

ECH8308-TL-H Datasheet



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DiGi Electronics Part Number	ECH8308-TL-H-DG
Manufacturer	onsemi
Manufacturer Product Number	ECH8308-TL-H
Description	MOSFET P-CH 12V 10A 8ECH
Detailed Description	P-Channel 12 V 10A (Ta) 1.6W (Ta) Surface Mount 8-ECH



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DiGi is a global authorized distributor of electronic components.

Purchase and inquiry

Manufacturer Product Number:

ECH8308-TL-H

Series:

-

FET Type:

P-Channel

Drain to Source Voltage (Vdss):

12 V

Drive Voltage (Max Rds On, Min Rds On):

1.8V, 4.5V

Vgs(th) (Max) @ Id:

-

Vgs (Max):

±10V

FET Feature:

-

Operating Temperature:

150°C (TJ)

Supplier Device Package:

8-ECH

Base Product Number:

ECH8308

Manufacturer:

onsemi

Product Status:

Active

Technology:

MOSFET (Metal Oxide)

Current - Continuous Drain (Id) @ 25°C:

10A (Ta)

Rds On (Max) @ Id, Vgs:

12.5mOhm @ 5A, 4.5V

Gate Charge (Qg) (Max) @ Vgs:

26 nC @ 4.5 V

Input Capacitance (Ciss) (Max) @ Vds:

2300 pF @ 6 V

Power Dissipation (Max):

1.6W (Ta)

Mounting Type:

Surface Mount

Package / Case:

8-SMD, Flat Lead

Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.29.0095

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99

MOSFET – Power, P-Channel, Single ECH8

-12 V, -10 A, 12.5 mΩ

ECH8308

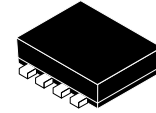
Features

- Best Suited for Load Switching
- 1.8 V Drive
- Protection Diode in
- Low ON-resistance
- This is a Pb-Free and Halide Free Device

ABSOLUTE MAXIMUM RATINGS (at Ta = 25°C)

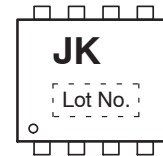
Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V _{DSS}		-12	V
Gate-to-Source Voltage	V _{GSS}		±10	V
Drain Current (DC)	I _D		-10	A
Drain Current (Pulse)	I _{DP}	PW ≤ 10 μs, duty cycle ≤ 1%	-40	A
Allowable Power Dissipation	P _D	When mounted on ceramic substrate (900 mm ² × 0.8 mm)	1.6	W
Channel Temperature	T _{ch}		150	°C
Storage Temperature	T _{stg}		-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.

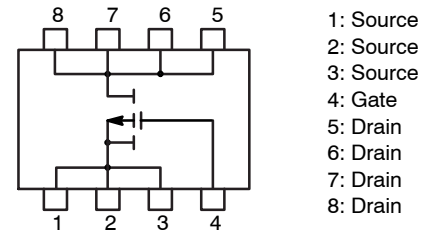


SOT-28FL / ECH8
CASE 318BF

MARKING DIAGRAM



ELECTRICAL CONNECTION



ORDERING INFORMATION

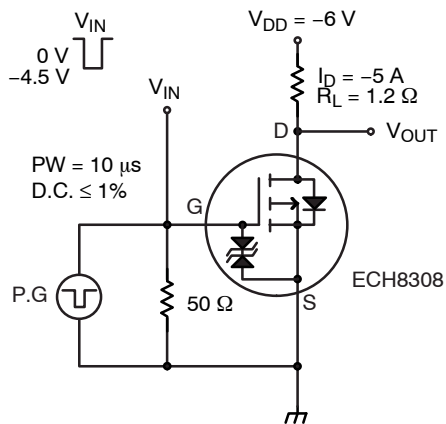
Device	Package	Shipping†
ECH8308-TL-H	SOT-28FL / ECH8 (Pb-Free and Halide Free)	3000 / Tape & Reel

†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.

ECH8308**ELECTRICAL CHARACTERISTICS** (at $T_a = 25^\circ\text{C}$)

Parameter	Symbol	Conditions	Ratings			Unit
			Min	Typ	Max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = -1 \text{ mA}, V_{GS} = 0 \text{ V}$	-12	-	-	V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -12 \text{ V}, V_{GS} = 0 \text{ V}$	-	-	-10	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS} = \pm 8 \text{ V}, V_{DS} = 0 \text{ V}$	-	-	± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = -6 \text{ V}, I_D = -1 \text{ mA}$	-0.4	-	-1.3	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = -6 \text{ V}, I_D = -4.5 \text{ A}$	12	21	-	S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D = -4.5 \text{ A}, V_{GS} = -4.5 \text{ V}$	-	9.2	12.5	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D = -2 \text{ A}, V_{GS} = -2.5 \text{ V}$	-	14	20	$\text{m}\Omega$
	$R_{DS(on)3}$	$I_D = -1 \text{ A}, V_{GS} = -1.8 \text{ V}$	-	22	33	$\text{m}\Omega$
Input Capacitance	C_{iss}	$V_{DS} = -6 \text{ V}, f = 1 \text{ MHz}$	-	2300	-	pF
Output Capacitance	C_{oss}		-	720	-	pF
Reverse Transfer Capacitance	C_{rss}		-	550	-	pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.	-	24	-	ns
Rise Time	t_r		-	130	-	ns
Turn-OFF Delay Time	$t_d(off)$		-	230	-	ns
Fall Time	t_f		-	195	-	ns
Total Gate Charge	Q_g		$V_{DS} = -6 \text{ V}, V_{GS} = -4.5 \text{ V}, I_D = -10 \text{ A}$	-	26	-
Gate-to-Source Charge	Q_{gs}	-		4.0	-	nC
Gate-to-Drain "Miller" Charge	Q_{gd}	-		7.1	-	nC
Diode Forward Voltage	V_{SD}	$I_S = -10 \text{ A}, V_{GS} = 0 \text{ V}$	-	-0.79	-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

ECH8308

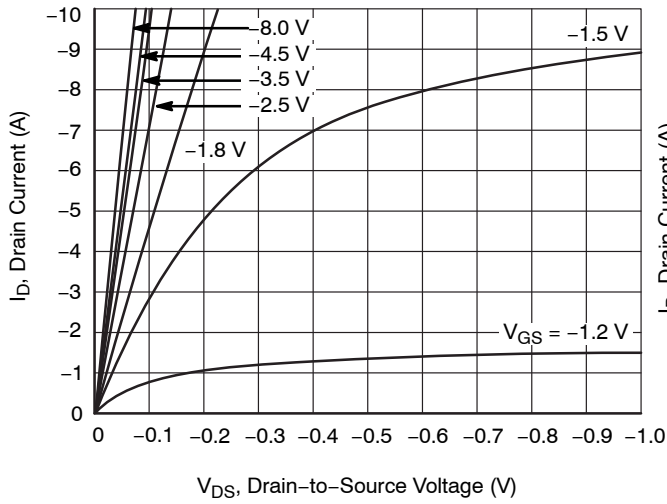


Figure 1. $I_D - V_{DS}$

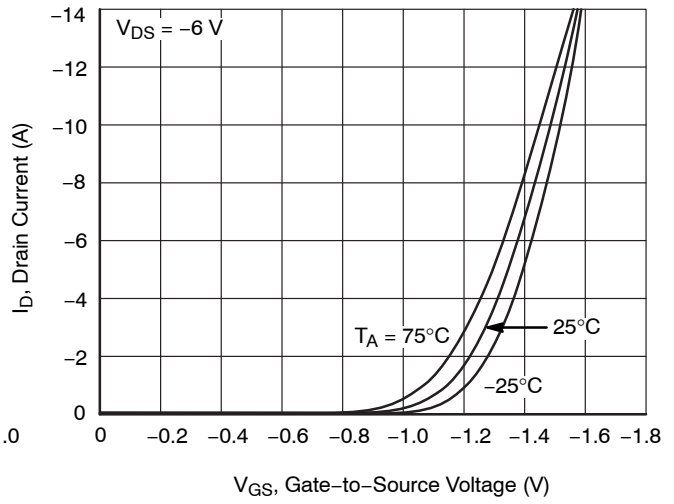


Figure 2. $I_D - V_{GS}$

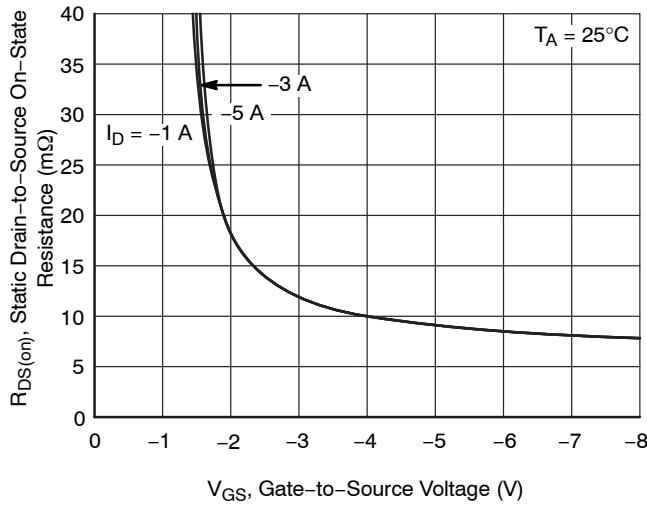


Figure 3. $R_{DS(on)} - V_{GS}$

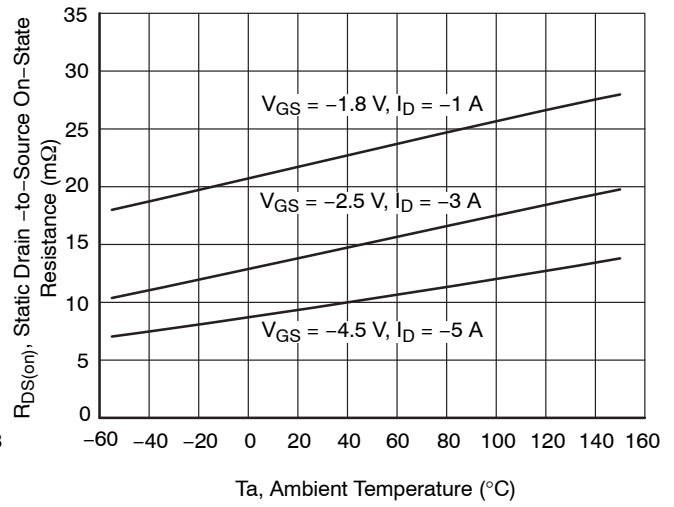


Figure 4. $R_{DS(on)} - T_a$

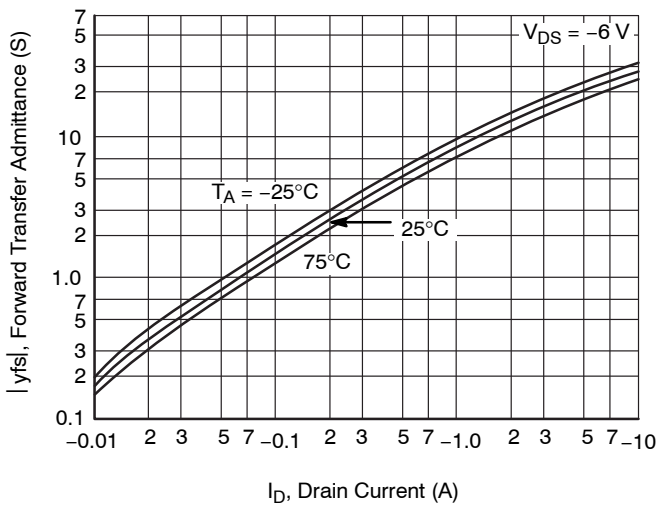


Figure 5. $|y_{fs}| - I_D$

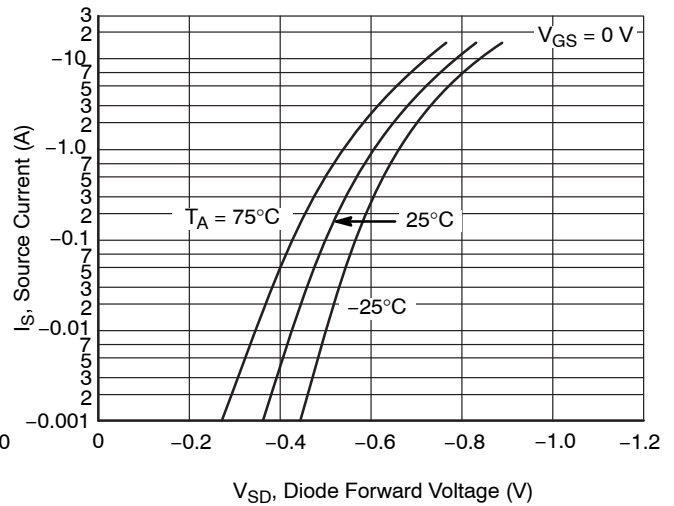


Figure 6. $I_S - V_{SD}$

ECH8308

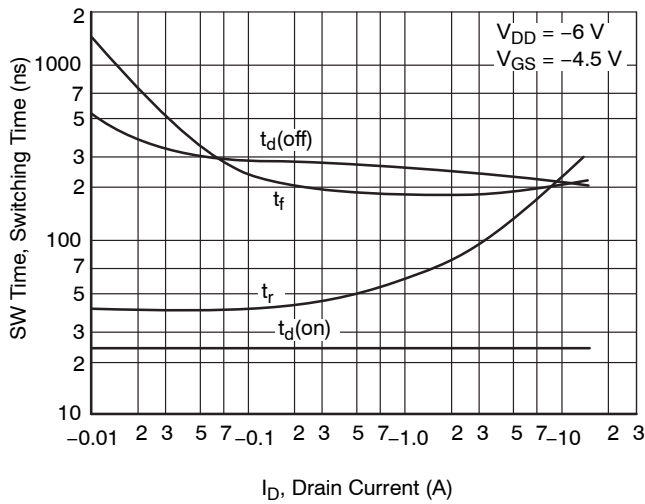


Figure 7. SW Time - I_D

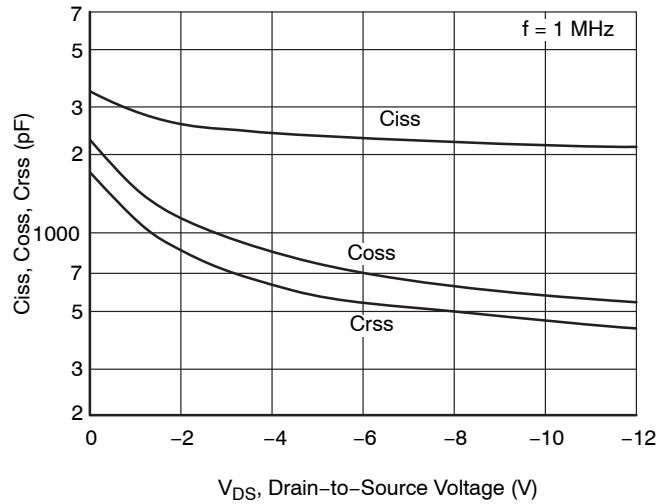


Figure 8. C_{iss} , C_{oss} , C_{rss} - V_{DS}

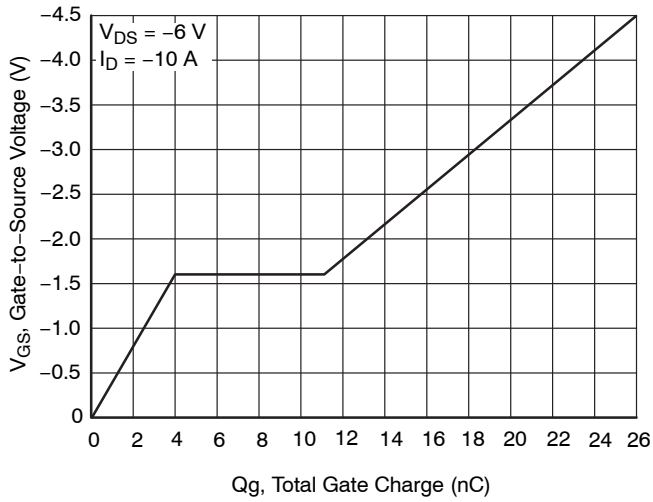


Figure 9. V_{GS} - Q_g

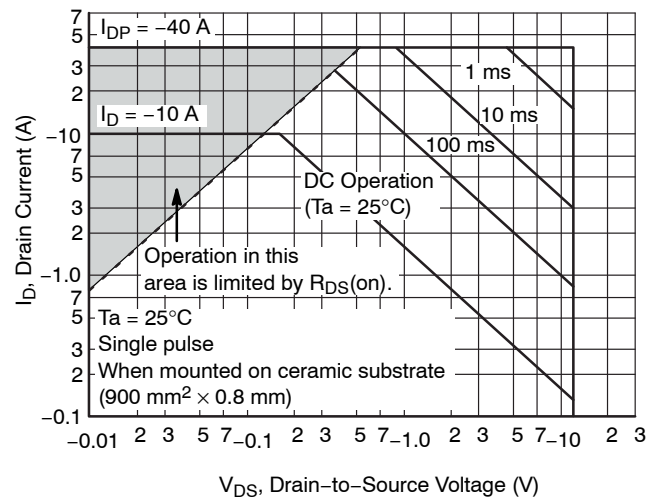


Figure 10. ASO

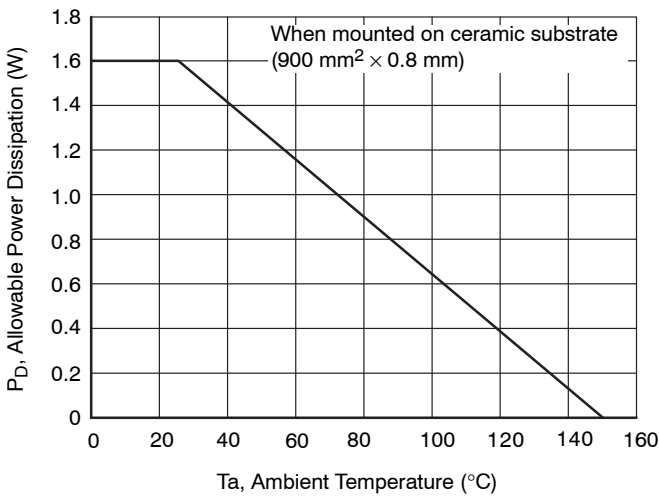
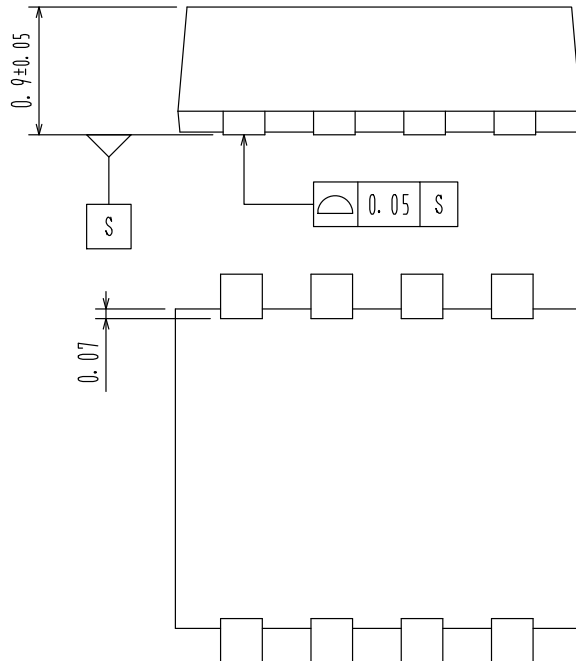
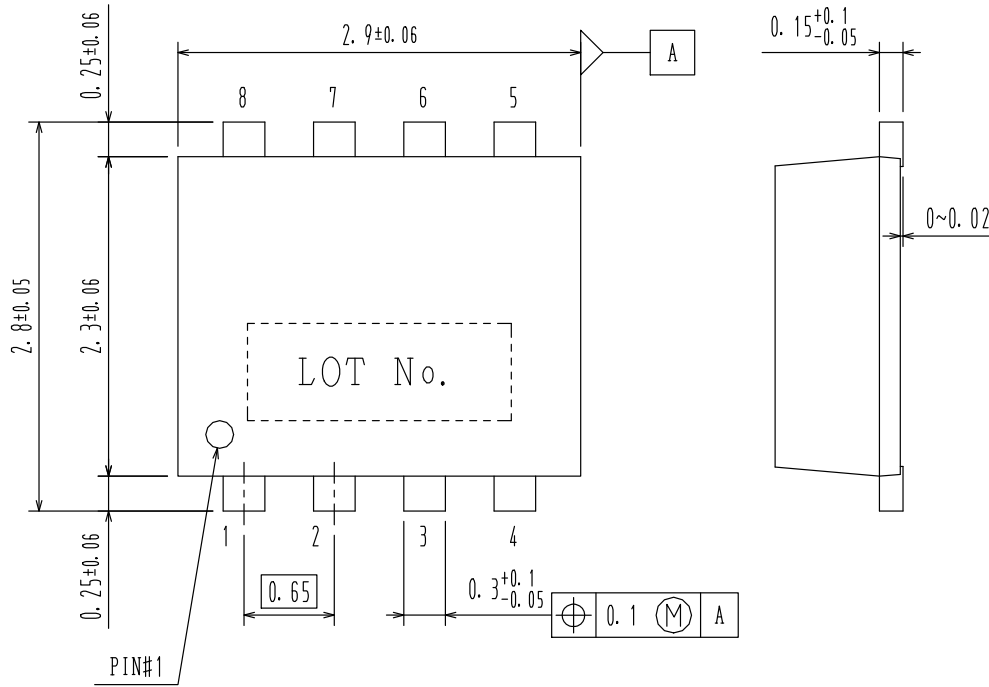


Figure 11. P_D - T_a

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