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Ordering number : ENA2281A

MCH6664

P-Channel Power MOSFET
−30V, −1.5A, 325mΩ, Dual MCPH6

ON Semiconductor®
http://onsemi.com

Features

- ON-resistance Pch : $R_{DS}(on)1$=250mΩ (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		−1.5	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	−6	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	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

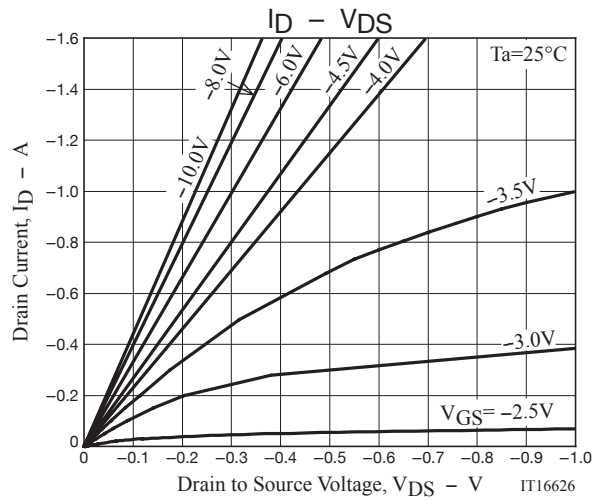
Parameter	Symbol	Value	Unit
Junction to Ambient	$R_{\theta JA}$	156.3	°C/W

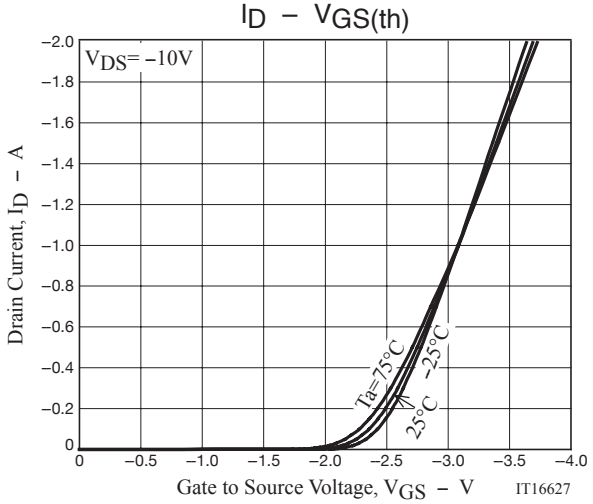
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

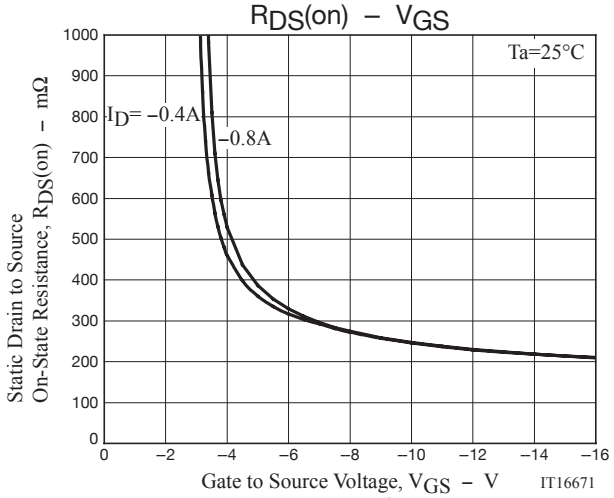
Electrical Characteristics at Ta=25°C

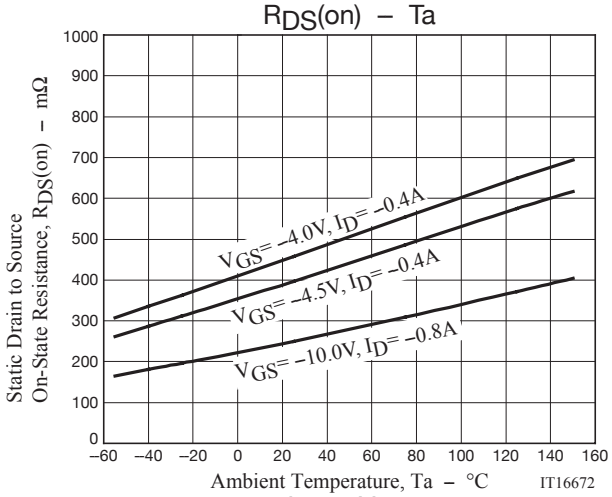
Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=−1mA, V_{GS}=0V	−30			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=−30V, V_{GS}=0V			−1	μA
Gate to Source Leakage Current	I_{GSS}	V_{GS}=±16V, V_{DS}=0V			±10	μA
Gate Threshold Voltage	$V_{GS}(th)$	V_{DS}=−10V, I_D=−1mA	−1.2		−2.6	V
Forward Transconductance	g_{FS}	V_{DS}=−10V, I_D=−0.8A		1.3		S
Static Drain-to-Source On-State Resistance	$R_{DS}(on)1$	I_D=−0.8A, V_{GS}=−10V		250	325	mΩ
	$R_{DS}(on)2$	I_D=−0.4A, V_{GS}=−4.5V		397	555	mΩ
	$R_{DS}(on)3$	I_D=−0.4A, V_{GS}=−4V		458	641	mΩ
Input Capacitance	Ciss	V_{DS}=−10V, f=1MHz		82		pF
Output Capacitance	Coss			22		pF
Reverse Transfer Capacitance	Crss			16		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		4		ns
Rise Time	t_r			3.3		ns
Turn-OFF Delay Time	$t_d(off)$			12		ns
Fall Time	t_f			5.4		ns
Total Gate Charge	Qg	V_{DS}=−15V, V_{GS}=−10V, I_D=−1.5A		2.2		nC
Gate to Source Charge	Qgs			0.36		nC
Gate to Drain "Miller" Charge	Qgd			0.49		nC
Forward Diode Voltage	V_{SD}	I_S=−1.5A, V_{GS}=0V		−0.9	−1.5	V

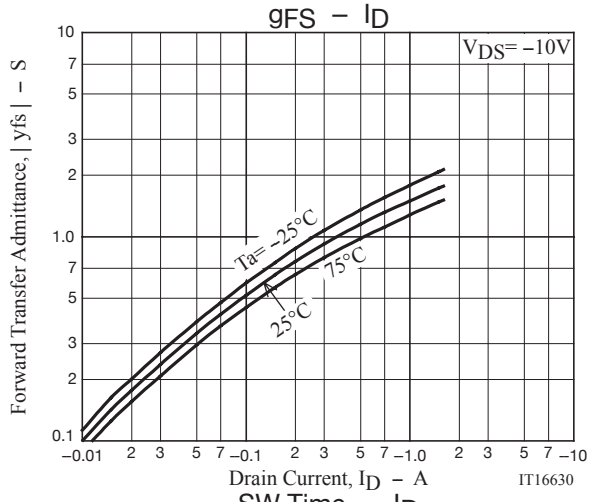
ORDERING INFORMATION
See detailed ordering and shipping information on page 4 of this data sheet.

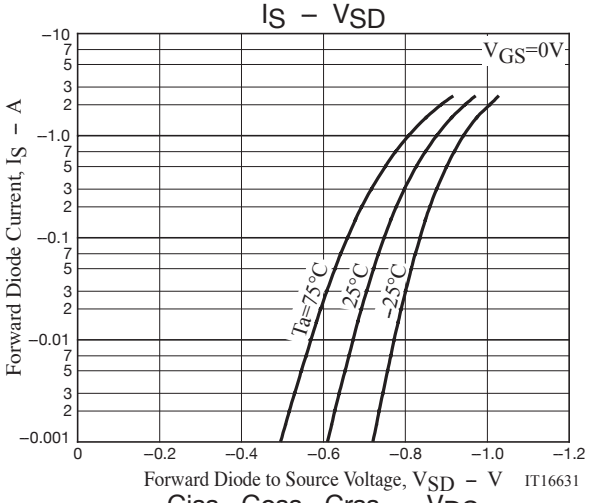

ID – VDS
Ta=25°C
–8.0V
–6.0V
–4.5V
–4.0V
–10.0V
–3.5V
–3.0V
VGS= –2.5V
Drain Current, ID – A
Drain to Source Voltage, VDS – V
IT16626

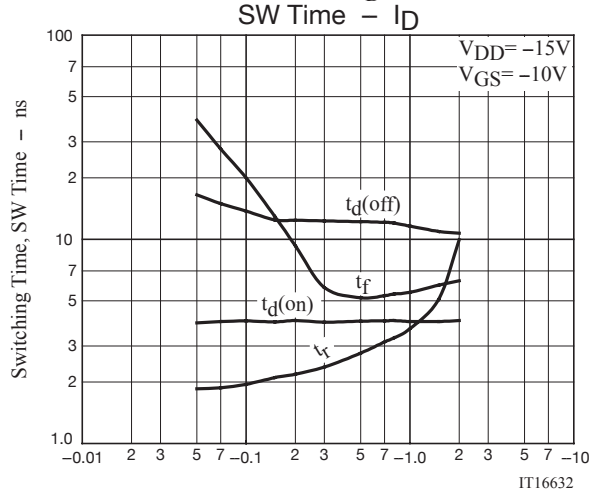

ID – VGS(th)
VDS= –10V
Ta=75°C
25°C
–25°C
Drain Current, ID – A
Gate to Source Voltage, VGS – V
IT16627

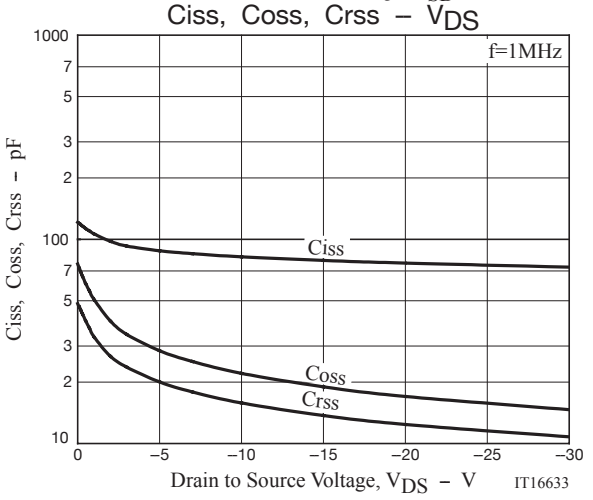

RDS(on) – VGS
Ta=25°C
ID= –0.4A
–0.8A
Static Drain to Source On-State Resistance, RDS(on) – mΩ
Gate to Source Voltage, VGS – V
IT16671

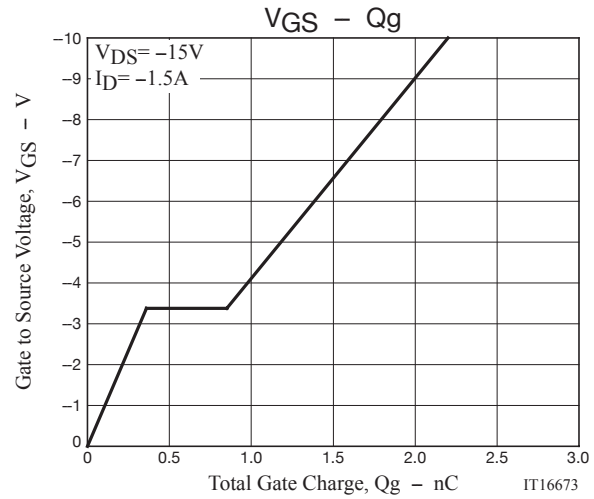

RDS(on) – Ta
VGS= –4.0V, ID= –0.4A
VGS= –4.5V, ID= –0.4A
VGS= –10.0V, ID= –0.8A
Static Drain to Source On-State Resistance, RDS(on) – mΩ
Ambient Temperature, Ta – °C
IT16672

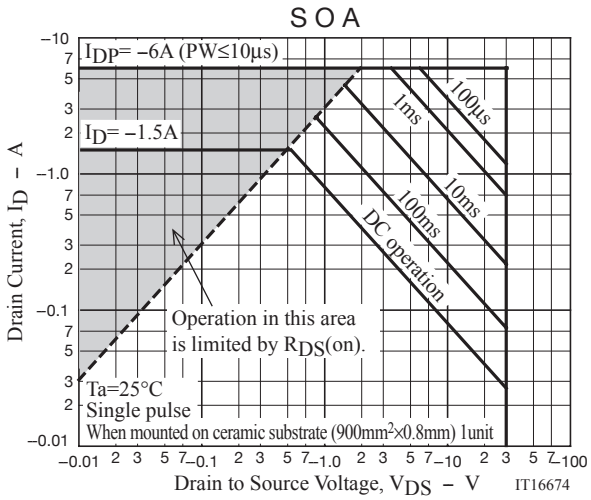

gFS – ID
VDS= –10V
Ta= –25°C
75°C
25°C
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
IT16630

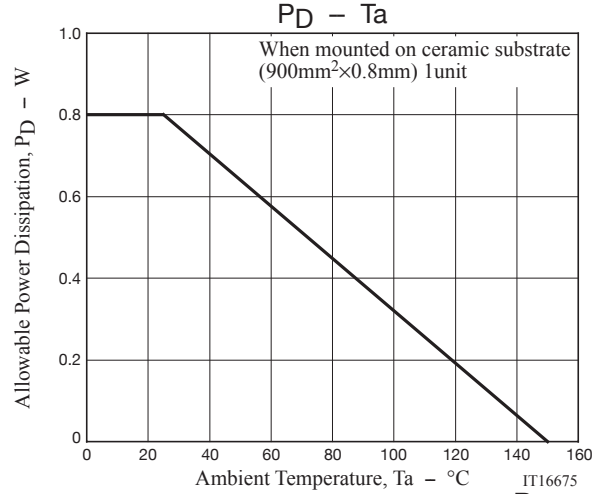

IS – VSD
VGS=0V
Ta=75°C
25°C
–25°C
Forward Diode Current, IS – A
Forward Diode to Source Voltage, VSD – V
IT16631

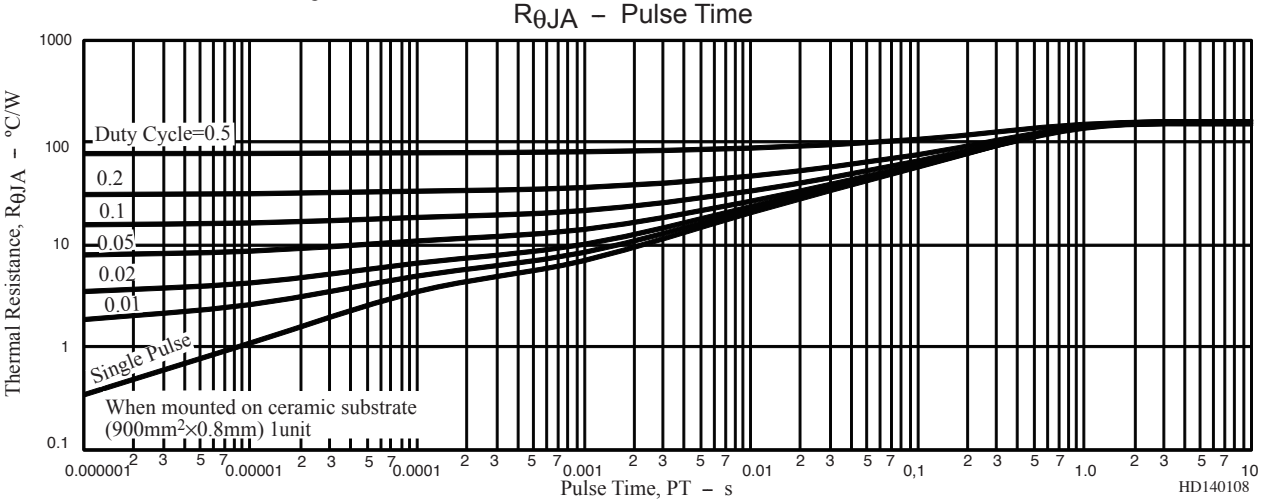

SW Time – ID
VDD= –15V
VGS= –10V
td(off)
tf
td(on)
tr
Switching Time, SW Time – ns
IT16632


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain to Source Voltage, VDS – V
IT16633


VGS – Qg
VDS= –15V
ID= –1.5A
Gate to Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT16673


S O A
IDP= –6A (PW≤10μs)
ID= –1.5A
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
IT16674


PD – Ta
When mounted on ceramic substrate
(900mm2×0.8mm) 1unit
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT16675


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

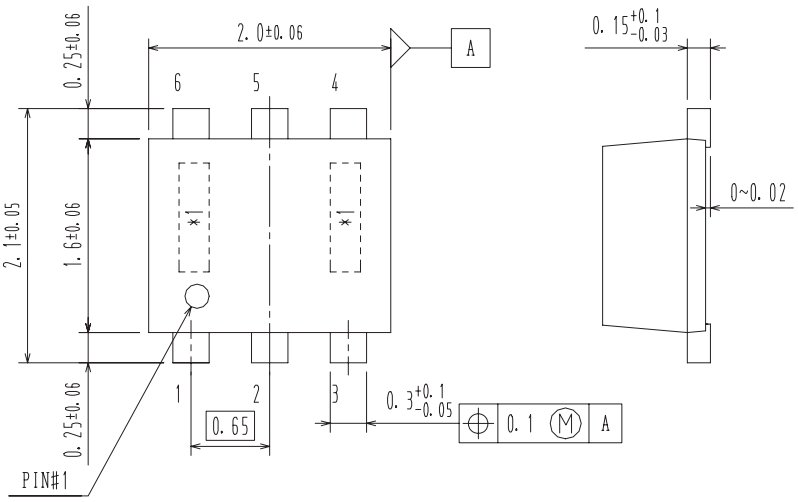
Package Dimensions

MCH6664-TL-W

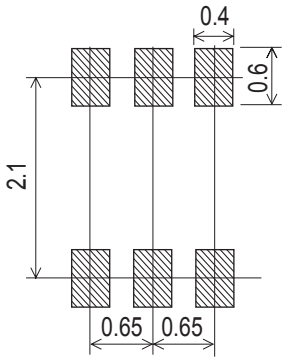
SC-88FL / MCPH6
CASE 419AS
ISSUE O

unit : mm

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



Recommended Soldering Footprint

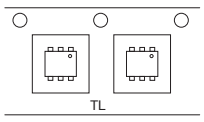


*1:Lot indication

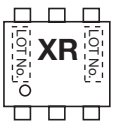
Ordering & Package Information

Device	Package	Shipping	note
MCH6664-TL-W	MCPH6, SC-88,SOT-363	3,000 pcs. / reel	Pb-Free and Halogen Free

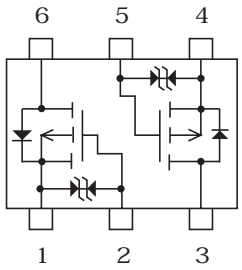
Packing Type:TL



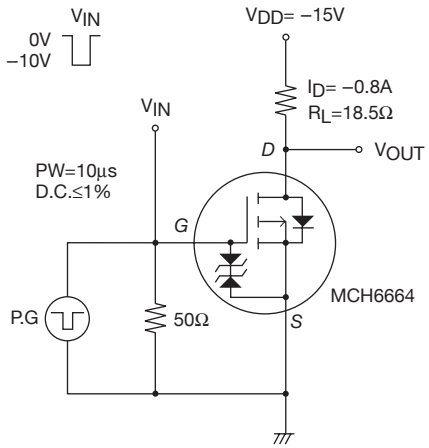
Marking



Electrical Connection



Switching Time Test Circuit



Note on usage : Since the MCH6664 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.