

MCH3484

Power MOSFET 20V, 40mΩ, 4.5A, Single N-Channel



ON Semiconductor®

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Features

- On-Resistance $R_{DS(on)} = 33\text{m}\Omega$ (typ)
- 0.9V Drive
- Pb-Free, Halogen Free and RoHS Compliance
- ESD Diode - Protected Gate

Specifications

Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

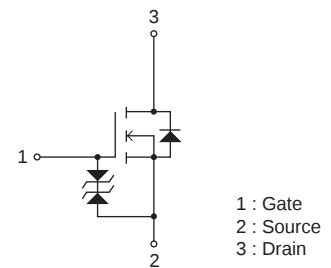
Parameter	Symbol	Value	Unit
Drain to Source Voltage	V_{DSS}	20	V
Gate to Source Voltage	V_{GSS}	± 5	V
Drain Current (DC)	I_D	4.5	A
Drain Current (Pulse) $PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	I_{DP}	18	A
Power Dissipation When mounted on ceramic substrate (900mm ² × 0.8mm)	P_D	1.0	W
Junction Temperature	T_J	150	°C
Operating Temperature	T_{opr}	-5 to +150	°C
Storage Temperature	T_{stg}	-55 to +150	°C

Thermal Resistance Ratings

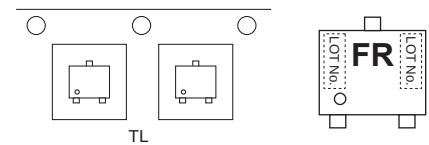
Parameter	Symbol	Value	Unit
Junction to Ambient When mounted on ceramic substrate (900mm ² × 0.8mm)	$R_{\theta JA}$	125	°C/W

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.

Electrical Connection N-Channel



Packing Type : TL Marking



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}	$V_{GS}=\pm 4\text{V}$, $V_{DS}=0\text{V}$			± 10	μA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=10\text{V}$, $I_D=1\text{mA}$	0.3		0.8	V
Forward Transconductance	g_{FS}	$V_{DS}=10\text{V}$, $I_D=2\text{A}$		5.6		S
Static Drain to Source On-State Resistance	$R_{DS(on)1}$	$I_D=2\text{A}$, $V_{GS}=2.5\text{V}$		33	40	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D=1\text{A}$, $V_{GS}=1.8\text{V}$		37	49	$\text{m}\Omega$
	$R_{DS(on)3}$	$I_D=0.5\text{A}$, $V_{GS}=1.2\text{V}$		79	119	$\text{m}\Omega$
	$R_{DS(on)4}$	$I_D=0.1\text{A}$, $V_{GS}=0.9\text{V}$		165	330	$\text{m}\Omega$
Input Capacitance	C_{iss}	$V_{DS}=10\text{V}$, $f=1\text{MHz}$		630		pF
Output Capacitance	C_{oss}			75		pF
Reverse Transfer Capacitance	C_{rss}			65		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit		8.9		ns
Rise Time	t_r			49		ns
Turn-OFF Delay Time	$t_{d(off)}$			63		ns
Fall Time	t_f			57		ns
Total Gate Charge	Q_g	$V_{DS}=10\text{V}$, $V_{GS}=2.5\text{V}$, $I_D=4.5\text{A}$		11		nC
Gate to Source Charge	Q_{gs}			0.9		nC
Gate to Drain "Miller" Charge	Q_{gd}			1.8		nC
Forward Diode Voltage	V_{SD}	$I_S=4.5\text{A}$, $V_{GS}=0\text{V}$		0.8	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

