

N-Channel and P-Channel Silicon MOSFETs

CPH6614 — General-Purpose Switching Device Applications

Features

- The CPH6614 incorporates a N-channel MOSFET and a P-channel MOSFET that feature low ON-resistance, Ultrahigh-speed switching, thereby enabling high-density mounting.
- Excellent ON-resistance characteristic.
- Best suited for load switches.
- 4V drive.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	N-channel	P-channel	Unit
Drain-to-Source Voltage	V _{DSS}		30	-30	V
Gate-to-Source Voltage	V _{GSS}		±20	±20	V
Drain Current (DC)	I _D		1.8	-1.2	A
Drain Current (Pulse)	I _{DP}	PW≤10μs, duty cycle≤1%	7.2	-4.8	A
Allowable Power Dissipation	P _D	Mounted on a ceramic board (900mm ² X0.8mm)1unit	0.8		W
Channel Temperature	T _{ch}		150		°C
Storage Temperature	T _{stg}		-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 _{(BR)DSS}	I _D =1mA, V _{GS} =0	30			V
Zero-Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0			1	μA
Gate-to-Source Leakage Current	I _{GSS}	V _{GS} =±16V, V _{DS} =0			±10	μA
Cutoff Voltage	V _{GS(off)}	V _{DS} =10V, I _D =1mA	1.2		2.6	V
Forward Transfer Admittance	y _{fs}	V _{DS} =10V, I _D =1A	0.78	1.3		S
Static Drain-to-Source On-State Resistance	R _{DS(on)1}	I _D =1A, V _{GS} =10V		150	195	mΩ
	R _{DS(on)2}	I _D =0.5A, V _{GS} =4V		290	410	mΩ
Input Capacitance	C _{iss}	V _{DS} =10V, f=1MHz		95		pF
Output Capacitance	C _{oss}	V _{DS} =10V, f=1MHz		22		pF
Reverse Transfer Capacitance	C _{rss}	V _{DS} =10V, f=1MHz		16		pF

Marking : WA

Continued on next page.

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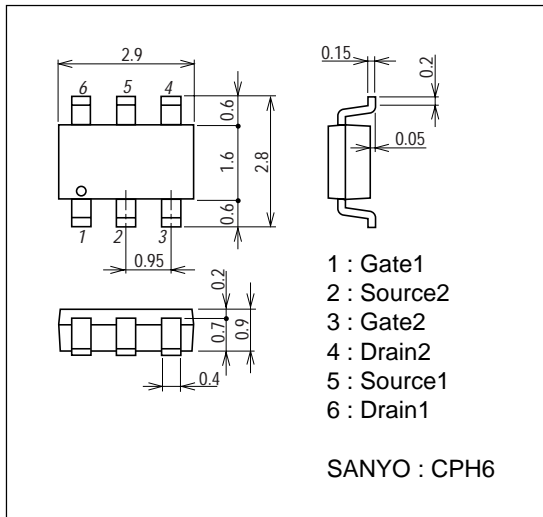
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-ON Delay Time	$t_d(\text{on})$	See specified Test Circuit.		6.2		ns
Rise Time	t_r	See specified Test Circuit.		4.5		ns
Turn-OFF Delay Time	$t_d(\text{off})$	See specified Test Circuit.		13		ns
Fall Time	t_f	See specified Test Circuit.		6.4		ns
Total Gate Charge	Q_g	$V_{DS}=10V, V_{GS}=10V, I_D=1.8A$		3.2		nC
Gate-to-Source Charge	Q_{gs}	$V_{DS}=10V, V_{GS}=10V, I_D=1.8A$		0.74		nC
Gate-to-Drain "Miller" Charge	Q_{gd}	$V_{DS}=10V, V_{GS}=10V, I_D=1.8A$		0.42		nC
Diode Forward Voltage	V_{SD}	$I_S=1.8A, V_{GS}=0$		0.93	1.2	V
[P-channel]						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=-1mA, V_{GS}=0$	-30			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-30V, V_{GS}=0$			-1	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 16V, V_{DS}=0$			± 10	μA
Cutoff Voltage	$V_{GS(\text{off})}$	$V_{DS}=-10V, I_D=-1mA$	-1.2		-2.6	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=-10V, I_D=0.6A$	0.6	1.0		S
Static Drain-to-Source On-State Resistance	$R_{DS(\text{on})1}$	$I_D=-0.6A, V_{GS}=-10V$		320	420	$m\Omega$
	$R_{DS(\text{on})2}$	$I_D=-0.3A, V_{GS}=-4V$		590	830	$m\Omega$
Input Capacitance	C_{iss}	$V_{DS}=-10V, f=1MHz$		104		pF
Output Capacitance	C_{oss}	$V_{DS}=-10V, f=1MHz$		22		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS}=-10V, f=1MHz$		17		pF
Turn-ON Delay Time	$t_d(\text{on})$	See specified Test Circuit.		12.5		ns
Rise Time	t_r	See specified Test Circuit.		24		ns
Turn-OFF Delay Time	$t_d(\text{off})$	See specified Test Circuit.		12		ns
Fall Time	t_f	See specified Test Circuit.		12.2		ns
Total Gate Charge	Q_g	$V_{DS}=-10V, V_{GS}=-10V, I_D=-1.2A$		3.3		nC
Gate-to-Source Charge	Q_{gs}	$V_{DS}=-10V, V_{GS}=-10V, I_D=-1.2A$		0.48		nC
Gate-to-Drain "Miller" Charge	Q_{gd}	$V_{DS}=-10V, V_{GS}=-10V, I_D=-1.2A$		0.45		nC
Diode Forward Voltage	V_{SD}	$I_S=-1.2A, V_{GS}=0$		-0.91	-1.5	V

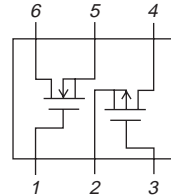
Package Dimensions

unit : mm

2238



Electrical Connection

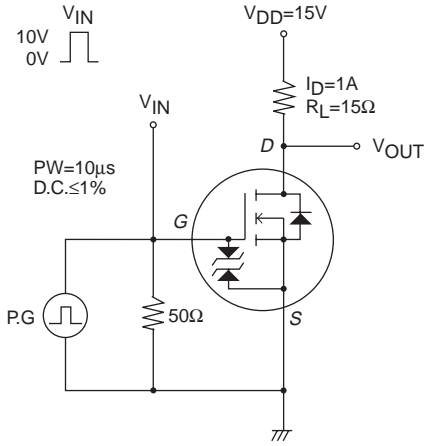


- 1 : Gate1
- 2 : Source2
- 3 : Gate2
- 4 : Drain2
- 5 : Source1
- 6 : Drain1

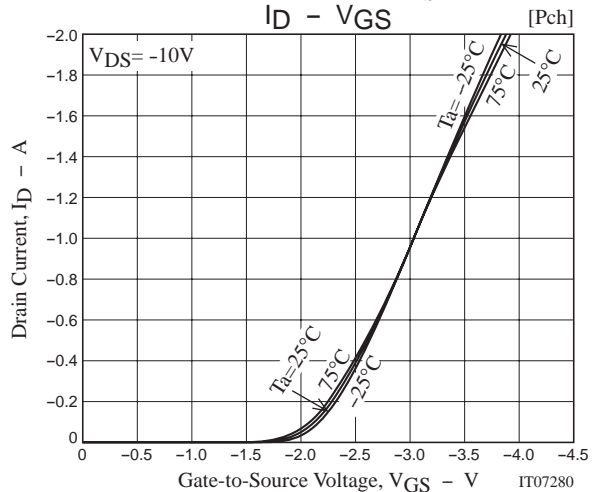
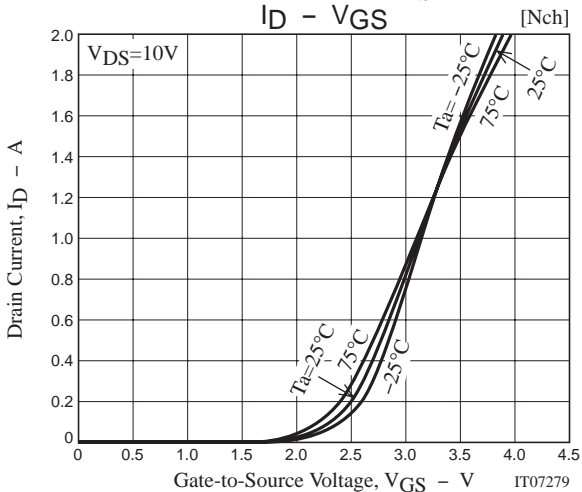
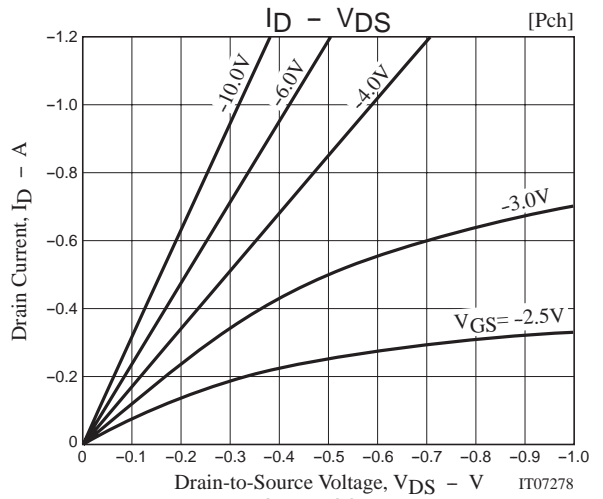
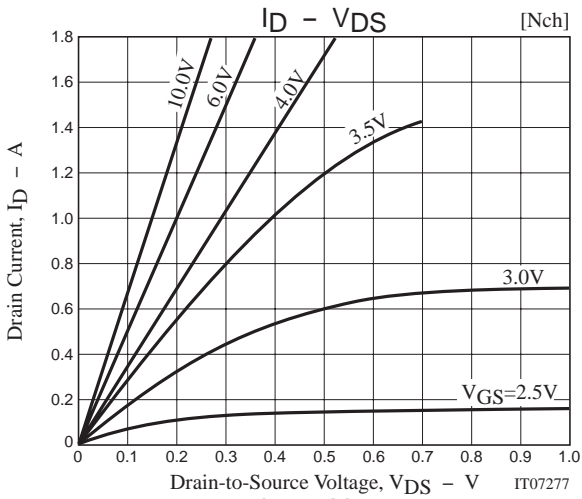
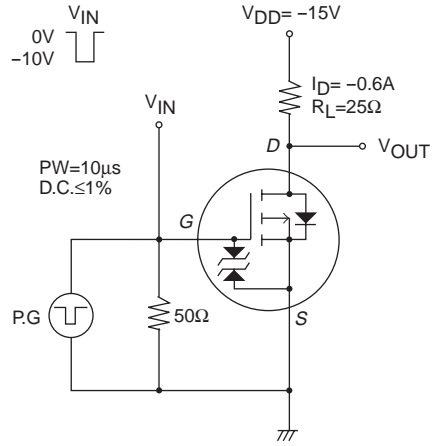
Top view

Switching Time Test Circuit

[N-channel]

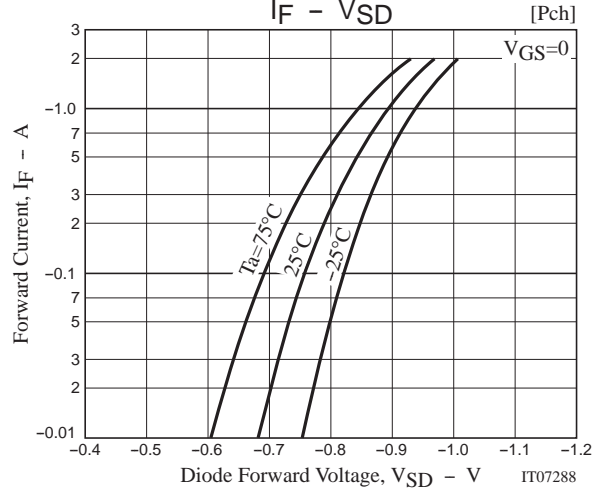
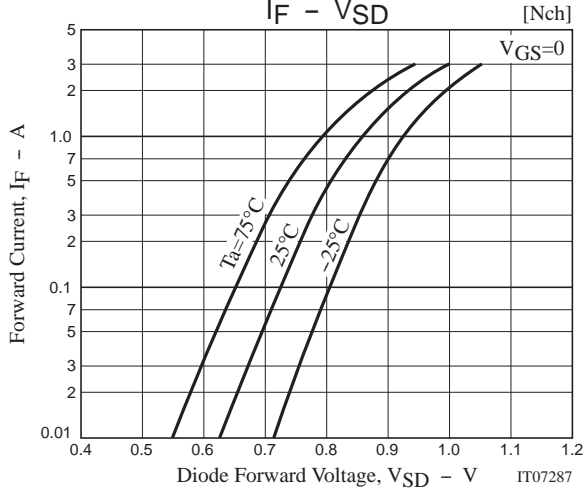
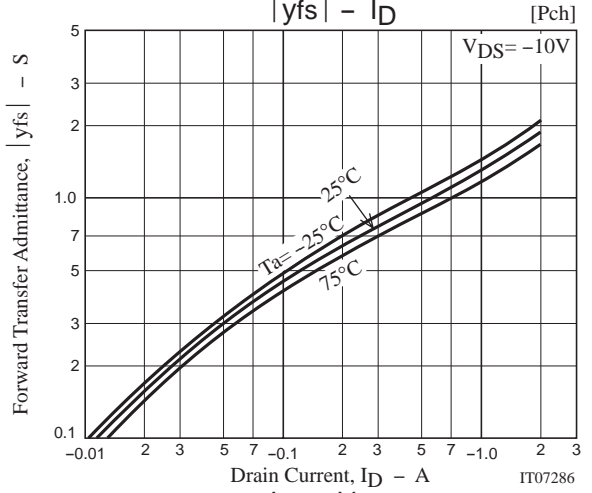
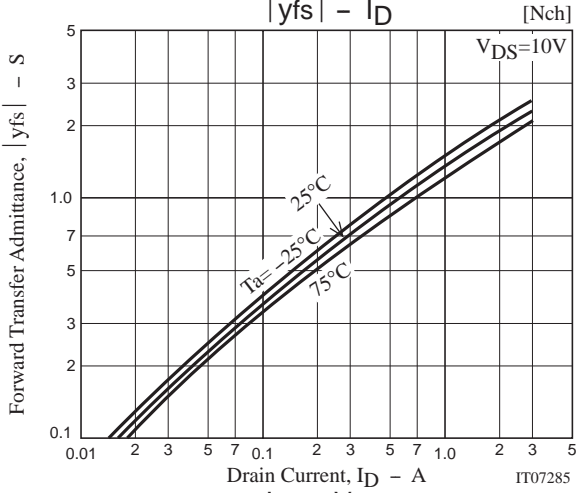
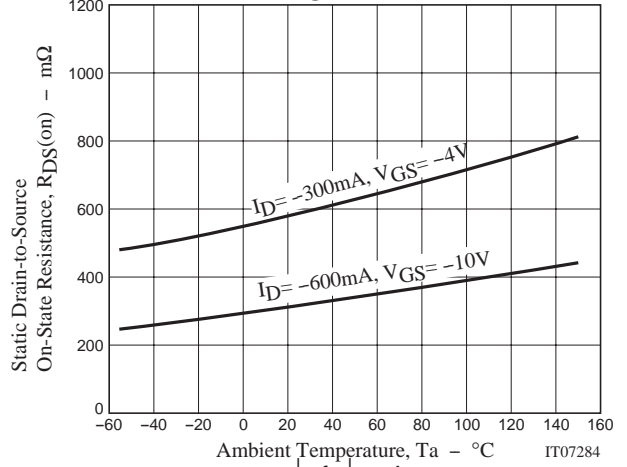
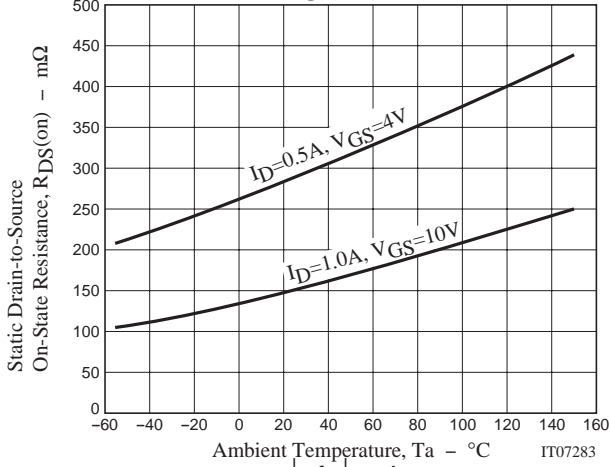
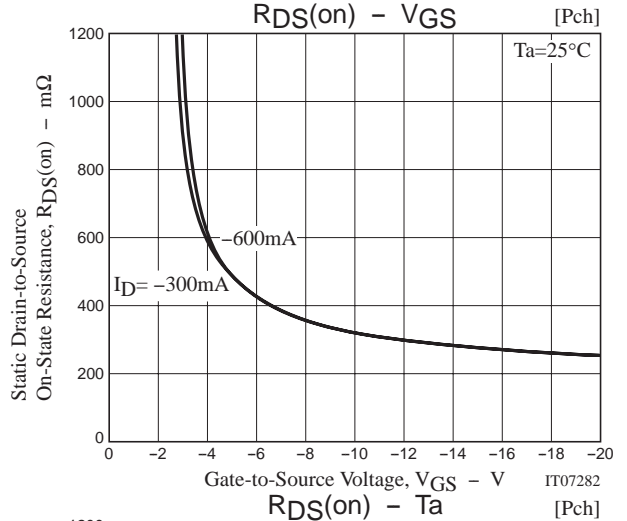
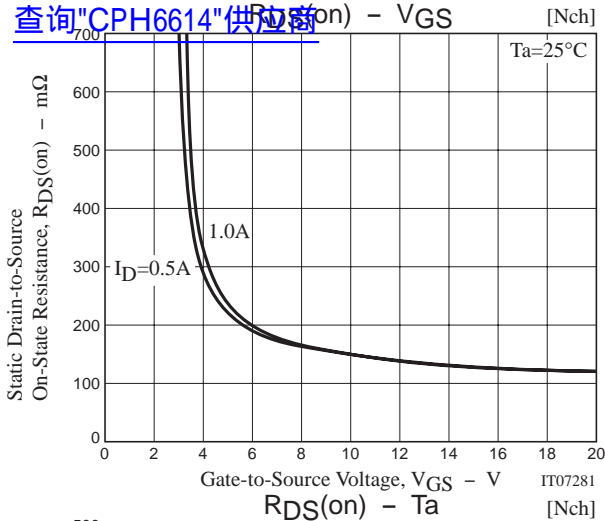


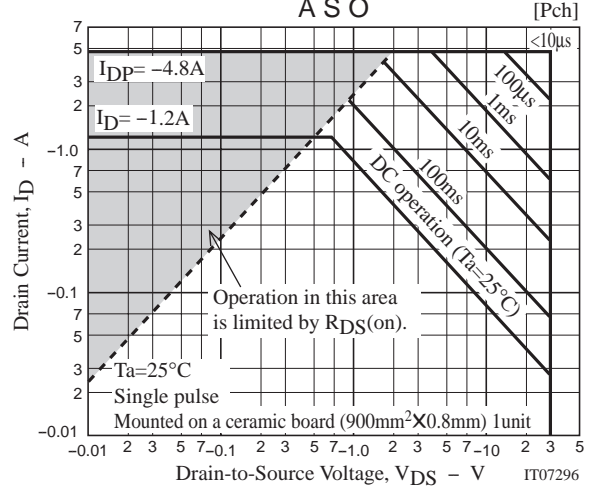
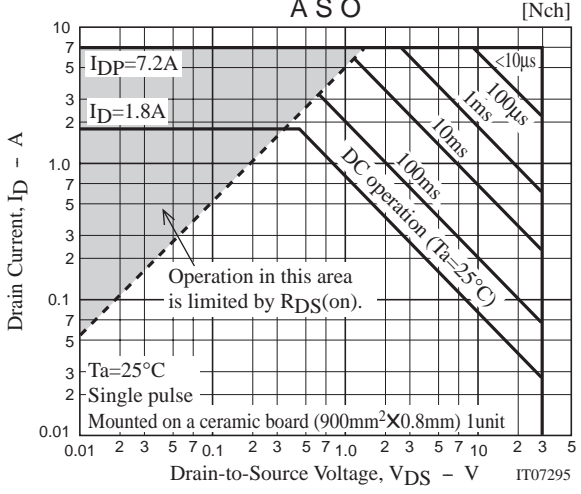
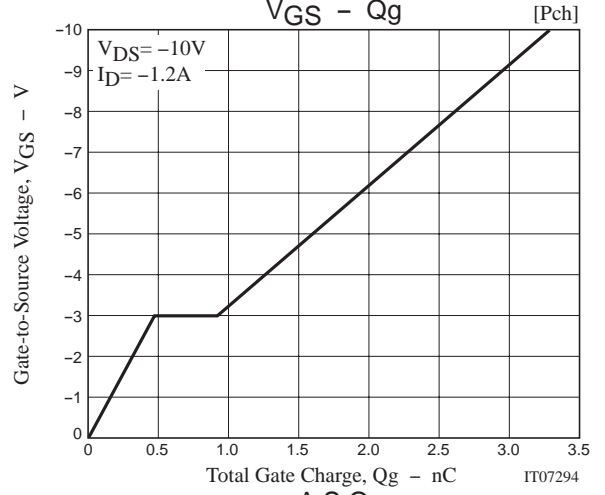
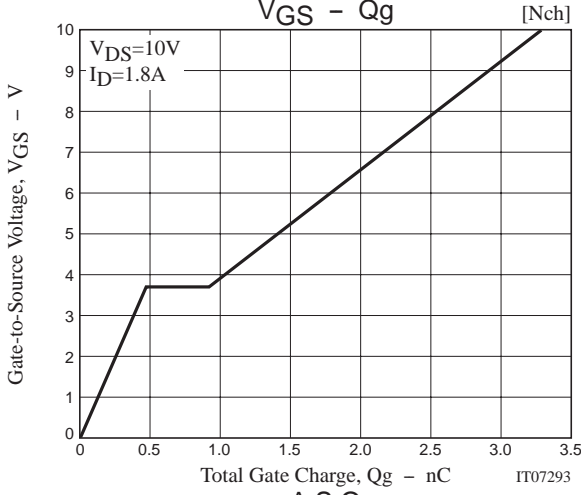
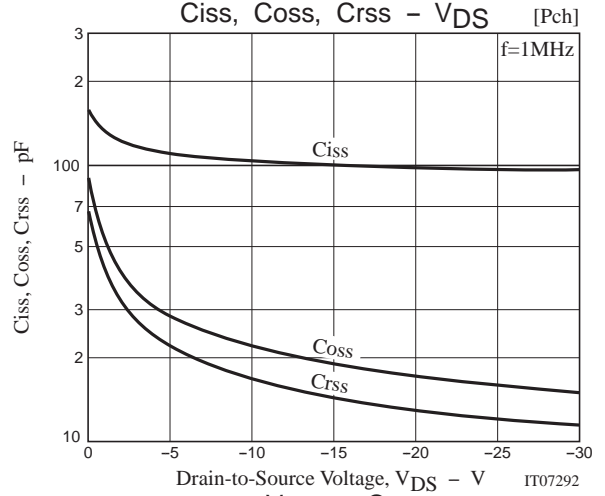
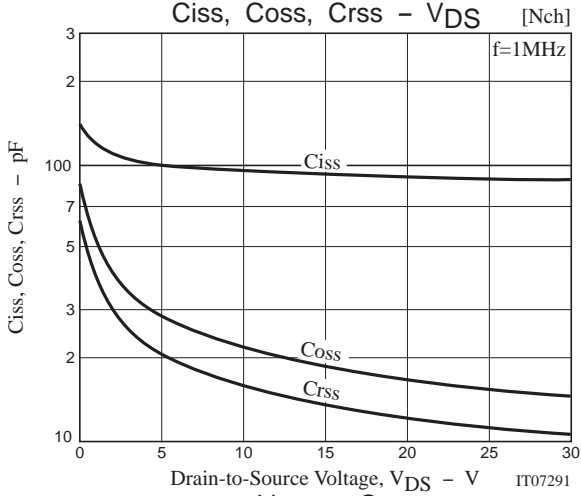
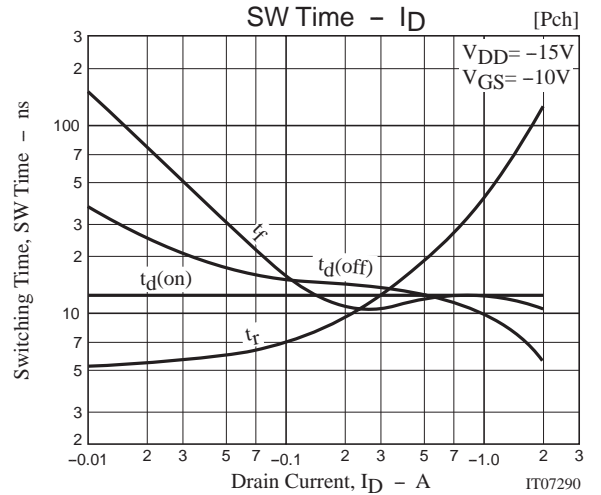
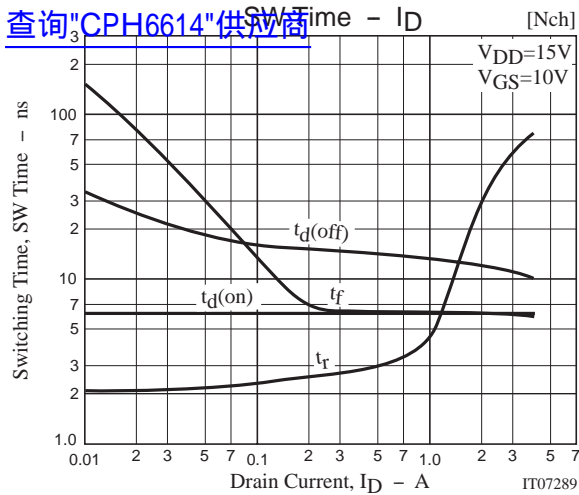
[P-channel]



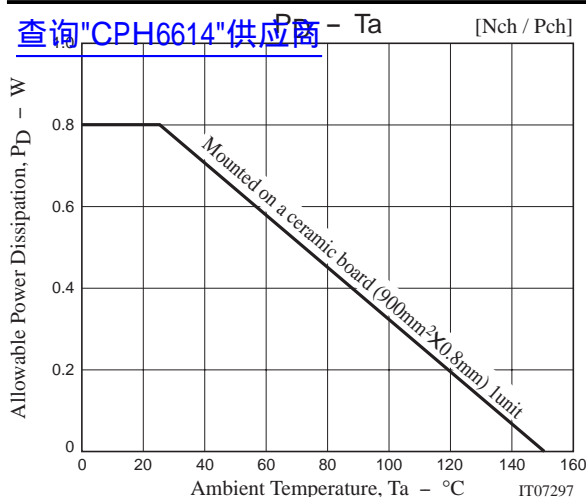
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Note on usage : Since the CPH6614 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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