## **ON Semiconductor**

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# MOSFET – Power, Single P-Channel -30 V, 215 m $\Omega$ , -2.0 A

This Power MOSFET is produced using ON Semiconductor's trench technology, which is specifically designed to minimize gate charge and low on resistance. This device is suitable for applications with low gate charge driving or low on resistance requirements.

### **Features**

- Low On-Resistance
- 1.8V drive
- ESD Diode-Protected Gate
- Pb-Free, Halogen Free and RoHS compliance

### **Typical Applications**

• Load Switch

### **SPECIFICATIONS**

ABSOLUTE MAXIMUM RATING at Ta = 25°C (Note 1)

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Parameter	Symbol	Value	Unit
Drain to Source Voltage	VDSS	-30	<b>V</b>
Gate to Source Voltage	VGSS	±10	٧
Drain Current (DC)	ID	-2.0	Α
Drain Current (Pulse) PW ≤ 10μs, duty cycle ≤ 1%	IDP	-8.0	Α
Power Dissipation When mounted on ceramic substrate (1000mm² × 0.8mm)	PD	0.9	W
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	-55 to +150	°C

Note 1: 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.

### THERMAL RESISTANCE RATINGS

Parameter	Symbol	Value	Unit
Junction to Ambient When mounted on ceramic substrate (1000mm² × 0.8mm)	$R_{ heta}$ JA	138.8	°C/W

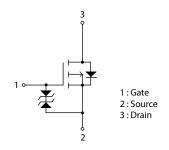


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VDSS	R <sub>DS</sub> (on) Max	ID Max
	215mΩ@ –4V	
-30V	280mΩ@ –2.5V	-2A
	430mΩ@ –1.8V	

## ELECTRICAL CONNECTION P-Channel



#### **PACKING TYPE: TL**

# TL

## MARKING

# QU (IOTNo. )

### ORDERING INFORMATION

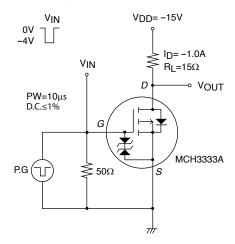
See detailed ordering and shipping information on page 5 of this data sheet.

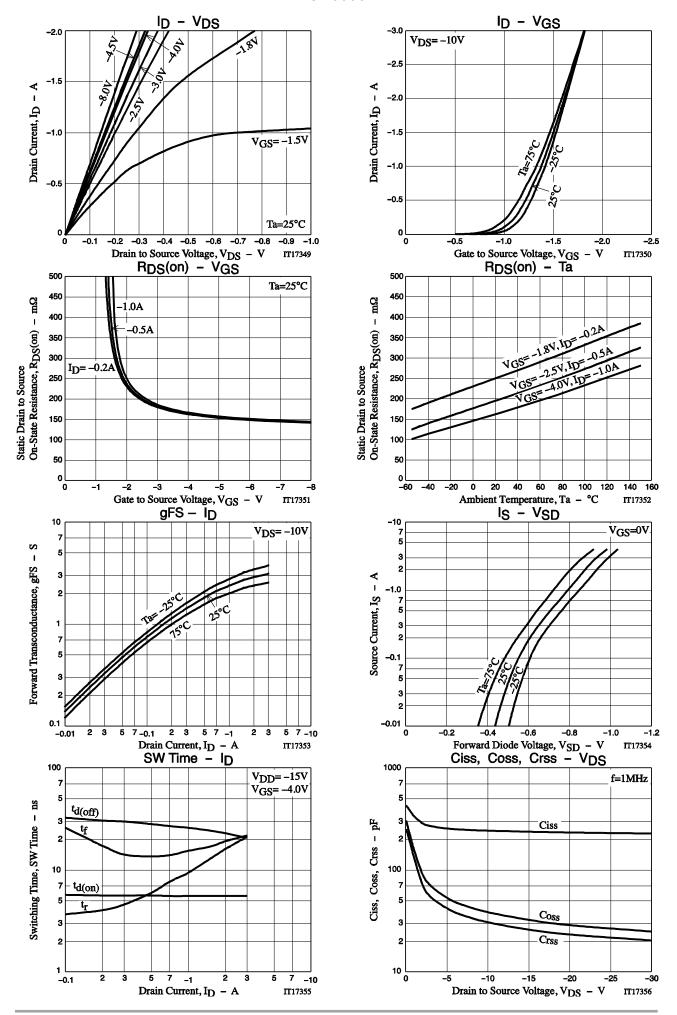
**ELECTRICAL CHARACTERISTICS** at Ta = 25°C (Note 2)

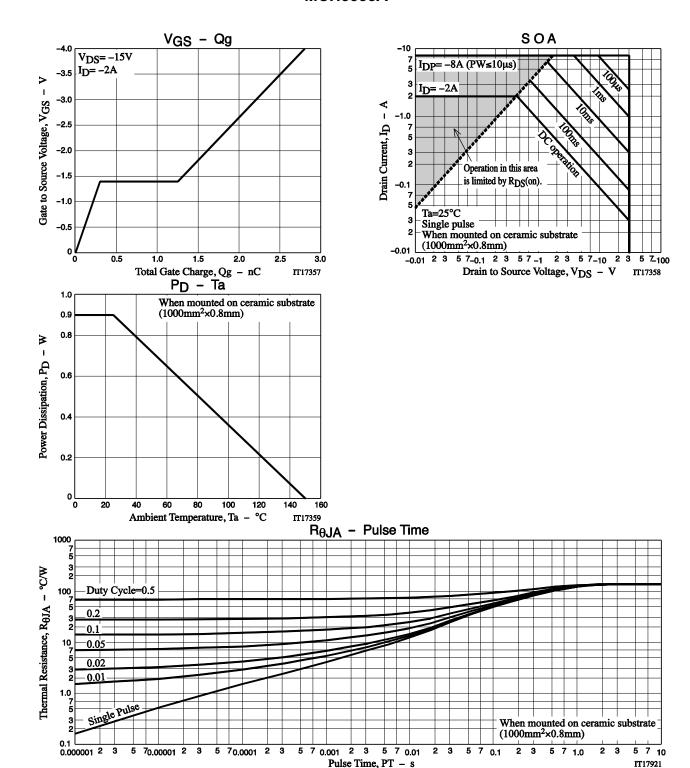
Parameter	Cumphal	ol Conditions	Value			Llmit
Parameter	Symbol	Conditions	min	typ	max	Unit
Drain to Source Breakdown Voltage	V(BR)DSS	ID=-1mA, VGS=0V	-30			V
Zero-Gate Voltage Drain Current	IDSS	VDS=-30V, VGS=0V			-1	μΑ
Gate to Source Leakage Current	IGSS	V <sub>GS</sub> =±8V, V <sub>DS</sub> =0V			±10	μΑ
Gate Threshold Voltage	VGS(th)	V <sub>DS</sub> =-10V, I <sub>D</sub> =-1mA	-0.4		-1.3	٧
Forward Transconductance	gFS	V <sub>DS</sub> =-10V, I <sub>D</sub> =-1.0A		2.5		S
Static Drain to Source On-State Resistance	R <sub>DS</sub> (on)1	I <sub>D</sub> =-1.0A, V <sub>G</sub> S=-4V		165	215	$m\Omega$
	R <sub>DS</sub> (on)2	I <sub>D</sub> =-0.5A, V <sub>G</sub> S=-2.5V		200	280	$m\Omega$
	RDS(on)3	ID=-0.2A, VGS=-1.8V		270	430	$m\Omega$
Input Capacitance	Ciss			240		pF
Output Capacitance	Coss	V <sub>DS</sub> =-10V, f=1MHz		39		pF
Reverse Transfer Capacitance	Crss			31		pF
Turn-ON Delay Time	t <sub>d</sub> (on)			5.7		ns
Rise Time	t <sub>r</sub>	Over the Land Over 1		9.7		ns
Turn-OFF Delay Time	t <sub>d</sub> (off)	See specified Test Circuit		27		ns
Fall Time	tf			16		ns
Total Gate Charge	Qg			2.8		nC
Gate to Source Charge	Qgs	V <sub>DS</sub> =-15V, V <sub>GS</sub> =-4V, I <sub>D</sub> =-2.0A		0.3		nC
Gate to Drain "Miller" Charge	Qgd			0.95		nC
Forward Diode Voltage	VSD	I <sub>S</sub> =-2.0A, V <sub>GS</sub> =0V		-0.87	-1.5	V

Note 2 : 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**

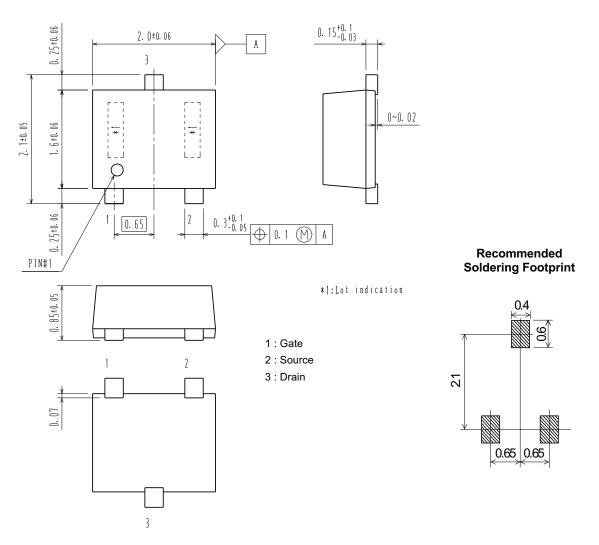






### PACKAGE DIMENSIONS

unit : mm SC-70FL / MCPH3 CASE 419AQ ISSUE O



### ORDERING INFORMATION

Device	Marking	Package	Shipping (Qty / Packing)		
MCH3333A-TL-H	QI.	SC-70FL / MCPH3	2 000 / Tara & Baal		
MCH3333A-TL-W	QU	(Pb-Free / Halogen Free)	3,000 / Tape & Reel		

<sup>†</sup> For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D. http://www.onsemi.com/pub\_link/Collateral/BRD8011-D.PDF

Note on usage: Since the MCH3333A is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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