



MCH3478

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

ON Semiconductor®

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Features

- Low ON-resistance
- 1.8V drive
- Protection diode in
- Ultrahigh speed switching
- Halogen free compliance

Specifications

Absolute Maximum Ratings at Ta=25°C

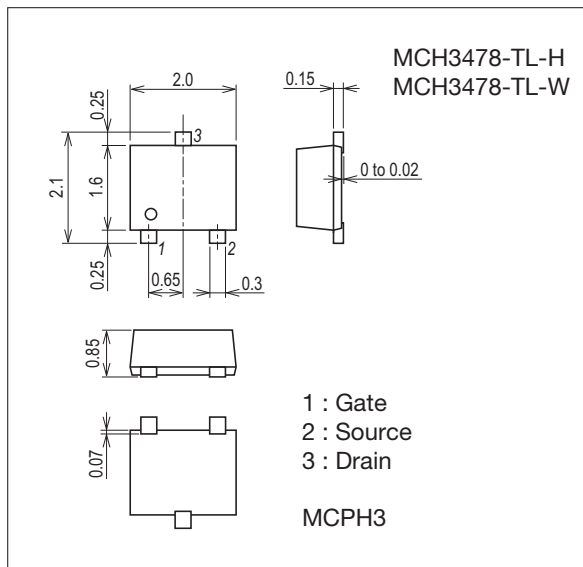
Parameter	Symbol	Conditions	Ratings	Unit
Drain to Source Voltage	V _{DSS}		30	V
Gate to Source Voltage	V _{GSS}		±12	V
Drain Current (DC)	I _D		2	A
Drain Current (PW≤10s)	I _D	Duty cycle≤1%	2.5	A
Drain Current (Pulse)	I _{DP}	PW≤10μs, duty cycle≤1%	8	A
Allowable Power Dissipation	P _D	When mounted on ceramic substrate (900mm ² ×0.8mm)	0.8	W
		When mounted on ceramic substrate (900mm ² ×0.8mm), PW=10s	1.2	W
Channel Temperature	T _{ch}		150	°C
Storage Temperature	T _{stg}		-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)

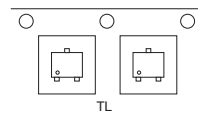
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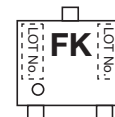
Product & Package Information

- Package : MCPH3
- JEITA, JEDEC : SC-70, SOT-323
- Minimum Packing Quantity : 3,000 pcs./reel

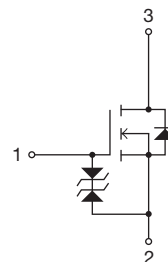
Packing Type : TL



Marking



Electrical Connection

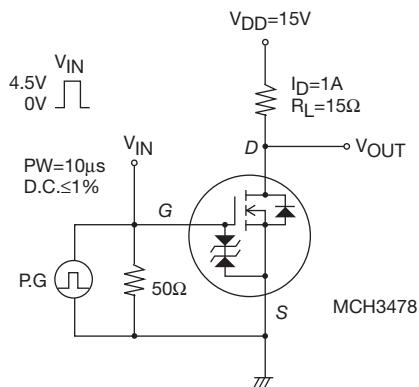


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Electrical Characteristics at $T_a=25^\circ\text{C}$

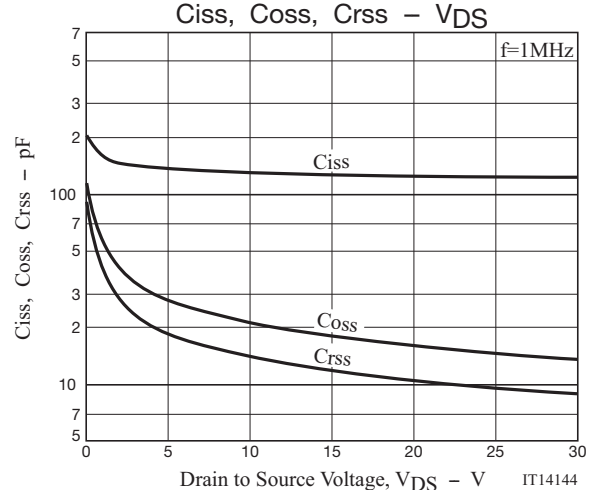
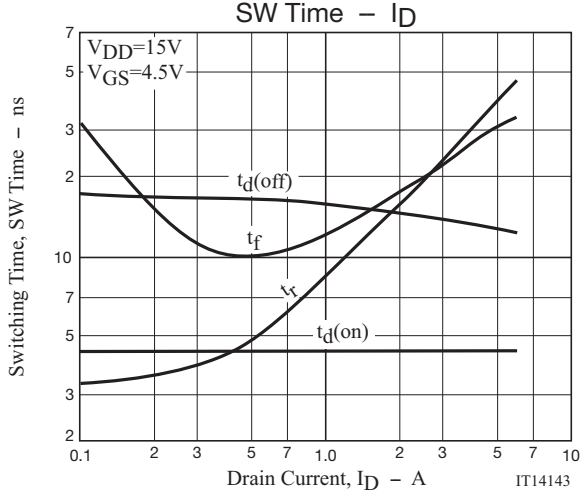
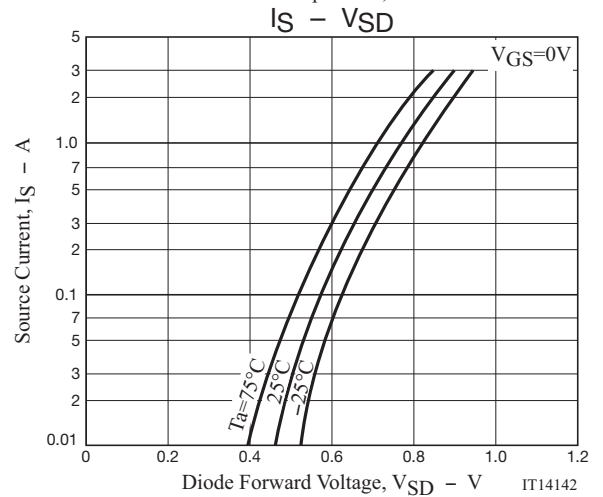
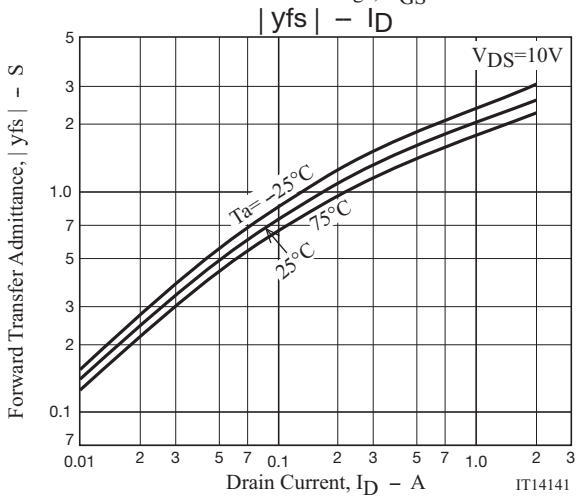
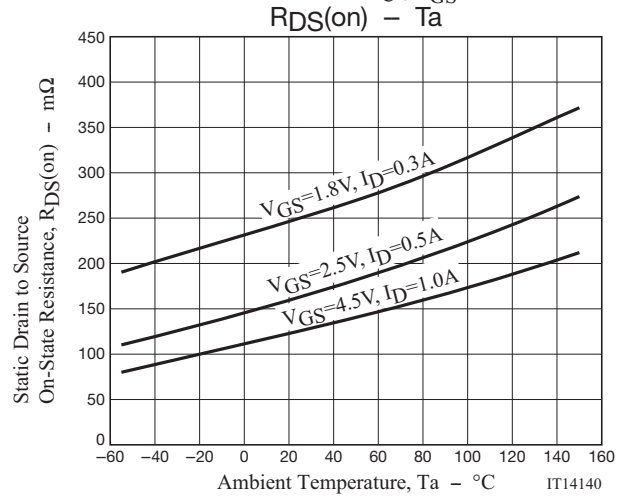
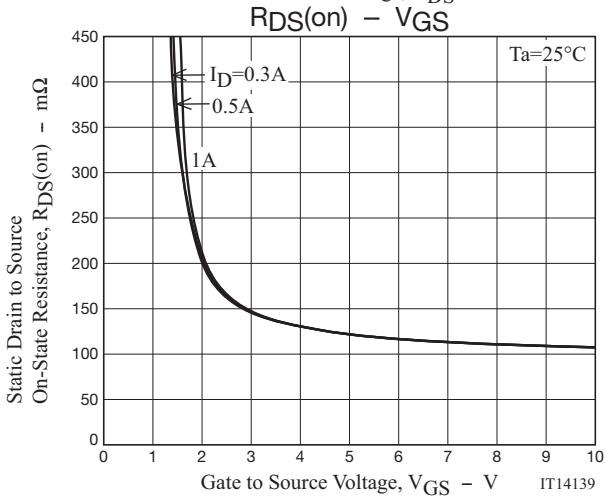
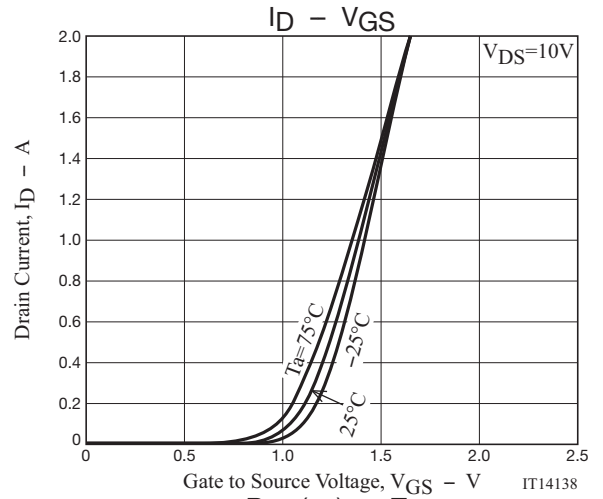
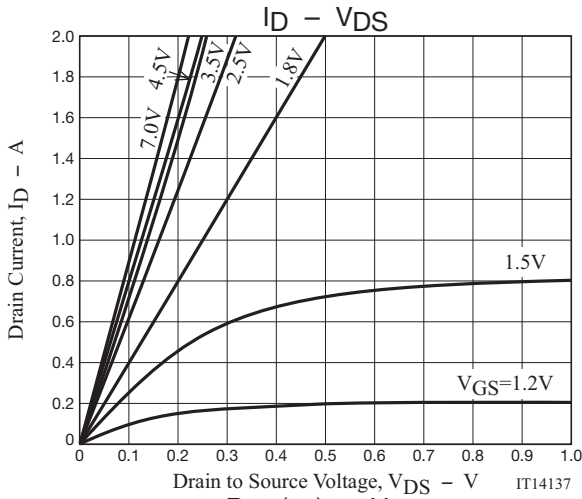
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1\text{mA}$, $V_{GS}=0\text{V}$	30			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30\text{V}$, $V_{GS}=0\text{V}$			1	μA
Gate to Source Leakage Current	I_{GSS}	$V_{GS}=\pm 8\text{V}$, $V_{DS}=0\text{V}$			± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10\text{V}$, $I_D=1\text{mA}$	0.4		1.3	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10\text{V}$, $I_D=1\text{A}$	1.2	2.0		S
Static Drain to Source On-State Resistance	$R_{DS(on)1}$	$I_D=1\text{A}$, $V_{GS}=4.5\text{V}$		125	165	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D=0.5\text{A}$, $V_{GS}=2.5\text{V}$		165	235	$\text{m}\Omega$
	$R_{DS(on)3}$	$I_D=0.3\text{A}$, $V_{GS}=1.8\text{V}$		250	375	$\text{m}\Omega$
Input Capacitance	C_{iss}	$V_{DS}=10\text{V}$, $f=1\text{MHz}$		130		pF
Output Capacitance	C_{oss}			21		pF
Reverse Transfer Capacitance	C_{rss}			14		pF
Turn-ON Delay Time	$t_{d(on)}$		See specified Test Circuit.		4.4	
Rise Time	t_r			8.7		ns
Turn-OFF Delay Time	$t_{d(off)}$			16		ns
Fall Time	t_f			12		ns
Total Gate Charge	Q_g	$V_{DS}=10\text{V}$, $V_{GS}=4.5\text{V}$, $I_D=2\text{A}$			1.7	
Gate to Source Charge	Q_{gs}			0.25		nC
Gate to Drain "Miller" Charge	Q_{gd}			0.38		nC
Diode Forward Voltage	V_{SD}	$I_S=2\text{A}$, $V_{GS}=0\text{V}$		0.85	1.2	V

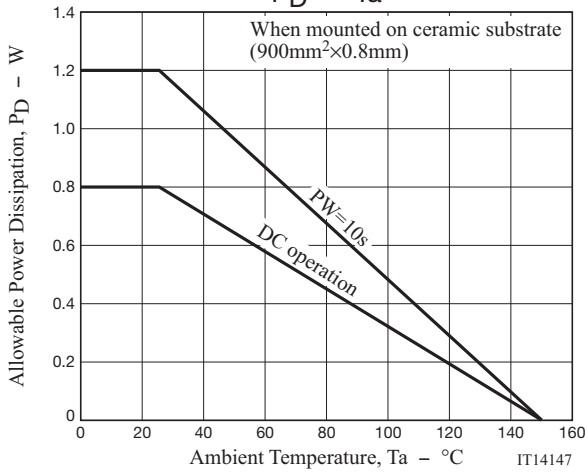
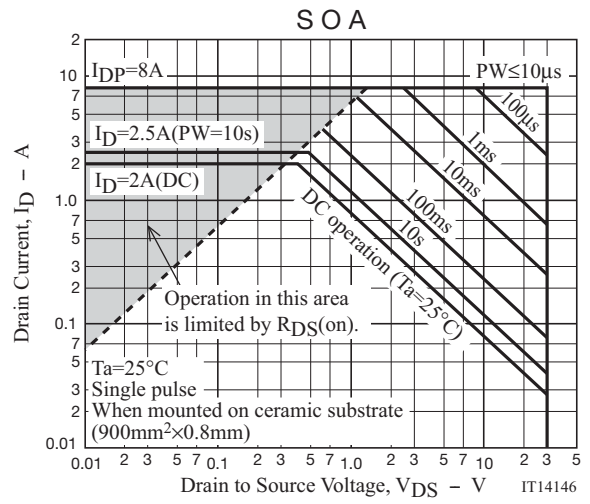
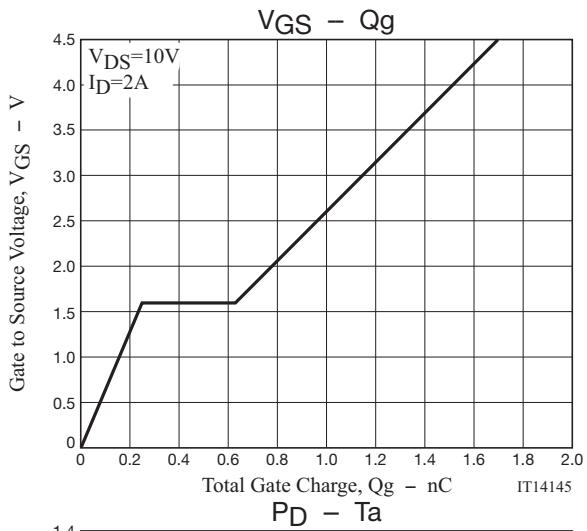
Switching Time Test Circuit



Ordering Information

Device	Package	Shipping	memo
MCH3478-TL-H	MCPH3	3,000pcs./reel	Pb Free and Halogen Free
MCH3478-TL-W			

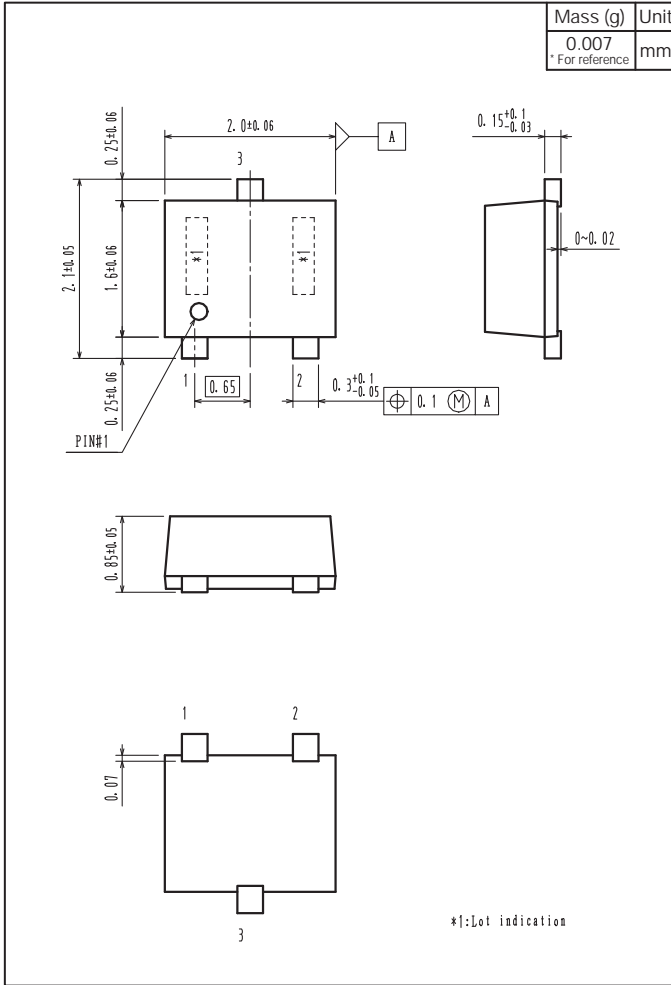




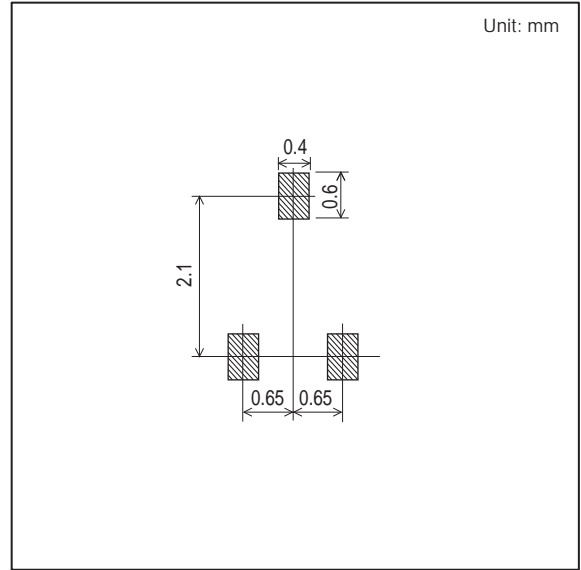
MCH3478

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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