



CPH5605

Ultrahigh-Speed Switching Applications

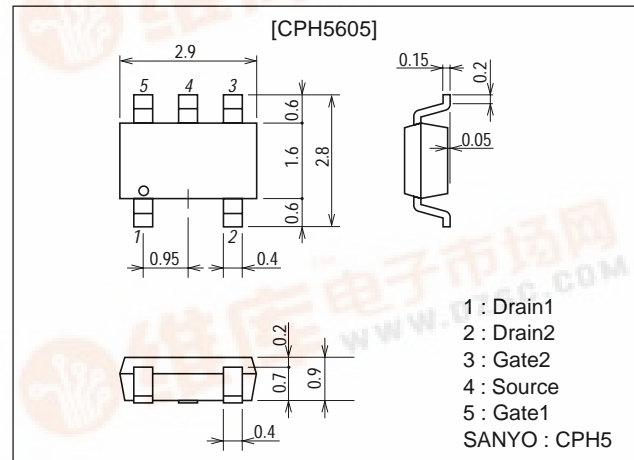
Features

- The CPH5605 incorporates an N-channel MOSFET and a P-channel MOSFET that feature low ON resistance and high-speed switching, thereby enabling high-density mounting.
- 2.5V drive.

Package Dimensions

unit:mm

2168



Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings		Unit	
			N-channel	P-channel		
Drain-to-Source Voltage	V_{DSS}		20	-20	V	
Gate-to-Source Voltage	V_{GSS}		±10	±10	V	
Drain Current (DC)	I_D		1.4	-1	A	
Drain Current (pulse)	I_{DP}	$PW \leq 10\mu s$, duty cycle $\leq 1\%$	5.6	-4	A	
Allowable Power Dissipation	P_D	Mounted on a ceramic board (600mm ² ×0.8mm) 1unit			0.9	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	
[N-channel]						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1mA$, $V_{GS}=0$	20			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=20V$, $V_{GS}=0$			10	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} $	$V_{DS}=10V$, $I_D=700mA$	1.8	2.5		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=700mA$, $V_{GS}=4V$		200	260	mΩ
	$R_{DS(on)2}$	$I_D=400mA$, $V_{GS}=2.5V$		260	360	mΩ

Marking : FE

Continued on next page.

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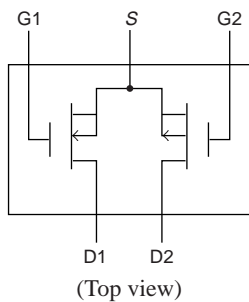


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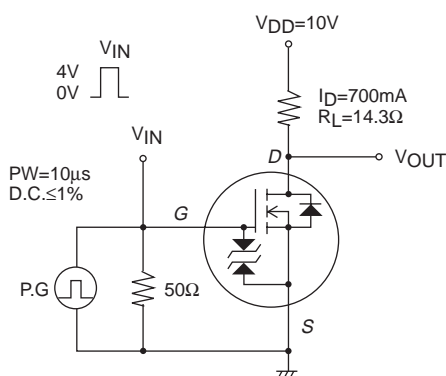
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	C _{iss}	V _{DS} =10V, f=1MHz		90		pF
Output Capacitance	C _{oss}	V _{DS} =10V, f=1MHz		60		pF
Reverse Transfer Capacitance	C _{rss}	V _{DS} =10V, f=1MHz		28		pF
Turn-ON Delay Time	t _{d(on)}	See specified Test Circuit		10		ns
Rise Time	t _r	See specified Test Circuit		20		ns
Turn-OFF Delay Time	t _{d(off)}	See specified Test Circuit		20		ns
Fall Time	t _f	See specified Test Circuit		20		ns
Total Gate Charge	Q _g	V _{DS} =10V, V _{GS} =10V, I _D =1.4A		6		nC
Gate-to-Source Charge	Q _{gs}	V _{DS} =10V, V _{GS} =10V, I _D =1.4A		1		nC
Gate-to-Drain "Miller" Charge	Q _{gd}	V _{DS} =10V, V _{GS} =10V, I _D =1.4A		2		nC
Diode Forward Voltage	V _{SD}	I _S =1.4A, V _{GS} =0		0.9	1.2	V
[P-channel]						
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			-10	μA
Gate-to-Source Leakage Current	I _{GSS}	V _{GS} =±8V, V _{DS} =0			±10	μA
Cutoff Voltage	V _{GS(off)}	V _{DS} =-10V, I _D =-1mA	-0.4		-1.4	V
Forward Transfer Admittance	y _{fs}	V _{DS} =-10V, I _D =-500mA	1.0	1.4		S
Static Drain-to-Source On-State Resistance	R _{DS(on)1}	I _D =-500mA, V _{GS} =-4V		420	550	mΩ
	R _{DS(on)2}	I _D =-300mA, V _{GS} =-2.5V		630	890	mΩ
Input Capacitance	C _{iss}	V _{DS} =-10V, f=1MHz		100		pF
Output Capacitance	C _{oss}	V _{DS} =-10V, f=1MHz		60		pF
Reverse Transfer Capacitance	C _{rss}	V _{DS} =-10V, f=1MHz		25		pF
Turn-ON Delay Time	t _{d(on)}	See specified Test Circuit		10		ns
Rise Time	t _r	See specified Test Circuit		25		ns
Turn-OFF Delay Time	t _{d(off)}	See specified Test Circuit		27		ns
Fall Time	t _f	See specified Test Circuit		32		ns
Total Gate Charge	Q _g	V _{DS} =-10V, V _{GS} =-10V, I _D =-1.0A		5		nC
Gate-to-Source Charge	Q _{gs}	V _{DS} =-10V, V _{GS} =-10V, I _D =-1.0A		1		nC
Gate-to-Drain "Miller" Charge	Q _{gd}	V _{DS} =-10V, V _{GS} =-10V, I _D =-1.0A		1		nC
Diode Forward Voltage	V _{SD}	I _S =-1.0A, V _{GS} =0		-0.9	-1.5	V

Electrical Connection



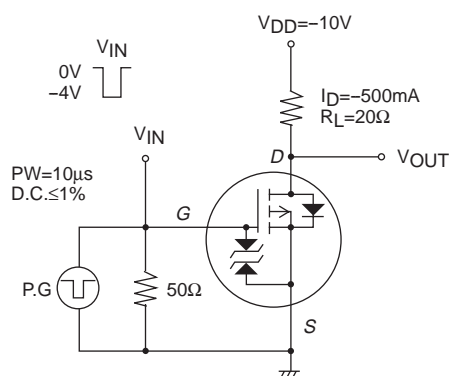
Switching Time Test Circuit

[N-channel]

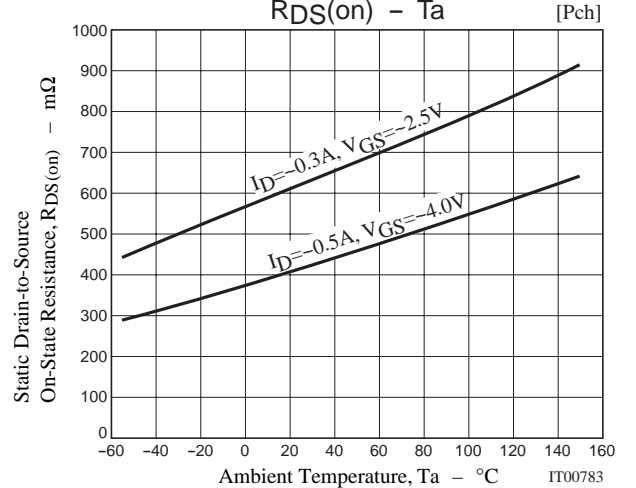
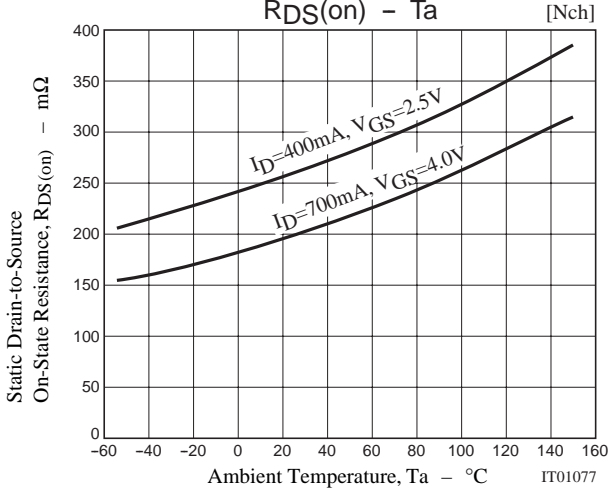
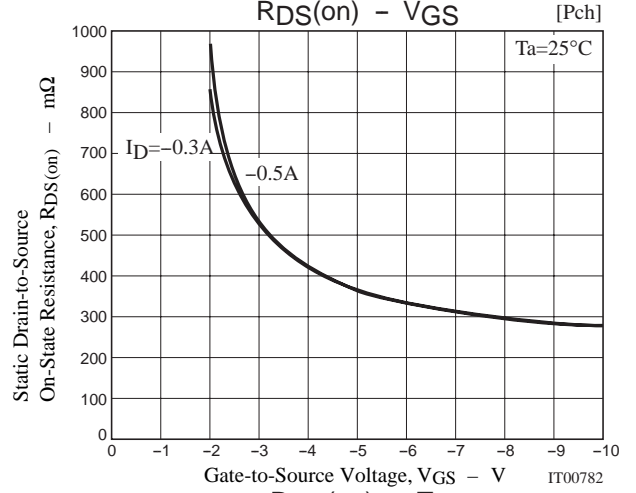
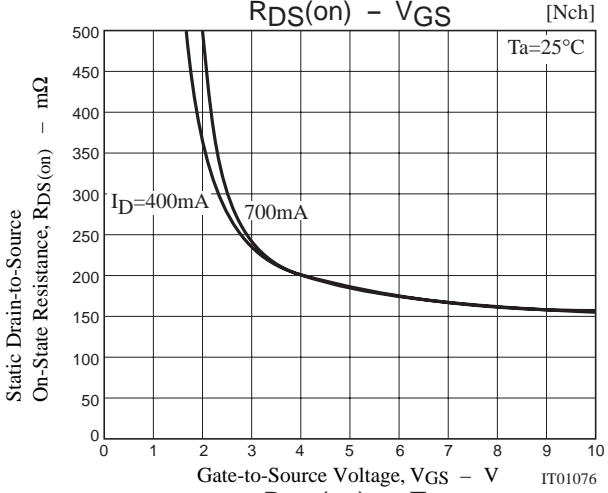
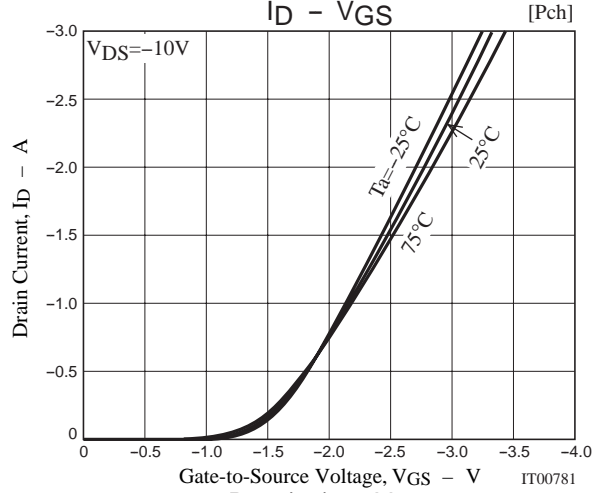
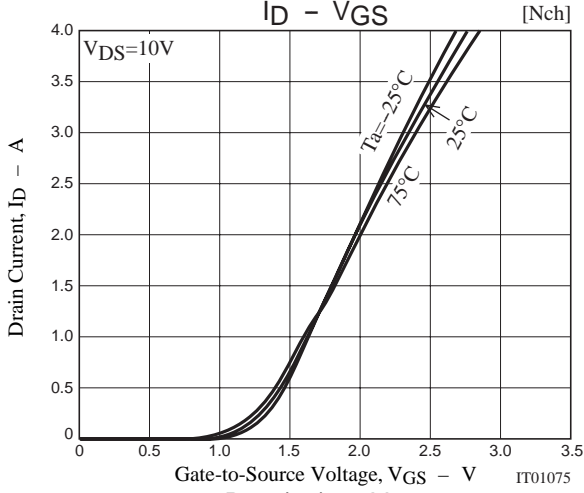
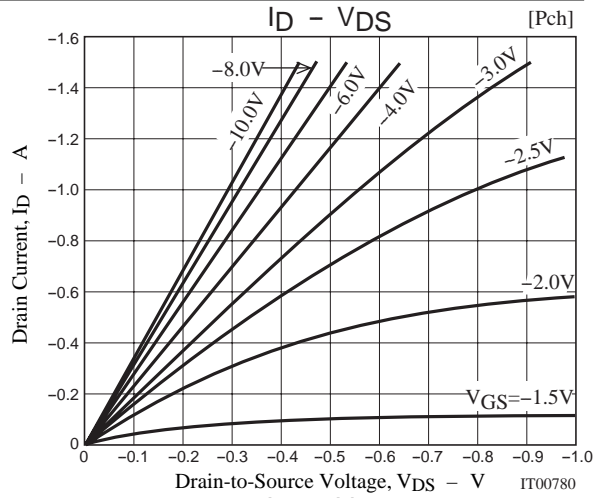
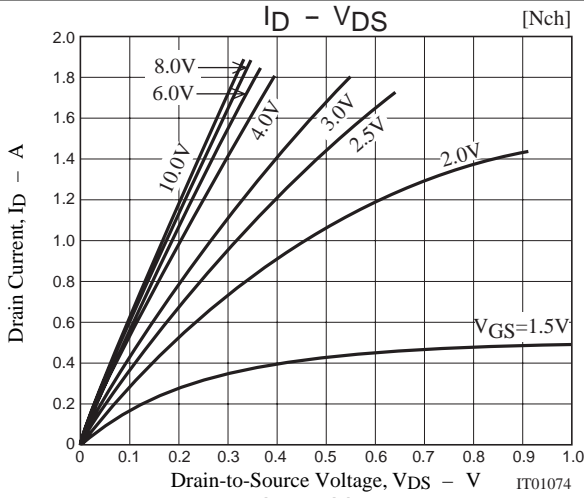


Switching Time Test Circuit

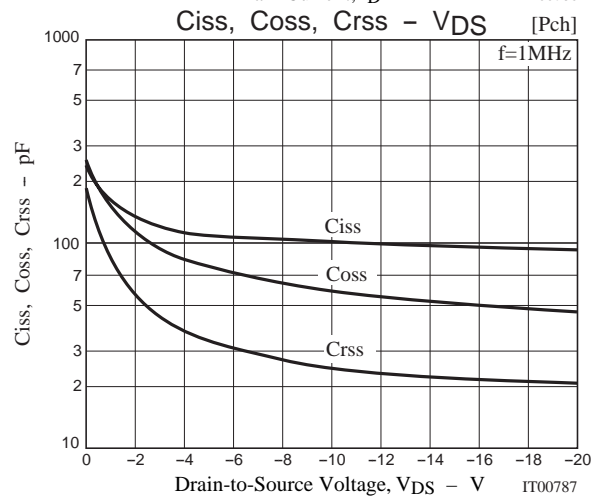
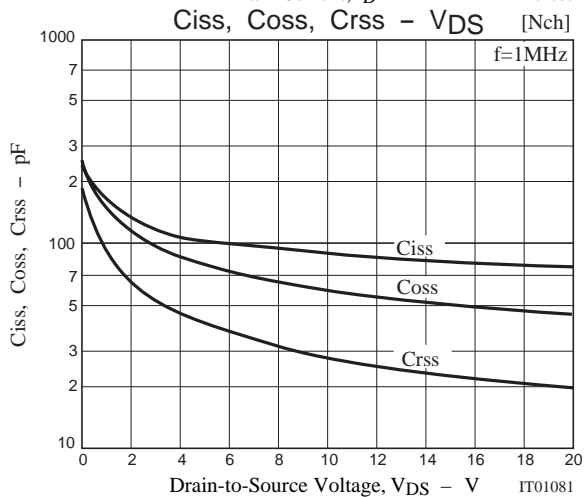
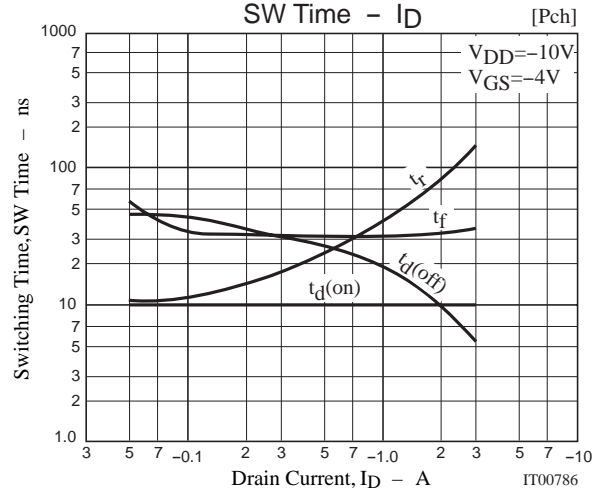
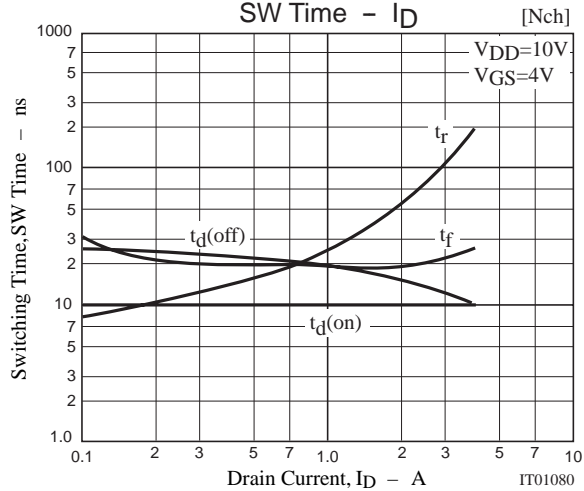
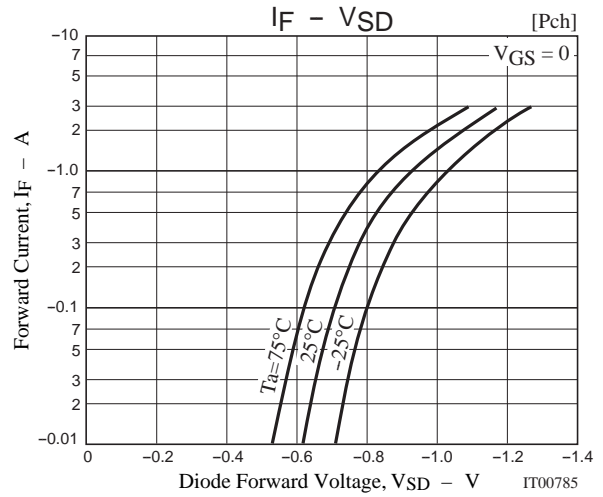
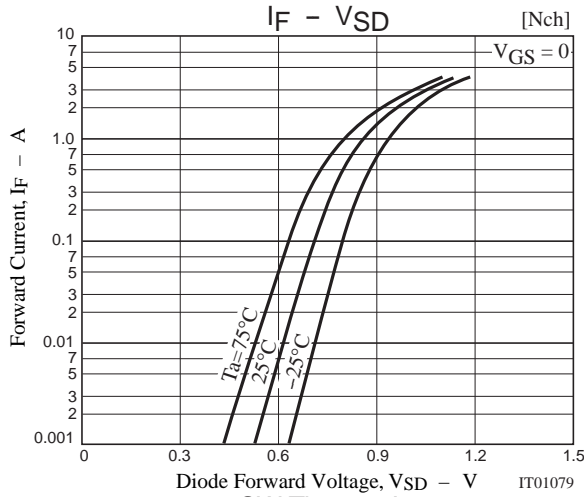
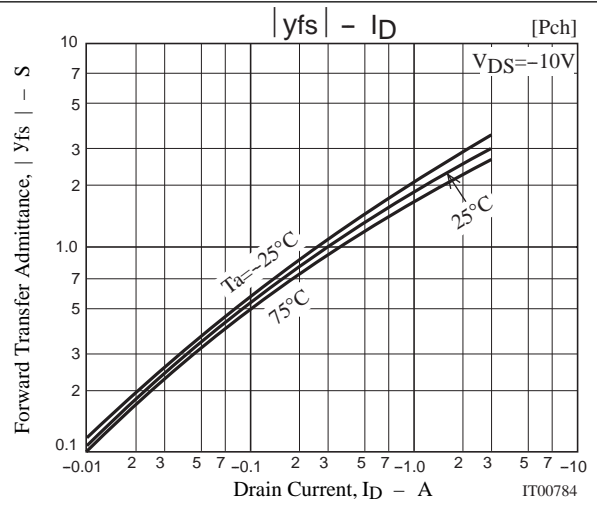
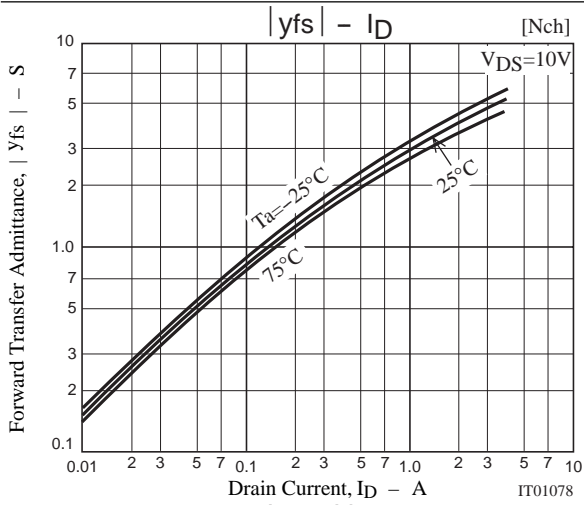
[P-channel]



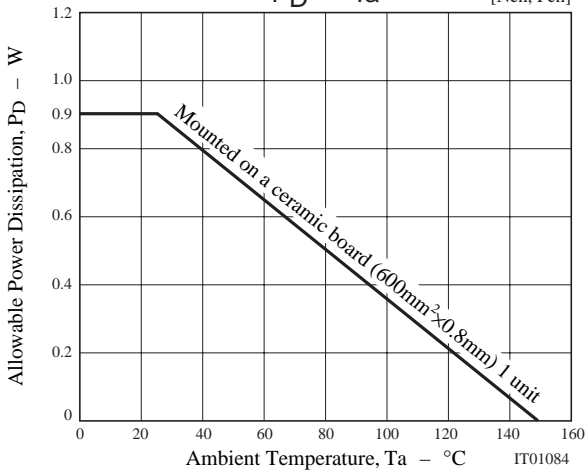
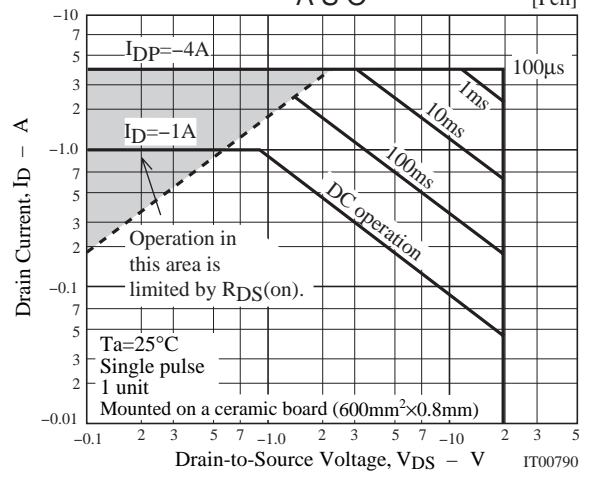
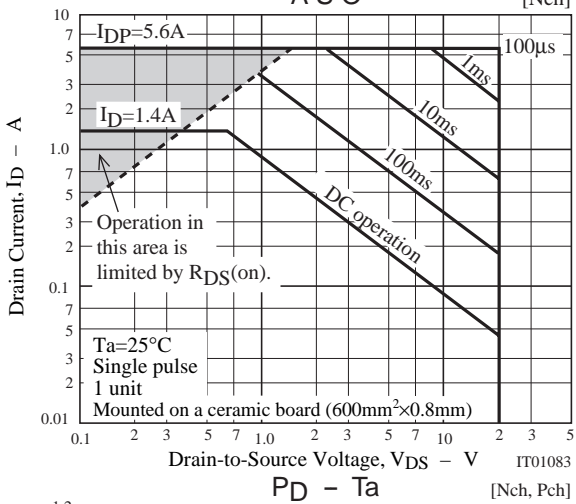
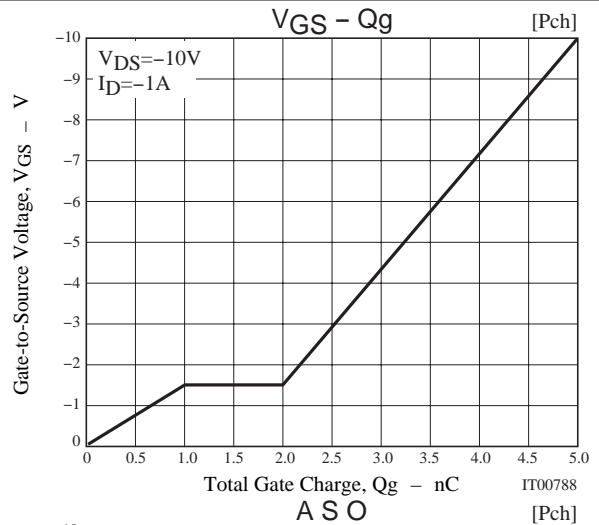
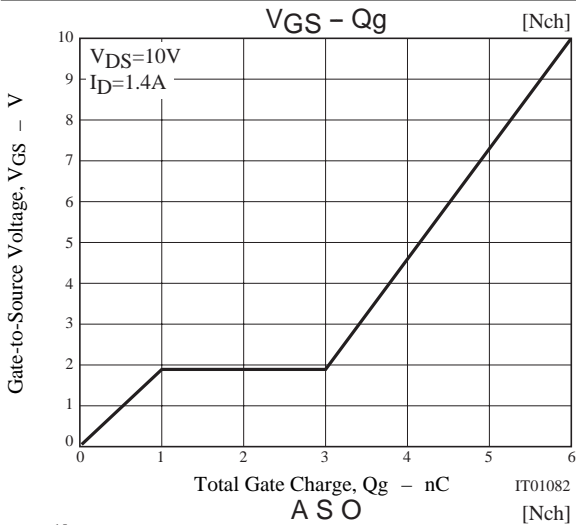
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