

MCH3374

Power MOSFET –12V, 70mΩ, –3A, Single P-Channel

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
- High Speed Switching
- 1.8V drive
- Pb-Free and RoHS compliance
- Halogen Free compliance : MCH3374-TL-W

Typical Applications

- Load Switch

SPECIFICATIONS

ABSOLUTE MAXIMUM RATING at Ta = 25°C (Note 1, 2)

Parameter	Symbol	Value	Unit
Drain to Source Voltage	VDSS	–12	V
Gate to Source Voltage	VGSS	±8	V
Drain Current (DC)	ID	–3	A
Drain Current (Pulse) PW ≤ 10μs, duty cycle ≤ 1%	IDP	–12	A
Power Dissipation When mounted on ceramic substrate (900mm ² × 0.8mm)	PD	1.0	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.

2 : This product is designed to "ESD immunity < 200V*", so please take care when handling.

*Machine Model

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Value	Unit
Junction to Ambient When mounted on ceramic substrate (900mm ² × 0.8mm)	RθJA	125	°C/W

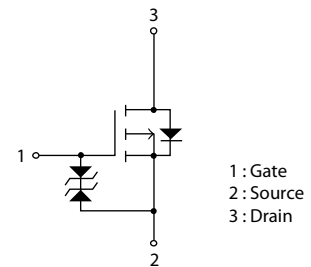


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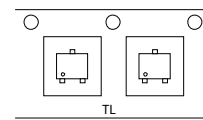
www.onsemi.com

VDSS	RDS(on) Max	ID Max
–12V	70mΩ@ –4.5V	–3A
	115mΩ@ –2.5V	
	215mΩ@ –1.8V	

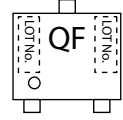
ELECTRICAL CONNECTION P-Channel



PACKING TYPE : TL



MARKING



ORDERING INFORMATION

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

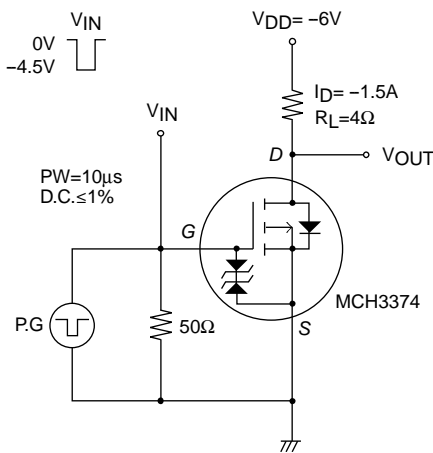
MCH3374

ELECTRICAL CHARACTERISTICS at Ta = 25°C (Note 3)

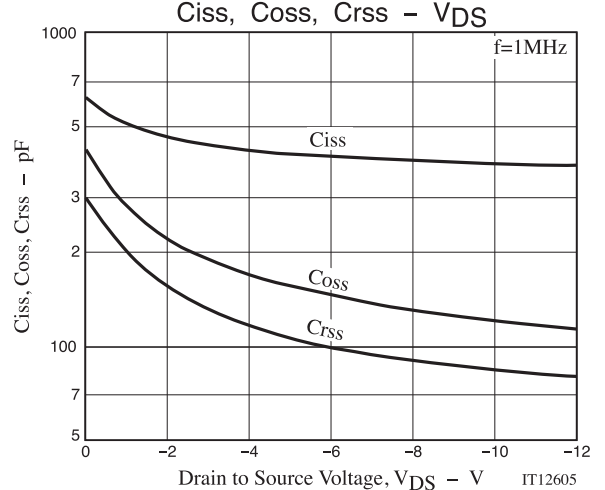
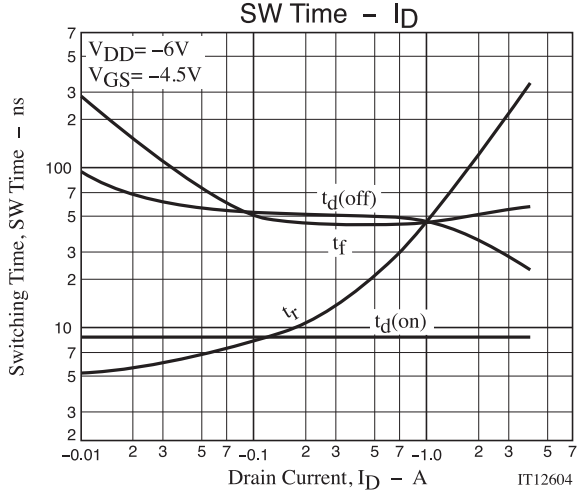
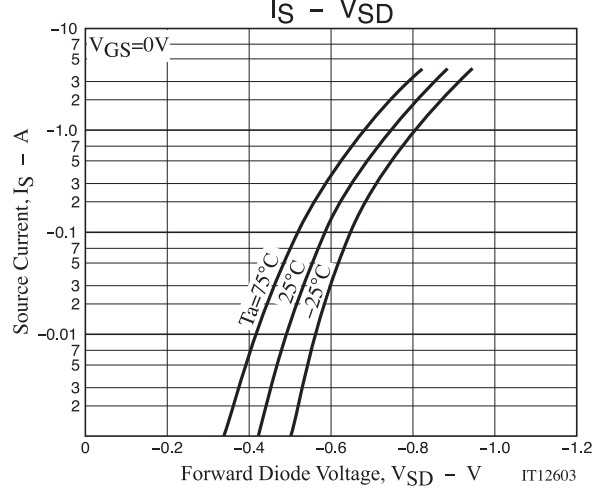
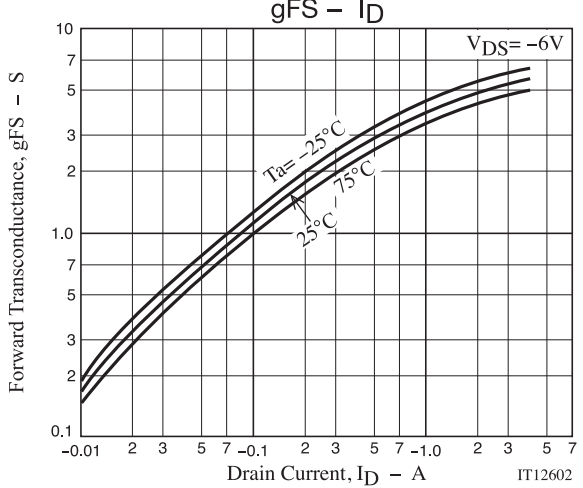
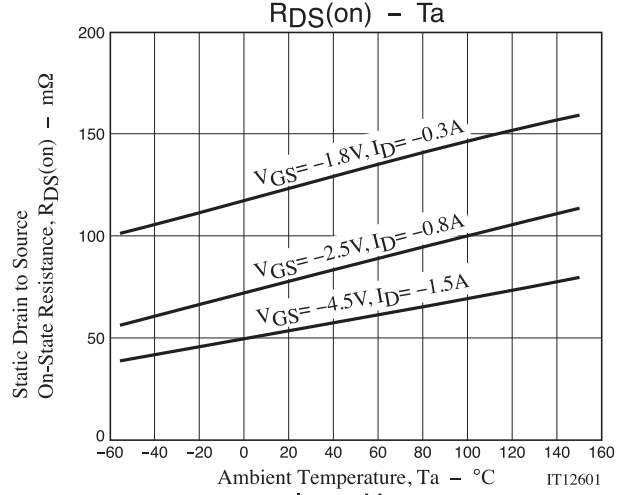
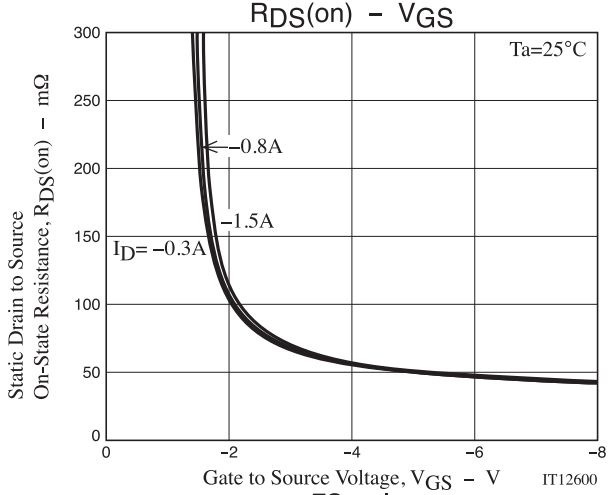
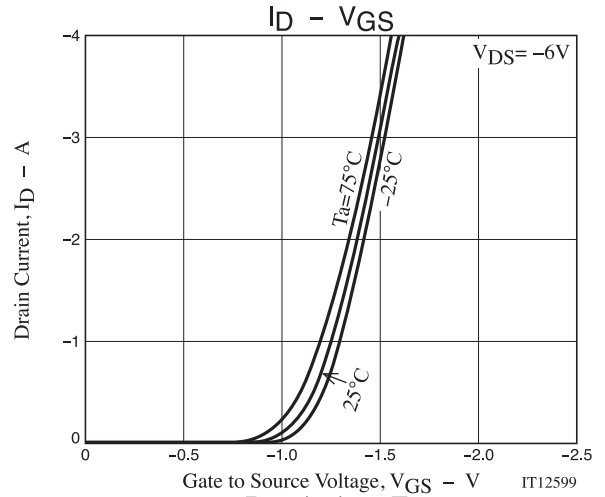
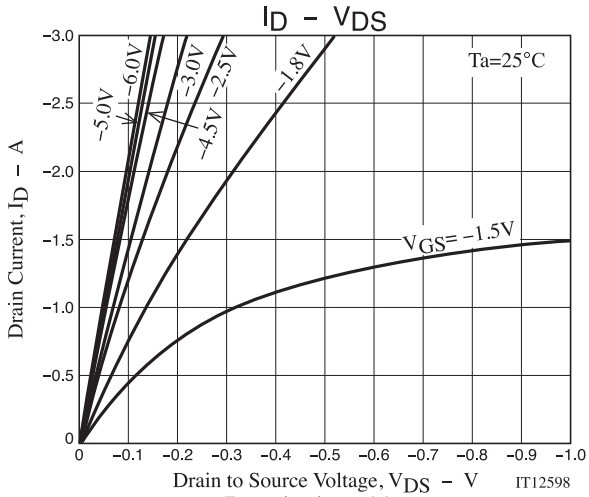
Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	V(BR)DSS	I _D =-1mA, V _{GS} =0V	-12			V
Zero-Gate Voltage Drain Current	I _{DSS}	V _{DS} =-12V, V _{GS} =0V			-10	μA
Gate to Source Leakage Current	I _{GSS}	V _{GS} =±6.4V, V _{DS} =0V			±10	μA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =-6V, I _D =-1mA	-0.4		-1.4	V
Forward Transconductance	g _{FS}	V _{DS} =-6V, I _D =-1.5A	2.7	4.5		S
Static Drain to Source On-State Resistance	R _{DS(on)1}	I _D =-1.5A, V _{GS} =-4.5V		54	70	mΩ
	R _{DS(on)2}	I _D =-0.8A, V _{GS} =-2.5V		80	115	mΩ
	R _{DS(on)3}	I _D =-0.3A, V _{GS} =-1.8V		125	215	mΩ
Input Capacitance	C _{iss}	V _{DS} =-6V, f=1MHz		405		pF
Output Capacitance	C _{oss}			145		pF
Reverse Transfer Capacitance	C _{rss}			100		pF
Turn-ON Delay Time	t _{d(on)}	See specified Test Circuit		8.8		ns
Rise Time	t _r			80		ns
Turn-OFF Delay Time	t _{d(off)}			41		ns
Fall Time	t _f			50		ns
Total Gate Charge	Q _g				5.6	
Gate to Source Charge	Q _{gs}	V _{DS} =-6V, V _{GS} =-4.5V, I _D =-3A		0.7		nC
Gate to Drain "Miller" Charge	Q _{gd}			1.6		nC
Forward Diode Voltage	V _{SD}	I _S =-3A, V _{GS} =0V		-0.85	-1.2	V

Note 3 : 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.

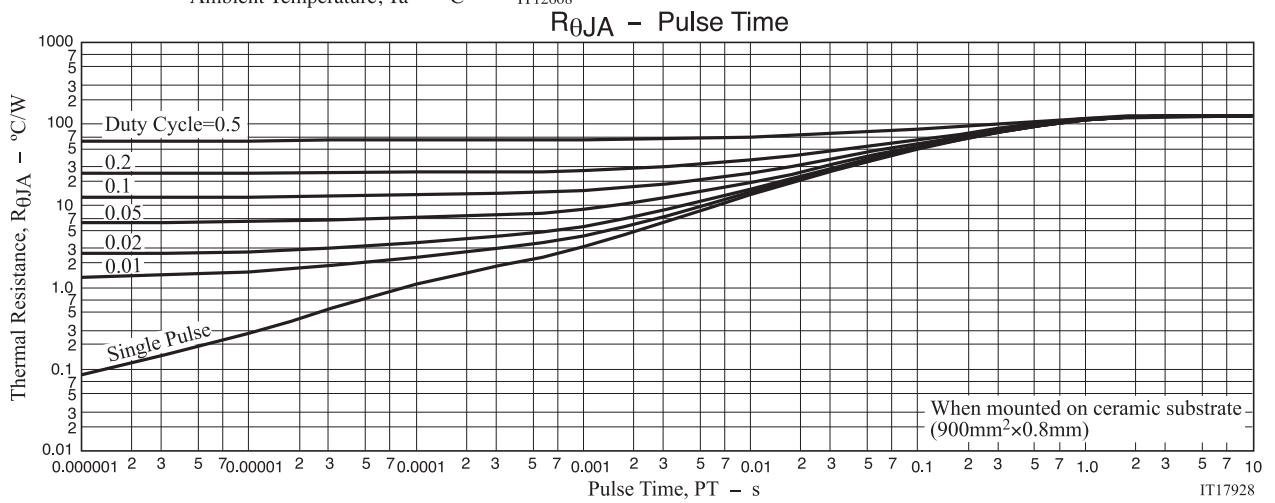
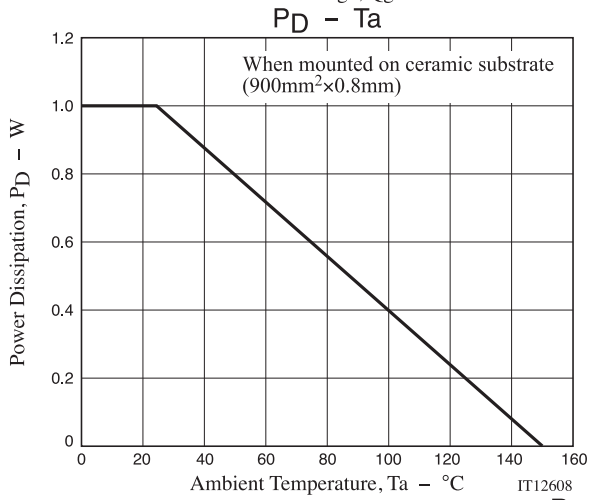
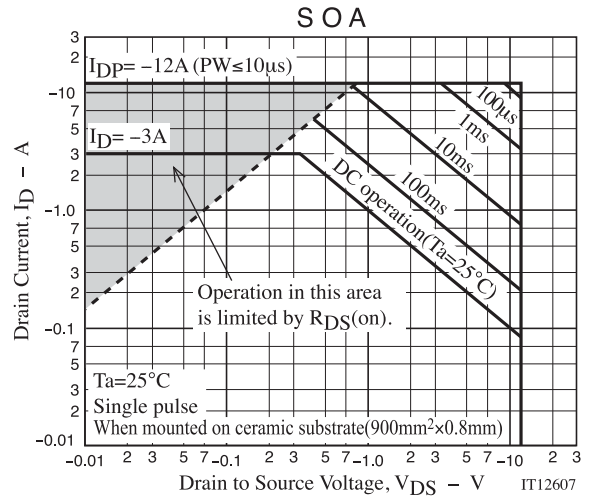
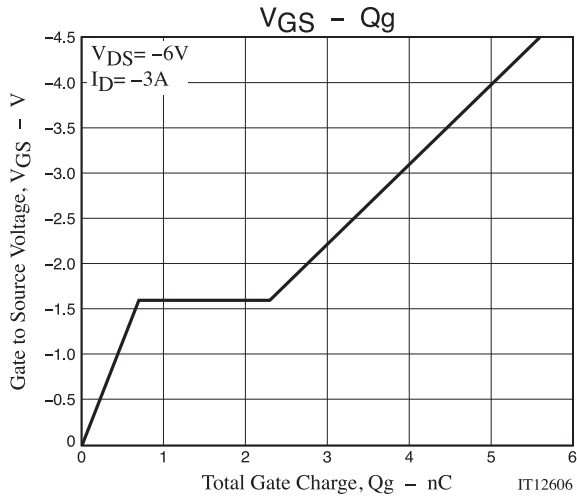
Switching Time Test Circuit



MCH3374



MCH3374

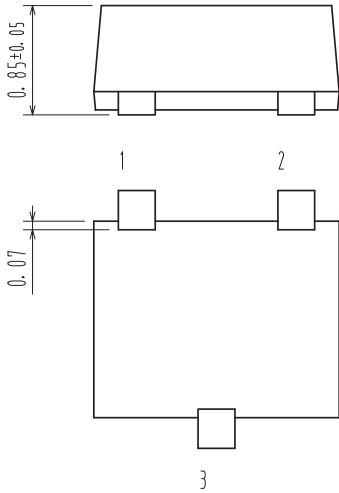
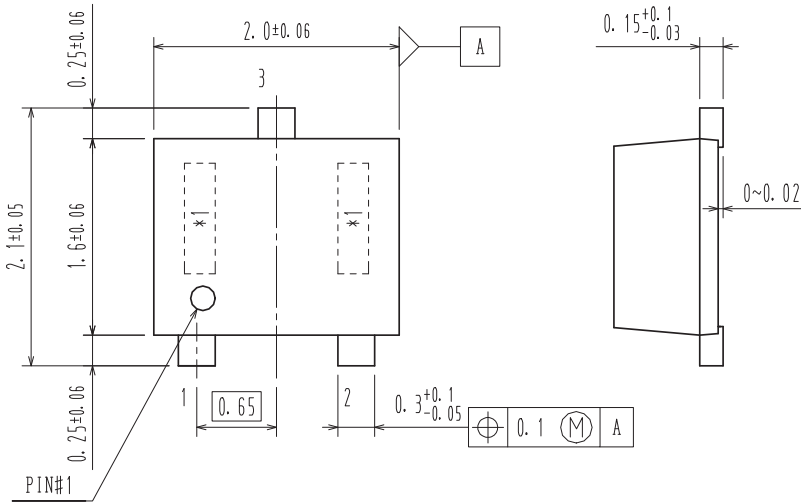


MCH3374

PACKAGE DIMENSIONS

unit : mm

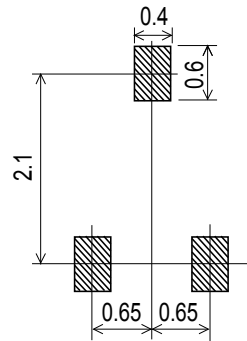
SC-70FL / MCPH3
CASE 419AQ
ISSUE O



*1: Lot indication

- 1 : Gate
- 2 : Source
- 3 : Drain

Recommended Soldering Footprint



ORDERING INFORMATION

Device	Marking	Package	Shipping (Qty / Packing)
MCH3374-TL-E	QF	SC-70FL / MCPH3 (Pb-Free)	3,000 / Tape & Reel
MCH3374-TL-W		SC-70FL / MCPH3 (Pb-Free / Halogen Free)	

† 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 MCH3374 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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