

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 $T_a = 25^\circ\text{C}$ (Note 1, 2)

Parameter	Symbol	Value	Unit
Drain to Source Voltage	V_{DS}	–12	V
Gate to Source Voltage	V_{GS}	± 8	V
Drain Current (DC)	I_D	–3	A
Drain Current (Pulse) $PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	I_{DP}	–12	A
Power Dissipation When mounted on ceramic substrate (900mm ² × 0.8mm)	P_D	1.0	W
Junction Temperature	T_j	150	°C
Storage Temperature	T_{stg}	–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)	$R_{\theta JA}$	125	°C/W

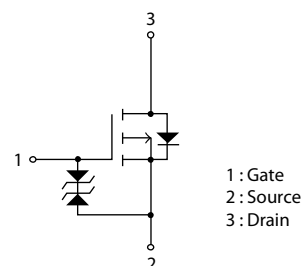


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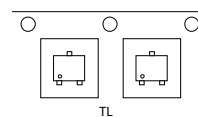
www.onsemi.com

V_{DS}	$R_{DS(on)}$ Max	I_D Max
–12V	70mΩ @ –4.5V	–3A
	115mΩ @ –2.5V	
	215mΩ @ –1.8V	

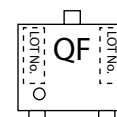
ELECTRICAL CONNECTION P-Channel



PACKING TYPE : TL



MARKING



ORDERING INFORMATION

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

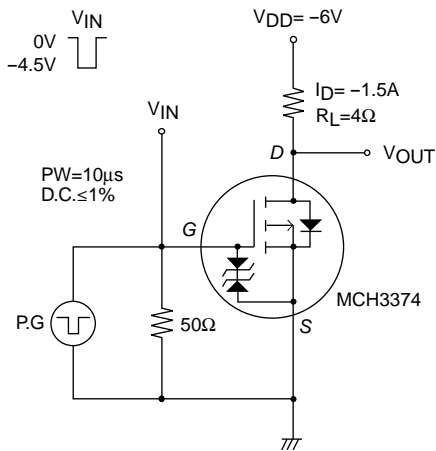
MCH3374

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

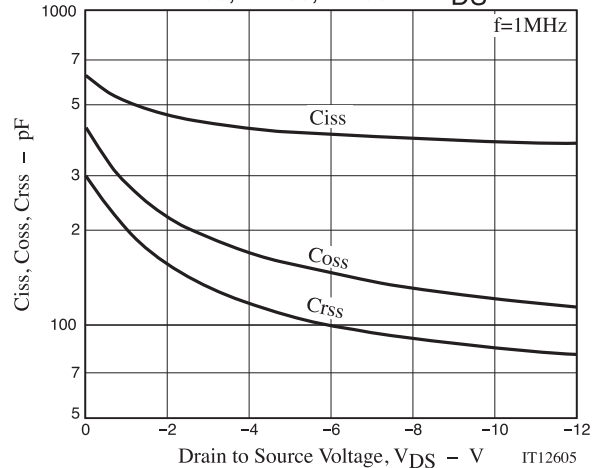
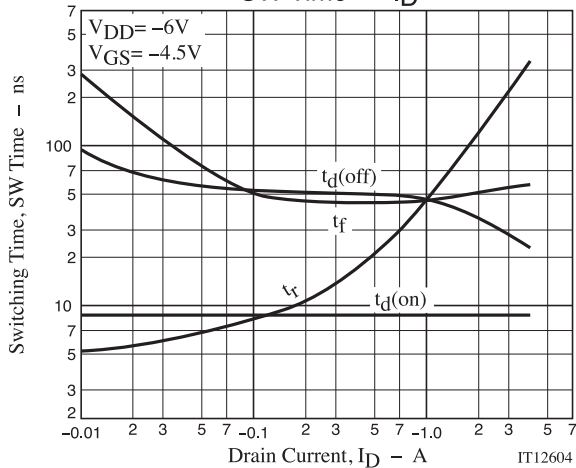
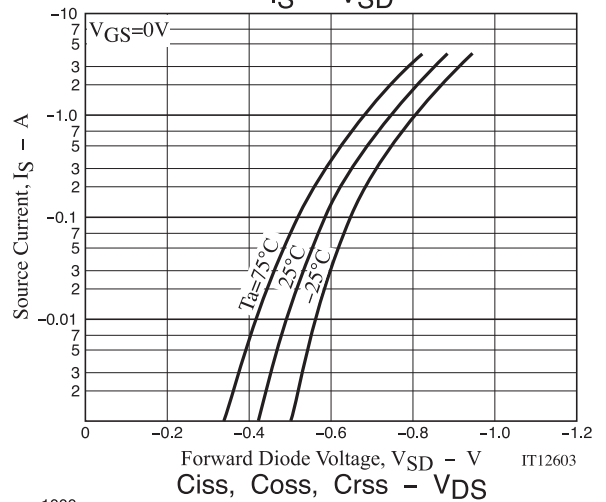
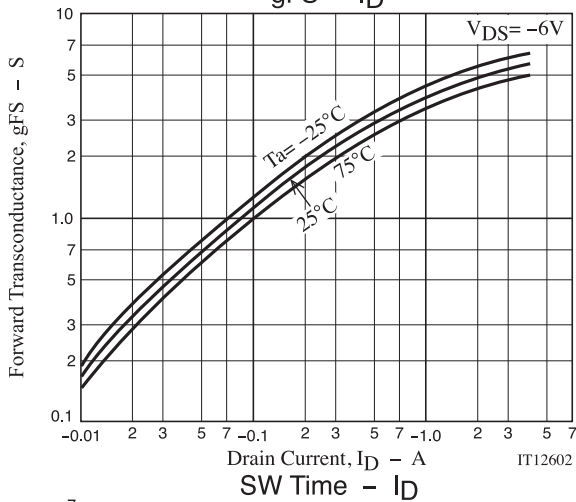
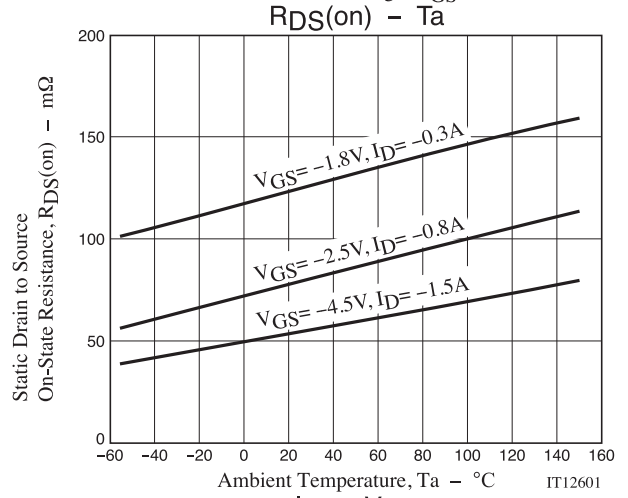
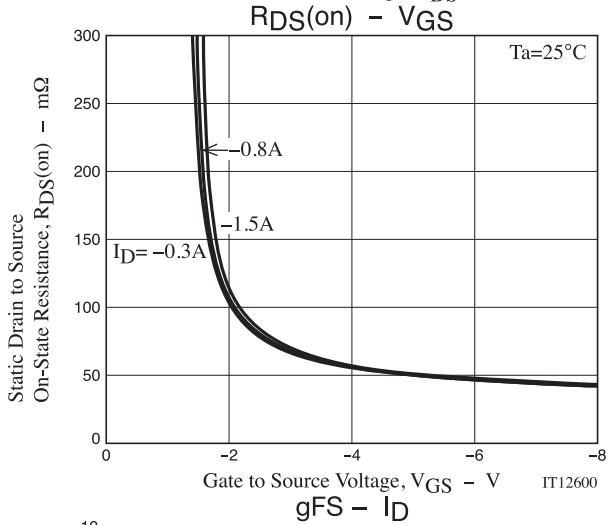
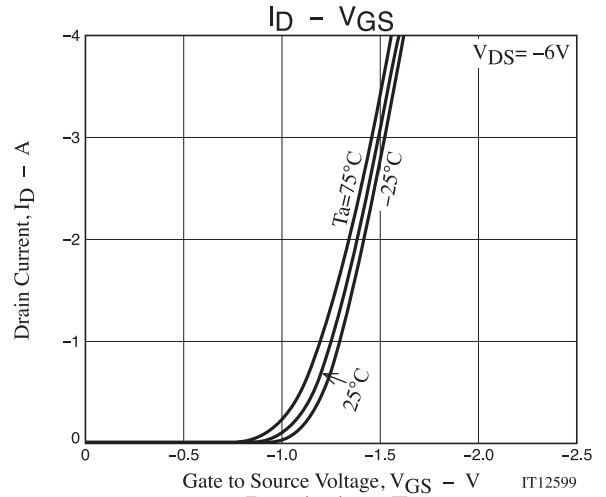
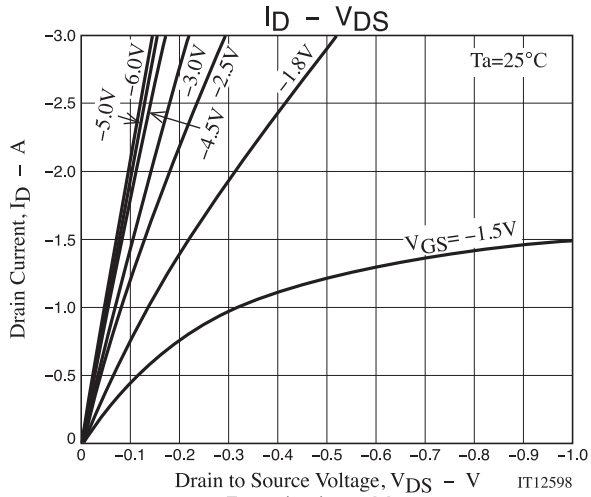
Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	V(BR)DSS	ID=−1mA, VGS=0V	−12			V
Zero-Gate Voltage Drain Current	IDSS	VDS=−12V, VGS=0V			−10	μA
Gate to Source Leakage Current	IGSS	VGS=±6.4V, VDS=0V			±10	μA
Gate Threshold Voltage	VGS(th)	VDS=−6V, ID=−1mA	−0.4		−1.4	V
Forward Transconductance	gFS	VDS=−6V, ID=−1.5A	2.7	4.5		S
Static Drain to Source On-State Resistance	RDS(on)1	ID=−1.5A, VGS=−4.5V		54	70	mΩ
	RDS(on)2	ID=−0.8A, VGS=−2.5V		80	115	mΩ
	RDS(on)3	ID=−0.3A, VGS=−1.8V		125	215	mΩ
Input Capacitance	Ciss	VDS=−6V, f=1MHz		405		pF
Output Capacitance	Coss			145		pF
Reverse Transfer Capacitance	Crss			100		pF
Turn-ON Delay Time	tD(on)	See specified Test Circuit		8.8		ns
Rise Time	tR			80		ns
Turn-OFF Delay Time	tD(off)			41		ns
Fall Time	tF			50		ns
Total Gate Charge	Qg	VDS=−6V, VGS=−4.5V, ID=−3A		5.6		nC
Gate to Source Charge	Qgs			0.7		nC
Gate to Drain "Miller" Charge	Qgd			1.6		nC
Forward Diode Voltage	VSD	IS=−3A, VGS=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.

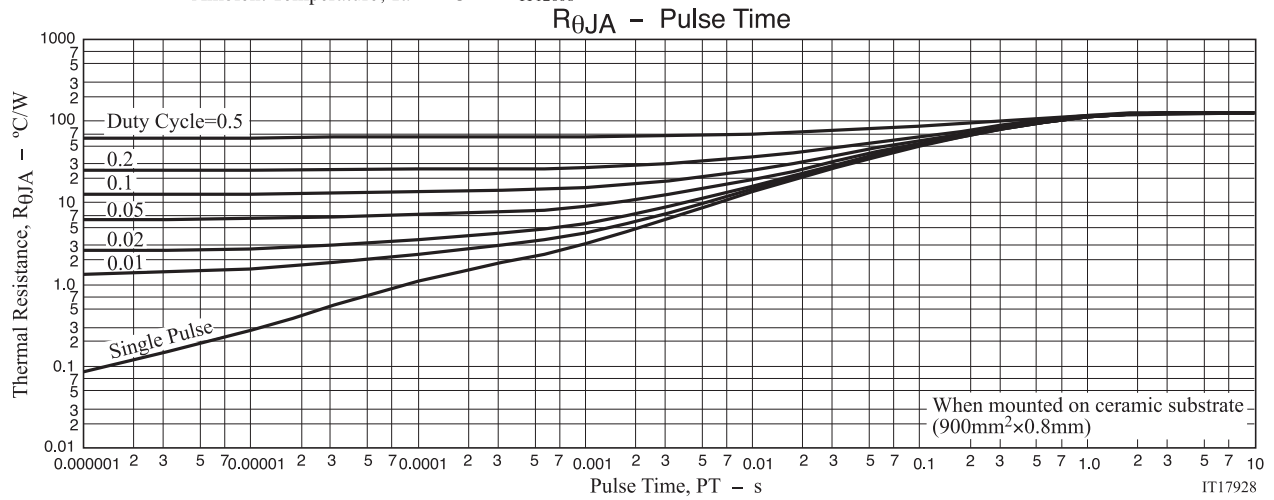
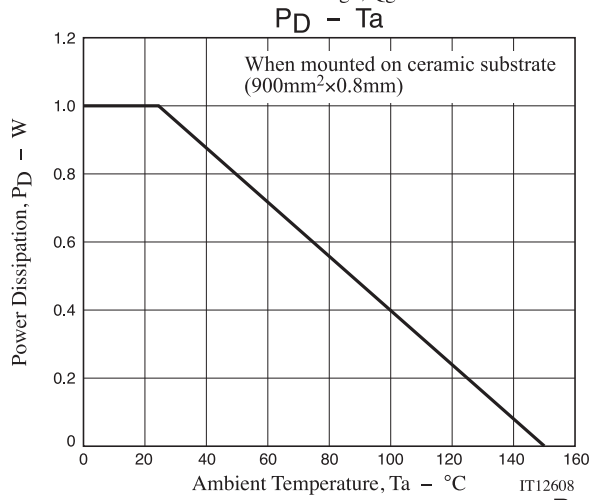
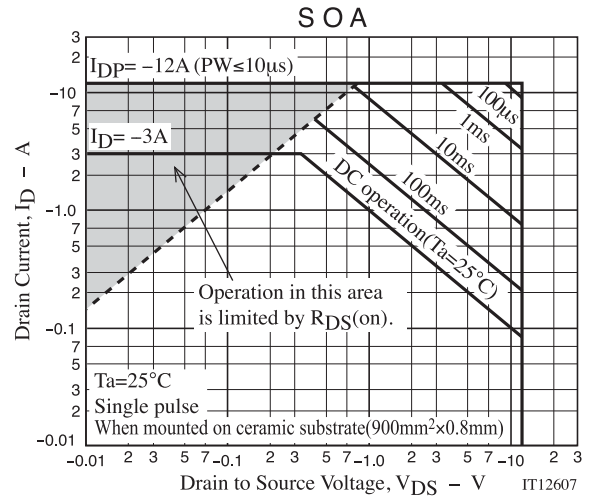
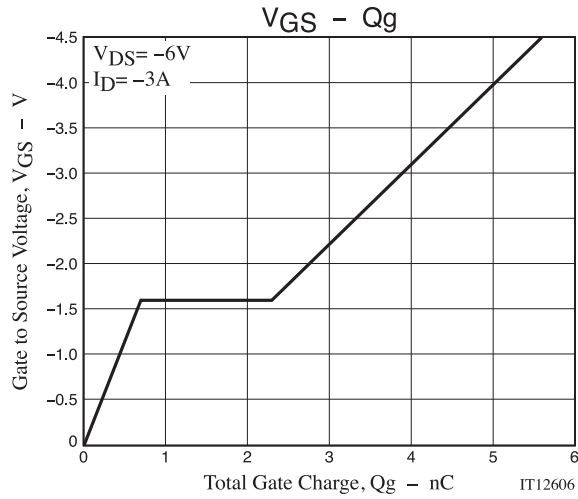
Switching Time Test Circuit



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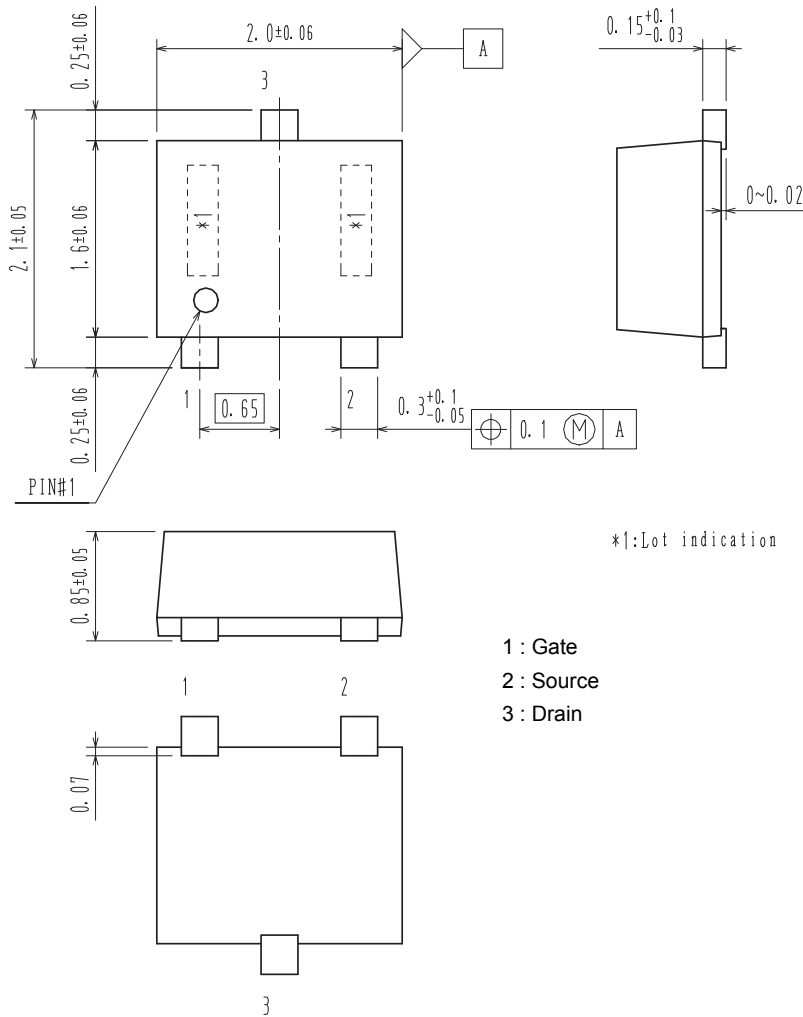


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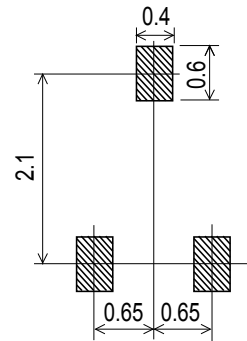
PACKAGE DIMENSIONS

unit : mm

SC-70FL / MCPH3
CASE 419AQ
ISSUE O



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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