# MCH3478

# N-Channel Power MOSFET 30V, 2A, 165mΩ, Single MCPH3



http://onsemi.com

### **Features**

- · Low ON-resistance
- 1.8V drive
- · Protection diode in

- · Ultrahigh speed switching
- · Halogen free compliance

# **Specifications**

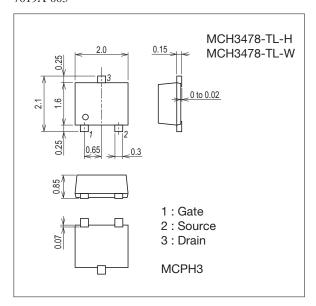
Absolute Maximum Ratings at Ta=25°C

3				
Parameter	Symbol	Conditions	Ratings	Unit
Drain to Source Voltage	VDSS		30	V
Gate to Source Voltage	VGSS		±12	V
Drain Current (DC)	ID		2	Α
Drain Current (PW≤10s)	ID	Duty cycle≤1%	2.5	Α
Drain Current (Pulse)	IDP	PW≤10μs, duty cycle≤1%	8	Α
Allowable Power Dissipation	PD	When mounted on ceramic substrate (900mm <sup>2</sup> ×0.8mm)	0.8	W
		When mounted on ceramic substrate (900mm <sup>2</sup> ×0.8mm), PW=10s	1.2	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		-55 to +150	°C

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) 7019A-003

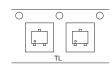


### **Product & Package Information**

• Package : MCPH3

JEITA, JEDEC : SC-70, SOT-323
Minimum Packing Quantity : 3,000 pcs./reel

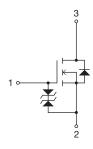
### Packing Type: TL



# Marking



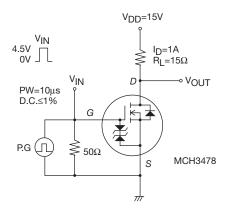
#### **Electrical Connection**



## Electrical Characteristics at Ta=25°C

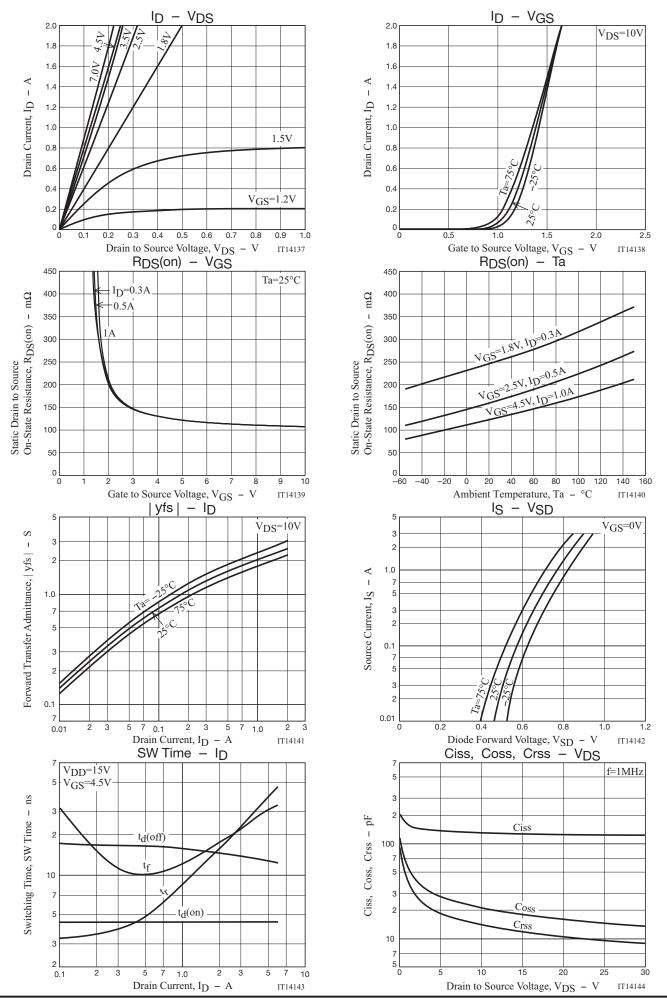
Parameter	Symbol	Conditions	Ratings			Unit
		Conditions	min	typ	max	Unit
Drain to Source Breakdown Voltage	V(BR)DSS	ID=1mA, VGS=0V	30			V
Zero-Gate Voltage Drain Current	IDSS	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V			1	μΑ
Gate to Source Leakage Current	IGSS	V <sub>GS</sub> =±8V, V <sub>DS</sub> =0V			±10	μΑ
Cutoff Voltage	V <sub>GS</sub> (off)	V <sub>DS</sub> =10V, I <sub>D</sub> =1mA	0.4		1.3	V
Forward Transfer Admittance	yfs	V <sub>DS</sub> =10V, I <sub>D</sub> =1A	1.2	2.0		S
Static Drain to Source On-State Resistance	R <sub>DS</sub> (on)1	I <sub>D</sub> =1A, V <sub>G</sub> S=4.5V		125	165	mΩ
	R <sub>DS</sub> (on)2	I <sub>D</sub> =0.5A, V <sub>GS</sub> =2.5V		165	235	mΩ
	R <sub>DS</sub> (on)3	I <sub>D</sub> =0.3A, V <sub>GS</sub> =1.8V		250	375	mΩ
Input Capacitance	Ciss			130		pF
Output Capacitance	Coss	V <sub>DS</sub> =10V, f=1MHz		21		pF
Reverse Transfer Capacitance	Crss			14		рF
Turn-ON Delay Time	t <sub>d</sub> (on)			4.4		ns
Rise Time	t <sub>r</sub>	0 '5 17 10' '1		8.7		ns
Turn-OFF Delay Time	t <sub>d</sub> (off)	See specified Test Circuit.		16		ns
Fall Time	tf			12		ns
Total Gate Charge	Qg			1.7		nC
Gate to Source Charge	Qgs	V <sub>DS</sub> =10V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =2A		0.25		nC
Gate to Drain "Miller" Charge	Qgd			0.38		nC
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =2A, V <sub>GS</sub> =0V		0.85	1.2	V

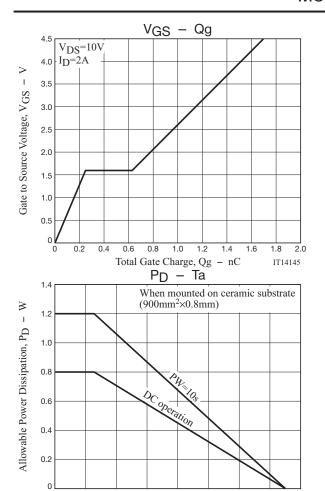
# Switching Time Test Circuit



# **Ordering Information**

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Device	Device Package		memo		
MCH3478-TL-H	MCPH3	3 000pag /roal	Db Free and Halagan Free		
MCH3478-TI -W	IVICPHS	3,000pcs./reel	Pb Free and Halogen Free		





80

Ambient Temperature, Ta - °C

100

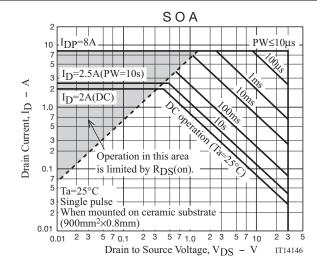
160

IT14147

140

0

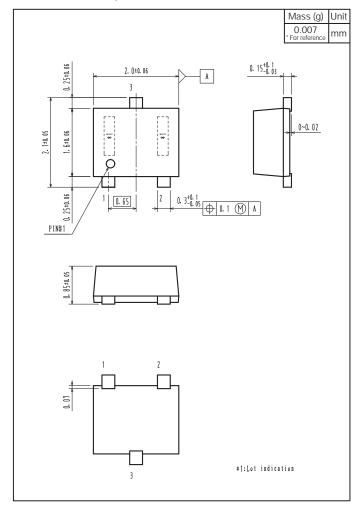
20

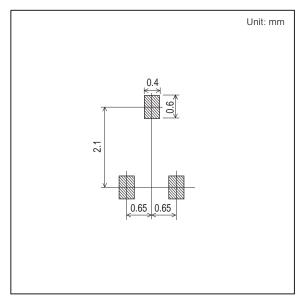


#### **Outline Drawing**

MCH3478-TL-H, MCH3478-TL-W

# Land Pattern Example





Note on usage: Since the MCH3478 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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