



SANYO Semiconductors

## DATA SHEET

# MCH3478 — N-Channel Silicon MOSFET

## General-Purpose Switching Device Applications

### Features

- Low ON-resistance.
- Ultrahigh speed switching.
- 1.8V drive.
- Halogen free compliance.

### Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V <sub>DSS</sub>		30	V
Gate-to-Source Voltage	V <sub>GSS</sub>		±12	V
Drain Current (DC)	I <sub>D</sub>		2	A
Drain Current (PW≤10s)	I <sub>D</sub>	Duty cycle≤1%	2.5	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	8	A
Allowable Power Dissipation	P <sub>D</sub>	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	T <sub>ch</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	V(BR)DSS	I <sub>D</sub> =1mA, V <sub>GS</sub> =0V	30			V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V			1	μA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±8V, V <sub>DS</sub> =0V			±10	μA
Cutoff Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =1mA	0.4		1.3	V
Forward Transfer Admittance	y <sub>fs</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =1A	1.2	2.0		S

Marking : FK

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# MCH3478

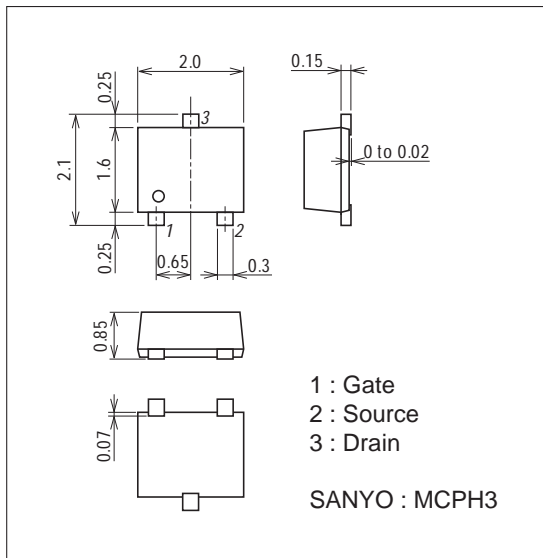
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=1A, V_{GS}=4.5V$		125	165	mΩ
	$R_{DS(on)2}$	$I_D=0.5A, V_{GS}=2.5V$		165	235	mΩ
	$R_{DS(on)3}$	$I_D=0.3A, V_{GS}=1.8V$		250	375	mΩ
Input Capacitance	$C_{iss}$	$V_{DS}=10V, f=1MHz$		130		pF
Output Capacitance	$C_{oss}$	$V_{DS}=10V, f=1MHz$		21		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=10V, f=1MHz$		14		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		4.4		ns
Rise Time	$t_r$	See specified Test Circuit.		8.7		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		16		ns
Fall Time	$t_f$	See specified Test Circuit.		12		ns
Total Gate Charge	$Q_g$	$V_{DS}=10V, V_{GS}=4.5V, I_D=2A$		1.7		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=10V, V_{GS}=4.5V, I_D=2A$		0.25		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=10V, V_{GS}=4.5V, I_D=2A$		0.38		nC
Diode Forward Voltage	$V_{SD}$	$I_S=2A, V_{GS}=0V$		0.85	1.2	V

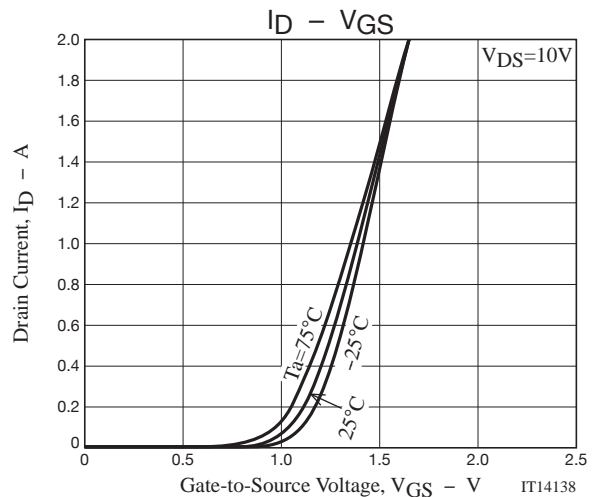
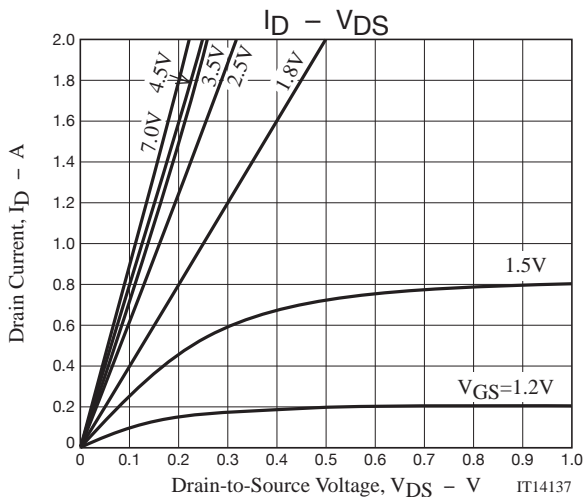
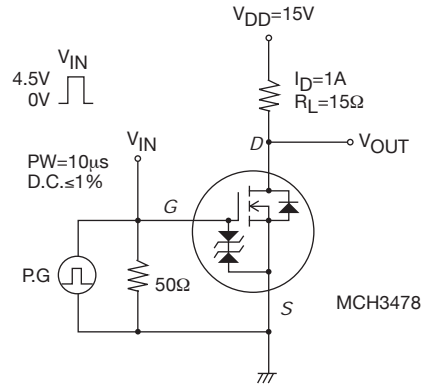
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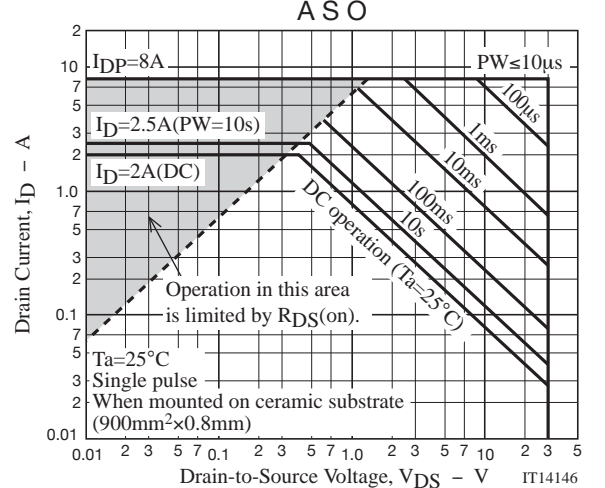
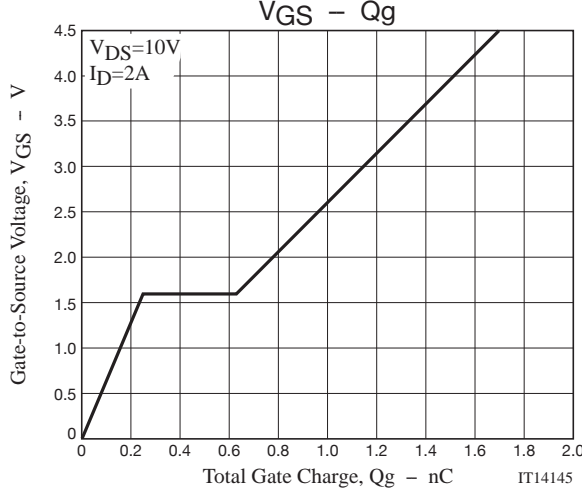
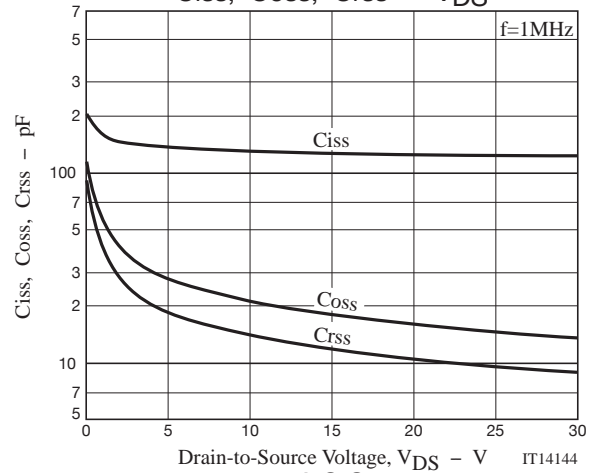
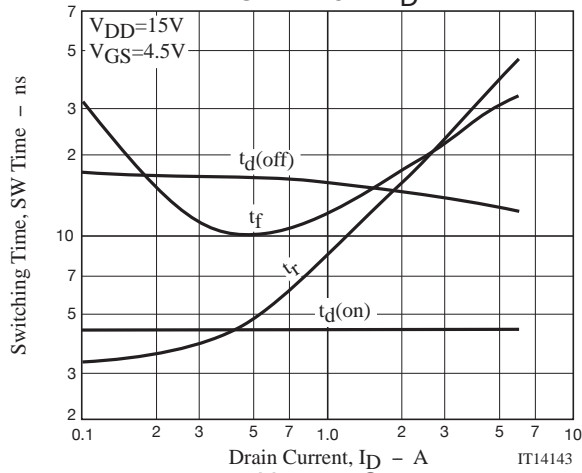
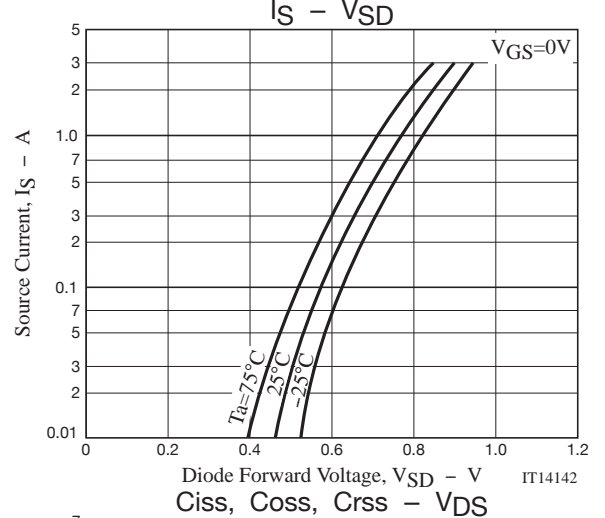
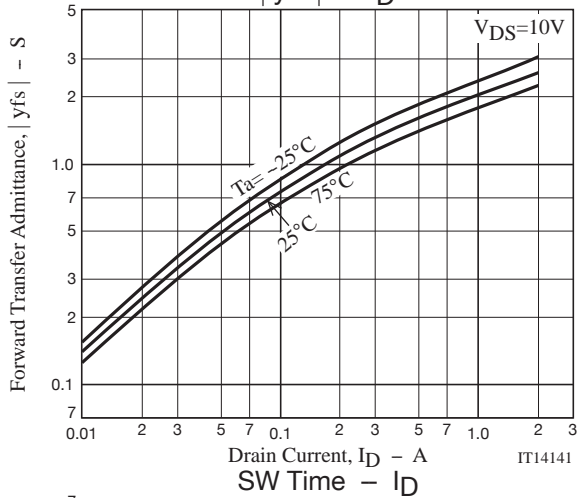
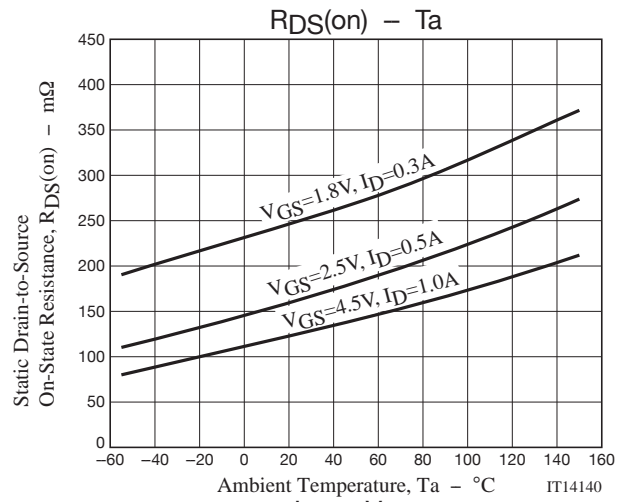
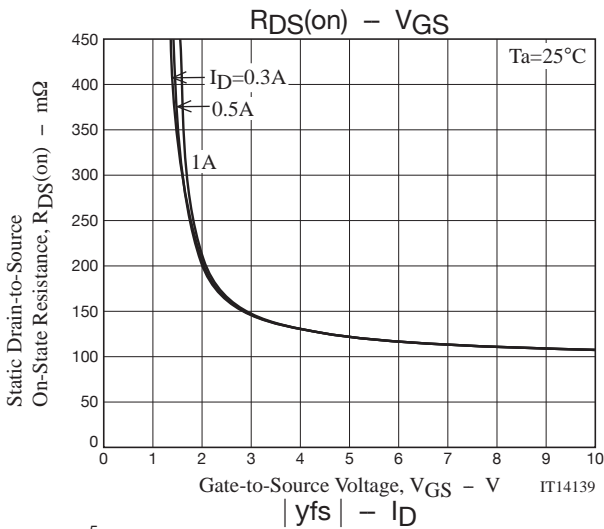
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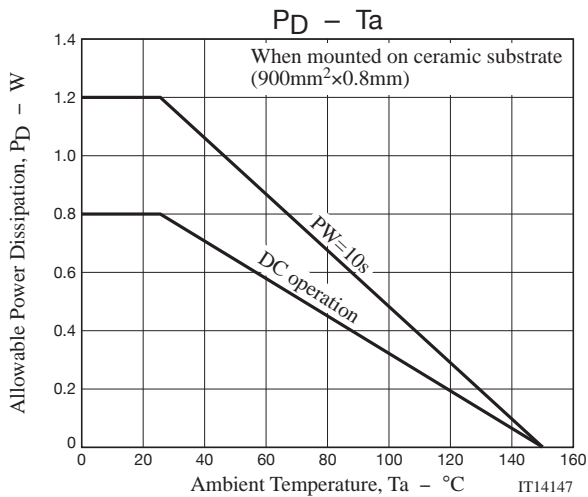
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## Switching Time Test Circuit







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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