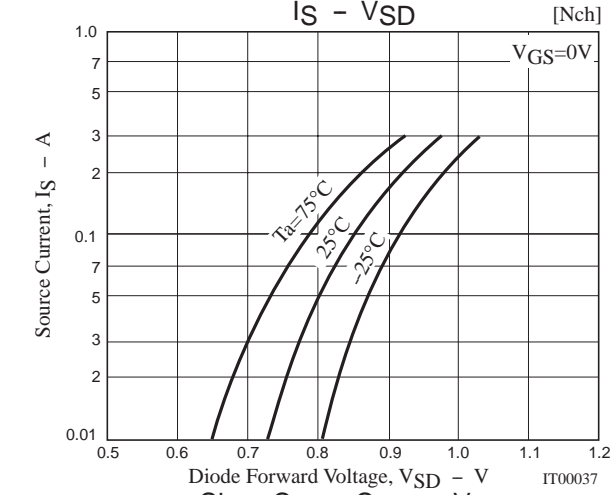
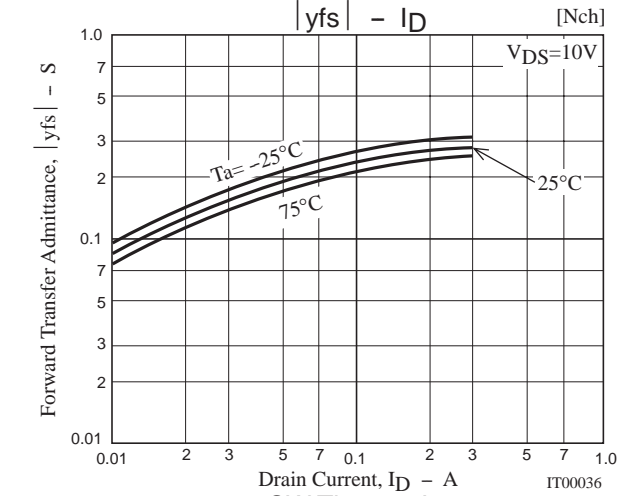
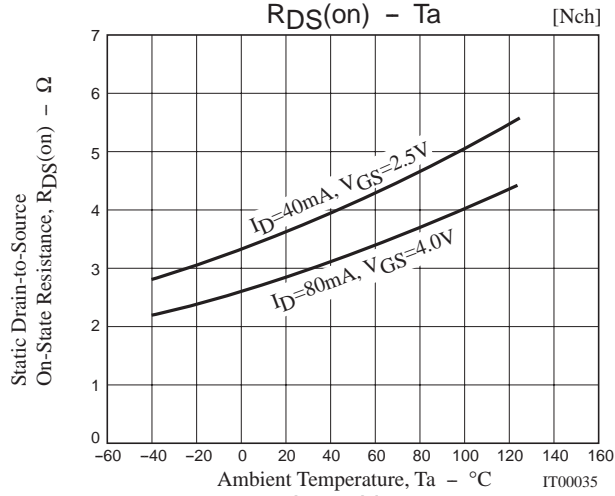
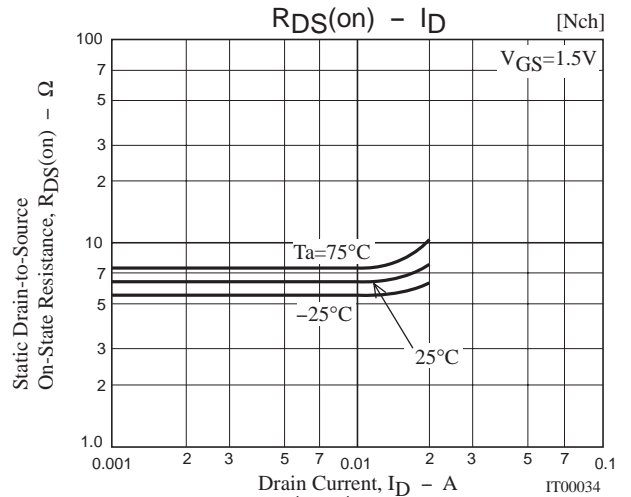
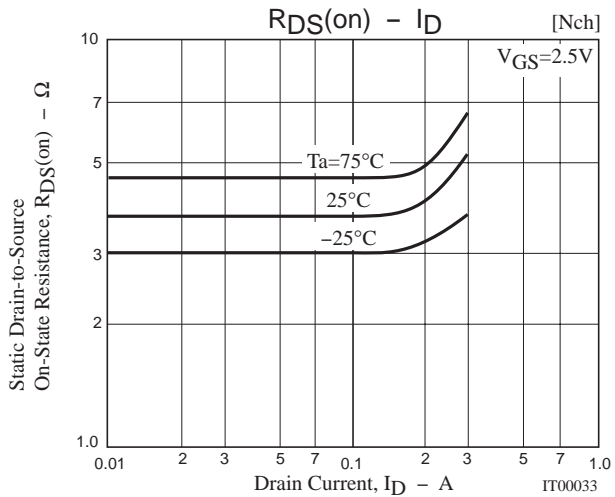
[N-channel]

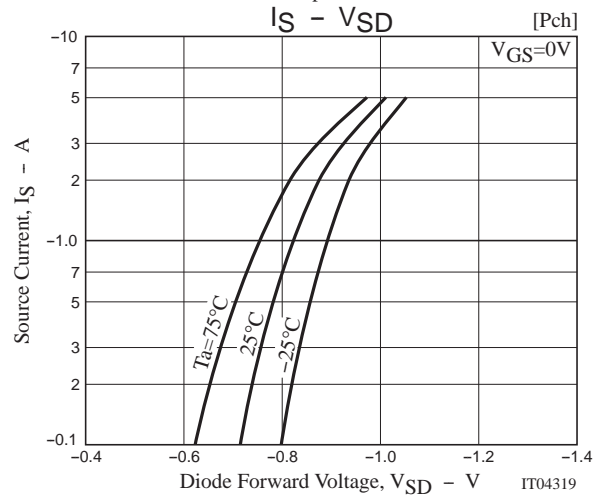
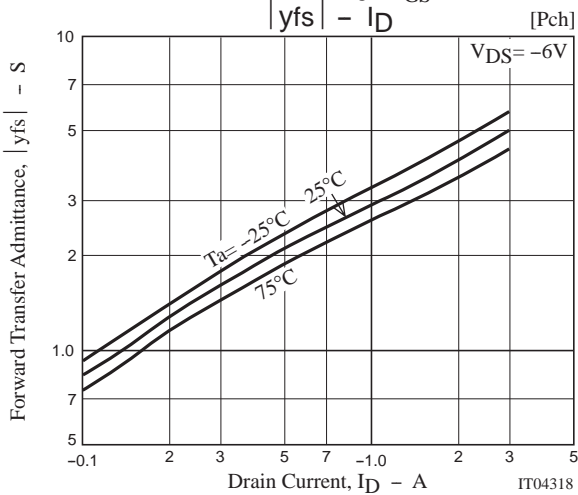
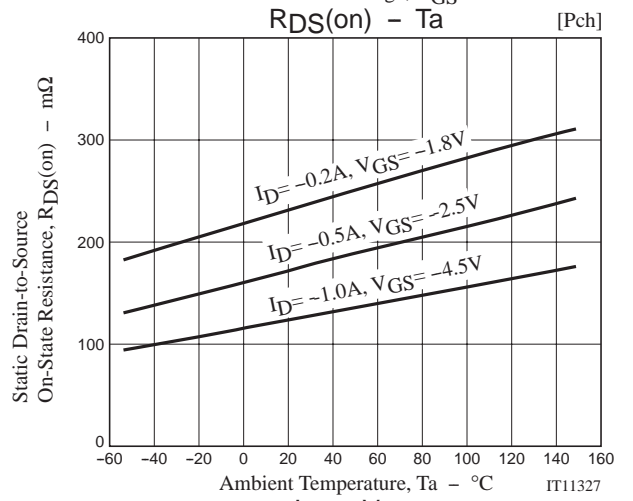
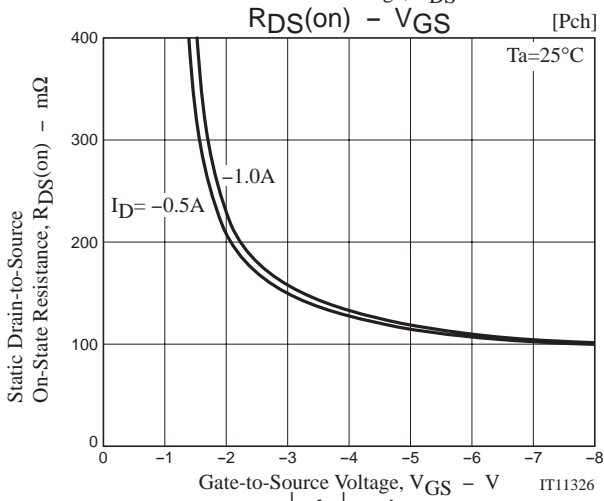
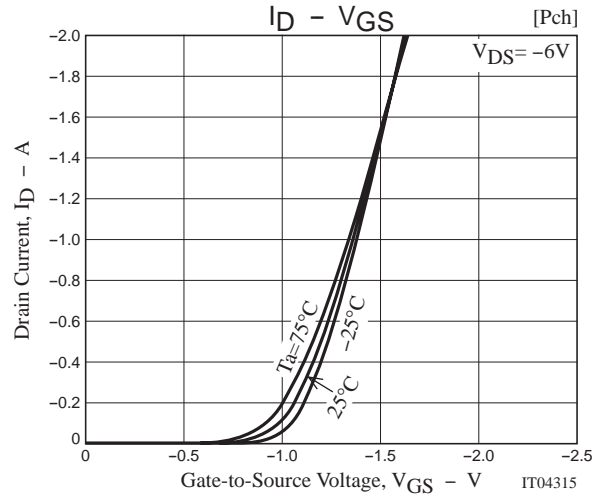
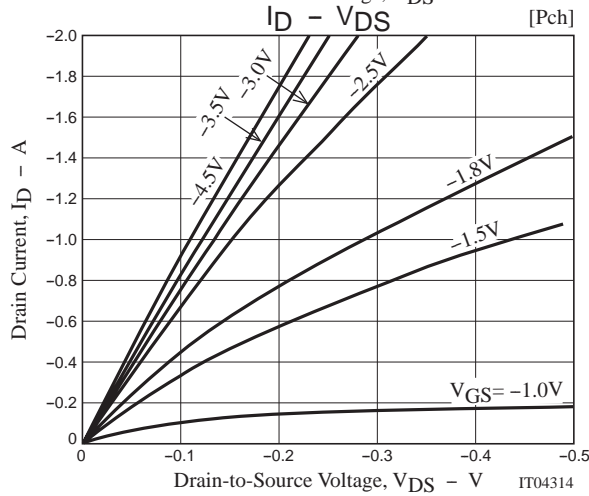
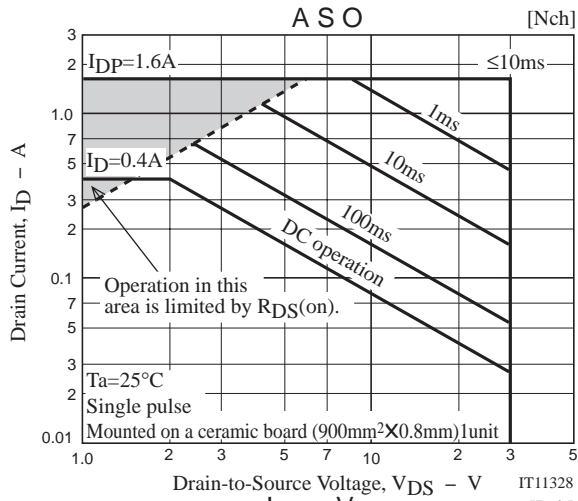


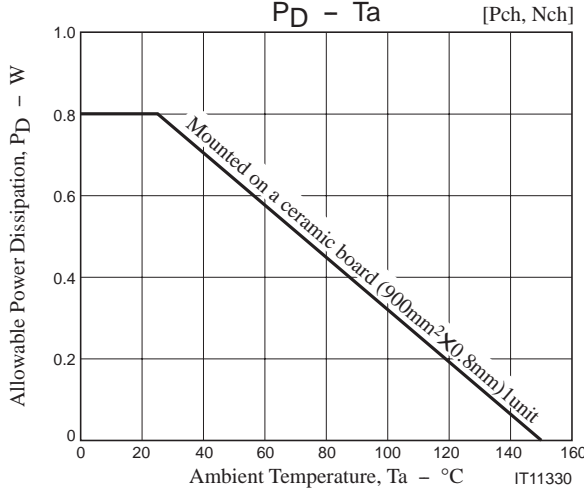
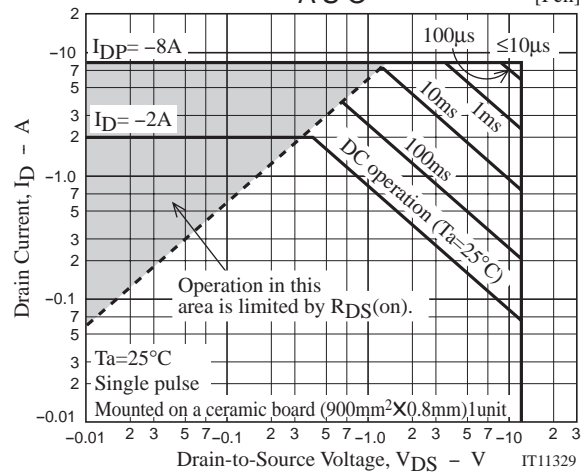
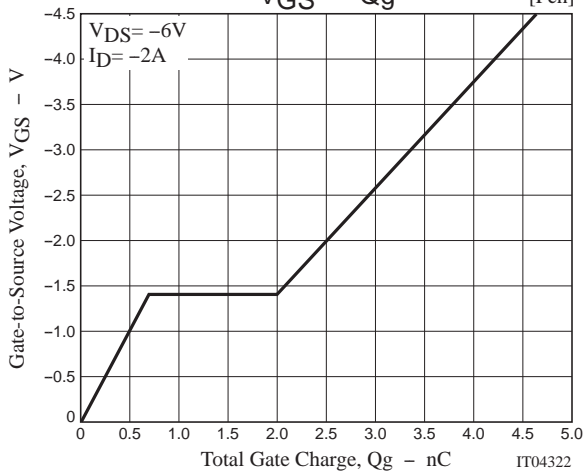
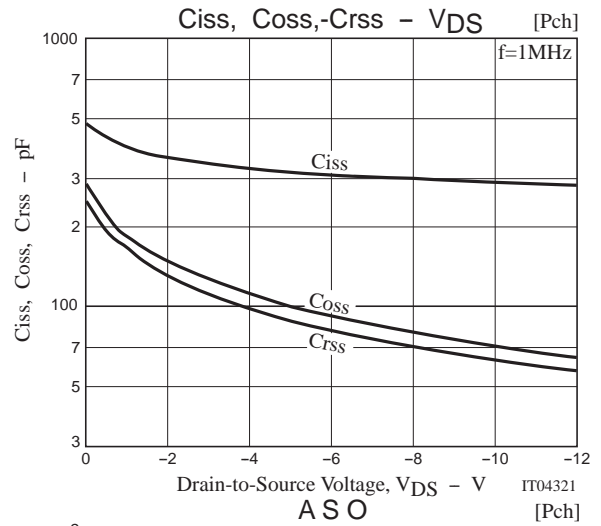
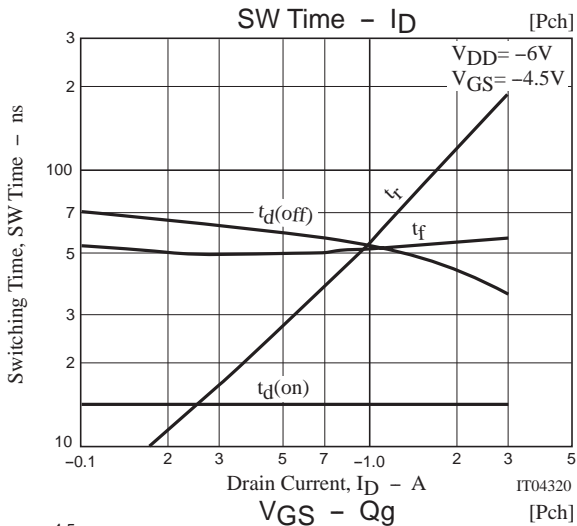
[P-channel]



# CPH6619







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