



CPH6615 — General-Purpose Switching Device Applications

N-Channel and P-Channel Silicon MOSFETs

Features

- The CPH6615 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 $T_a=25^\circ\text{C}$

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		2.5	-1.8	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	10	-7.2	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (900mm \times 900mm)1unit	0.9		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	
[N-channel]						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1\text{mA}$, $V_{GS}=0$	30			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30\text{V}$, $V_{GS}=0$			1	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 16\text{V}$, $V_{DS}=0$			± 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} $	$V_{DS}=10\text{V}$, $I_D=1.5\text{A}$	1.2	2.0		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=1.5\text{A}$, $V_{GS}=10\text{V}$		79	105	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D=1\text{A}$, $V_{GS}=4\text{V}$		150	210	$\text{m}\Omega$
Input Capacitance	C_{iss}	$V_{DS}=10\text{V}$, $f=1\text{MHz}$		187		pF
Output Capacitance	C_{oss}	$V_{DS}=10\text{V}$, $f=1\text{MHz}$		40		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS}=10\text{V}$, $f=1\text{MHz}$		33		pF

Marking : WB

Continued on next page.

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CPH6615

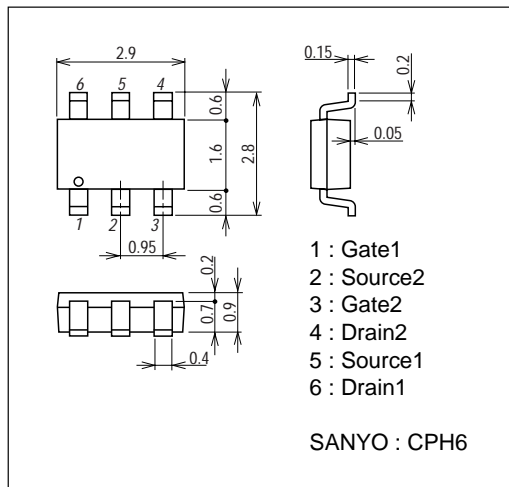
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		7.8		ns
Rise Time	t_r	See specified Test Circuit.		18.5		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		22		ns
Fall Time	t_f	See specified Test Circuit.		12		ns
Total Gate Charge	Qg	$V_{DS}=10V, V_{GS}=10V, I_D=2.5A$		5.2		nC
Gate-to-Source Charge	Qgs	$V_{DS}=10V, V_{GS}=10V, I_D=2.5A$		1		nC
Gate-to-Drain "Miller" Charge	Qgd	$V_{DS}=10V, V_{GS}=10V, I_D=2.5A$		0.97		nC
Diode Forward Voltage	V_{SD}	$I_S=2.5A, V_{GS}=0$		0.9	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	$V_{GS(off)}$	$V_{DS}=-10V, I_D=-1mA$	-1.2		-2.6	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=-10V, I_D=-1A$	1.1	1.8		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=-1A, V_{GS}=-10V$		180	235	$m\Omega$
	$R_{DS(on)2}$	$I_D=-0.5A, V_{GS}=-4V$		320	450	$m\Omega$
Input Capacitance	C_{iss}	$V_{DS}=-10V, f=1MHz$		226		pF
Output Capacitance	C_{oss}	$V_{DS}=-10V, f=1MHz$		43		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS}=-10V, f=1MHz$		36		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		8.5		ns
Rise Time	t_r	See specified Test Circuit.		10.5		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		29		ns
Fall Time	t_f	See specified Test Circuit.		22		ns
Total Gate Charge	Qg	$V_{DS}=-10V, V_{GS}=-10V, I_D=-1.8A$		5.5		nC
Gate-to-Source Charge	Qgs	$V_{DS}=-10V, V_{GS}=-10V, I_D=-1.8A$		1		nC
Gate-to-Drain "Miller" Charge	Qgd	$V_{DS}=-10V, V_{GS}=-10V, I_D=-1.8A$		0.97		nC
Diode Forward Voltage	V_{SD}	$I_S=-1.8A, V_{GS}=0$		-0.91	-1.5	V

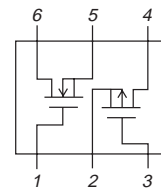
Package Dimensions

unit : mm

2238



Electrical Connection

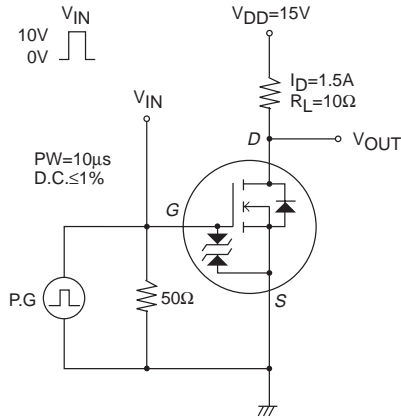


- 1 : Gate1
- 2 : Source2
- 3 : Gate2
- 4 : Drain2
- 5 : Source1
- 6 : Drain1

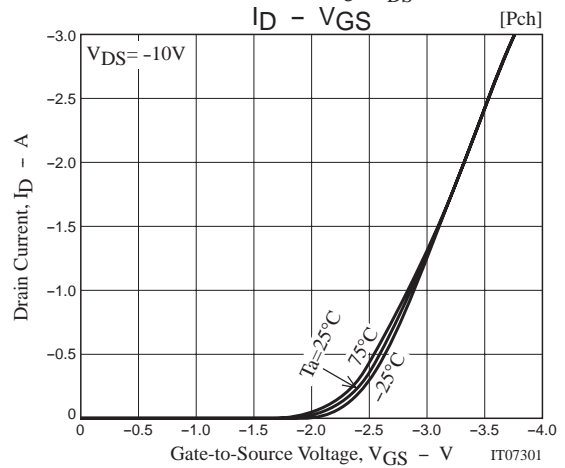
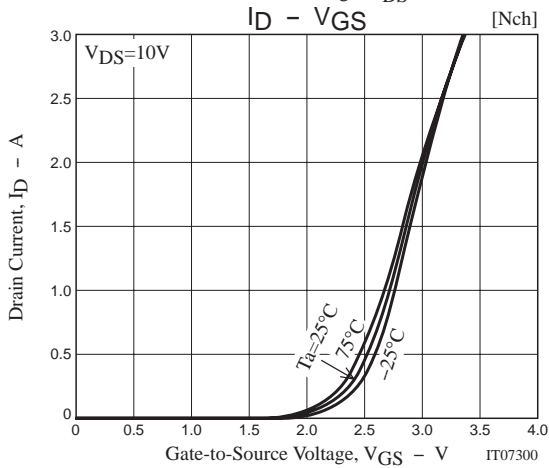
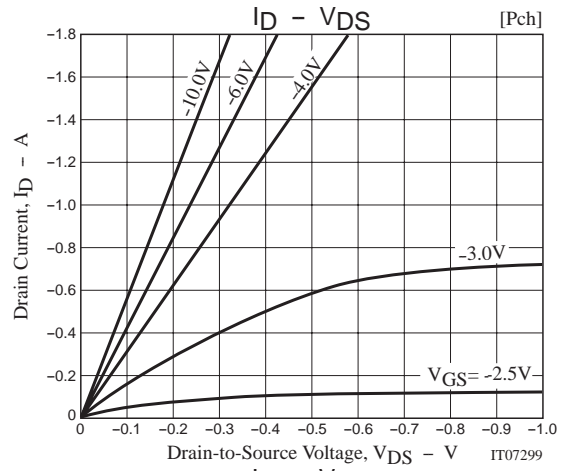
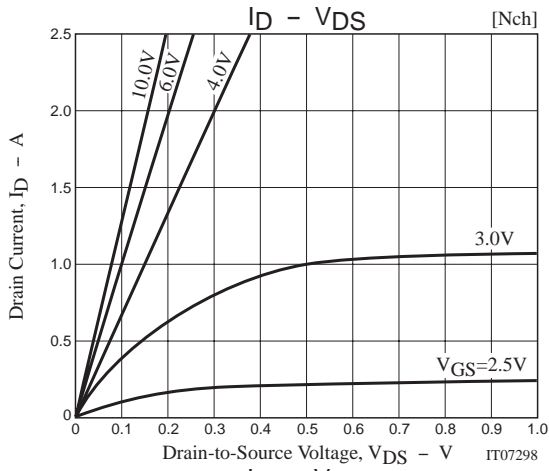
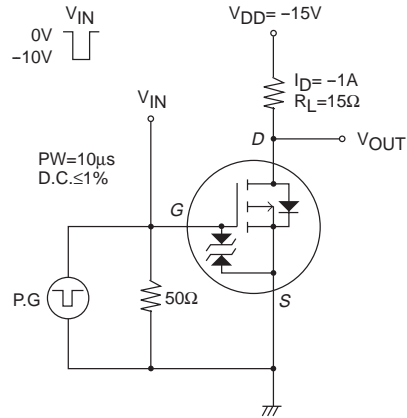
Top view

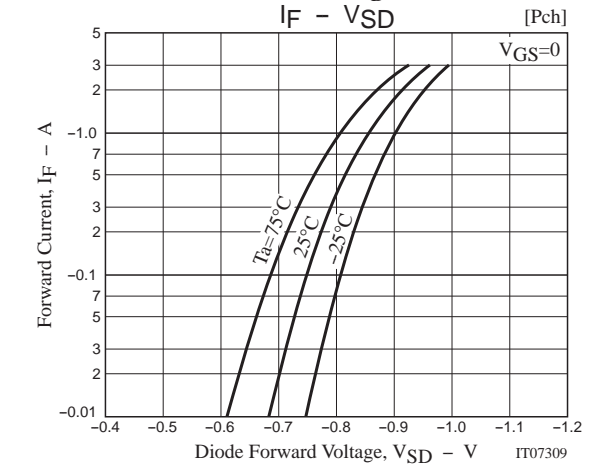
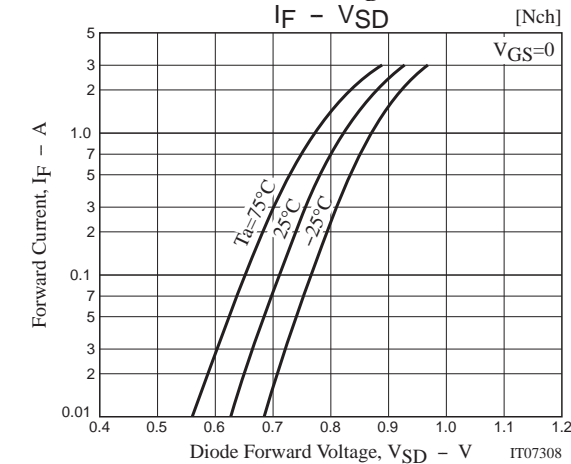
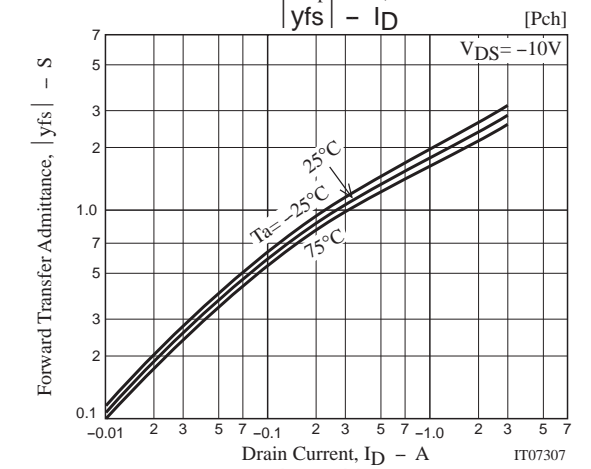
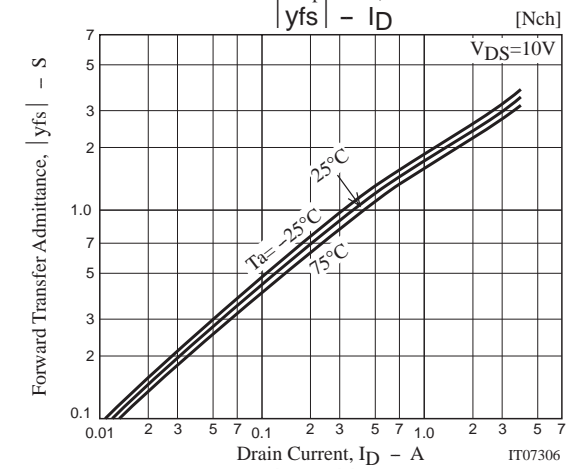
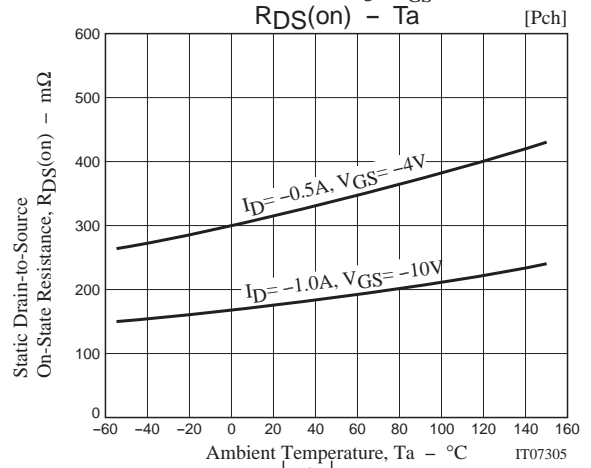
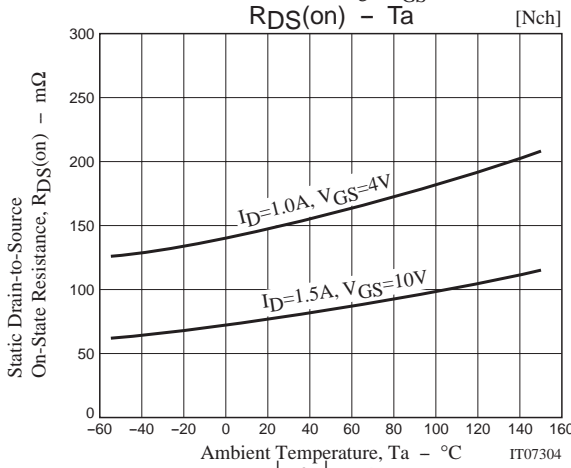
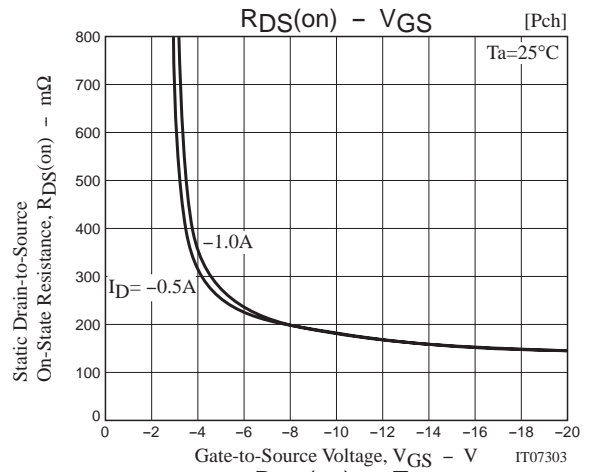
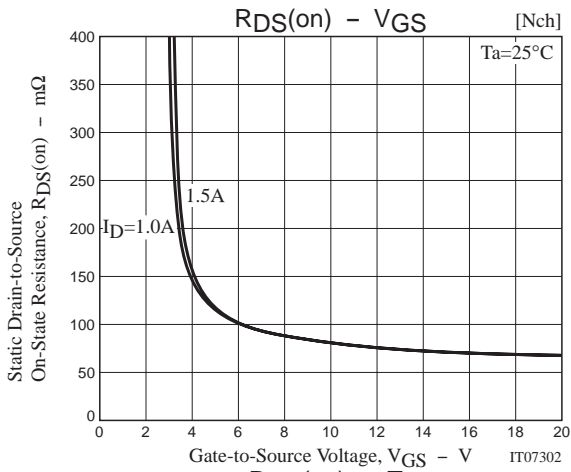
Switching Time Test Circuit

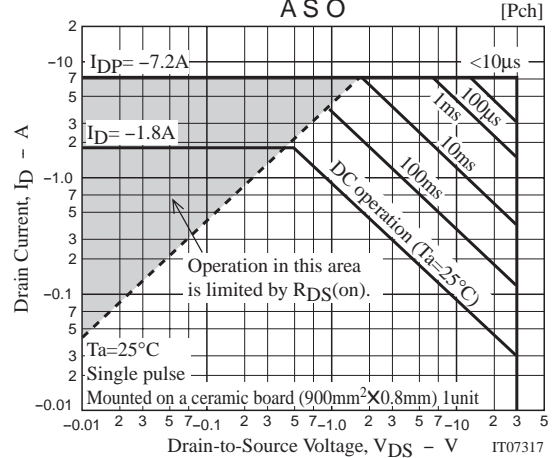
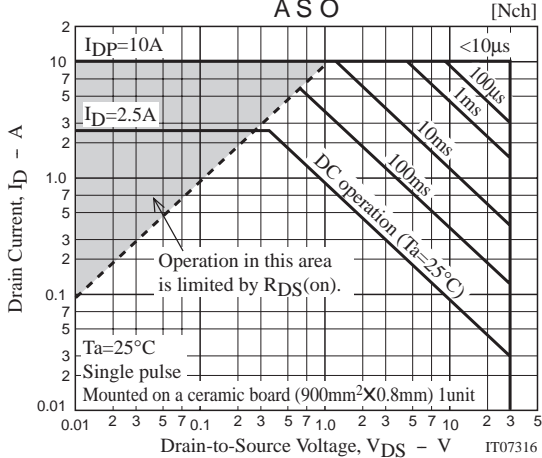
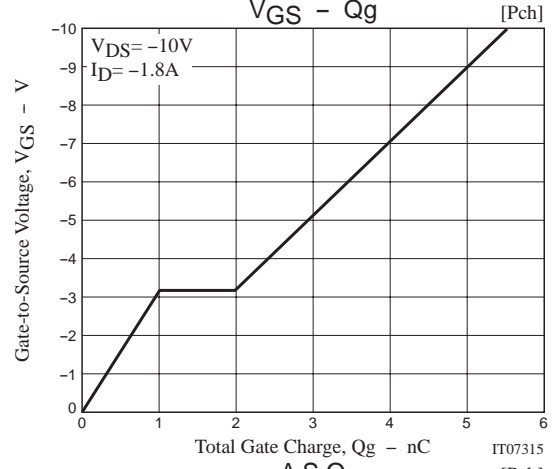
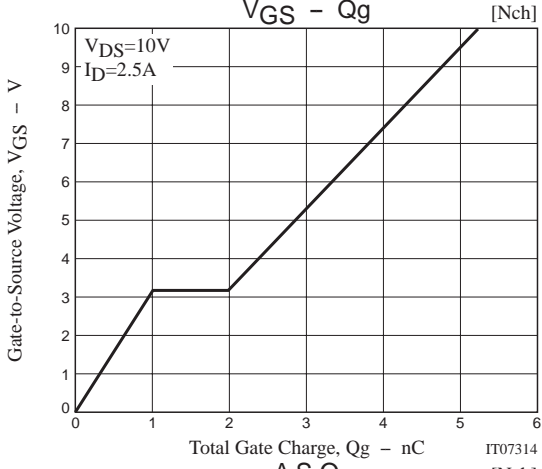
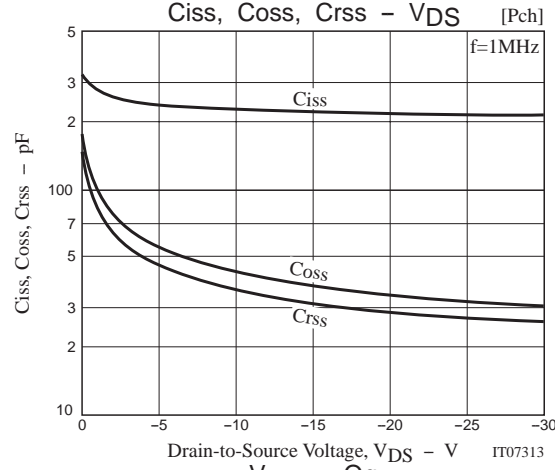
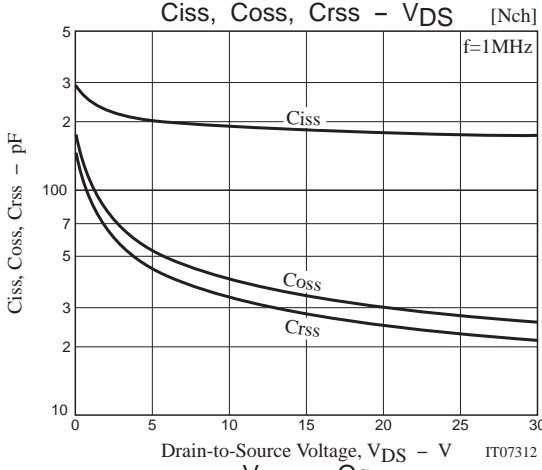
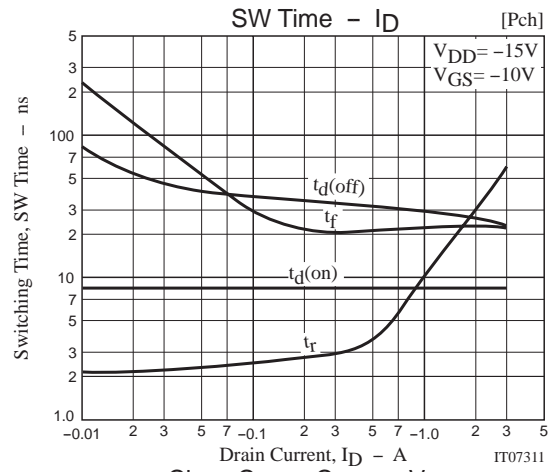
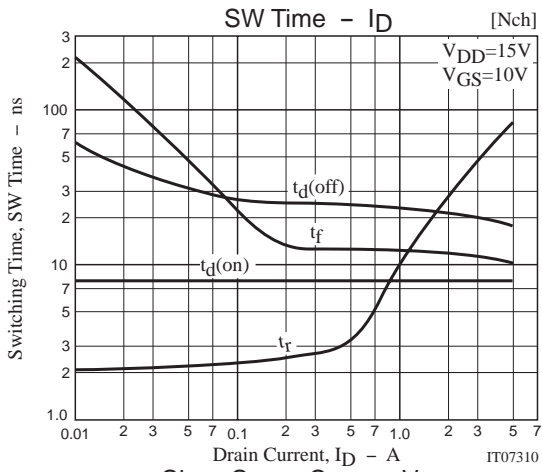
[N-channel]



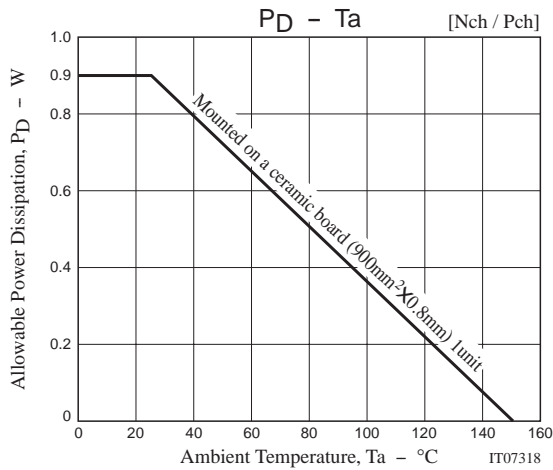
[P-channel]







CPH6615



Note on usage : Since the CPH6615 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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