

1HP04CH

Small Signal MOSFET –100V, 18Ω, –170mA, 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

- High Voltage (100V)
- 4V drive
- High Speed Switching and Low Loss
- ESD Diode-Protected Gate
- Pb-Free, Halogen Free and RoHS compliance

Typical Applications

- Lithium-ion Battery Charging and Discharging Cell Balance

SPECIFICATIONS

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

Parameter	Symbol	Value	Unit
Drain to Source Voltage	VDSS	–100	V
Gate to Source Voltage	VGSS	±20	V
Drain Current (DC)	ID	–170	mA
Drain Current (Pulse) PW ≤ 10μs, duty cycle ≤ 1%	IDP	–680	mA
Power Dissipation When mounted on ceramic substrate (900mm ² × 0.8mm)	PD	0.6	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 (900mm ² × 0.8mm)	RθJA	208	°C/W

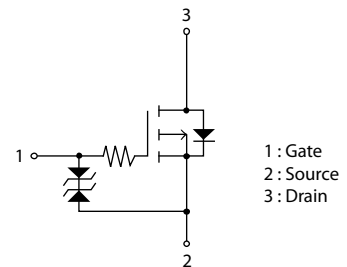


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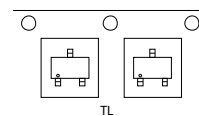
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VDSS	RDS(on) Max	ID Max
–100V	18Ω@ –10V	–170mA
	21Ω@ –4V	

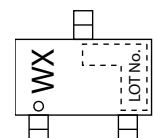
ELECTRICAL CONNECTION P-Channel



PACKING TYPE : TL



MARKING



ORDERING INFORMATION

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

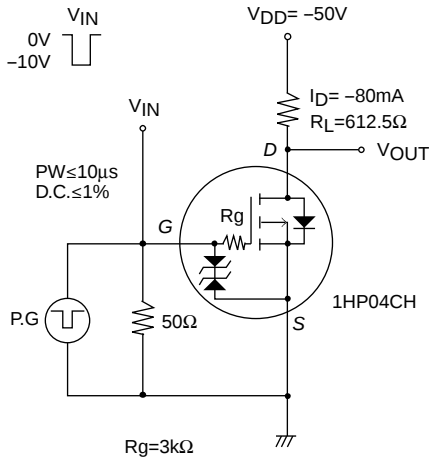
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ELECTRICAL CHARACTERISTICS at Ta = 25°C (Note 2)

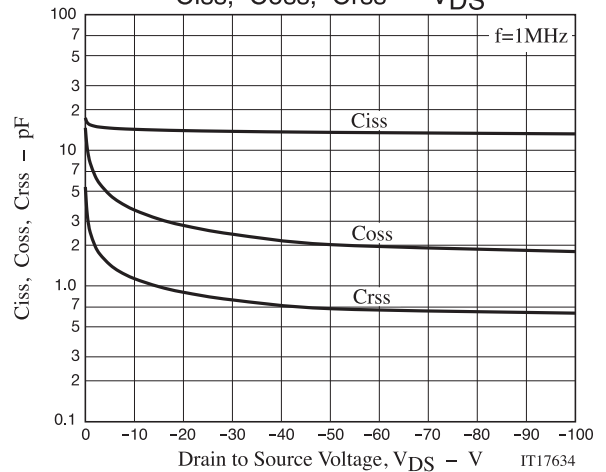
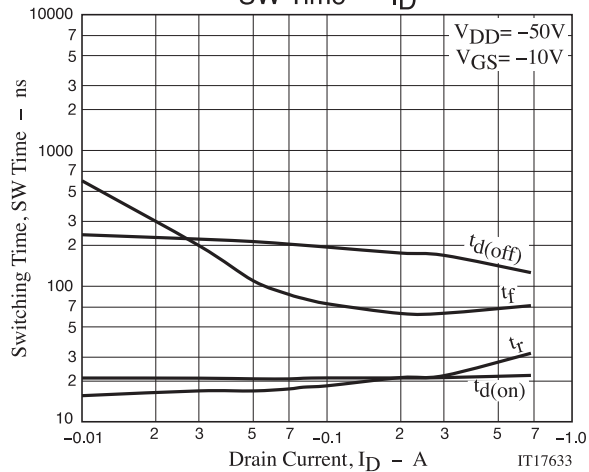
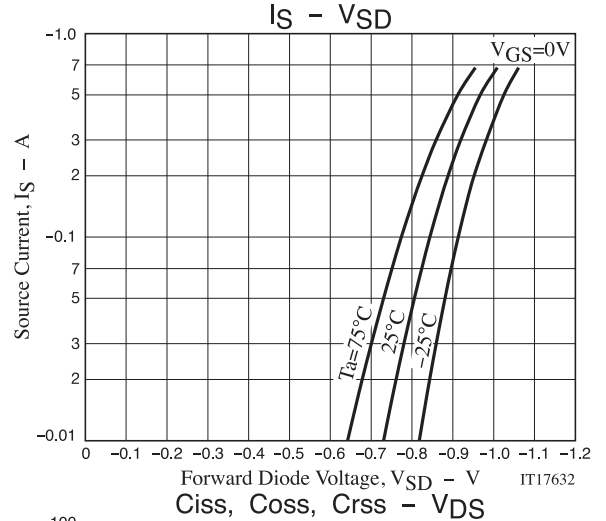
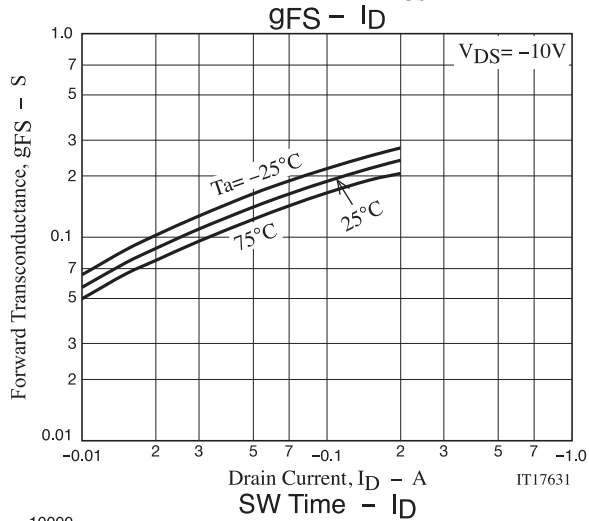
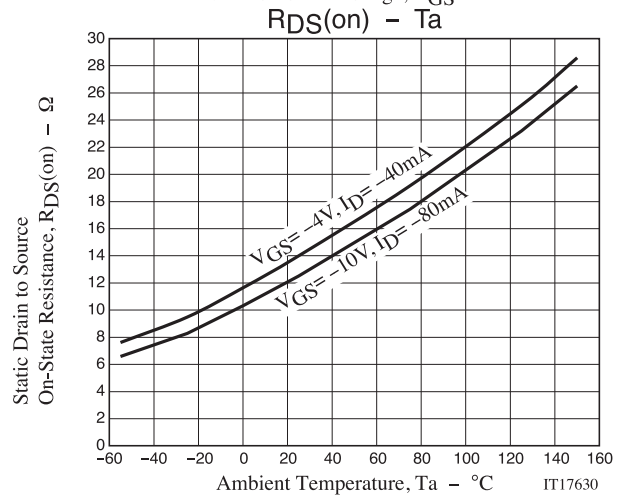
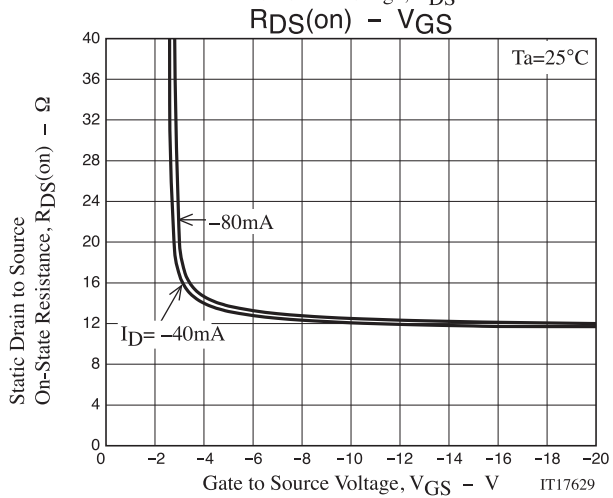
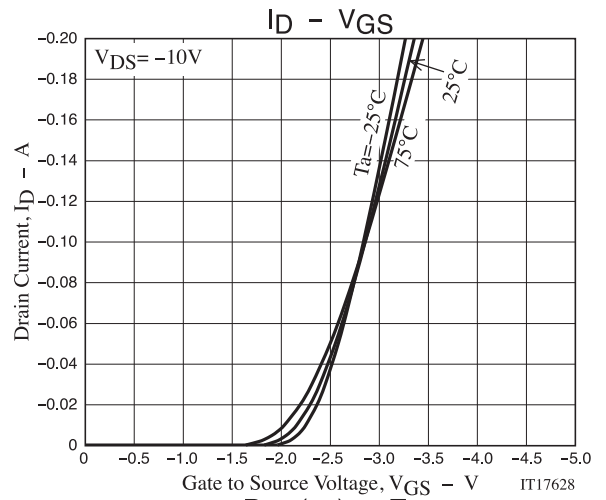
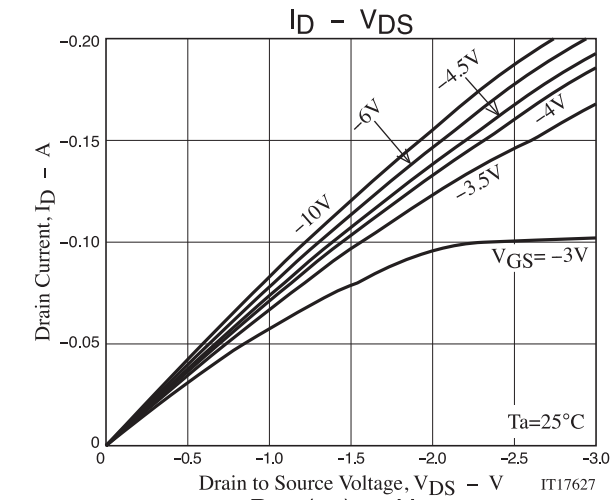
Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	V(BR)DSS	I _D =-1mA, V _{GS} =0V	-100			V
Zero-Gate Voltage Drain Current	I _{DSS}	V _{DS} =-100V, V _{GS} =0V			-1	μA
Gate to Source Leakage Current	I _{GSS}	V _{GS} =±16V, V _{DS} =0V			±10	μA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =-10V, I _D =-100μA	-1.2		-2.6	V
Forward Transconductance	g _{FS}	V _{DS} =-10V, I _D =-80mA		170		mS
Static Drain to Source On-State Resistance	R _{DS(on)1}	I _D =-80mA, V _{GS} =-10V		12.5	18	Ω
	R _{DS(on)2}	I _D =-40mA, V _{GS} =-4V		14	21	Ω
Input Capacitance	C _{iss}	V _{DS} =-20V, f=1MHz		14		pF
Output Capacitance	C _{oss}			2.8		pF
Reverse Transfer Capacitance	C _{rss}			0.9		pF
Turn-ON Delay Time	t _{d(on)}	See specified Test Circuit		21		ns
Rise Time	t _r			18		ns
Turn-OFF Delay Time	t _{d(off)}			200		ns
Fall Time	t _f			81		ns
Total Gate Charge	Q _g	V _{DS} =-50V, V _{GS} =-10V, I _D =-170mA		0.9		nC
Gate to Source Charge	Q _{gs}			0.14		nC
Gate to Drain "Miller" Charge	Q _{gd}			0.27		nC
Forward Diode Voltage	V _{SD}	I _S =-170mA, V _{GS} =0V		-0.88	-1.2	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.

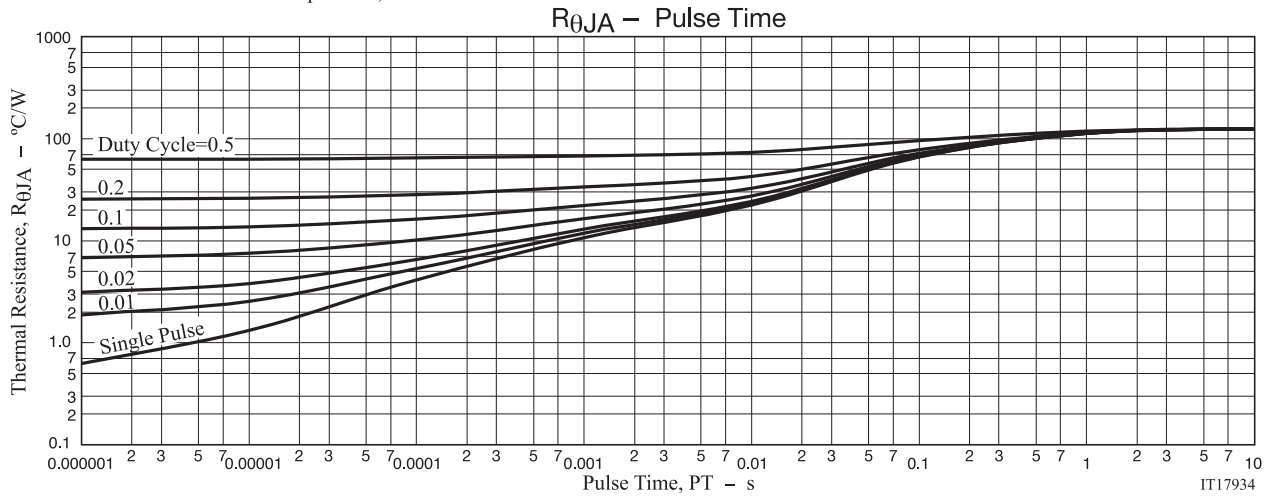
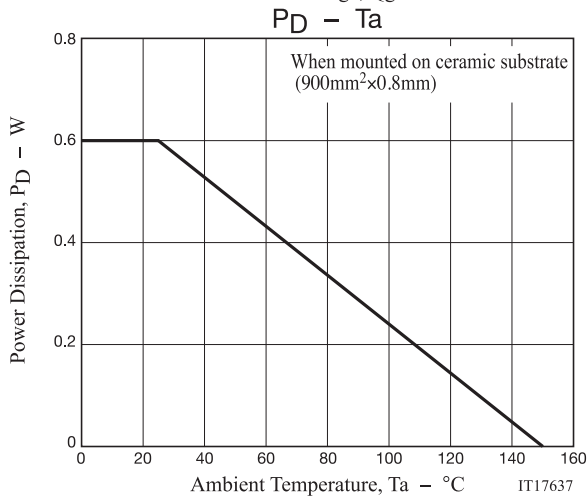
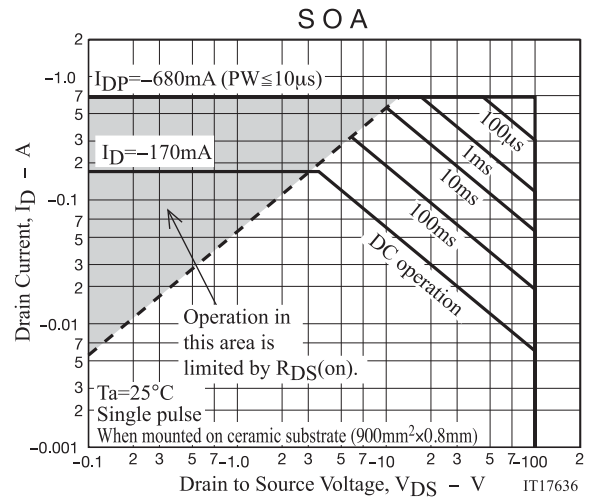
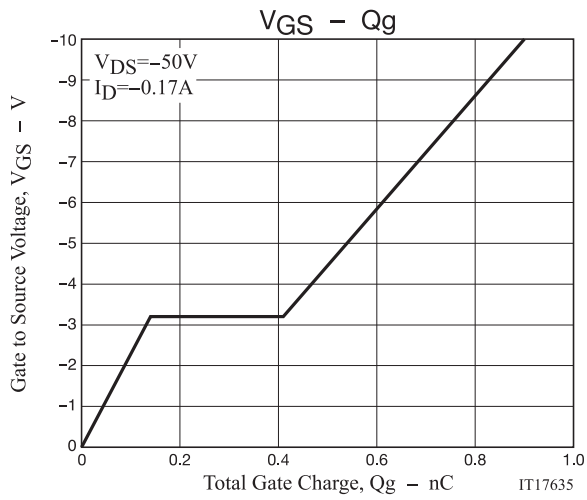
Switching Time Test Circuit



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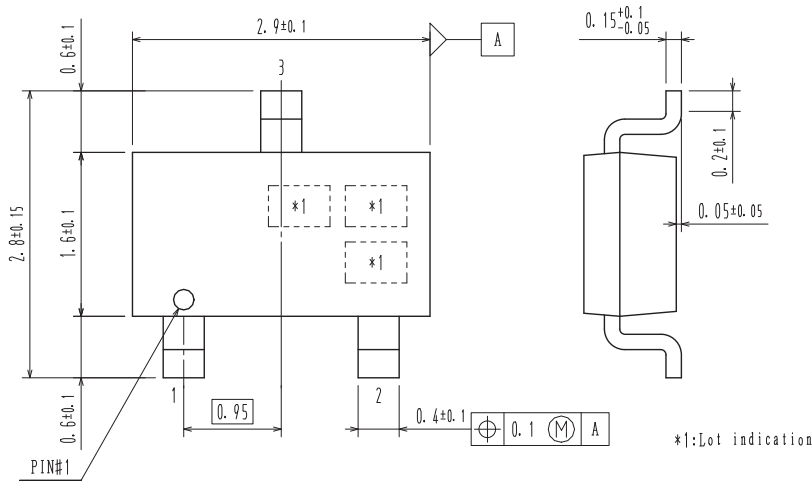


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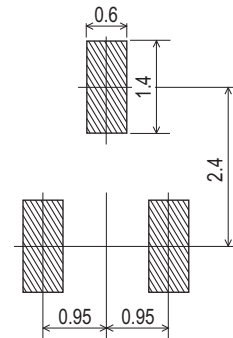
PACKAGE DIMENSIONS

unit : mm

CPH3
CASE 318BA
ISSUE O



Recommended Soldering Footprint



ORDERING INFORMATION

Device	Marking	Package	Shipping (Qty / Packing)
1HP04CH-TL-W	WX	CPH3 SC-59, SOT-23, TO-236 (Pb-Free / Halogen Free)	3,000 / Tape & Reel

† 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 1HP04CH is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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