Ordering number : ENA2280A

MCH6661

N-Channel Power MOSFET
30V, 1.8A, 188mΩ, Dual MCPH6

ON Semiconductor®
http://onsemi.com

Features

- ON-resistance Nch : $R_{DS}(on)1$=145mΩ (typ.)
- 4V drive
- Halogen free compliance

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Value	Unit
Drain to Source Voltage	V_{DSS}		30	V
Gate to Source Voltage	V_{GSS}		±20	V
Drain Current (DC)	I_D		1.8	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	7.2	A
Power Dissipation	P_D	When mounted on ceramic substrate (900mm^2×0.8mm) 1unit	0.8	W
Junction Temperature	Tj		150	°C
Storage Temperature Purposes,	Tstg		−55 to +150	°C
Lead Temperature for Soldering Purposes, 3mm from Case for 10 Seconds	T_L		260	°C

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

Thermal Resistance Ratings

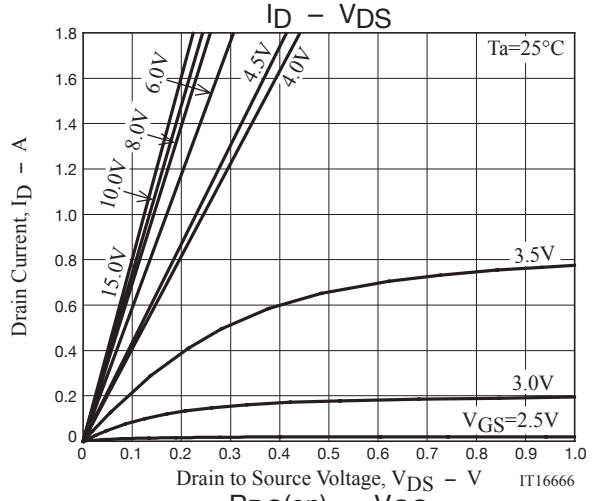
Parameter	Symbol	Value	Unit
Junction to Ambient	$R_{\theta JA}$	156.3	°C/W

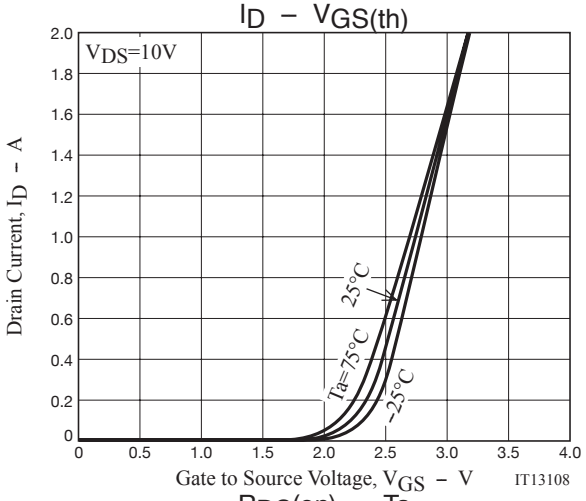
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

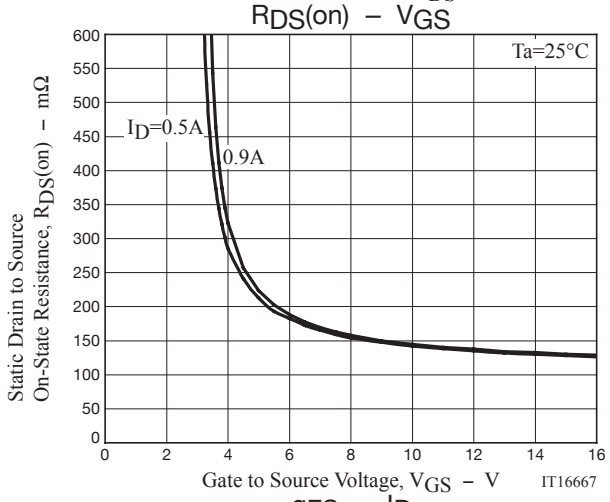
Electrical Characteristics at Ta=25°C

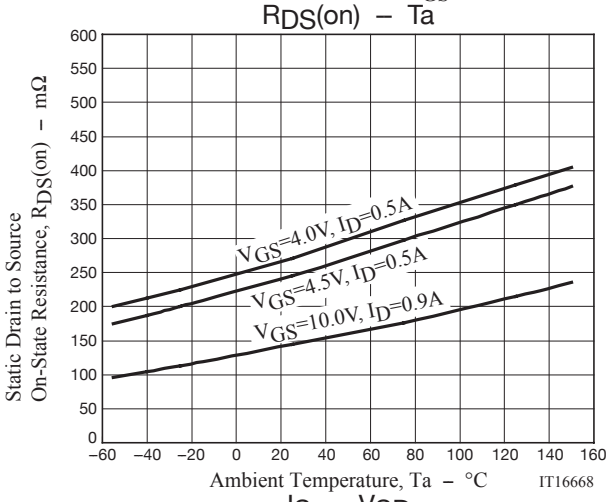
Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=1mA, V_{GS}=0V	30			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V, V_{GS}=0V			1	μA
Gate to Source Leakage Current	I_{GSS}	V_{GS}=±16V, V_{DS}=0V			±10	μA
Gate Threshold Voltage	$V_{GS}(th)$	V_{DS}=10V, I_D=1mA	1.2		2.6	V
Forward Transconductance	g_{FS}	V_{DS}=10V, I_D=0.9A		1.1		S
Static Drain to Source On-State Resistance	$R_{DS}(on)1$	I_D=0.9A, V_{GS}=10V		145	188	mΩ
	$R_{DS}(on)2$	I_D=0.5A, V_{GS}=4.5V		245	343	mΩ
	$R_{DS}(on)3$	I_D=0.5A, V_{GS}=4V		270	378	mΩ
Input Capacitance	Ciss	V_{DS}=10V, f=1MHz		88		pF
Output Capacitance	Coss			19		pF
Reverse Transfer Capacitance	Crss			11		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		3.4		ns
Rise Time	t_r			3.6		ns
Turn-OFF Delay Time	$t_d(off)$			10.5		ns
Fall Time	t_f			4.0		ns
Total Gate Charge	Qg	V_{DS}=15V, V_{GS}=10V, I_D=1.8A		2.0		nC
Gate to Source Charge	Qgs			0.33		nC
Gate to Drain "Miller" Charge	Qgd			0.29		nC
Forward Diode Voltage	V_{SD}	I_S=1.8A, V_{GS}=0V		0.86	1.2	V

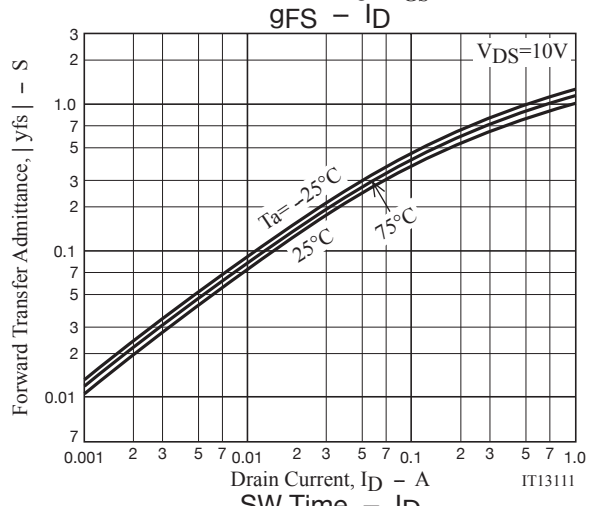
ORDERING INFORMATION
See detailed ordering and shipping information on page 4 of this data sheet.

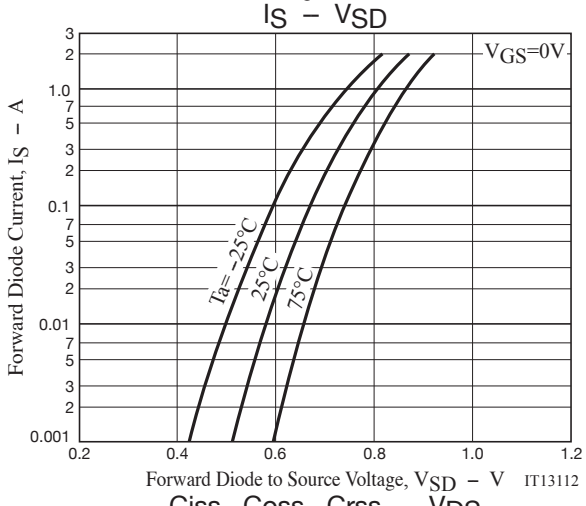

ID – VDS
Ta=25°C
6.0V
4.5V
4.0V
8.0V
10.0V
15.0V
3.5V
3.0V
VGS=2.5V
Drain Current, ID – A
Drain to Source Voltage, VDS – V
IT16666

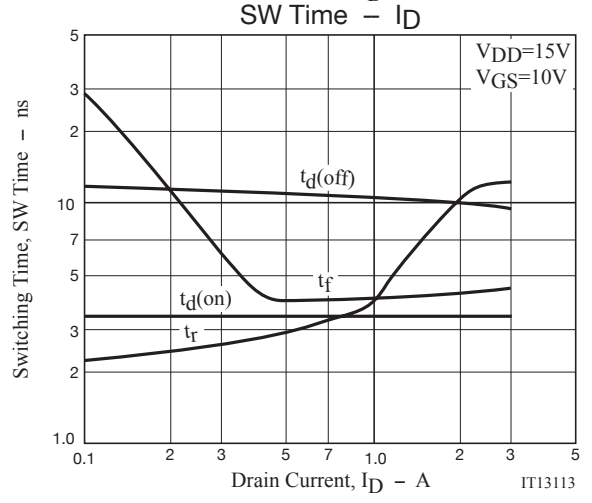

ID – VGS(th)
VDS=10V
25°C
Ta=75°C
–25°C
Drain Current, ID – A
Gate to Source Voltage, VGS – V
IT13108

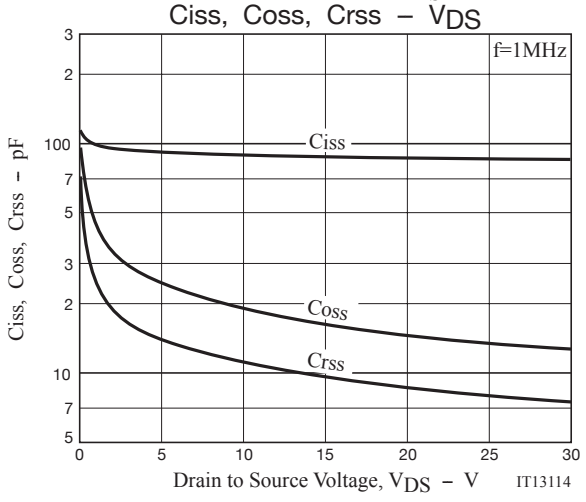

RDS(on) – VGS
Ta=25°C
ID=0.5A
0.9A
Static Drain to Source
On-State Resistance, RDS(on) – mΩ
Gate to Source Voltage, VGS – V
IT16667

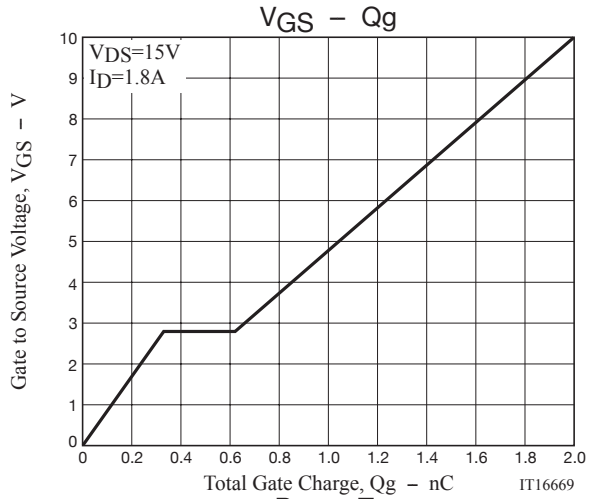

RDS(on) – Ta
VGS=4.0V, ID=0.5A
VGS=4.5V, ID=0.5A
VGS=10.0V, ID=0.9A
Static Drain to Source
On-State Resistance, RDS(on) – mΩ
Ambient Temperature, Ta – °C
IT16668

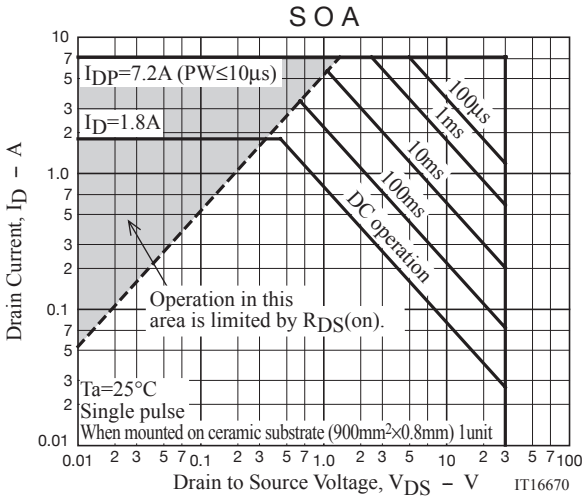

gFS – ID
VDS=10V
Ta= –25°C
25°C
75°C
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
IT13111

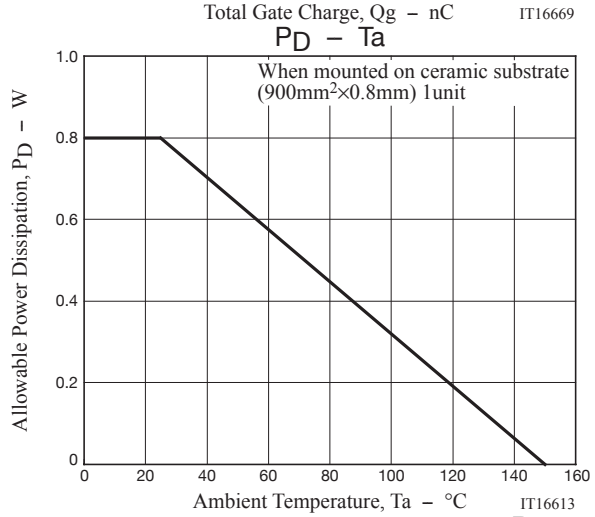

IS – VSD
VGS=0V
Ta= –25°C
25°C
75°C
Forward Diode Current, IS – A
Forward Diode to Source Voltage, VSD – V
IT13112

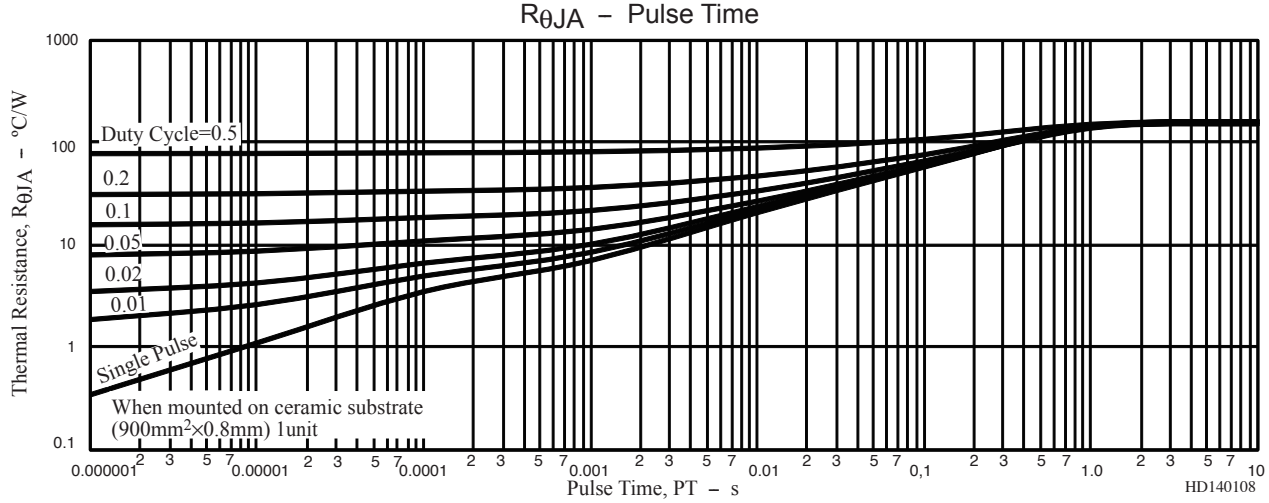

SW Time – ID
VDD=15V
VGS=10V
td(off)
tf
td(on)
tr
Switching Time, SW Time – ns
Drain Current, ID – A
IT13113


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain to Source Voltage, VDS – V
IT13114


VGS – Qg
VDS=15V
ID=1.8A
Gate to Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT16669


S O A
IDP=7.2A (PW≤10μs)
ID=1.8A
100μs
1ms
10ms
100ms
DC operation
Operation in this
area is limited by RDS(on).
Ta=25°C
Single pulse
When mounted on ceramic substrate (900mm2×0.8mm) 1unit
Drain Current, ID – A
Drain to Source Voltage, VDS – V
IT16670


PD – Ta
When mounted on ceramic substrate
(900mm2×0.8mm) 1unit
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT16613


RθJA – Pulse Time
Duty Cycle=0.5
0.2
0.1
0.05
0.02
0.01
Single Pulse
When mounted on ceramic substrate
(900mm2×0.8mm) 1unit
Thermal Resistance, RθJA – °C/W
Pulse Time, PT – s
HD140108

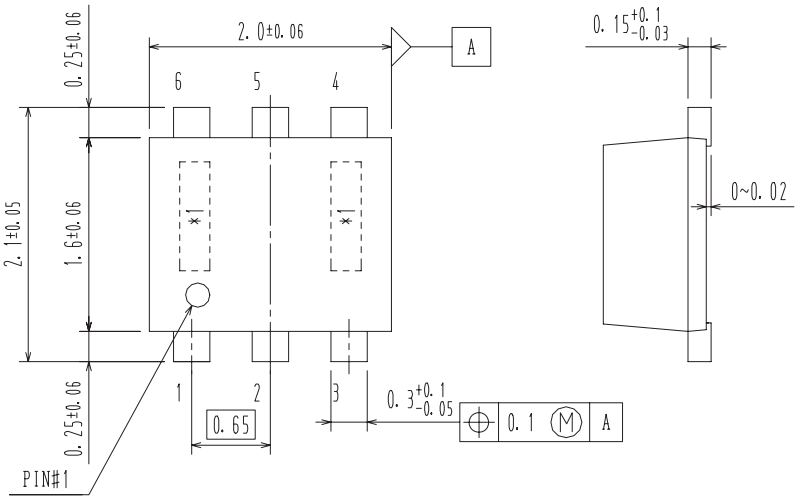
Package Dimensions

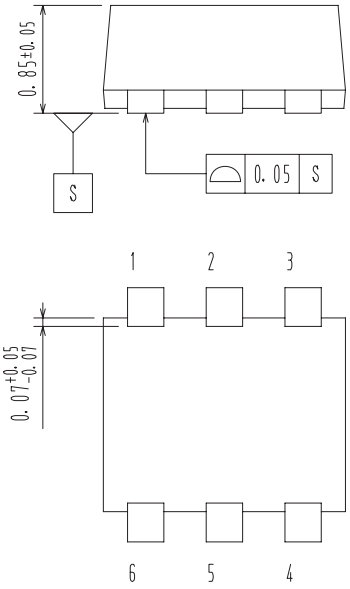
MCH6661-TL-W

SC-88FL / MCPH6
CASE 419AS
ISSUE O

unit : mm

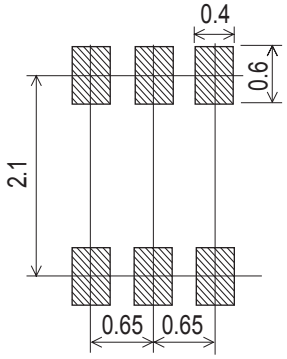
1:Source1
2:Gate1
3:Drain2
4:Source2
5:Gate2
6:Drain1





*1:Lot indication

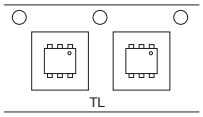
Recommended Soldering Footprint



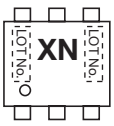
Ordering & Package Information

Device	Package	Shipping	note
MCH6661-TL-W	MCPH6, SC-88,SOT-363	3,000 pcs. / reel	Pb-Free and Halogen Free

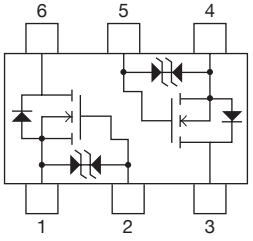
Packing Type:TL



Marking

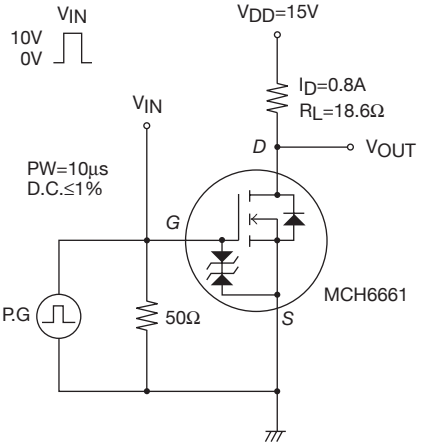


Electrical Connection



Top view

Switching Time Test Circuit



Note on usage : Since the MCH6661 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.