



ON Semiconductor®

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MCH3477

Power MOSFET 20V, 38mΩ, 4.5A, Single N-Channel

Features

- High Speed Switching
- 1.8V Drive
- ESD Diode - Protected Gate
- Low On-Resistance
- Pb-Free, Halogen Free and RoHS Compliance

V _{DSS}	R _{DS(on)} Max	I _D Max
20V	38 mΩ@4.5V	4.5A
	61 mΩ@2.5V	
	99 mΩ@1.8V	

Specifications

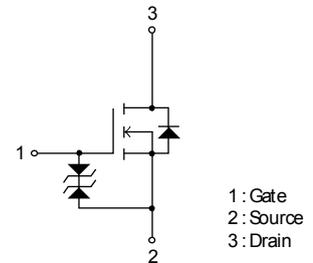
Absolute Maximum Ratings at T_a = 25°C

Parameter	Symbol	Value	Unit
Drain to Source Voltage	V _{DSS}	20	V
Gate to Source Voltage	V _{GSS}	±12	V
Drain Current (DC)	I _D	4.5	A
Drain Current (Pulse) PW≤10μs, duty cycle≤1%	I _{DP}	18	A
Power Dissipation When mounted on ceramic substrate (900mm ² ×0.8mm)	P _D	1.0	W
Junction Temperature	T _J	150	°C
Storage Temperature	T _{stg}	-55 to +150	°C

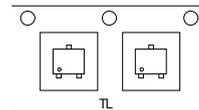
Thermal Resistance Ratings

Parameter	Symbol	Value	Unit
Junction to Ambient When mounted on ceramic substrate (900mm ² ×0.8mm)	R _{θJA}	125	°C/W

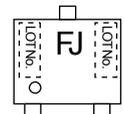
Electrical Connection N-Channel



Packing Type:TL



Marking



Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

ORDERING INFORMATION

See detailed ordering and shipping information on page 5 of this data sheet.

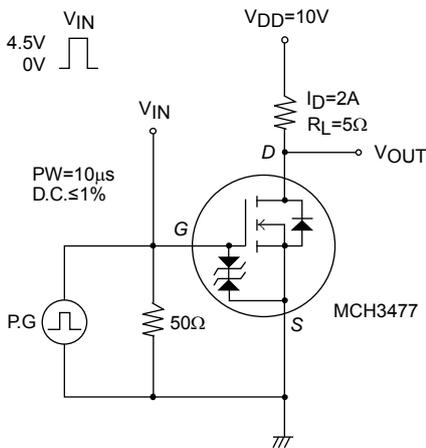
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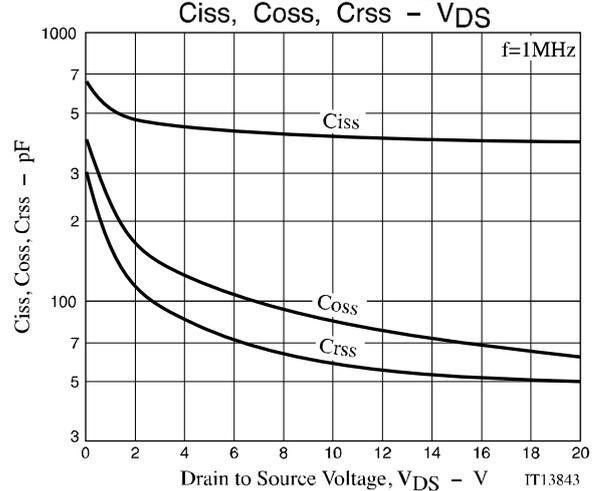
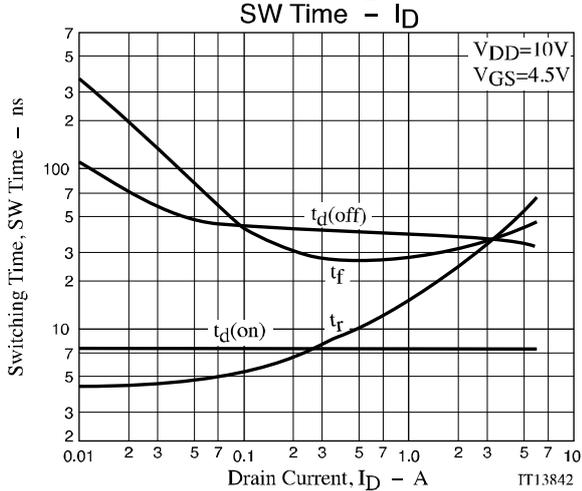
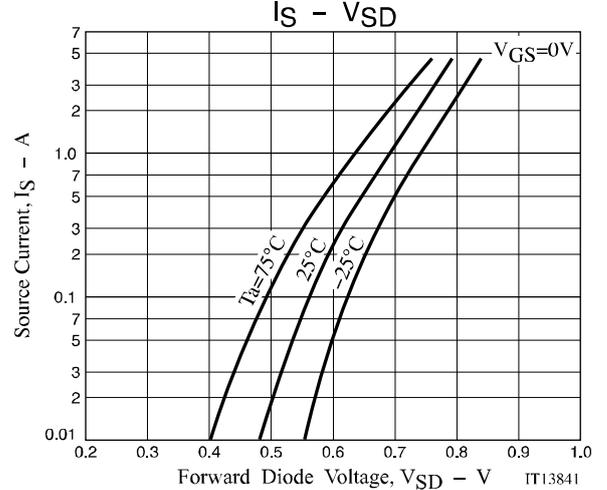
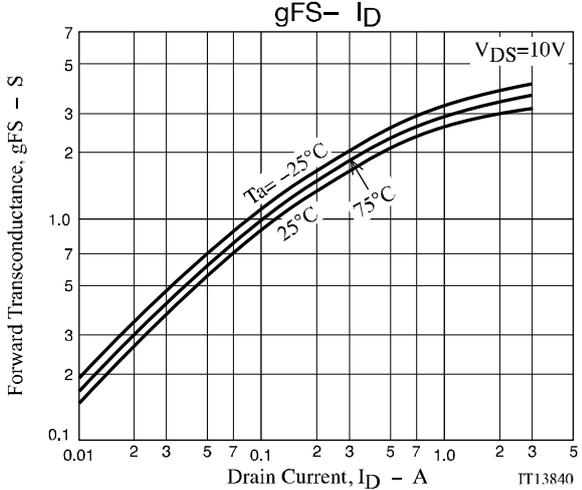
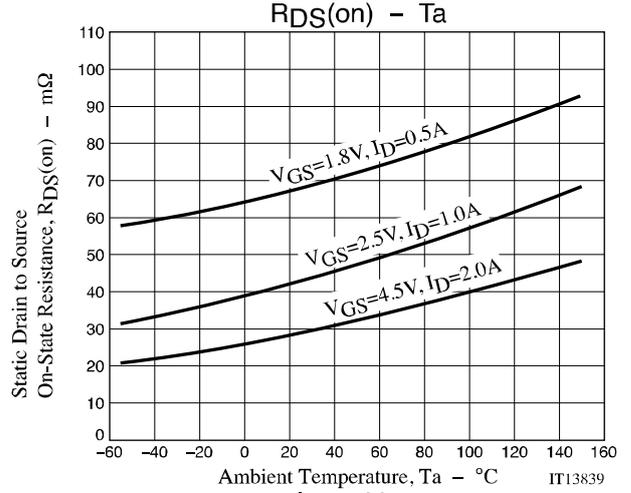
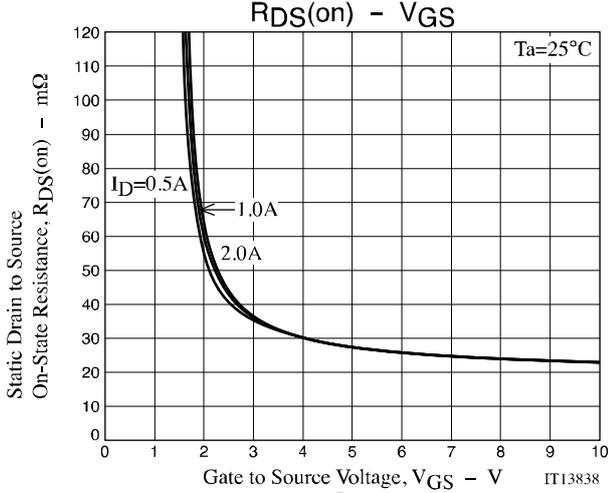
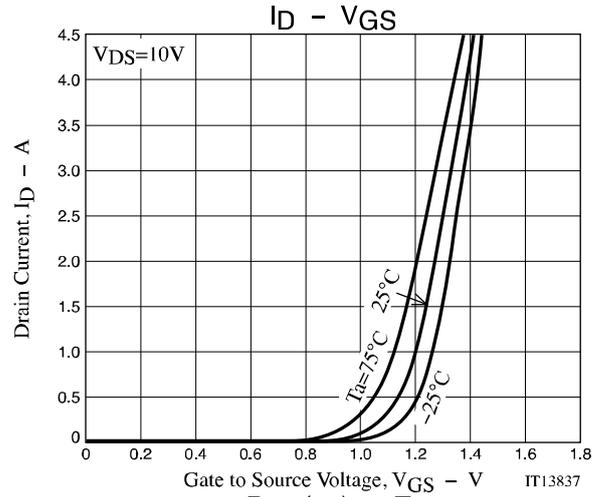
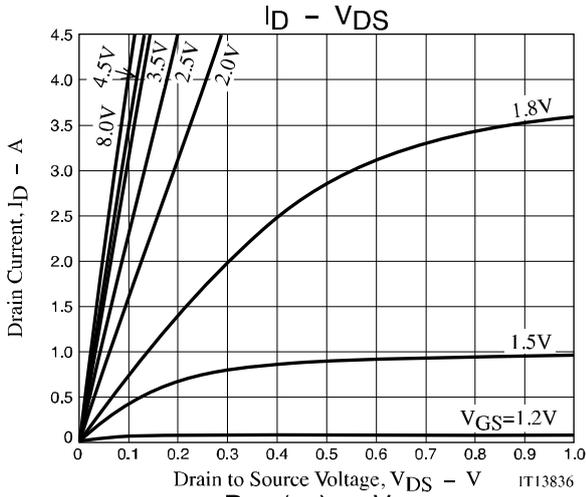
Electrical Characteristics at $T_a = 25^\circ\text{C}$

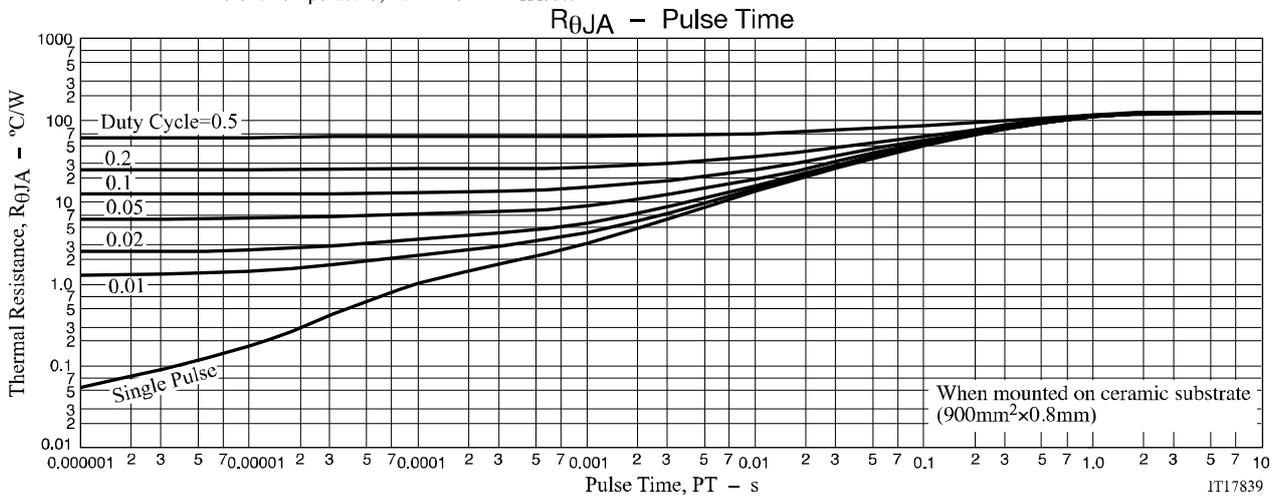
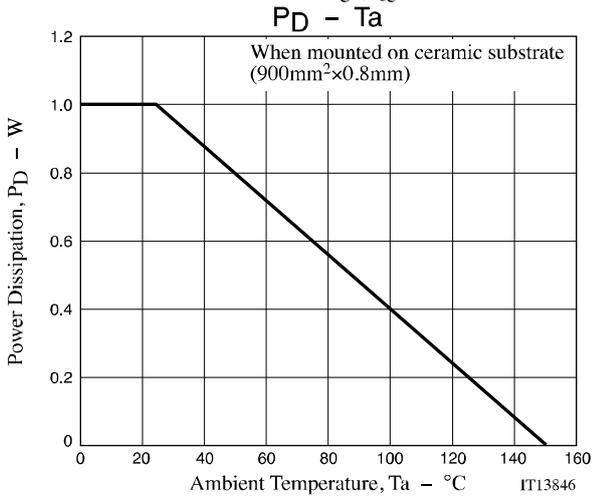
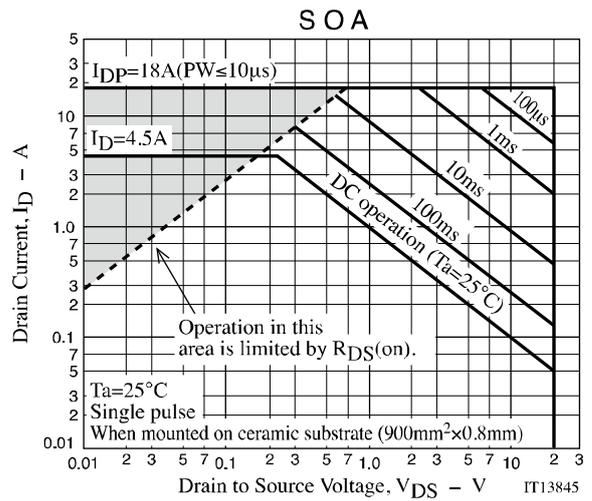
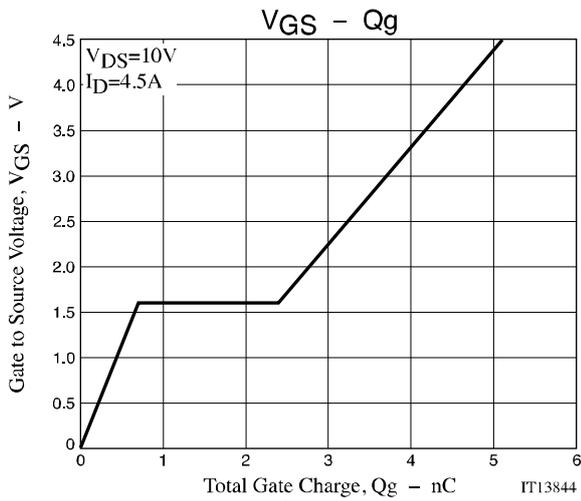
Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1\text{mA}, V_{GS}=0\text{V}$	20			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=20\text{V}, V_{GS}=0\text{V}$			1	μA
Gate to Source Leakage Current	I_{GSS}	$V_{GS}=\pm 8\text{V}, V_{DS}=0\text{V}$			± 10	μA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=10\text{V}, I_D=1\text{mA}$	0.4		1.3	V
Forward Transconductance	g_{FS}	$V_{DS}=10\text{V}, I_D=2\text{A}$	2.0	3.4		S
Static Drain to Source On-State Resistance	$R_{DS(on)1}$	$I_D=2\text{A}, V_{GS}=4.5\text{V}$		29	38	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D=1\text{A}, V_{GS}=2.5\text{V}$		43	61	$\text{m}\Omega$
	$R_{DS(on)3}$	$I_D=0.5\text{A}, V_{GS}=1.8\text{V}$		69	99	$\text{m}\Omega$
Input Capacitance	C_{iss}	$V_{DS}=10\text{V}, f=1\text{MHz}$		410		pF
Output Capacitance	C_{oss}			84		pF
Reverse Transfer Capacitance	C_{rss}			59		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit		7.5		ns
Rise Time	t_r			26		ns
Turn-OFF Delay Time	$t_{d(off)}$			38		ns
Fall Time	t_f			32		ns
Total Gate Charge	Q_g		$V_{DS}=10\text{V}, V_{GS}=4.5\text{V}, I_D=4.5\text{A}$		5.1	
Gate to Source Charge	Q_{gs}			0.7		nC
Gate to Drain "Miller" Charge	Q_{gd}			1.7		nC
Forward Diode Voltage	V_{SD}	$I_S=4.5\text{A}, V_{GS}=0\text{V}$		0.78	1.2	V

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

Switching Time Test Circuit







MCH3477

Package Dimensions

MCH3477-TL-H / MCH3477-TL-W

MCPH3

CASE 419AQ

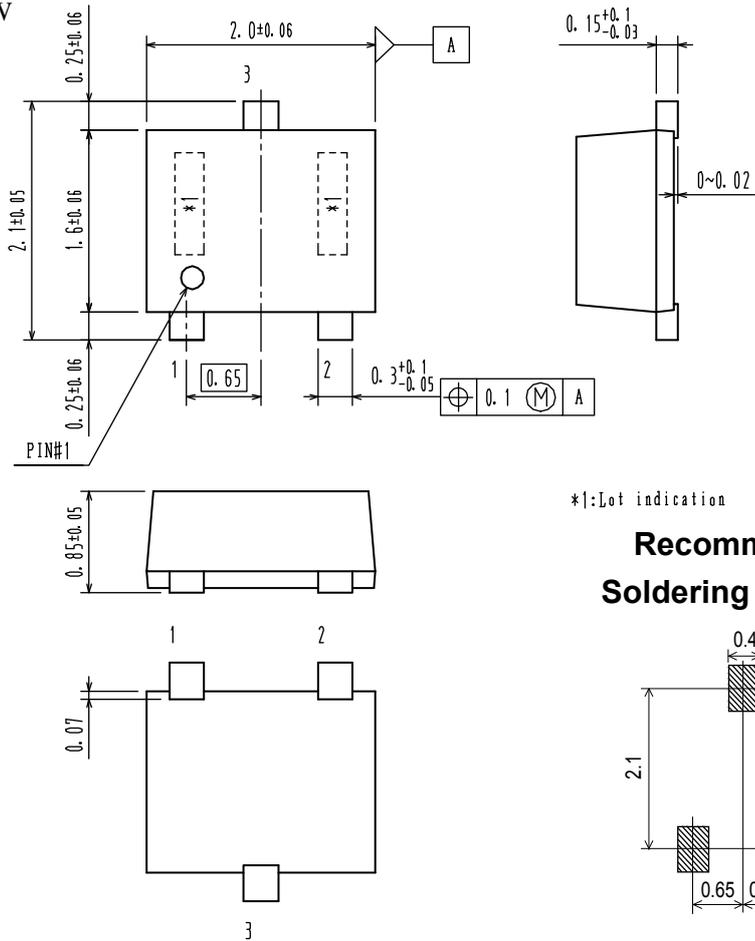
ISSUE O

Unit : mm

1 : Gate

2 : Source

3 : Drain



*]:Lot indication

Recommended Soldering Footprint

ORDERING INFORMATION

Device	Package	Shipping	Note
MCH3477-TL-H	MCPH3 SC-70,SOT-323	3,000 pcs. / reel	Pb-Free and Halogen Free
MCH3477-TL-W			

Note on usage : Since the MCH3477 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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