Ordering number : ENA1430B

ECH8310

P-Channel Power MOSFET
−30V, −9A, 17mΩ, Single ECH8

ON Semiconductor®
http://onsemi.com

Features

- 4V drive
- Halogen free compliance
- Protection diode in

Specifications

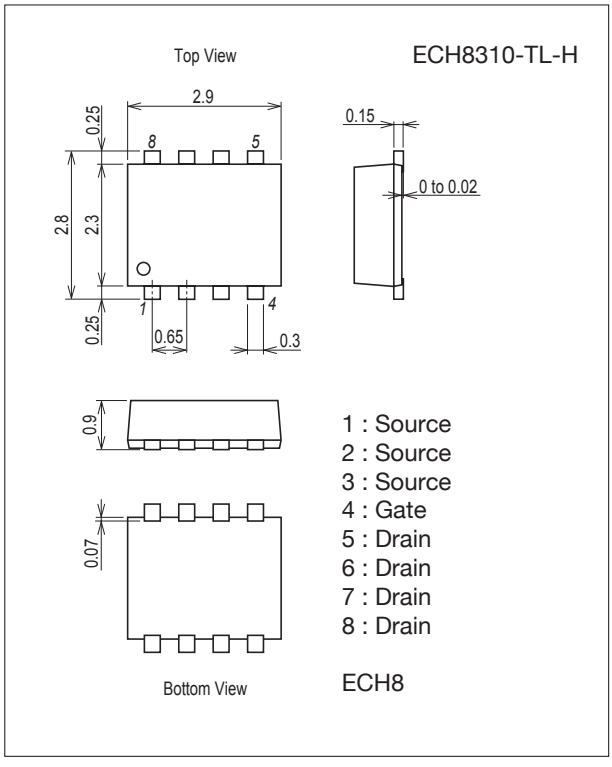
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		−30	V
Gate-to-Source Voltage	V_{GSS}		±20	V
Drain Current (DC)	I_D		−9	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	−60	A
Allowable Power Dissipation	P_D	When mounted on ceramic substrate (900mm²×0.8mm)	1.5	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−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.

Package Dimensions

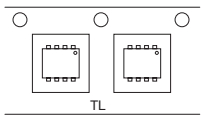
unit : mm (typ)
7011A-002



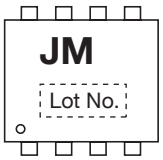
Product & Package Information

- Package : ECH8
- JEITA, JEDEC : -
- Minimum Packing Quantity : 3,000 pcs./reel

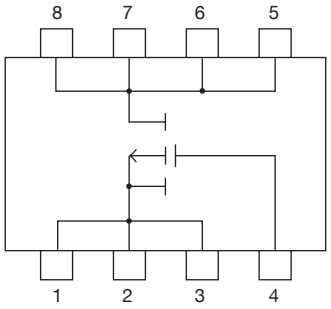
Packing Type : TL



Marking



Electrical Connection



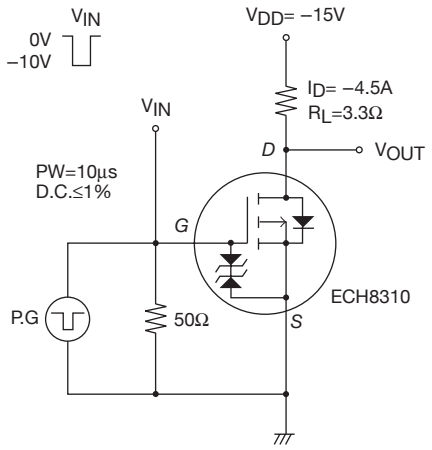
ORDERING INFORMATION
See detailed ordering and shipping information on page 2 of this data sheet.

Electrical Characteristics at Ta=25°C

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

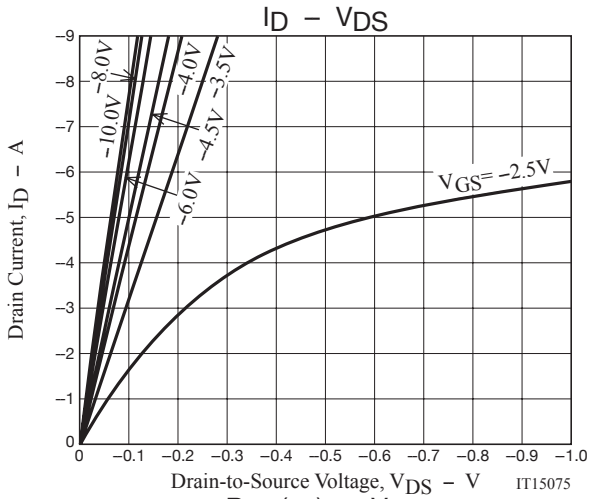
Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

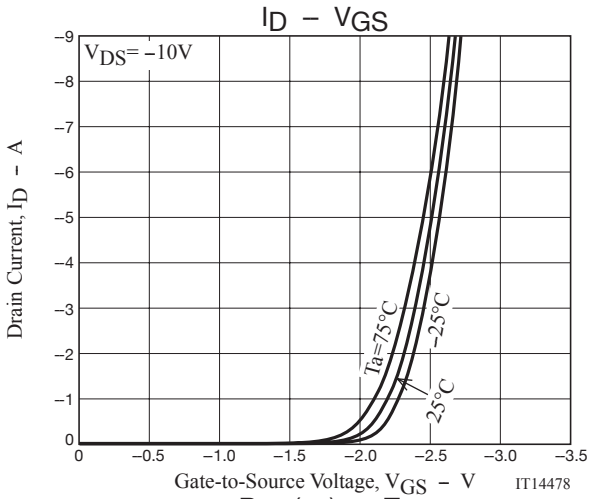
Switching Time Test Circuit

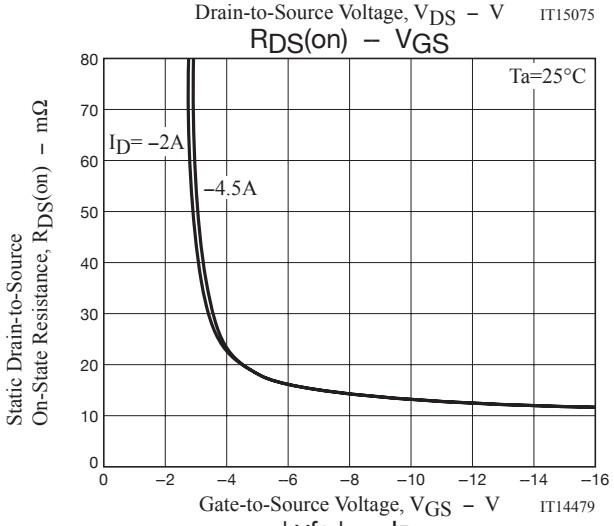


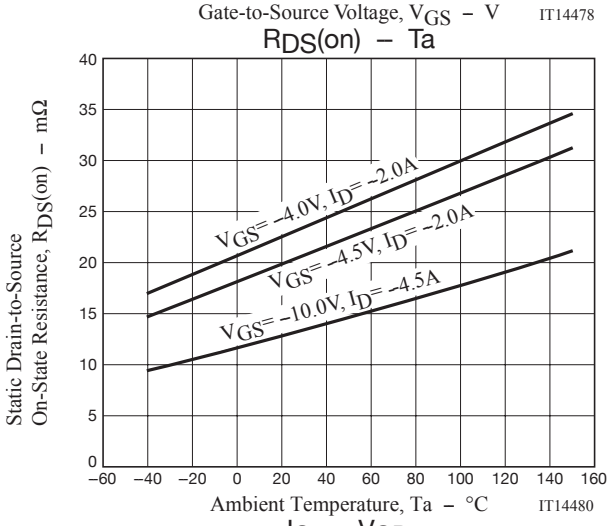
Ordering Information

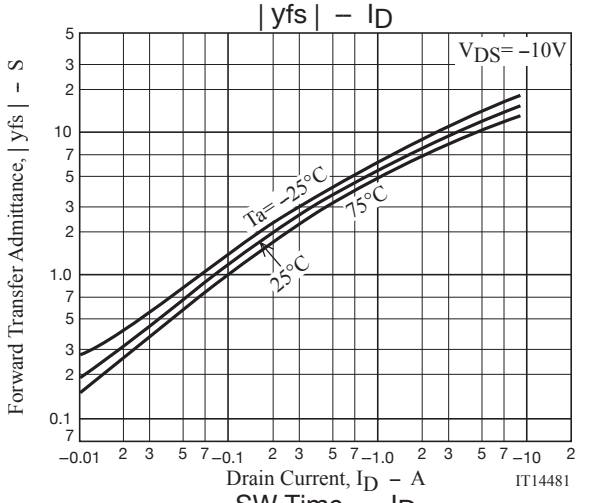
Device	Package	Shipping	memo
ECH8310-TL-H	ECH8	3,000pcs./reel	Pb Free and Halogen Free

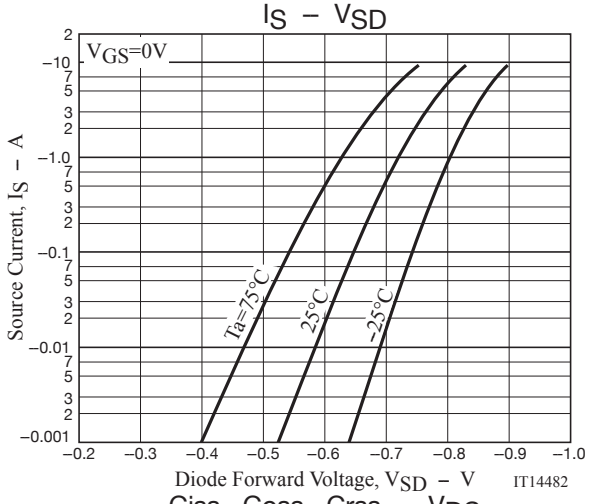

ID – VDS
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT15075
VGS= –2.5V
–10.0V
–8.0V
–6.0V
–4.5V
–4.0V
–3.5V

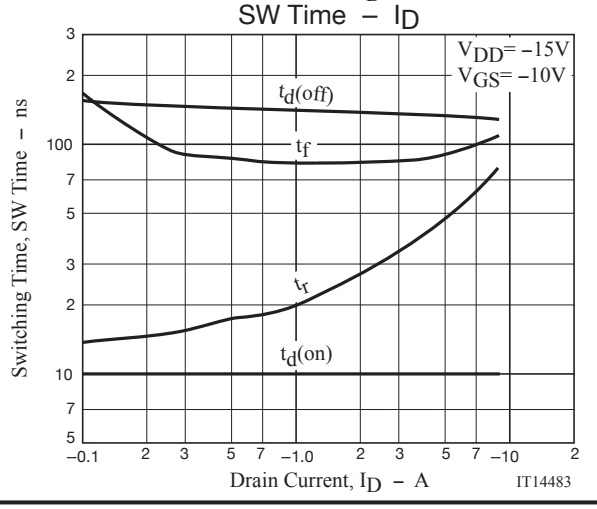

ID – VGS
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
IT14478
VDS= –10V
Ta=75°C
–25°C
–25°C

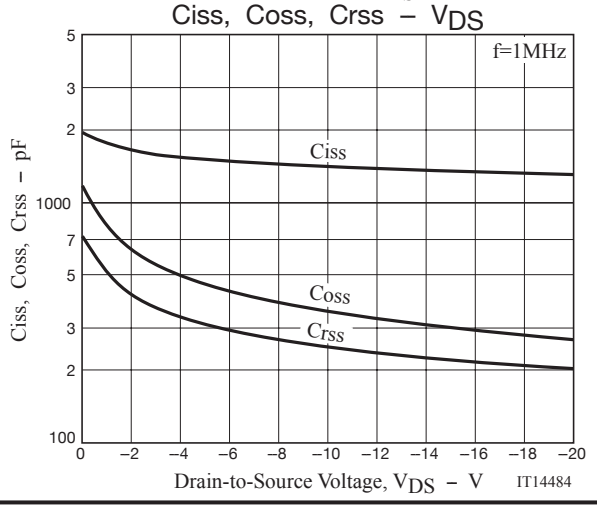

RDS(on) – VGS
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT14479
Ta=25°C
ID= –2A
–4.5A

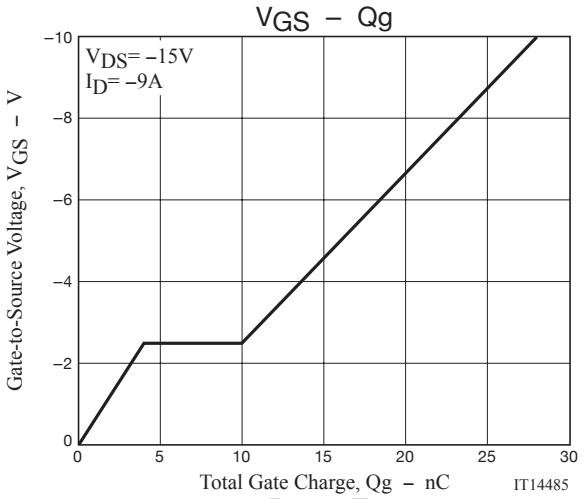

RDS(on) – Ta
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Ambient Temperature, Ta – °C
IT14480
VGS= –4.0V, ID= –2.0A
VGS= –4.5V, ID= –2.0A
VGS= –10.0V, ID= –4.5A

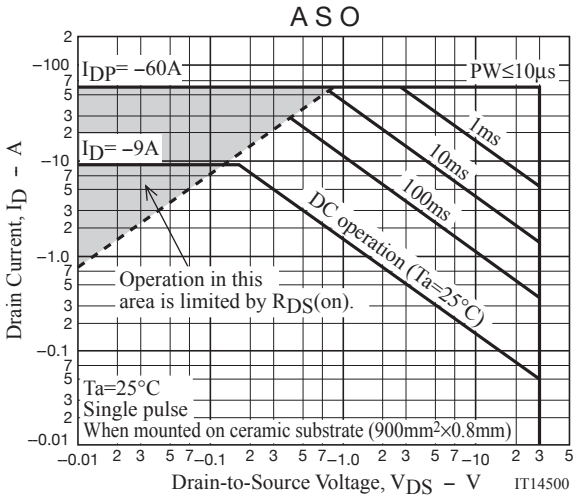

| yfs | – ID
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
IT14481
VDS= –10V
Ta= –25°C
75°C
25°C

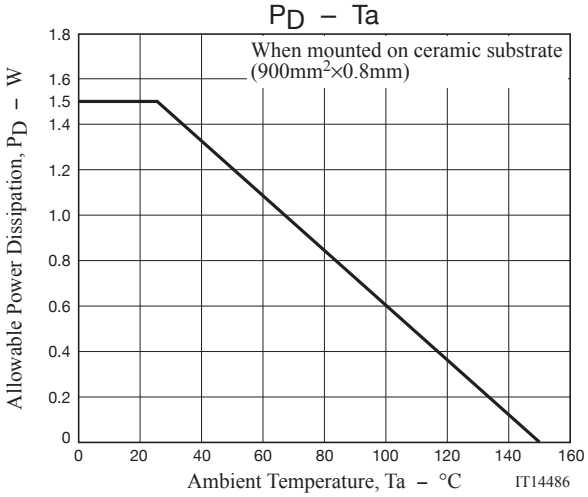

IS – VSD
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT14482
VGS=0V
Ta=75°C
25°C
–25°C


SW Time – ID
Switching Time, SW Time – ns
Drain Current, ID – A
IT14483
VDD= –15V
VGS= –10V
td(off)
tf
tr
td(on)


Ciss, Coss, Crss – VDS
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT14484
f=1MHz
Ciss
Coss
Crss

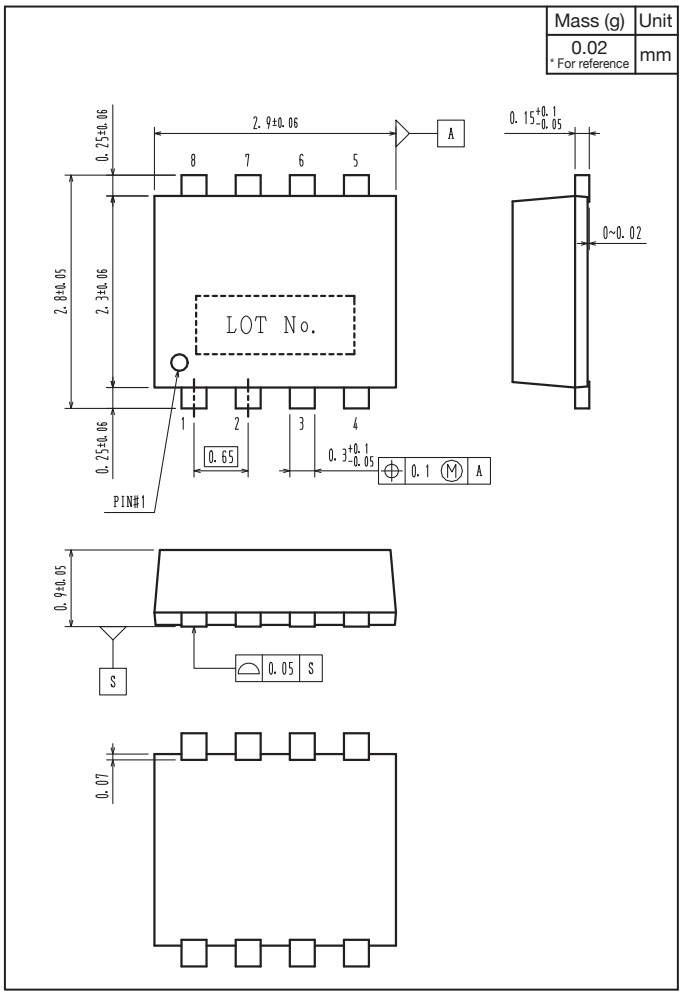

VGS – Qg
VDS= –15V
ID= –9A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT14485


A S O
IDP= –60A
PW≤10μs
ID= –9A
1ms
10ms
100ms
DC operation (Ta=25°C)
Operation in this
area is limited by RDS(on).
Ta=25°C
Single pulse
When mounted on ceramic substrate (900mm2×0.8mm)
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT14500

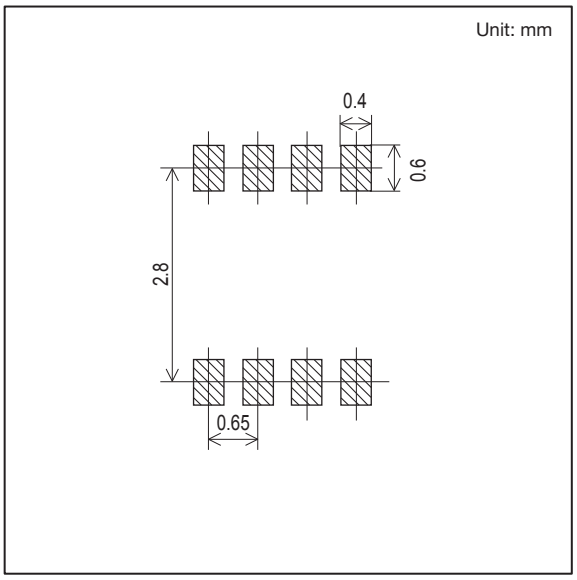

PD – Ta
When mounted on ceramic substrate
(900mm2×0.8mm)
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT14486

Outline Drawing

ECH8310-TL-H



Land Pattern Example



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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