onsemi

MOSFET – Power, Single, P-Channel

-30 V, 25 mΩ, -7,5 A

ECH8315

Description

This Power MOSFET is produced using **onsemi**'s trench technology, which is specifically designed to low on resistance. This devices is suitable for applications with low on resistance requirements.

Features

- Low On–Resistance
- 4 V Drive
- ESD Diode-Protected Gate
- Pb-Free, Halogen Free and RoHS Compliant

Typical Applications

- Load Switch
- Protection Switch for Lithium-ion Battery
- Motor Driver

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Parameter	Symbol	Value	Unit
Drain to Source Voltage	V _{DSS}	-30	V
Gate to Source Voltage	V _{GSS}	±20	V
Drain Current (DC)	I _D	-7.5	А
Drain Current (Pulse) PW \leq 10 μ s, duty cycle \leq 1%	I _{DP}	-40	A
Power Dissipation When mounted on ceramic substrate (900 mm ² x 0.8 mm)	P _D	1.5	W
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	-55 to +150	°C
When mounted on ceramic substrate (900 mm² x 0.8 mm) Junction Temperature Storage Temperature	Tj Tstg	150	°C °C

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.

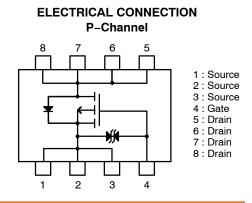
THERMAL CHARACTERISTICS

Parameter	Symbol	Value	Unit
Junction to Ambient When mounted on ceramic substrate (900 mm ² x 0.8 mm)	$R_{\theta JA}$	83.3	°C/W

V _{DSS}	R _{DS(on)} Max	I _D Max
–30 V	25 mΩ @ –10 V	–7.5 A
	44 mΩ @ −4.5 V	
	49 mΩ @ –4 V	



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MARKING DIAGRAM



ORDERING INFORMATION

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

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

			Value			<u> </u>
Parameter	Symbol	Conditions	Min	Тур	Max	Unit
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}	$V_{DS} = -30$ V, $V_{GS} = 0$ V	-	-	-1	μA
Gate to Source Leakage Current	I _{GSS}	I_{GSS} $V_{GS} = \pm 16$ V, $V_{DS} = 0$ V		-	±10	μA
Gate Threshold Voltage	V _{GS(th)}	$V_{GS(th)}$ $V_{DS} = -10 \text{ V}, \text{ I}_{D} = -1 \text{ mA}$		-	-2.6	V
Forward Transconductance	9 _{FS}	$V_{DS} = -10 \text{ V}, \text{ I}_{D} = -3.5 \text{ A}$	5	8.4	-	S
Static Drain to Source On-State Resistance	R _{DS(on)}	$I_D = -3.5 \text{ A}, \text{ V}_{GS} = -10 \text{ V}$	-	19	25	mΩ
		$I_D = -2 \text{ A}, \text{ V}_{GS} = -4.5 \text{ V}$	_	31	44	mΩ
		$I_D = -2 \text{ A}, V_{GS} = -4 \text{ V}$	_	35	49	mΩ
Input Capacitance	C _{iss}	V _{DS} = -10 V, f = 1 MHz	_	875	-	pF
Output Capacitance	C _{oss}		_	200	-	1
Reverse Transfer Capacitance	C _{rss}		_	150	-	1
Turn-ON Delay Time	t _{d(on)}	See Figure 1	_	8.1	-	ns
Rise Time	t _r		_	33	-	ns
Turn-OFF Delay Time	t _{d(off)}		_	92	-	ns
Fall Time	t _f		_	60	-	ns
Total Gate Charge	Qg		-	18	-	nC
Gate to Source Charge	Qgs	V_{DS} = -15 V, V_{GS} = -10 V, I_D = -7.5 A	-	2.1	-	nC
Gate to Drain "Miller" Charge	Qgd	1	-	4.7	-	nC
Forward Diode Voltage	V _{SD}	I _S = -7.5 A, V _{GS} = 0 V	-	-0.82	-1.2	V

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.

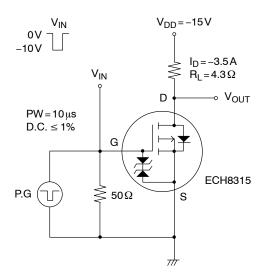
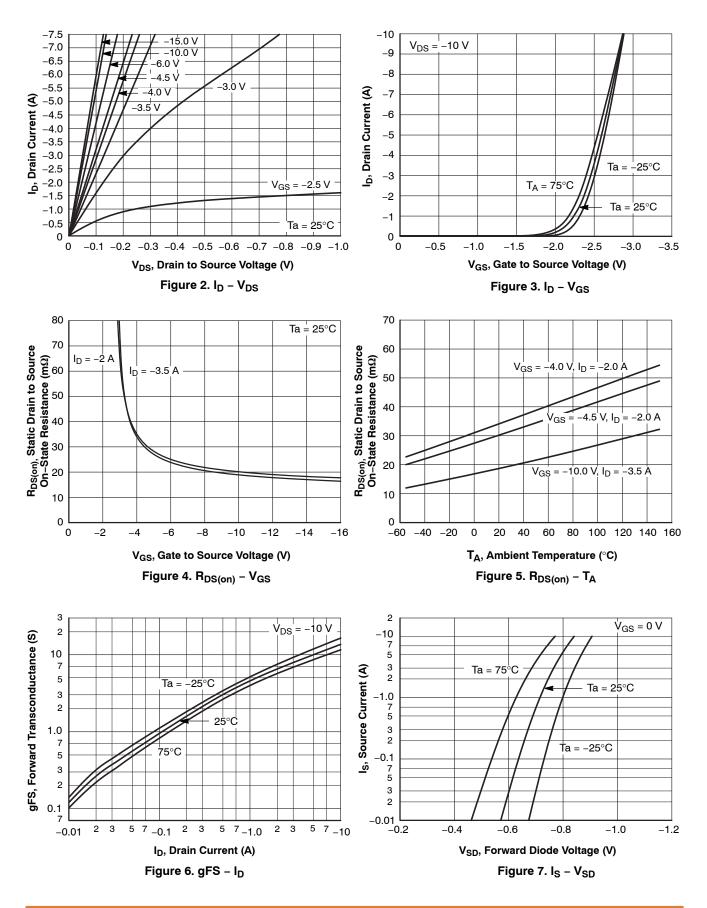
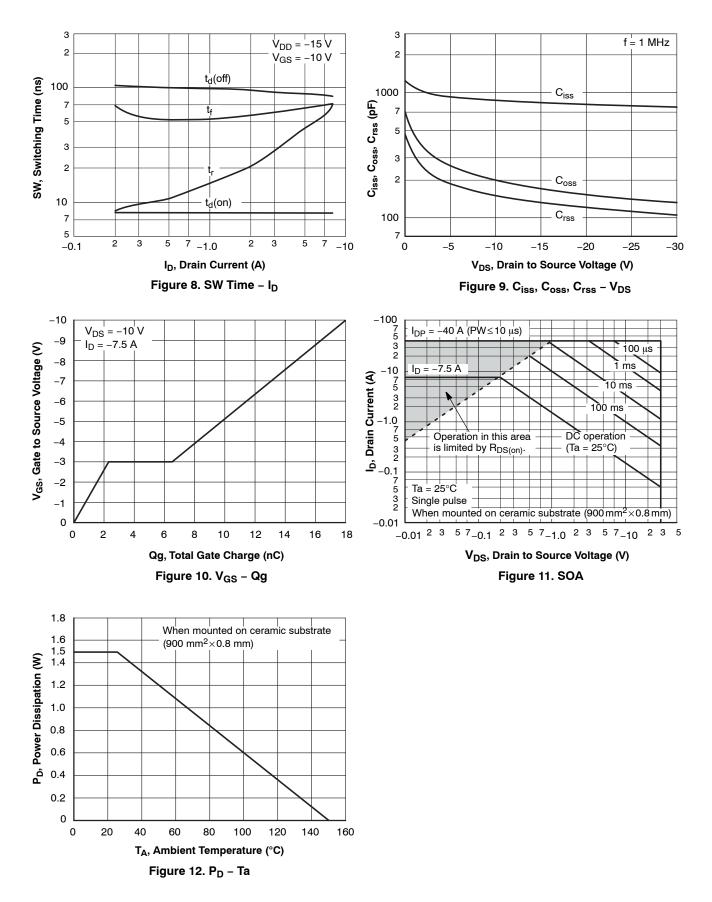


Figure 1. Switching Time Test Circuit 1

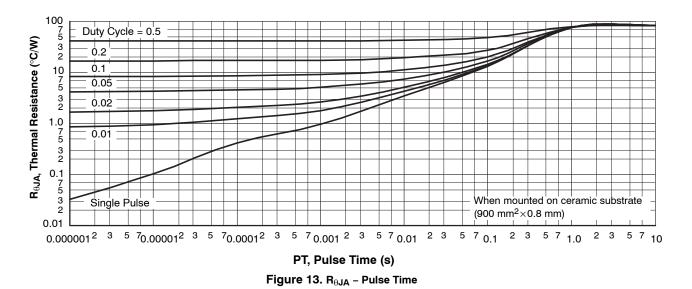
TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS (continued)



TYPICAL CHARACTERISTICS (CONTINUED)



ORDERING INFORMATION

Product Number	Marking	Package	Shipping (Qty / Packing) [†]
ECH8315-TL-H	JS	SOT–28FL / ECH8 (Pb–Free / Halogen Free)	3000 / Tape and Reel

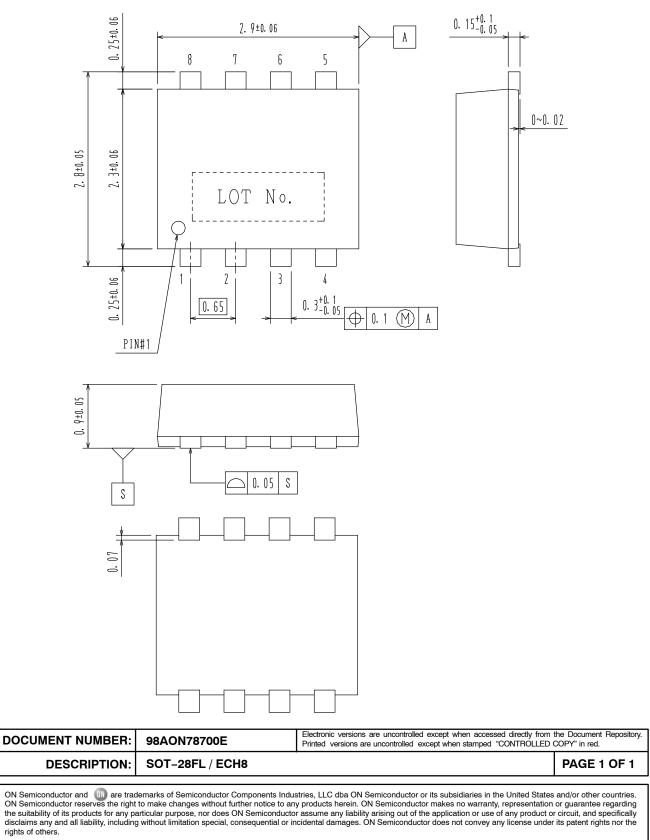
+For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, <u>BRD8011/D</u>.

Note on usage : Since the ECH8315 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.



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DATE 31 MAR 2012



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