



MCH6614

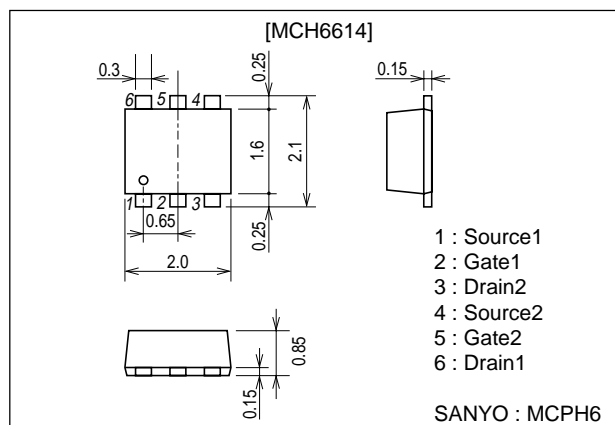
Ultrahigh-Speed Switching Applications

Features

- The MCH6614 incorporates two elements that are an N-channel and a P-channel MOSFETs that feature low ON resistance and high-speed switching, thereby enabling high-density mounting.
- Low ON-resistance.
- 2.5V drive.

Package Dimensions

unit : mm
2173



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}		± 10	± 10	V
Drain Current (DC)	I_D		0.35	-0.4	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu s$, duty cycle $\leq 1\%$	1.4	-1.6	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (90mm \times 90.8mm)1unit	0.8		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	$V_{(BR)DSS}$	$I_D=1mA$, $V_{GS}=0$	30			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V$, $V_{GS}=0$			10	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 8V$, $V_{DS}=0$			± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10V$, $I_D=100\mu A$	0.4		1.3	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V$, $I_D=80mA$	150	220		mS
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=80mA$, $V_{GS}=4V$		2.9	3.7	Ω
	$R_{DS(on)2}$	$I_D=40mA$, $V_{GS}=2.5V$		3.7	5.2	Ω
	$R_{DS(on)3}$	$I_D=10mA$, $V_{GS}=1.5V$		6.4	12.8	Ω

Marking : FN

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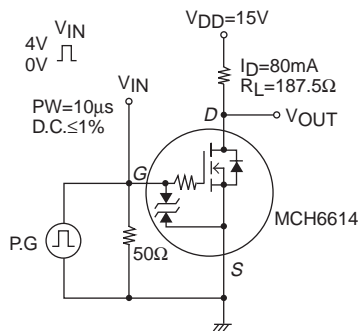
MCH6614

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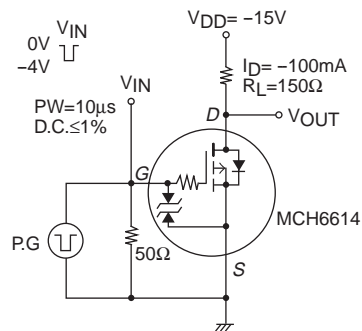
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	V _{DS} =10V, f=1MHz		7.0		pF
Output Capacitance	Coss	V _{DS} =10V, f=1MHz		5.9		pF
Reverse Transfer Capacitance	Crss	V _{DS} =10V, f=1MHz		2.3		pF
Turn-ON Delay Time	t _{d(on)}	See specified Test Circuit		19		ns
Rise Time	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} =0		0.87	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			-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 =-100μA	-0.4		-1.4	V
Forward Transfer Admittance	y _{fs}	V _{DS} =-10V, I _D =-100mA	210	300		mS
Static Drain-to-Source On-State Resistance	R _{DS(on)1}	I _D =-100mA, V _{GS} =-4V		2.4	3.1	Ω
	R _{DS(on)2}	I _D =-50mA, V _{GS} =-2.5V		3.5	4.9	Ω
	R _{DS(on)3}	I _D =-10mA, V _{GS} =-1.5V		10	20	Ω
Input Capacitance	Ciss	V _{DS} =-10V, f=1MHz		28		pF
Output Capacitance	Coss	V _{DS} =-10V, f=1MHz		15		pF
Reverse Transfer Capacitance	Crss	V _{DS} =-10V, f=1MHz		5.2		pF
Turn-ON Delay Time	t _{d(on)}	See specified Test Circuit		24		ns
Rise Time	t _r	See specified Test Circuit		75		ns
Turn-OFF Delay Time	t _{d(off)}	See specified Test Circuit		200		ns
Fall Time	t _f	See specified Test Circuit		150		ns
Total Gate Charge	Q _g	V _{DS} =-10V, V _{GS} =-10V, I _D =-200mA		2		nC
Gate-to-Source Charge	Q _{gs}	V _{DS} =-10V, V _{GS} =-10V, I _D =-200mA		0.25		nC
Gate-to-Drain "Miller" Charge	Q _{gd}	V _{DS} =-10V, V _{GS} =-10V, I _D =-200mA		0.35		nC
Diode Forward Voltage	V _{SD}	I _S =-200mA, V _{GS} =0		-0.82	-1.2	V

Switching Time Test Circuit

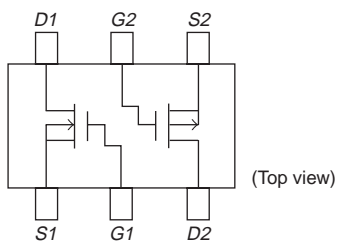
[N-channel]



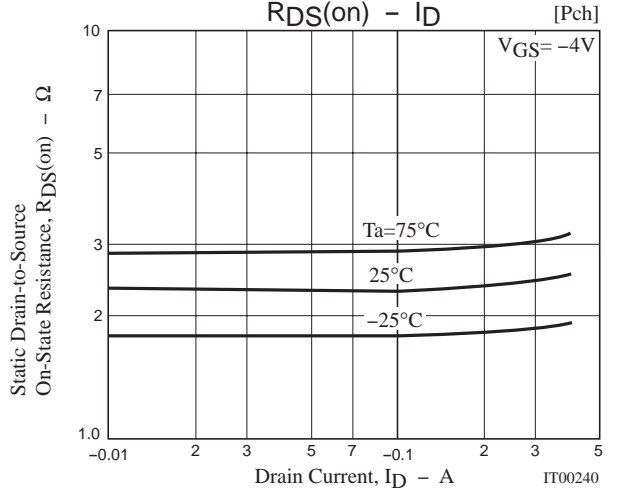
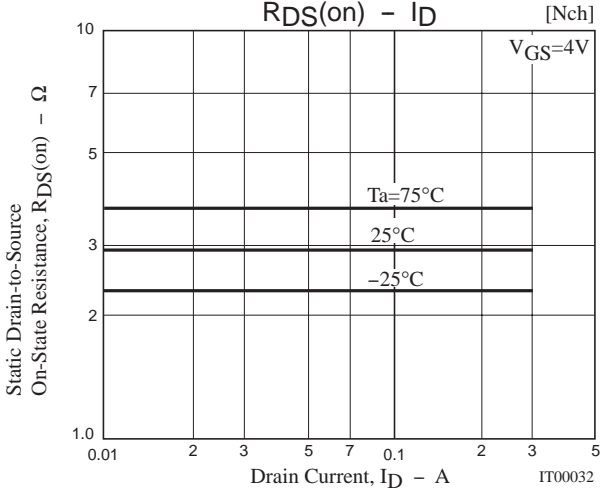
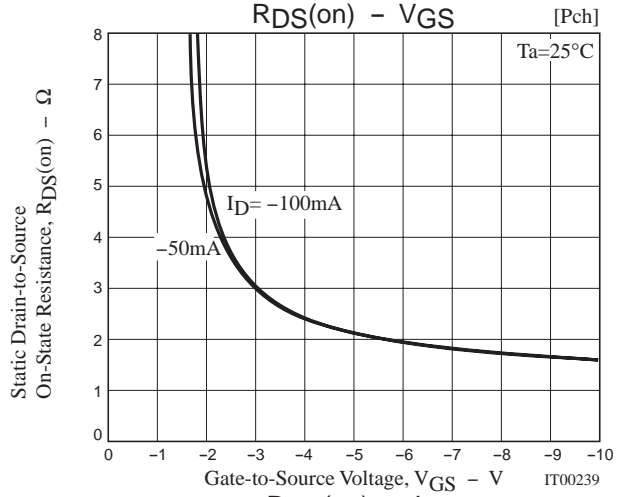
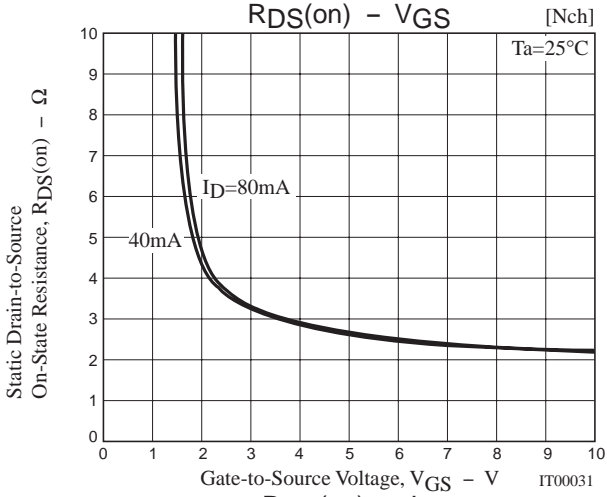
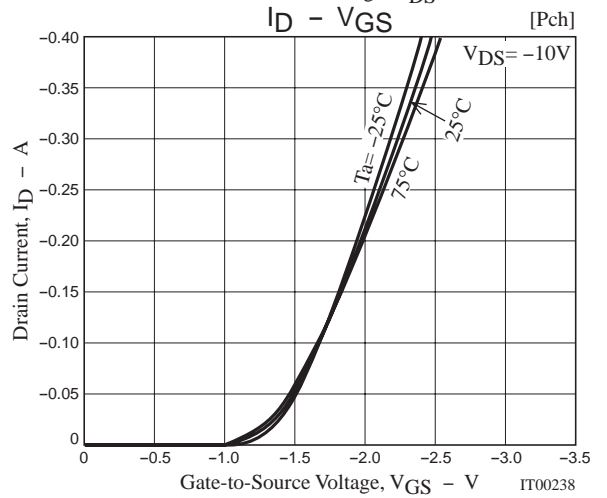
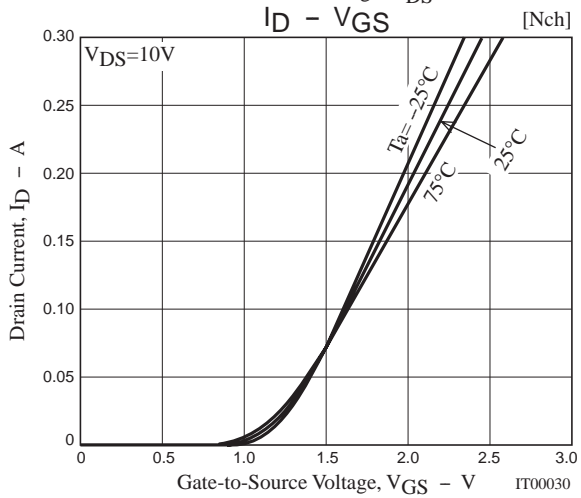
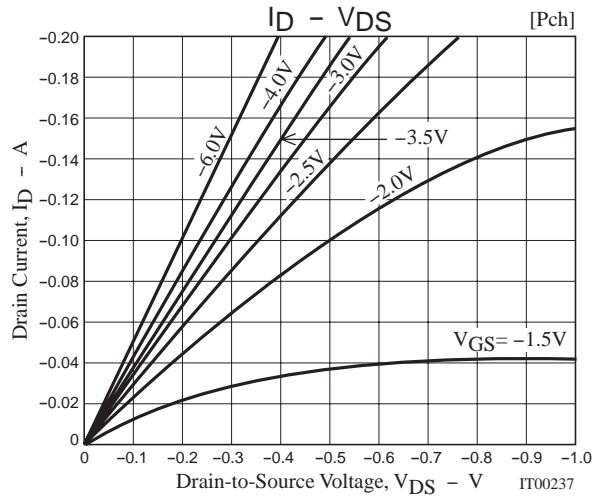
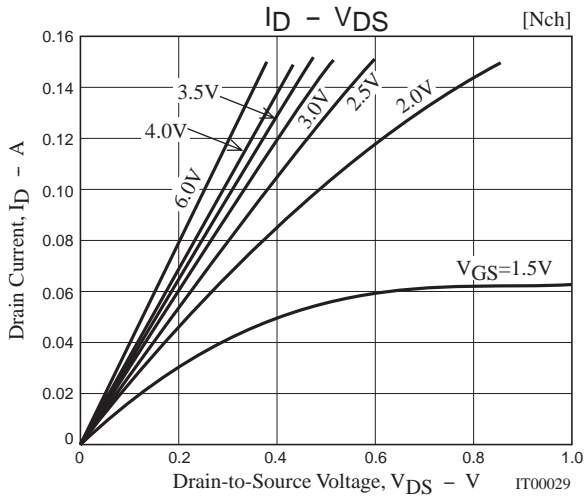
[P-channel]



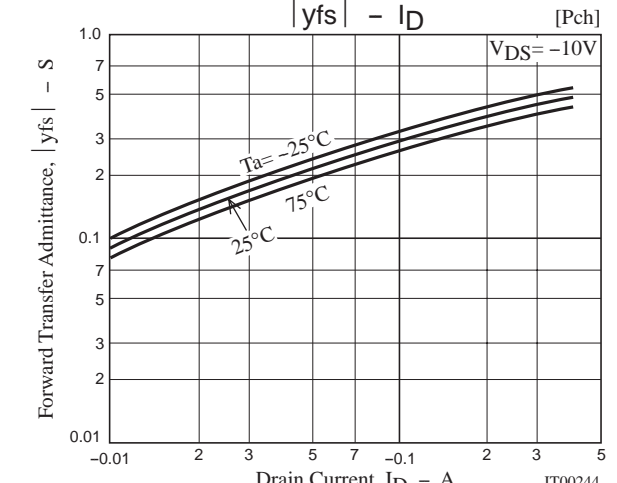
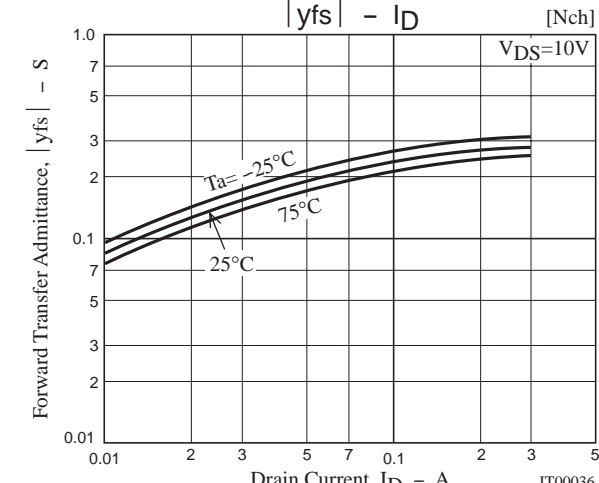
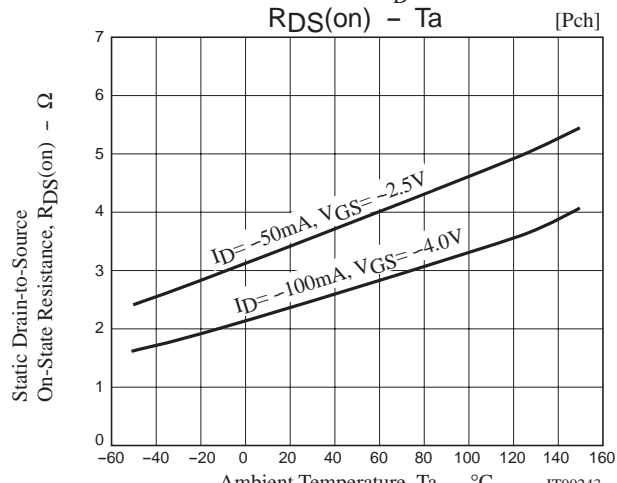
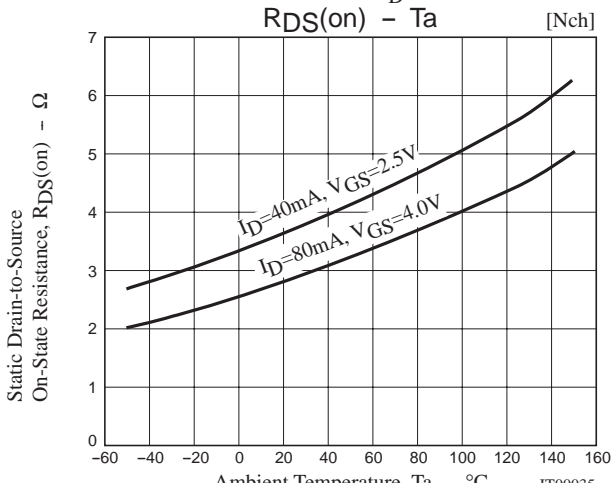
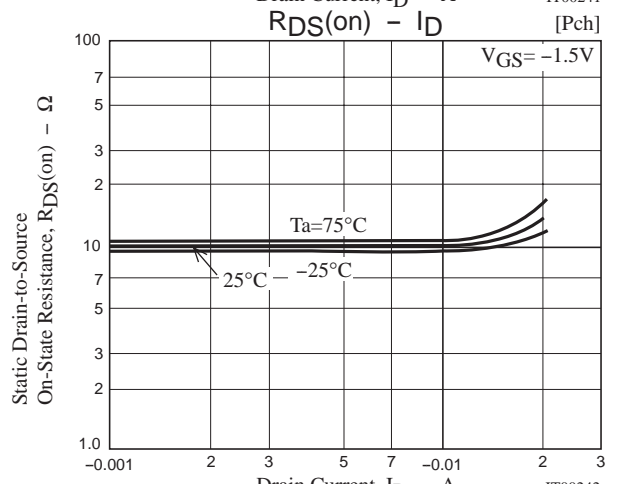
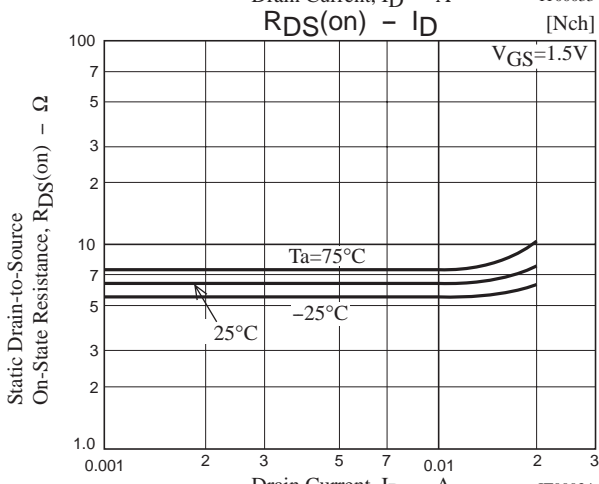
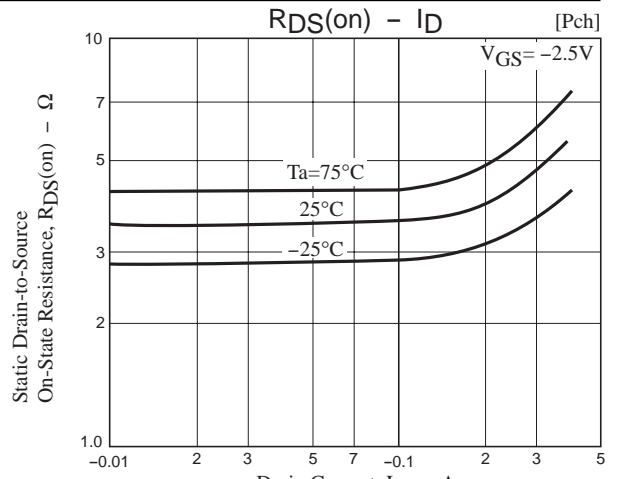
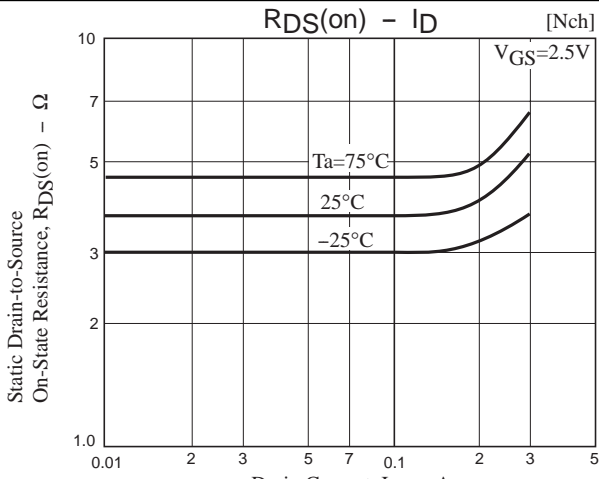
Electrical Connection



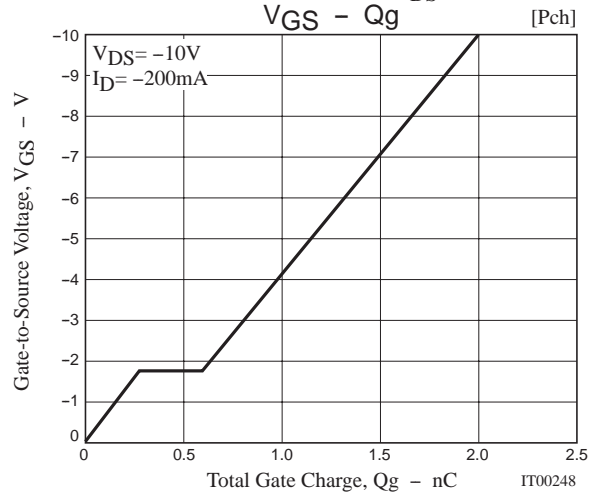
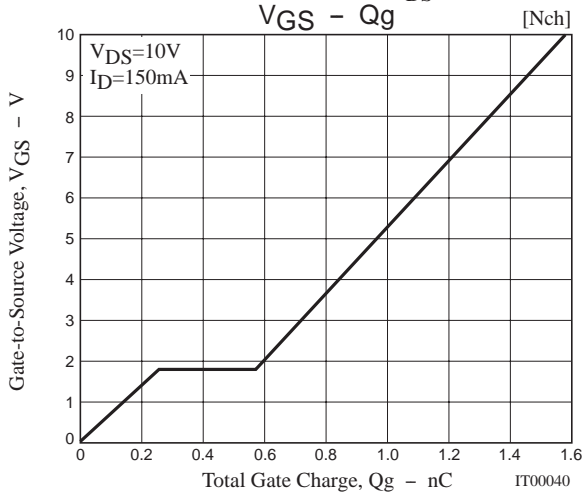
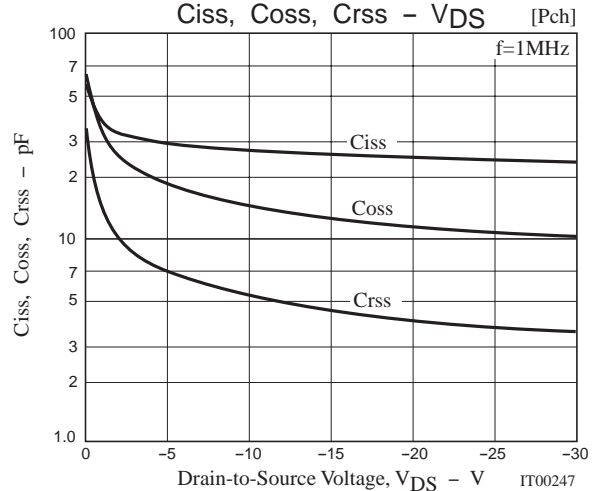
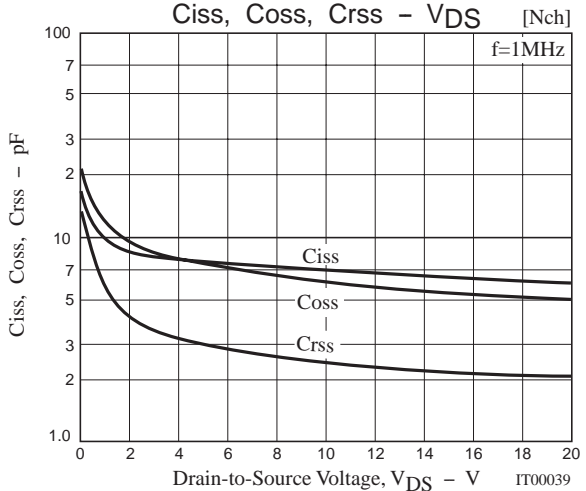
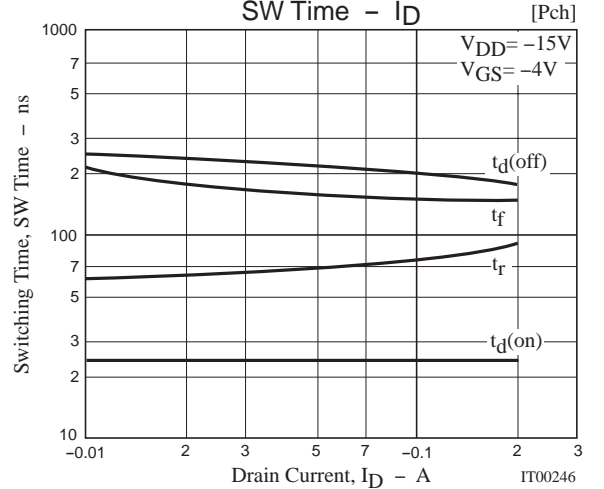
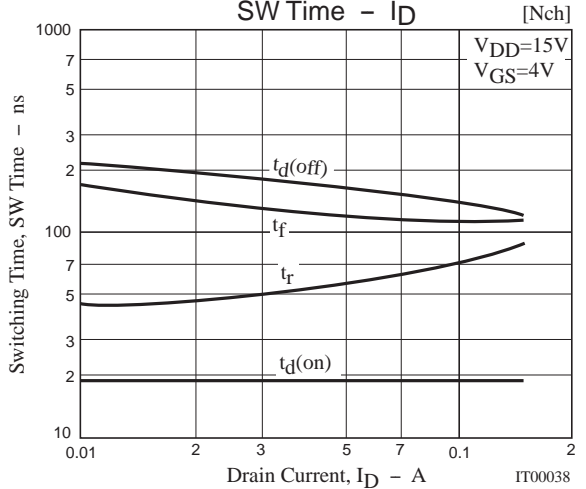
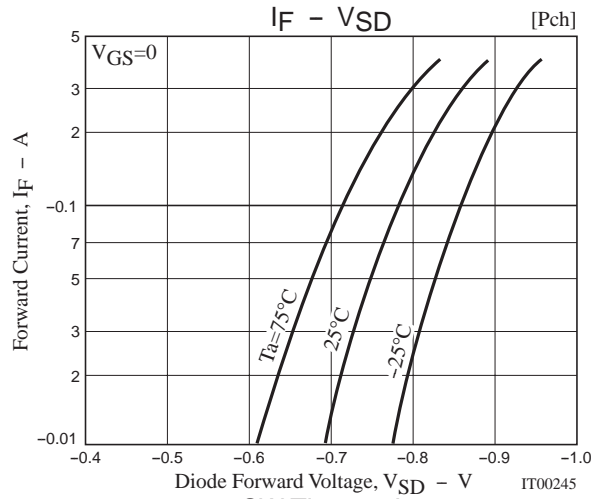
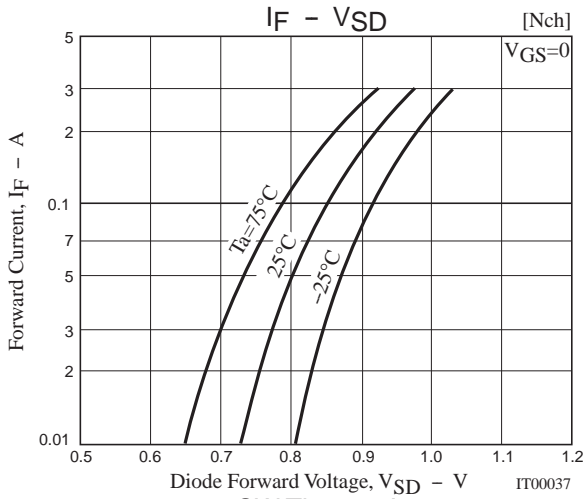
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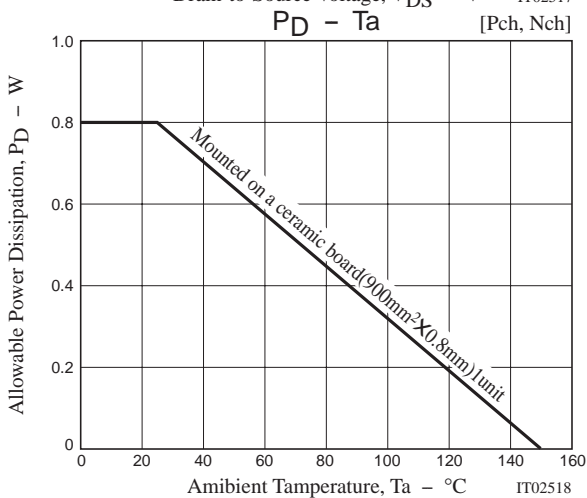
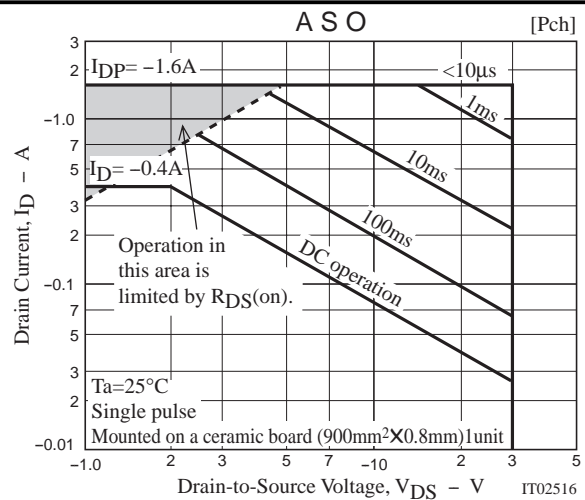
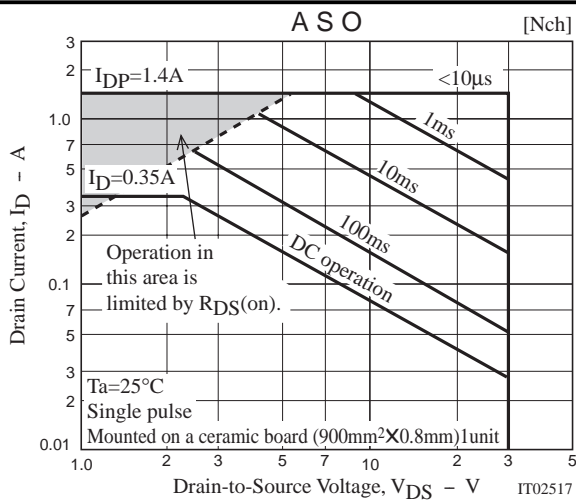
MCH6614



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Note on usage : Since the MCH6614 is designed for high-speed switching applications, please avoid using this device in the vicinity of highly charged objects.

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