



# MCH6613

## Power MOSFET

30V, 0.35A, 3.7Ω -30V, -0.2A, 10.4Ω, Complementary Dual MCPH6

ON Semiconductor®

<http://onsemi.com>

### Features

- The MCH6613 incorporates two elements in the same package which are N-channel and P-channel low ON resistance and high-speed switching MOSFETs, thereby enabling high-density mounting
- Excellent ON-resistance characteristic
- 1.5V 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	-30	V
Gate to Source Voltage	V <sub>GSS</sub>		±10	±10	V
Drain Current (DC)	I <sub>D</sub>		0.35	-0.2	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	1.4	-0.8	A
Allowable Power Dissipation	P <sub>D</sub>	When mounted on ceramic substrate (900mm <sup>2</sup> ×0.8mm) 1unit	0.8		W
Channel Temperature	T <sub>ch</sub>		150		°C
Storage Temperature	T <sub>stg</sub>		-55 to +150		°C

This product is designed to "ESD immunity < 200V\*\*", so please take care when handling.

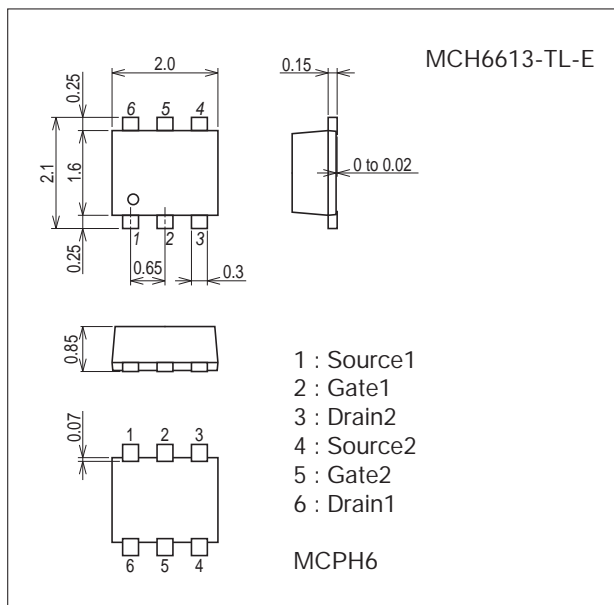
\* Machine Model

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

### Package Dimensions

unit : mm (typ)

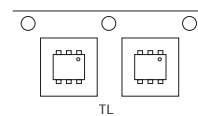
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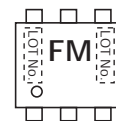
### Ordering & Package Information

Device	Package	Shipping	memo
MCH6613-TL-E	MCPH6 SC-88, SC-70-6, SOT-363	3,000 pcs./reel	Pb-Free

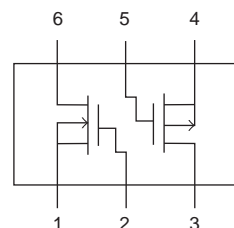
### Packing Type : TL



### Marking



### Electrical Connection



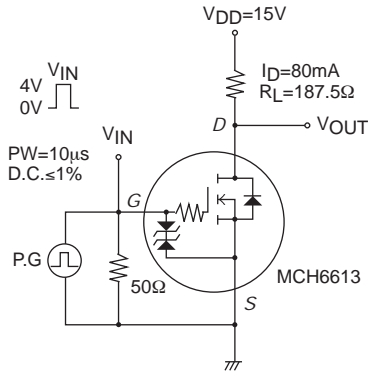
# MCH6613

## Electrical Characteristics at Ta=25°C

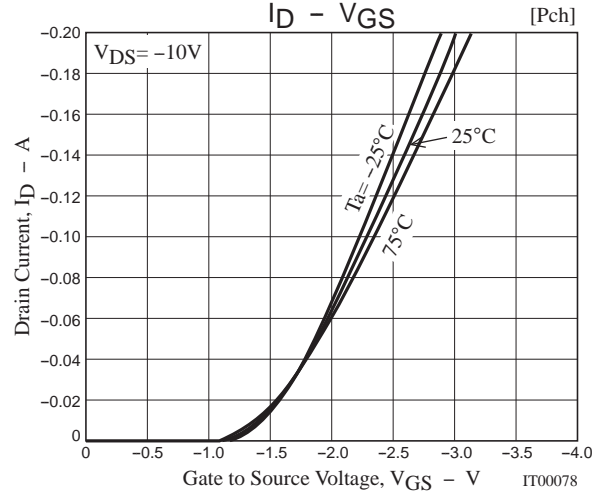
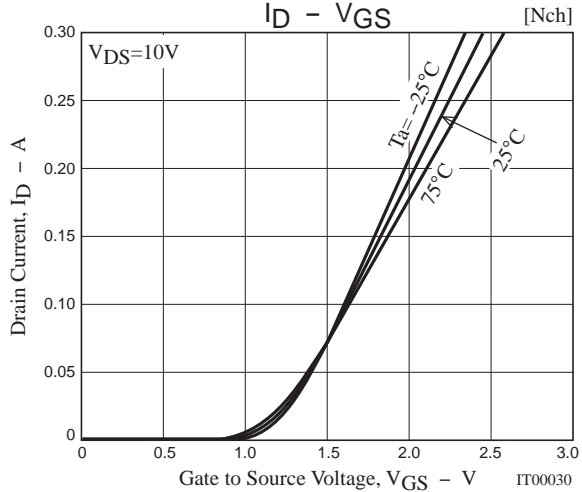
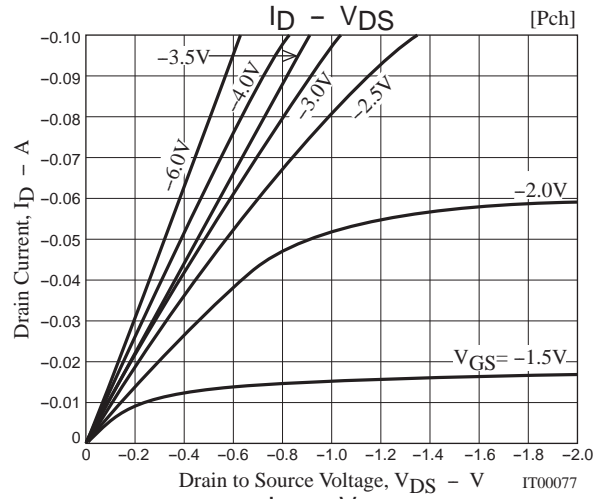
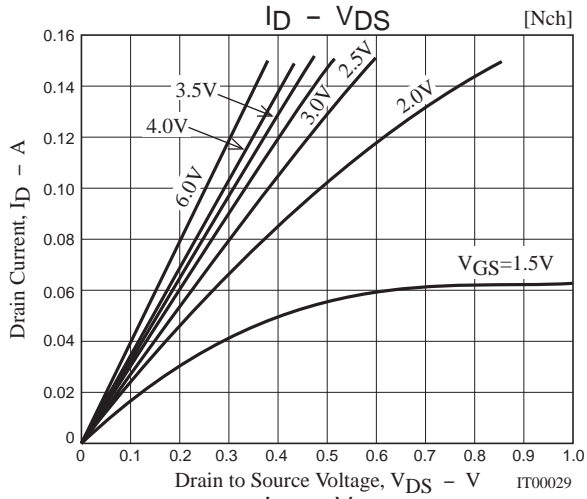
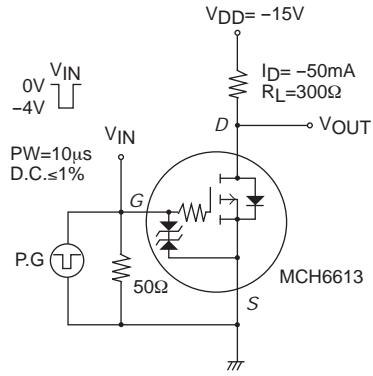
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[N-channel]						
Drain to Source Breakdown Voltage	V(BR)DSS	ID=1mA, VGS=0V	30			V
Zero-Gate Voltage Drain Current	IDSS	VDS=30V, VGS=0V			1	μA
Gate to Source Leakage Current	IGSS	VGS=±8V, VDS=0V			±10	μA
Cutoff Voltage	VGS(off)	VDS=10V, ID=100μA	0.4		1.3	V
Forward Transfer Admittance	yfs	VDS=10V, ID=80mA	150	220		mS
Static Drain to Source On-State Resistance	RDS(on)1	ID=80mA, VGS=4V		2.9	3.7	Ω
	RDS(on)2	ID=40mA, VGS=2.5V		3.7	5.2	Ω
	RDS(on)3	ID=10mA, VGS=1.5V		6.4	12.8	Ω
Input Capacitance	Ciss	VDS=10V, f=1MHz		7.0		pF
Output Capacitance	Coss			5.9		pF
Reverse Transfer Capacitance	Crss			2.3		pF
Turn-ON Delay Time	t <sub>d(on)</sub>		See specified Test Circuit.		19	
Rise Time	t <sub>r</sub>			65		ns
Turn-OFF Delay Time	t <sub>d(off)</sub>			155		ns
Fall Time	t <sub>f</sub>			120		ns
Total Gate Charge	Qg	VDS=10V, VGS=10V, ID=150mA			1.58	
Gate to Source Charge	Qgs			0.26		nC
Gate to Drain "Miller" Charge	Qgd			0.31		nC
Diode Forward Voltage	VSD	IS=150mA, VGS=0V		0.87	1.2	V
[P-channel]						
Drain to Source Breakdown Voltage	V(BR)DSS	ID=-1mA, VGS=0V	-30			V
Zero-Gate Voltage Drain Current	IDSS	VDS=-30V, VGS=0V			-1	μA
Gate to Source Leakage Current	IGSS	VGS=±8V, VDS=0V			±10	μA
Cutoff Voltage	VGS(off)	VDS=-10V, ID=-100μA	-0.4		-1.4	V
Forward Transfer Admittance	yfs	VDS=-10V, ID=-50mA	80	110		mS
Static Drain to Source On-State Resistance	RDS(on)1	ID=-50mA, VGS=-4V		8	10.4	Ω
	RDS(on)2	ID=-30mA, VGS=-2.5V		11	15.4	Ω
	RDS(on)3	ID=-1mA, VGS=-1.5V		27	54	Ω
Input Capacitance	Ciss	VDS=-10V, f=1MHz		7.5		pF
Output Capacitance	Coss			5.7		pF
Reverse Transfer Capacitance	Crss			1.8		pF
Turn-ON Delay Time	t <sub>d(on)</sub>		See specified Test Circuit.		24	
Rise Time	t <sub>r</sub>			55		ns
Turn-OFF Delay Time	t <sub>d(off)</sub>			120		ns
Fall Time	t <sub>f</sub>			130		ns
Total Gate Charge	Qg	VDS=-10V, VGS=-10V, ID=-100mA			1.43	
Gate to Source Charge	Qgs			0.18		nC
Gate to Drain "Miller" Charge	Qgd			0.25		nC
Diode Forward Voltage	VSD	IS=-100mA, VGS=0V		-0.83	-1.2	V

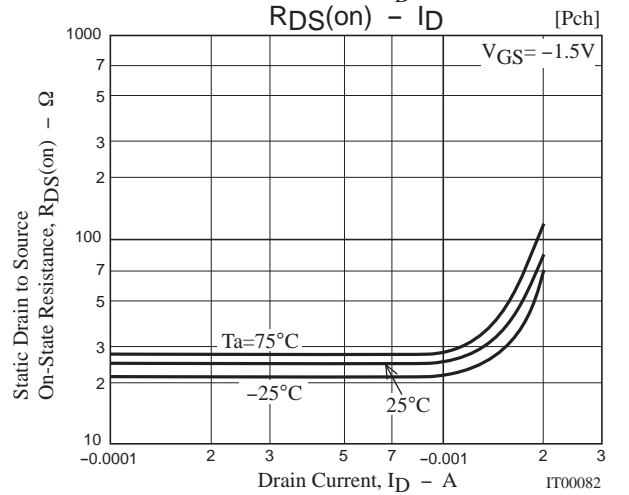
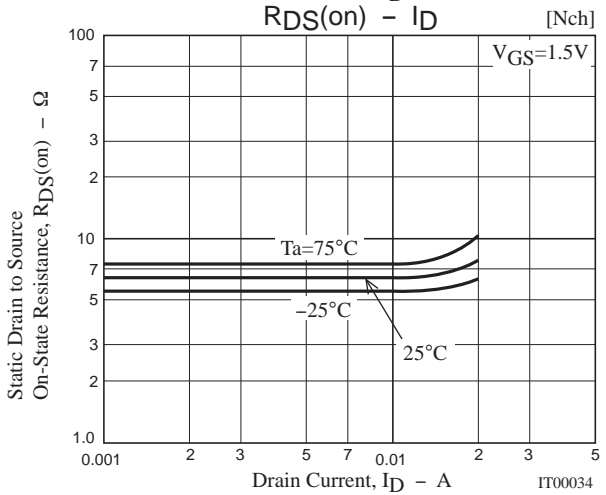
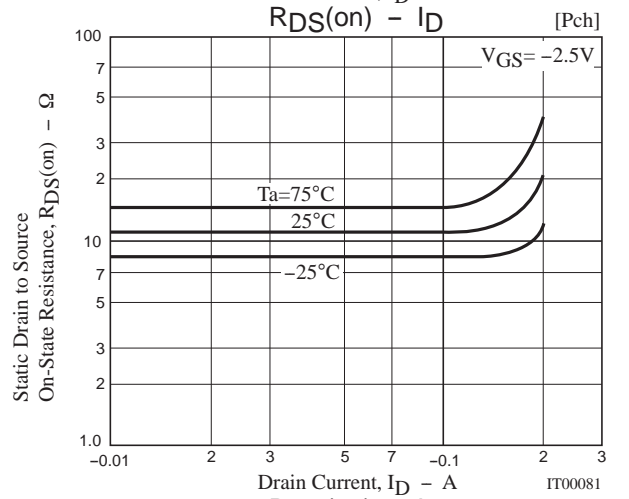
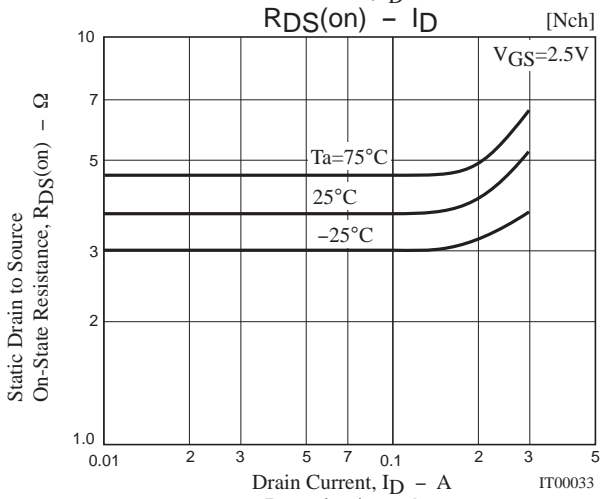
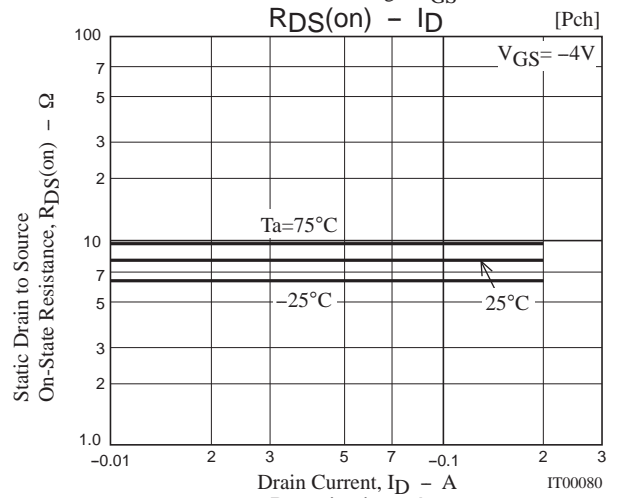
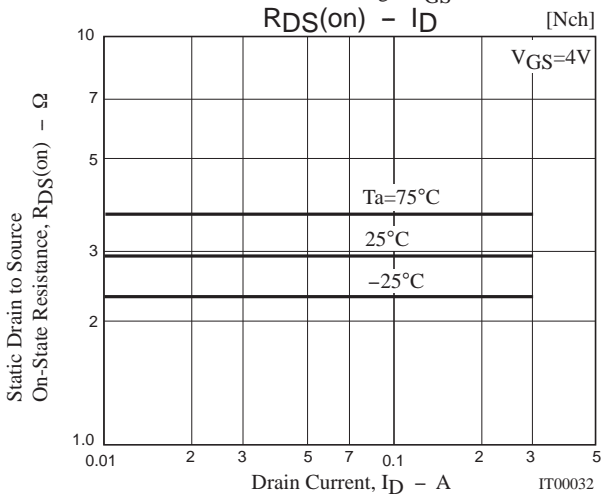
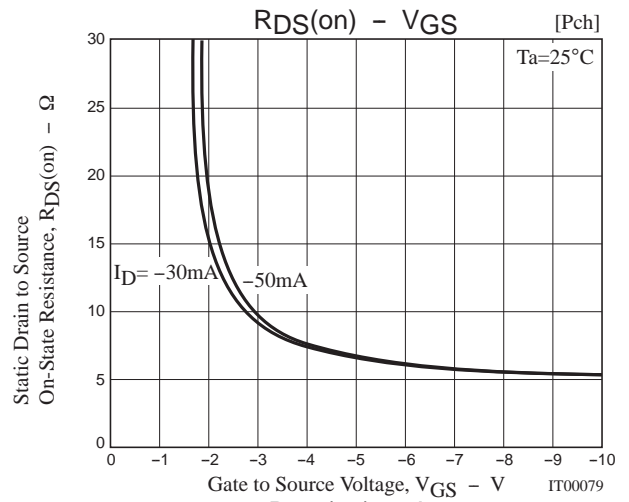
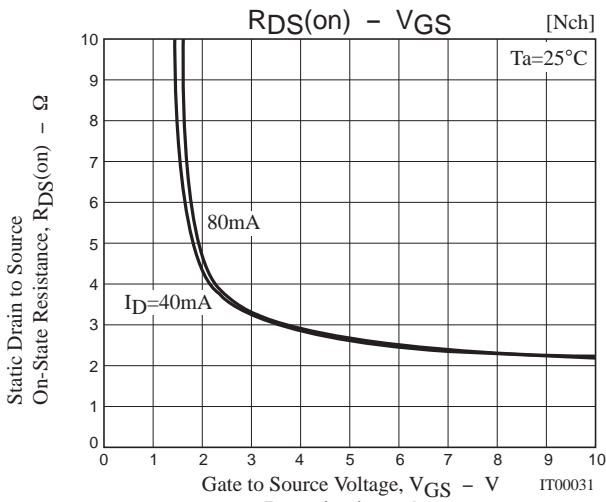
Switching Time Test Circuit

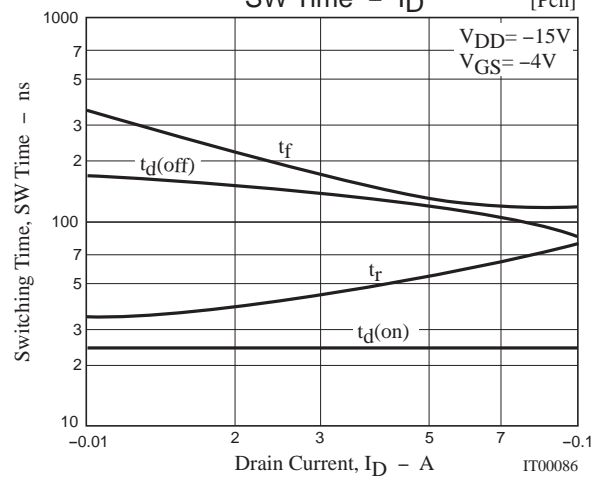
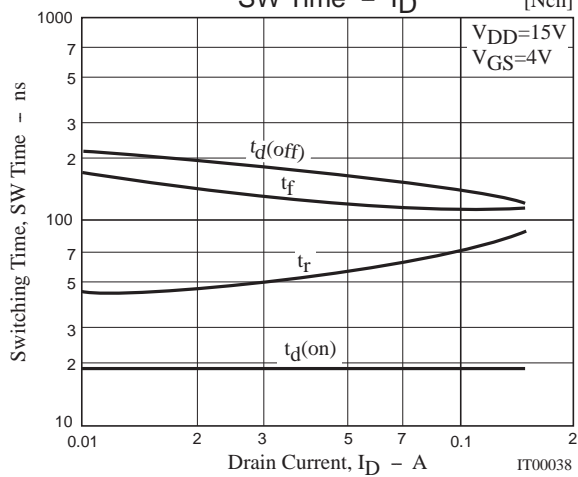
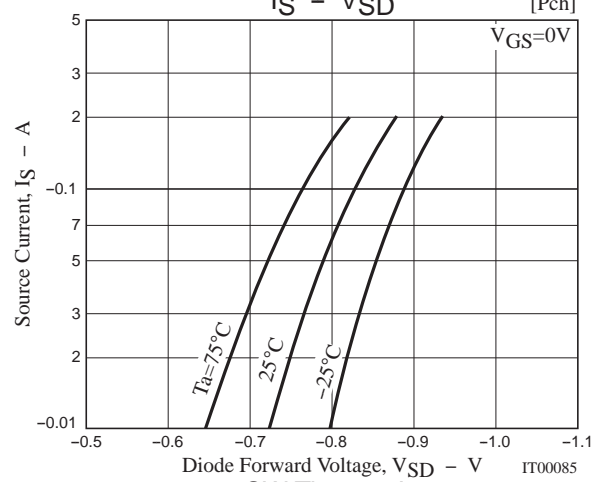
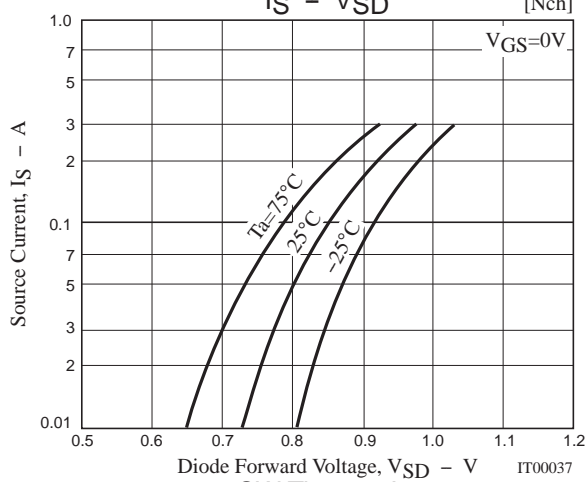
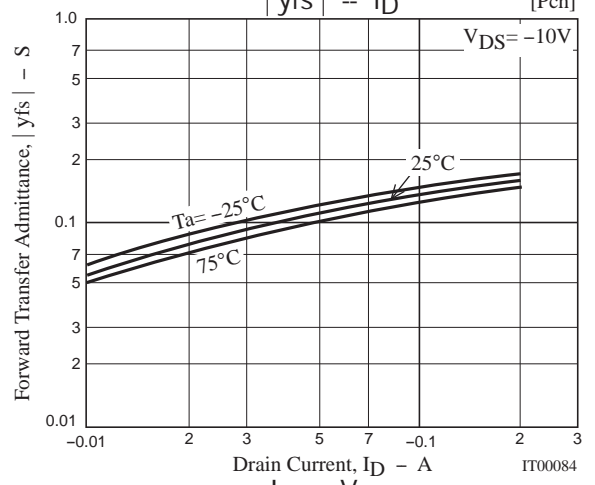
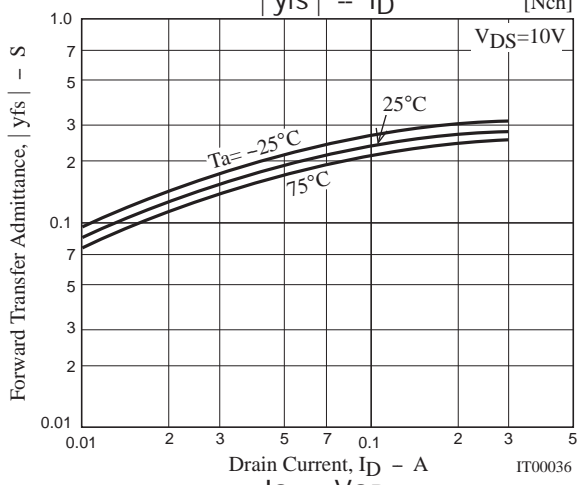
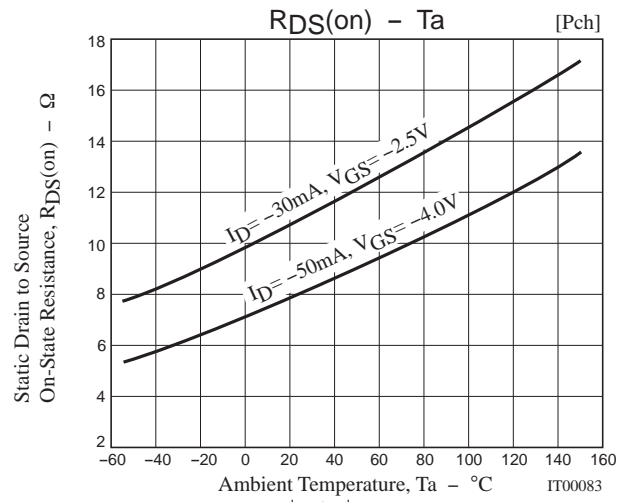
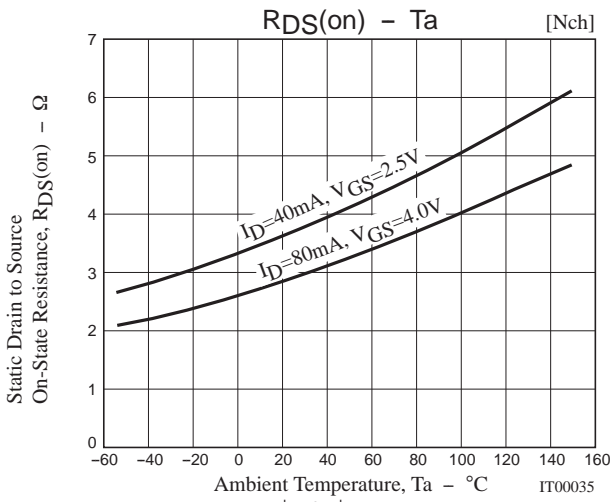
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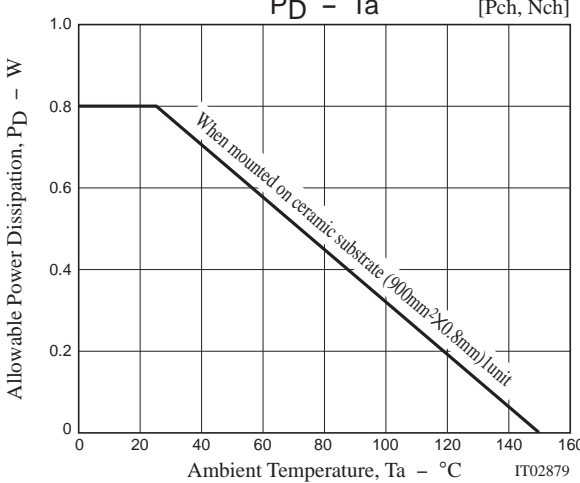
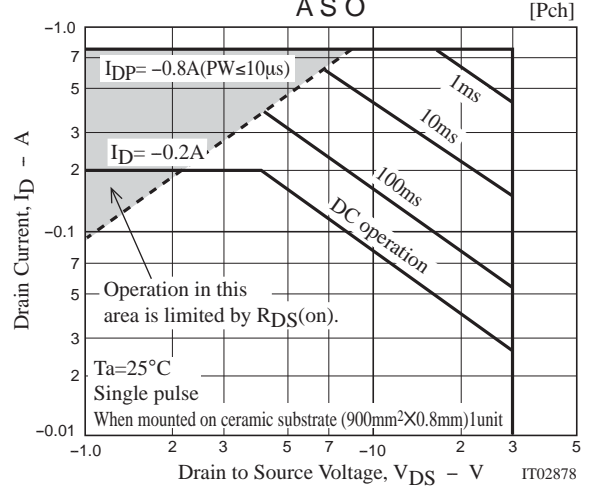
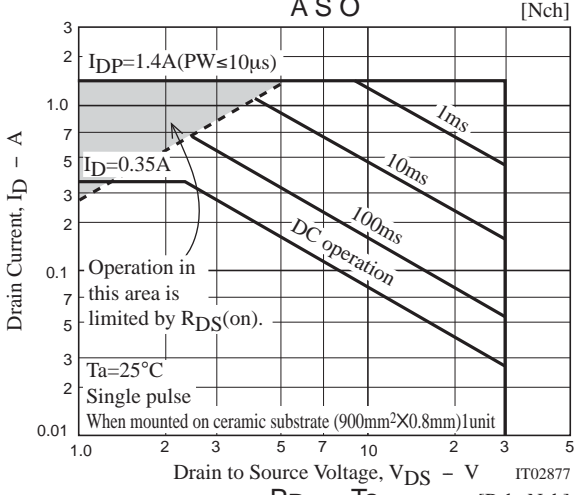
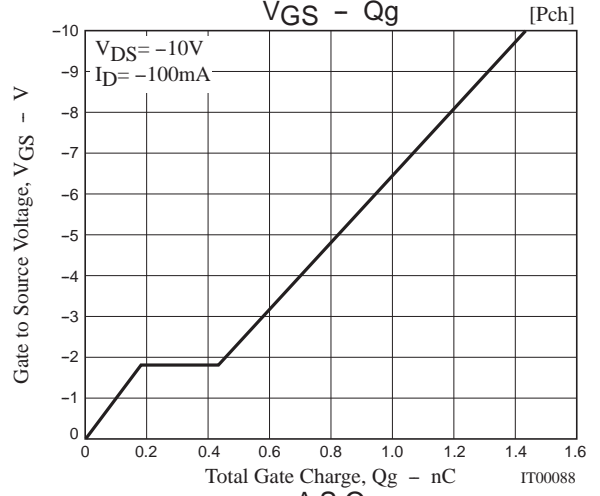
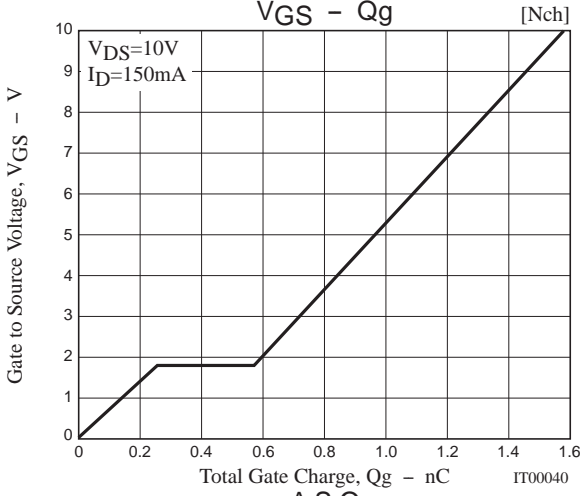
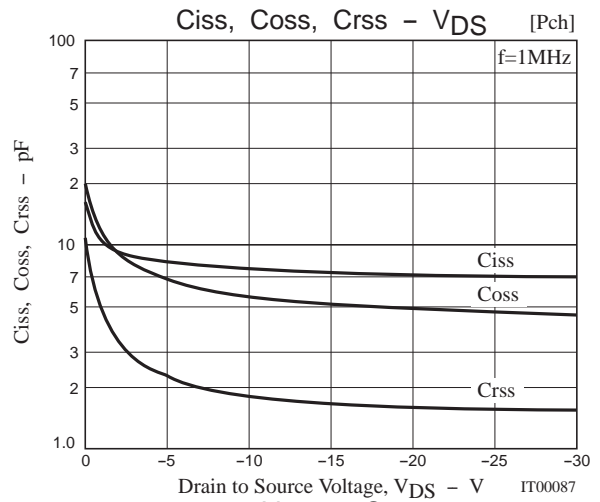
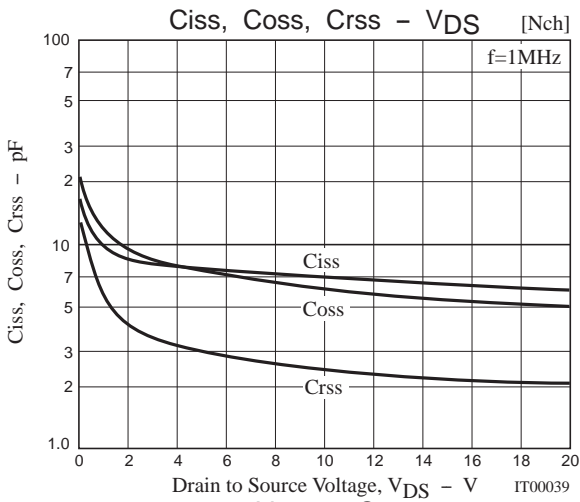


[P-channel]



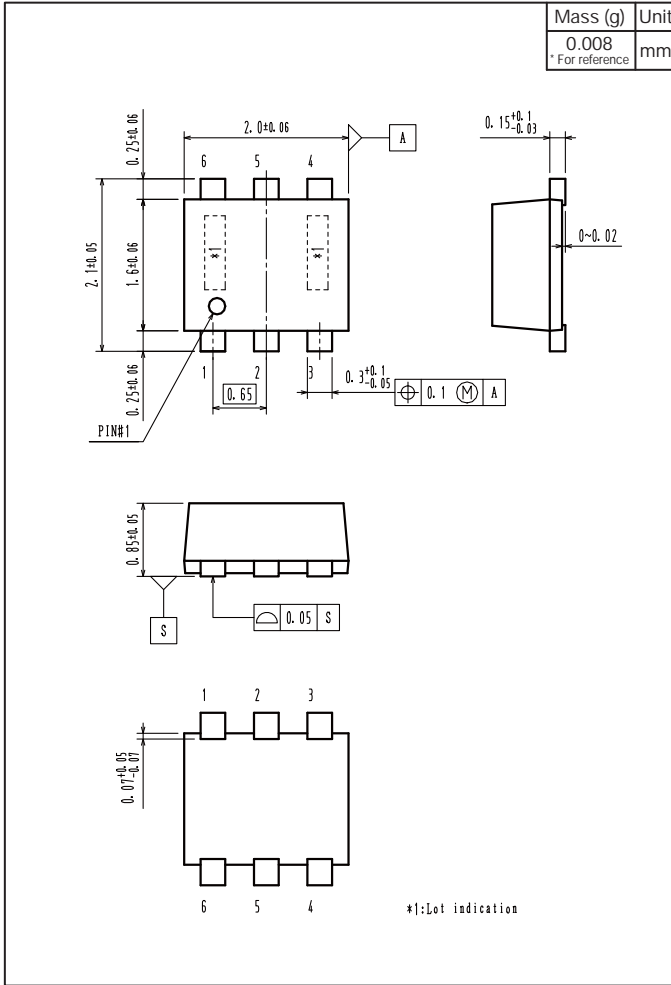




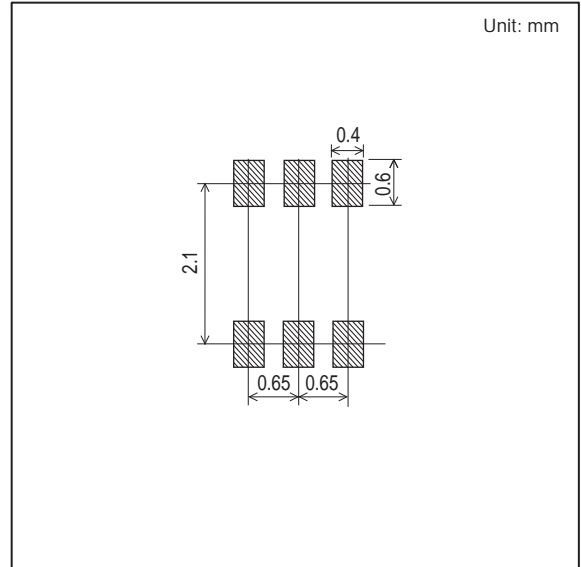


# MCH6613

## Outline Drawing MCH6613-TL-E



## Land Pattern Example



Note on usage : Since the MCH6613 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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