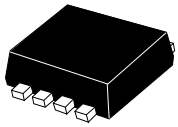
MOSFET – Power, P-Channel Single ECH8

-30 V, -9 A, 17 mΩ

ECH8310



SOT−28FL/ECH8
CASE 318BF

Features

- 4 V Drive
- Halogen free compliance
- Protection diode in
- This Device is Pb−Free, Halogen Free and RoHS Compliant

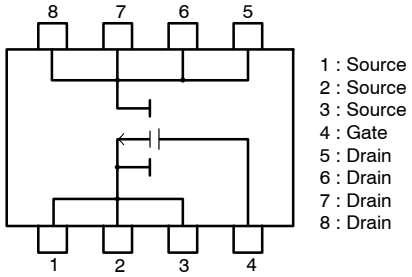
Specifications

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

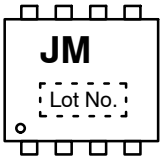
Symbol	Parameter	Conditions	Ratings	Unit
V_{DSS}	Drain−to−Source Voltage		−30	V
V_{GSS}	Gate−to−Source Voltage		±20	V
I_D	Drain Current (DC)		−9	A
I_{DP}	Drain Current (Pulse)	PW ≤ 10 μs, duty cycle ≤ 1%	−60	A
P_D	Allowable Power Dissipation	When mounted on ceramic substrate (900 mm^2 X 0.8 mm)	1.5	W
Tch	Channel Temperature		150	°C
Tstg	Storage Temperature		−55 to +150	°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.

ELECTRICAL CONNECTION



MARKING DIAGRAM



ORDERING INFORMATION

Device	Package	Shipping†
ECH8310−TL−H	SOT−28FL ECH8 (Pb−Free)	3000 / 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.

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

Symbol	Parameter	Conditions	Ratings			Unit
			Min	Typ	Max	
$V_{(BR)DSS}$	Drain−to−Source Breakdown Voltage	I_D = −1 mA, V_{GS} = 0 V	−30	–	–	V
I_{DSS}	Zero−Gate Voltage Drain Current	V_{DS} = −30 V, V_{GS} = 0 V	–	–	−1	μA
I_{GSS}	Gate−to−Source Leakage Current	V_{GS} = ±16 V, V_{DS} = 0 V		–	±10	μA
$V_{GS(off)}$	Cutoff Voltage	V_{DS} = −10 V, I_D = −1 mA	−1.2	–	−2.6	V
| yfs |	Forward Transfer Admittance	V_{DS} =−10 V, I_D = −4.5 A		12	–	S
$R_{DS(on)1}$	Static Drain to Source On−State Resistance	I_D = −4.5 A, V_{GS} = −10 V	9	13	17	mΩ
$R_{DS(on)2}$		I_D = −2 A, V_{GS} = −4.5 V	12	20	28	mΩ
$R_{DS(on)3}$		I_D = −2 A, V_{GS} = −4.0 V	13.5	23	32.5	mΩ
Ciss	Input Capacitance	V_{DS} = −10 V, f = 1 MHz	–	1400	–	pF
Coss	Output Capacitance		–	350	–	pF
Crss	Reverse Transfer Capacitance		–	250	–	pF
$t_{d(on)}$	Turn−ON Delay Time	See specified Test Circuit.	–	10	–	ns
t_r	Rise Time		–	45	–	ns
$t_{d(off)}$	Turn−OFF Delay Time		–	134	–	ns
t_f	Fall Time		–	87	–	ns
Qg	Total Gate Charge	V_{DS} = −15 V, V_{GS} = −10 V, I_D = −9 A	–	28	–	nC
Qgs	Gate−to−Source Charge		–	4	–	nC
Qgd	Gate−to−Drain “Miller” Charge		–	6	–	nC
V_{SD}	Diode Forward Voltage	I_S = −9 A, V_{GS} = 0 V	–	−0.8	−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.

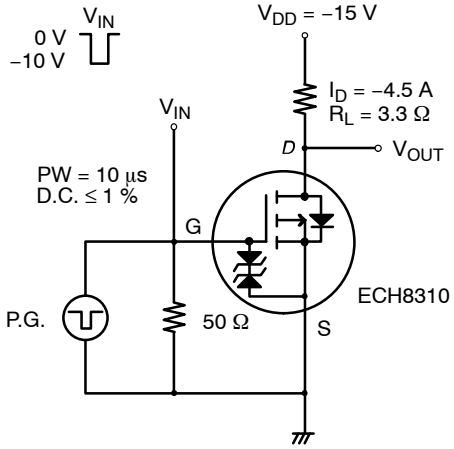


Figure 1. Switching Time Test Circuit

TYPICAL CHARACTERISTICS

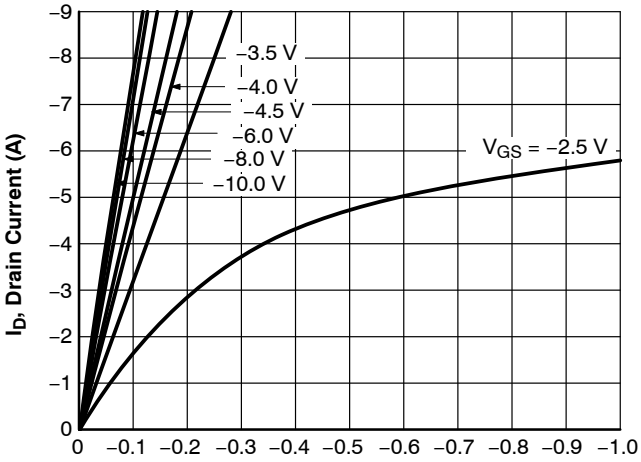


Figure 2. $I_D - V_{DS}$

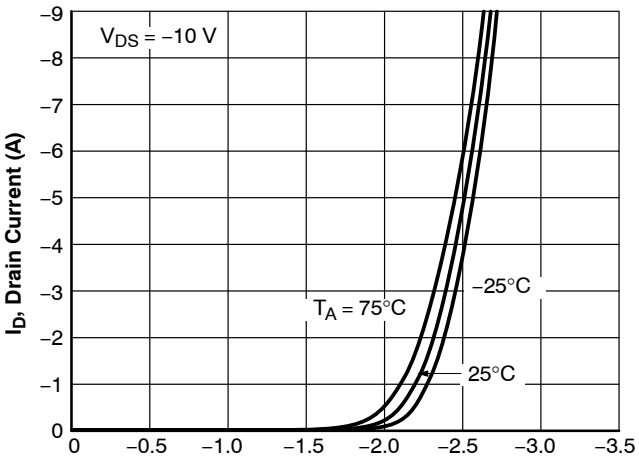


Figure 3. $I_D - V_{GS}$

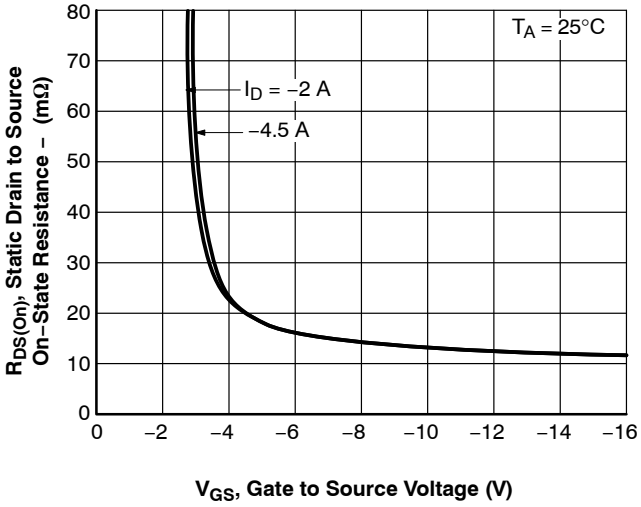


Figure 4. $R_{DS(on)} - V_{GS}$

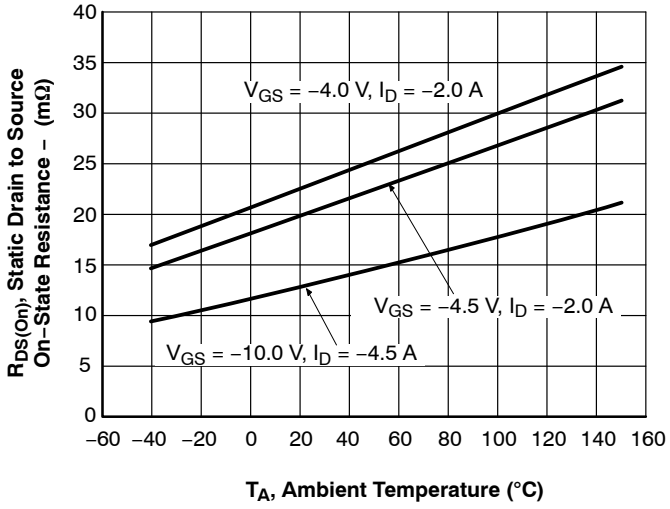


Figure 5. $R_{DS(on)} - T_A$

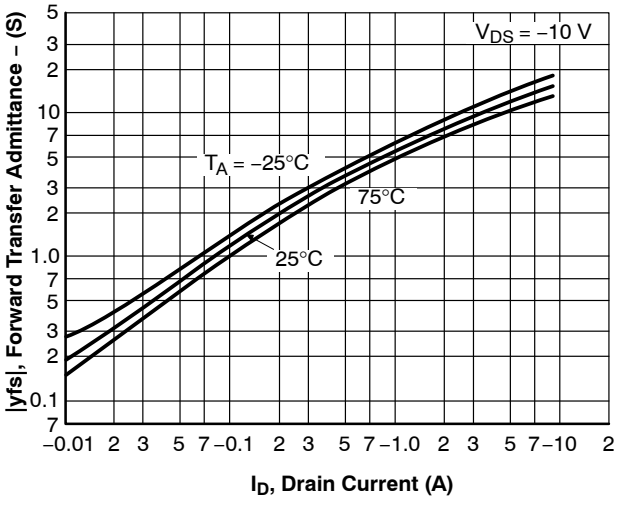


Figure 6. $|Yfs| - I_D$

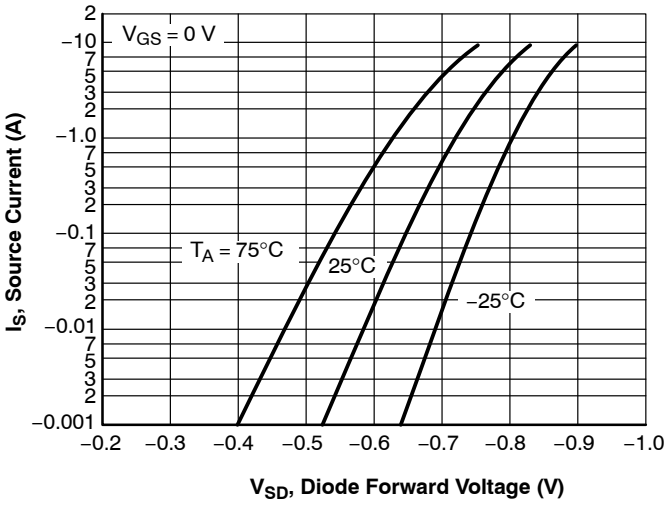


Figure 7. $I_S - V_{SD}$

TYPICAL CHARACTERISTICS (CONTINUED)

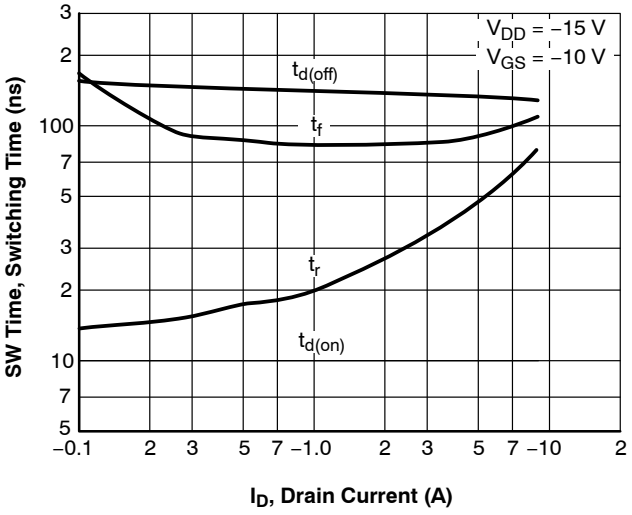


Figure 8. I_D – S/W Time

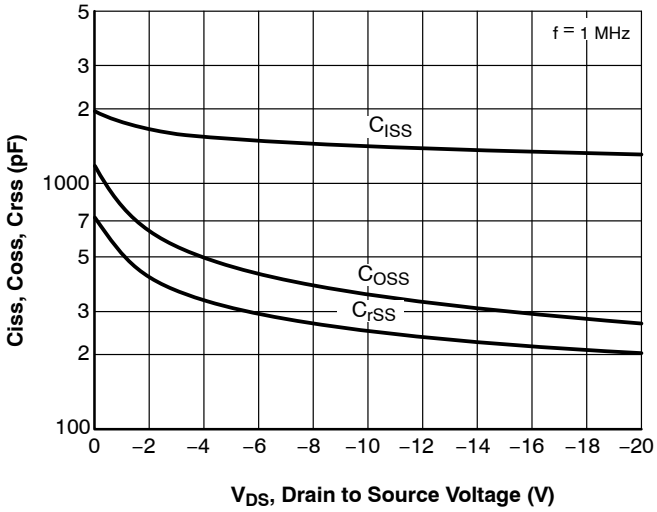


Figure 9. Ciss, Coss,Crss – V_{DS}

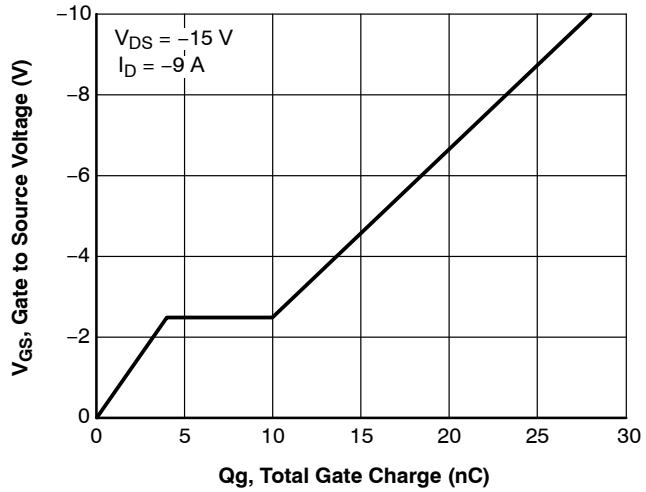


Figure 10. V_{GS} – Q_g

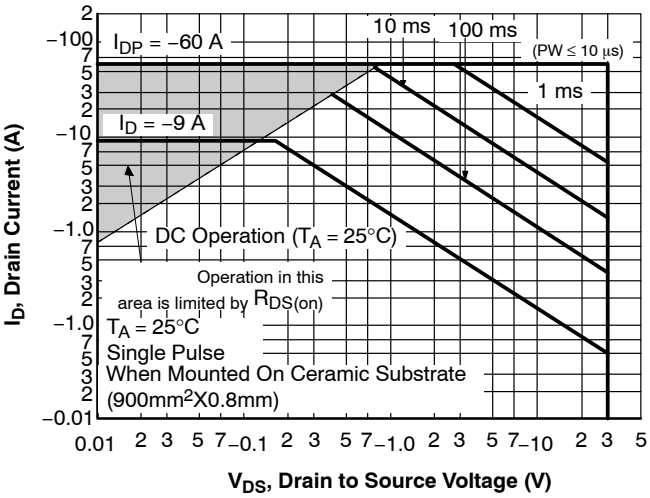


Figure 11. S O A

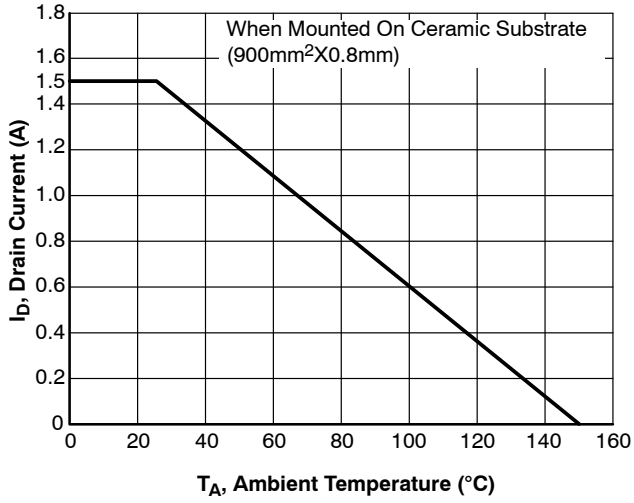


Figure 12. I_D – T_A

Note on usage : Since the ECH8310 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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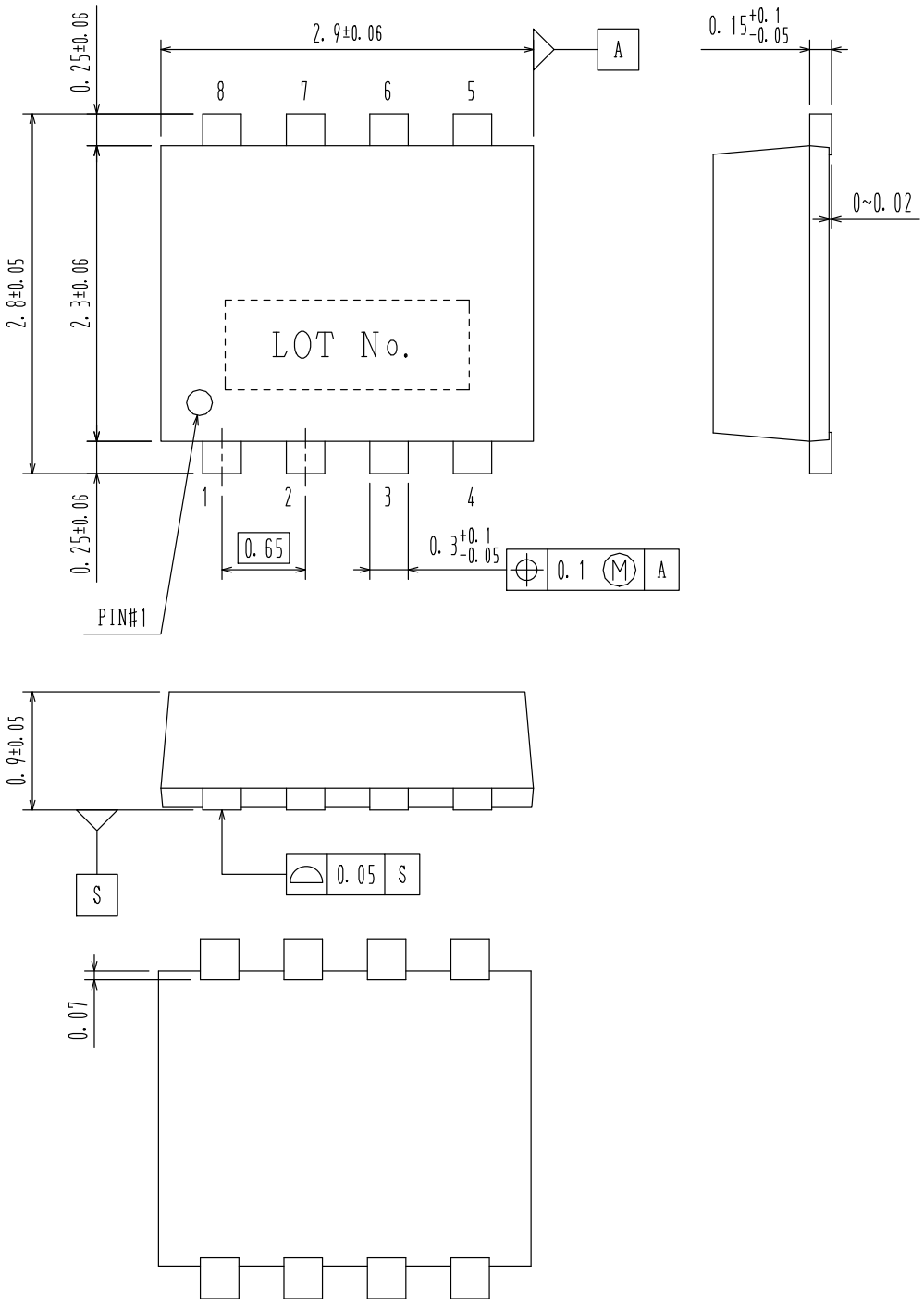
ISSUE O

DATE 31 MAR 2012



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