



# MCH3333A

## P-Channel Power MOSFET -30V, -2.0A, 215mΩ, Single MCPH3

ON Semiconductor®

<http://onsemi.com>

### Features

- 1.8V drive
- Halogen free compliance
- Protection diode in

### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Drain to Source Voltage	$V_{DSS}$		-30	V
Gate to Source Voltage	$V_{GSS}$		$\pm 10$	V
Drain Current (DC)	$I_D$		-2.0	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	-8.0	A
Allowable Power Dissipation	$P_D$	When mounted on ceramic substrate (1000mm <sup>2</sup> ×0.8mm)	0.9	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.

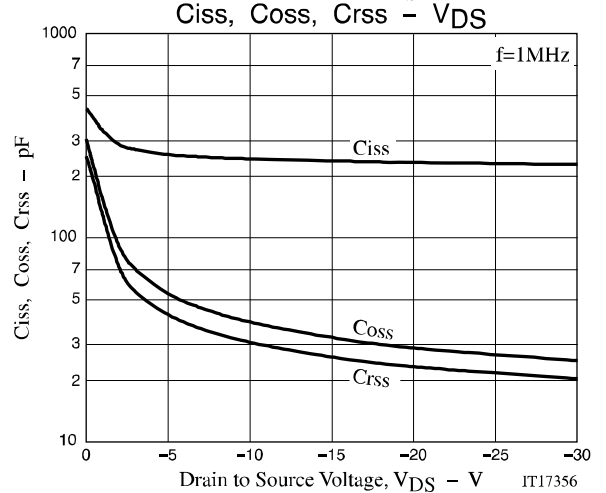
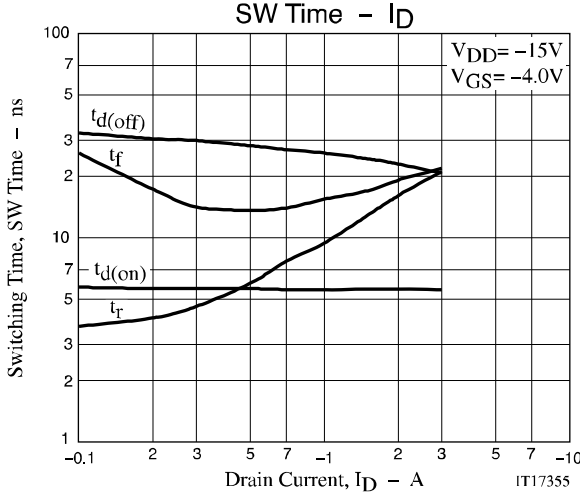
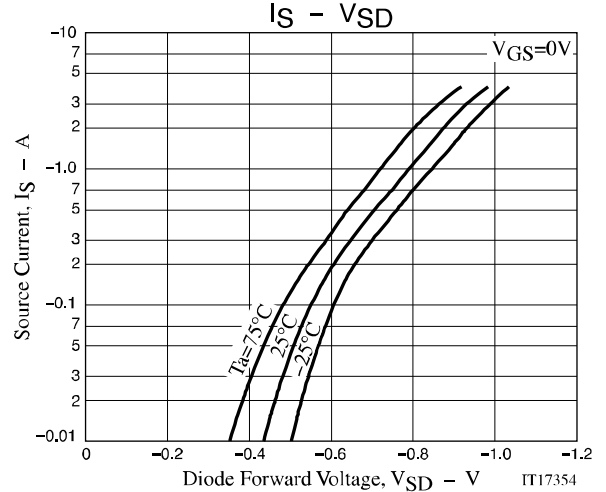
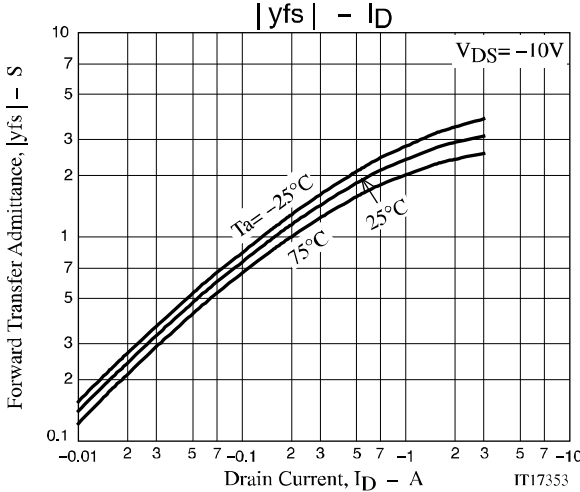
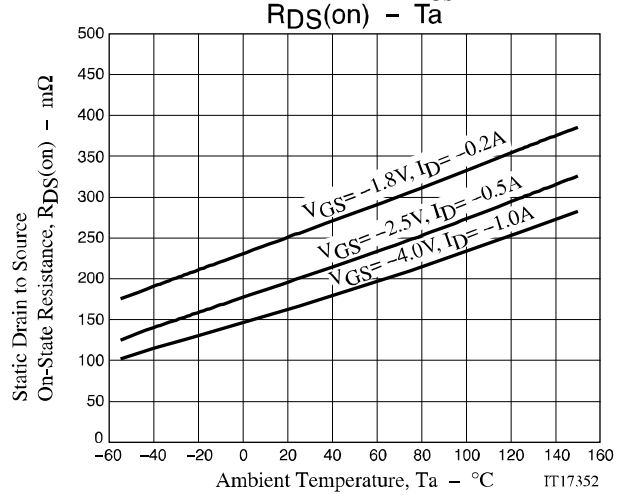
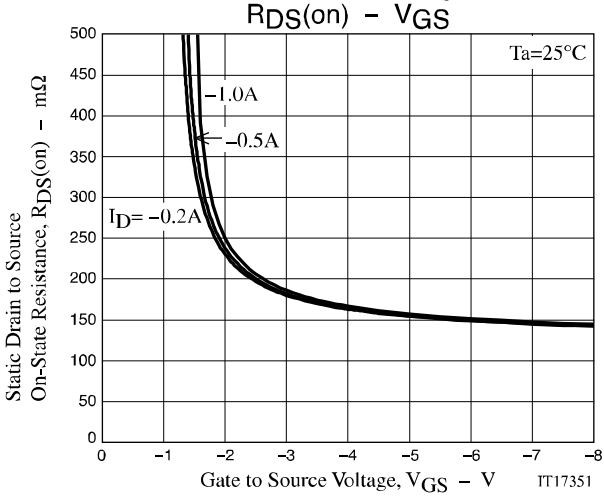
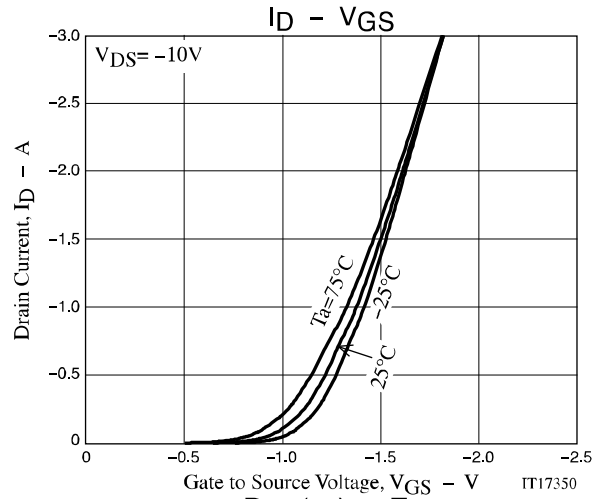
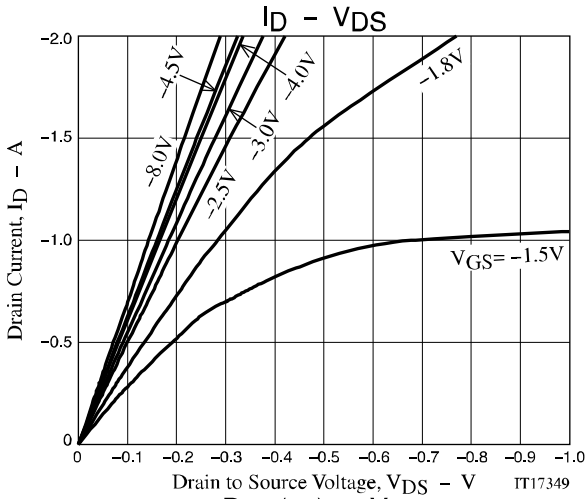
#### Electrical Characteristics at $T_a = 25^\circ\text{C}$

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	$I_{GSS}$	$V_{GS} = \pm 8\text{V}$ , $V_{DS} = 0\text{V}$			$\pm 10$	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} $	$V_{DS} = -10\text{V}$ , $I_D = -1.0\text{A}$		2.5		S
Static Drain to Source On-State Resistance	$R_{DS(on)1}$	$I_D = -1.0\text{A}$ , $V_{GS} = -4\text{V}$		165	215	mΩ
	$R_{DS(on)2}$	$I_D = -0.5\text{A}$ , $V_{GS} = -2.5\text{V}$		200	280	mΩ
	$R_{DS(on)3}$	$I_D = -0.2\text{A}$ , $V_{GS} = -1.8\text{V}$		270	430	mΩ
Input Capacitance	$C_{iss}$	$V_{DS} = -10\text{V}$ , $f = 1\text{MHz}$		240		pF
Output Capacitance	$C_{oss}$			39		pF
Reverse Transfer Capacitance	$C_{rss}$			31		pF
Turn-ON Delay Time	$t_d(on)$		See specified Test Circuit.		5.7	
Rise Time	$t_r$			9.7		ns
Turn-OFF Delay Time	$t_d(off)$			27		ns
Fall Time	$t_f$			16		ns
Total Gate Charge	$Q_g$	$V_{DS} = -15\text{V}$ , $V_{GS} = -4\text{V}$ , $I_D = -2.0\text{A}$		2.8		nC
Gate to Source Charge	$Q_{gs}$			0.3		nC
Gate to Drain "Miller" Charge	$Q_{gd}$			0.95		nC
Diode Forward Voltage	$V_{SD}$	$I_S = -2.0\text{A}$ , $V_{GS} = 0\text{V}$		-0.87	-1.5	V

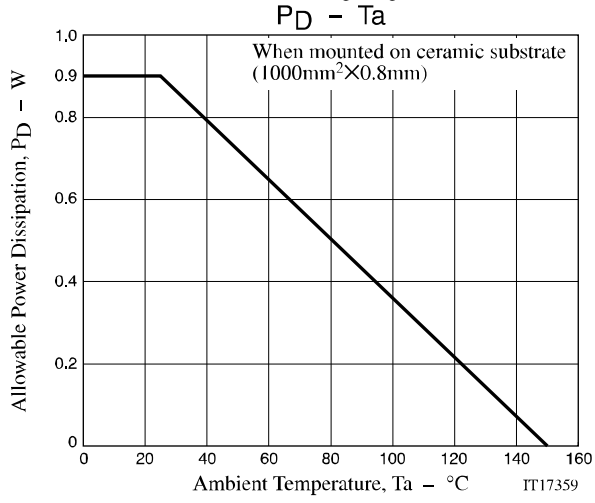
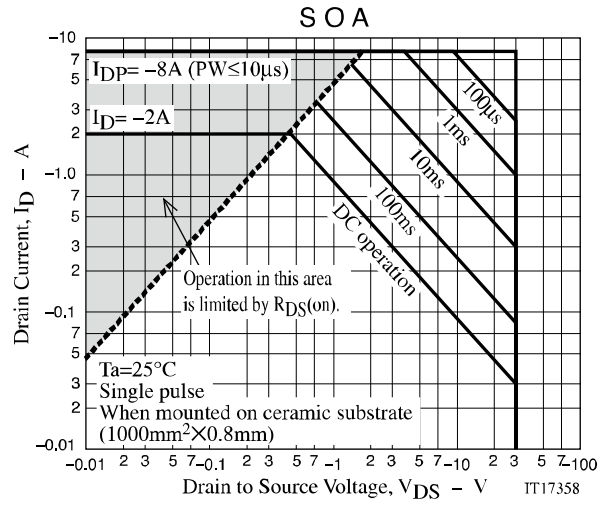
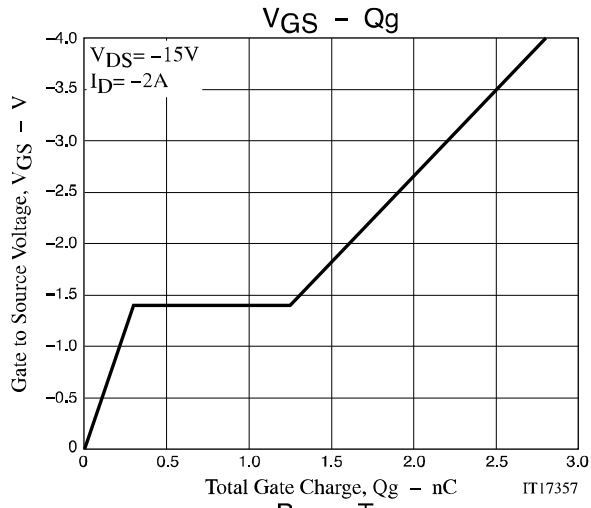
### ORDERING INFORMATION

See detailed ordering and shipping information on page 4 of this data sheet.

# MCH3333A



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## Package Dimensions

MCH3333A-TL-H

### SC-70FL/MCPH3

CASE 419AQ

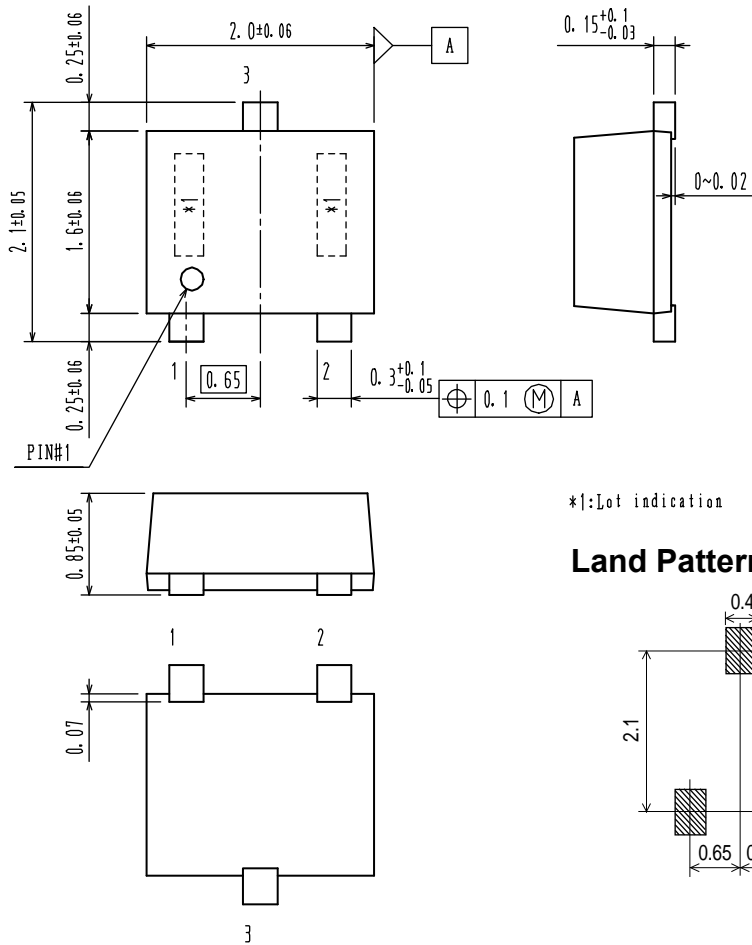
ISSUE O

unit : mm

1: Gate

2: Source

3: Drain



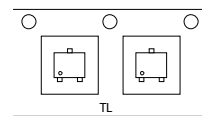
\*|: Lot indication

### Land Pattern Example

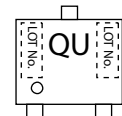
## Ordering & Package Information

Device	Package	Shipping	note
MCH3333A-TL-H	MCPH3 SC-70,SOT-323	3,000 pcs. / reel	Pb-Free and Halogen Free

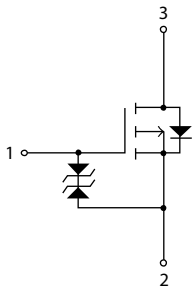
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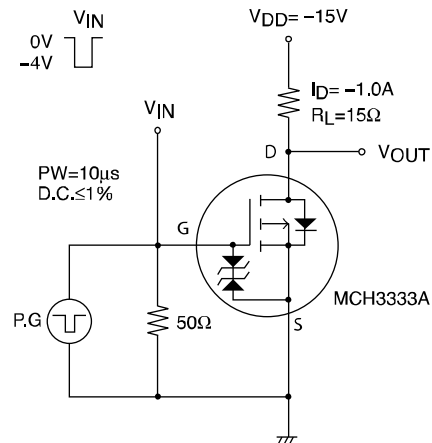
## Marking



## Electrical Connection



## Switching Time Test Circuit



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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