

ECH8309-TL-H Datasheet



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| | |
|------------------------------|--|
| DiGi Electronics Part Number | ECH8309-TL-H-DG |
| Manufacturer | onsemi |
| Manufacturer Product Number | ECH8309-TL-H |
| Description | MOSFET P-CH 12V 9.5A 8ECH |
| Detailed Description | P-Channel 12 V 9.5A (Ta) 1.5W (Ta) Surface Mount 8-ECH |



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RFQ Email: Info@DiGi-Electronics.com

DiGi is a global authorized distributor of electronic components.

Purchase and inquiry

Manufacturer Product Number:

ECH8309-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:

ECH8309

Manufacturer:

onsemi

Product Status:

Obsolete

Technology:

MOSFET (Metal Oxide)

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

9.5A (Ta)

Rds On (Max) @ Id, Vgs:

16mOhm @ 4.5A, 4.5V

Gate Charge (Qg) (Max) @ Vgs:

18 nC @ 4.5 V

Input Capacitance (Ciss) (Max) @ Vds:

1780 pF @ 6 V

Power Dissipation (Max):

1.5W (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

Ordering number : ENA1418B



ECH8309

P-Channel Power MOSFET -12V, -9.5A, 16mΩ, Single ECH8

ON Semiconductor®

<http://onsemi.com>

Features

- 1.8V drive
- Halogen free compliance
- Protection diode in

Specifications

Absolute Maximum Ratings at Ta=25°C

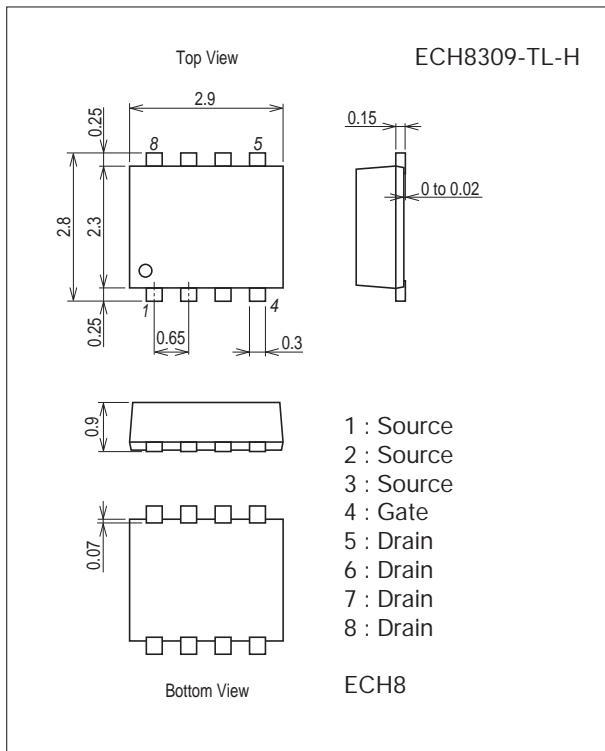
| Parameter | Symbol | Conditions | Ratings | Unit |
|-----------------------------|------------------|---|-------------|------|
| Drain-to-Source Voltage | V _{DSS} | | -12 | V |
| Gate-to-Source Voltage | V _{GSS} | | ±10 | V |
| Drain Current (DC) | I _D | | -9.5 | A |
| Drain Current (Pulse) | I _{DP} | PW≤10μs, duty cycle≤1% | -40 | A |
| Allowable Power Dissipation | P _D | When mounted on ceramic substrate (900mm ² ×0.8mm) | 1.5 | W |
| Channel Temperature | T _{ch} | | 150 | °C |
| Storage Temperature | T _{stg} | | -55 to +150 | °C |

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Package Dimensions

unit : mm (typ)

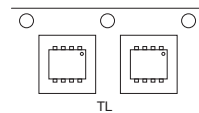
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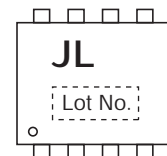
Product & Package Information

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

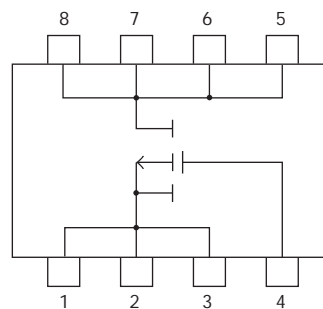
Packing Type : TL



Marking



Electrical Connection

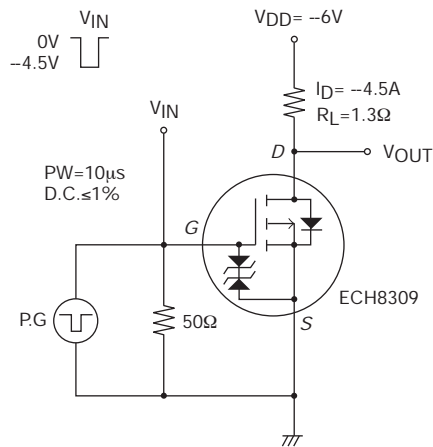


ECH8309

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} $ | $V_{DS}=-6\text{V}$, $I_D=-4.5\text{A}$ | 9.6 | 16 | | S |
| Static Drain-to-Source On-State Resistance | $R_{DS(on)1}$ | $I_D=-4.5\text{A}$, $V_{GS}=-4.5\text{V}$ | | 12 | 16 | $\text{m}\Omega$ |
| | $R_{DS(on)2}$ | $I_D=-2\text{A}$, $V_{GS}=-2.5\text{V}$ | | 18 | 26 | $\text{m}\Omega$ |
| | $R_{DS(on)3}$ | $I_D=-1\text{A}$, $V_{GS}=-1.8\text{V}$ | | 30 | 53 | $\text{m}\Omega$ |
| Input Capacitance | C_{iss} | | | 1780 | | pF |
| Output Capacitance | C_{oss} | $V_{DS}=-6\text{V}$, $f=1\text{MHz}$ | | 540 | | pF |
| Reverse Transfer Capacitance | C_{rss} | | | 390 | | pF |
| Turn-ON Delay Time | $t_{d(on)}$ | See specified Test Circuit. | | 22 | | ns |
| Rise Time | t_r | | | 110 | | ns |
| Turn-OFF Delay Time | $t_{d(off)}$ | | | 157 | | ns |
| Fall Time | t_f | | | 123 | | ns |
| Total Gate Charge | Q_g | | | | 18 | |
| Gate-to-Source Charge | Q_{gs} | $V_{DS}=-6\text{V}$, $V_{GS}=-4.5\text{V}$, $I_D=-9.5\text{A}$ | | 2.8 | | nC |
| Gate-to-Drain "Miller" Charge | Q_{gd} | | | 4.9 | | nC |
| Diode Forward Voltage | V_{SD} | $I_S=-9.5\text{A}$, $V_{GS}=0\text{V}$ | | -0.8 | -1.2 | V |

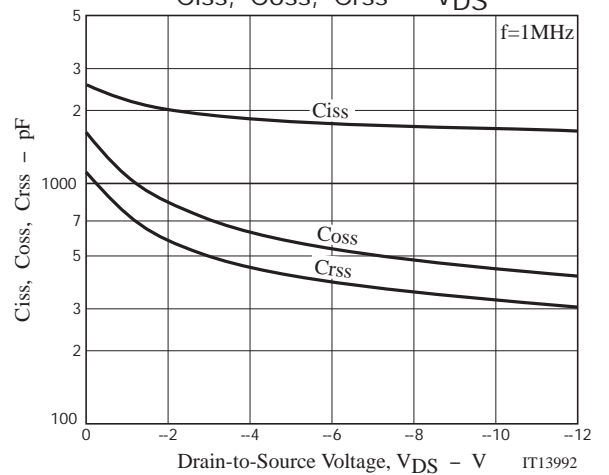
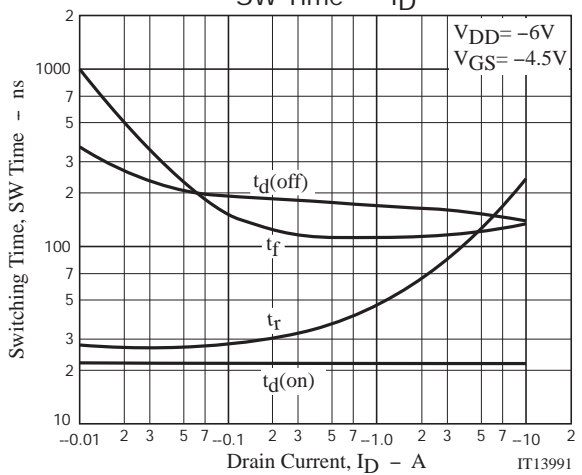
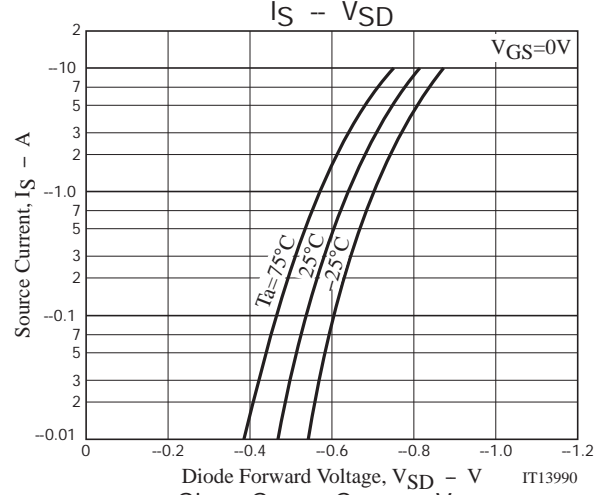
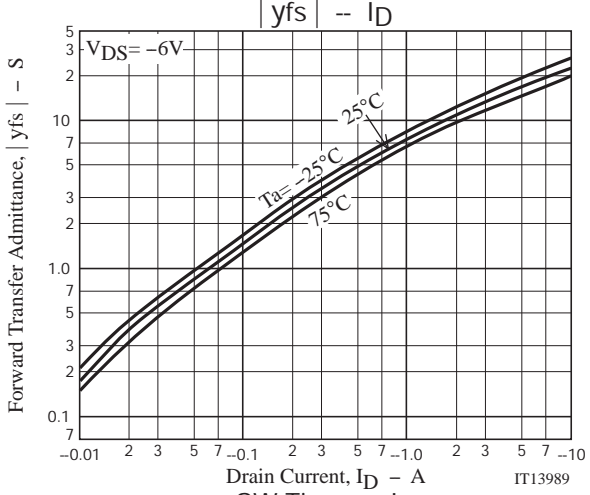
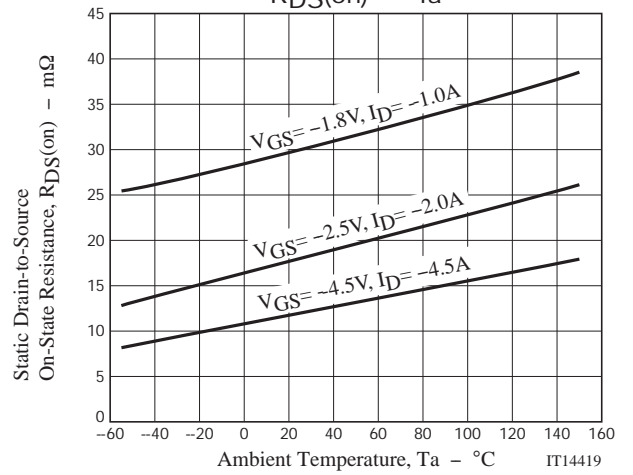
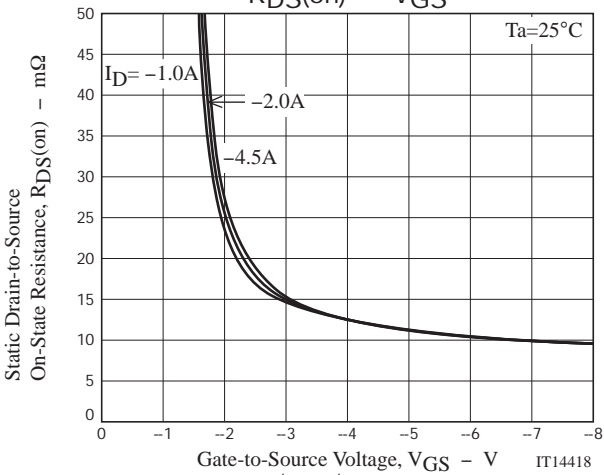
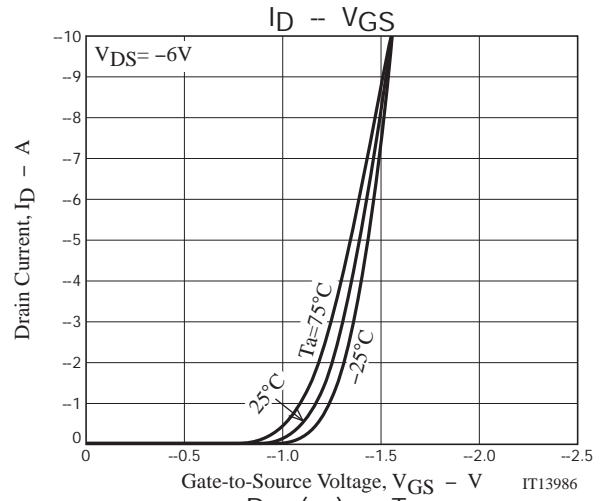
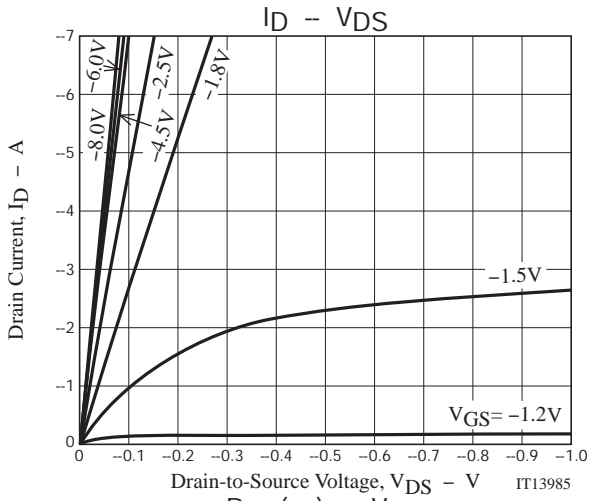
Switching Time Test Circuit



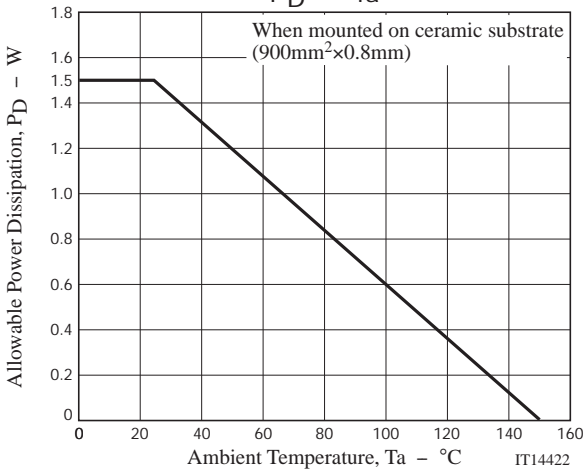
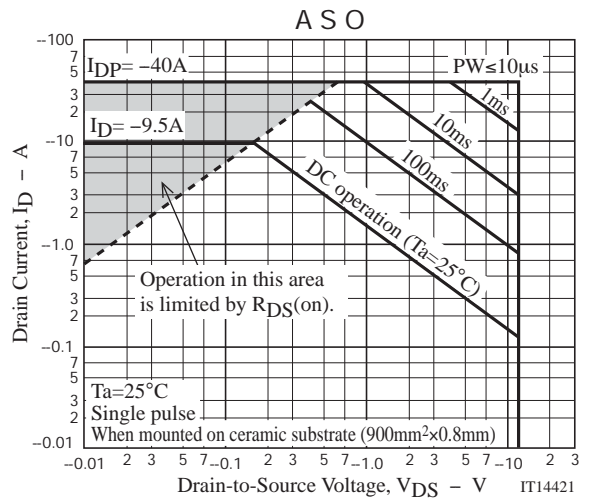
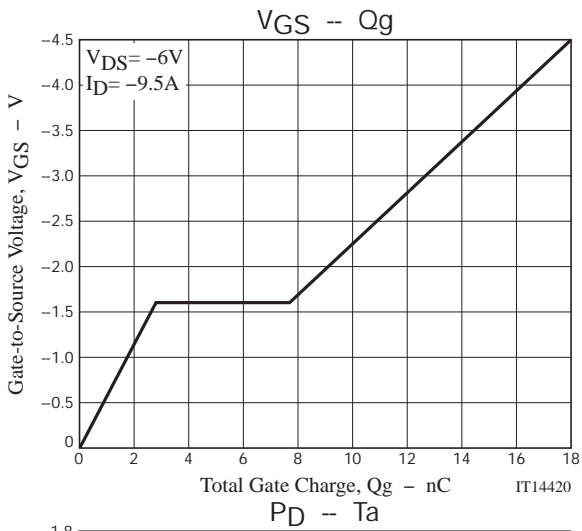
Ordering Information

| Device | Package | Shipping | memo |
|--------------|---------|----------------|--------------------------|
| ECH8309-TL-H | ECH8 | 3,000pcs./reel | Pb Free and Halogen Free |

ECH8309



ECH8309



ECH8309

Embossed Taping Specification

ECH8309-TL-H

1. Packing Format

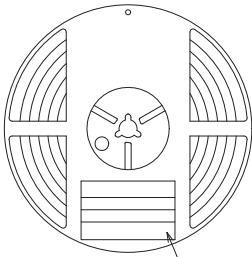
| Package Name | Carrier Tape Type | Maximum Number of devices contained (pcs) | | | Packing format | |
|--------------|-------------------|---|-----------|-----------|---|--|
| | | Reel | Inner box | Outer box | Inner BOX (C-1) | Outer BOX (A-7) |
| ECH8 | CPH6 | 3,000 | 15,000 | 90,000 | 5 reels contained Dimensions:mm (external) 183×72×185 | 6 inner boxes contained Dimensions:mm (external) 440×195×210 |

Reel label, Inner box label
(unit :mm)

Outer box label

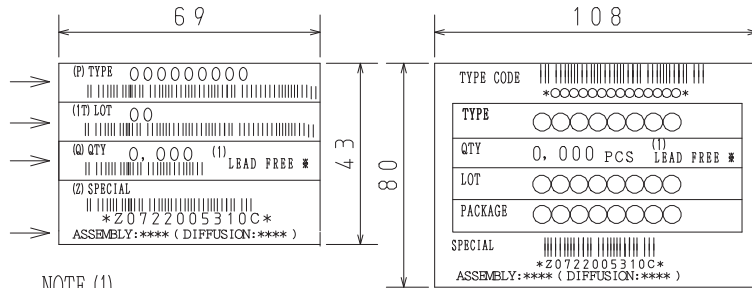
It is a label at the time of factory shipments.
The form of a label may change in physical distribution process.

Packing method



Reel label

Type No.
LOT No.
Quantity
Origin



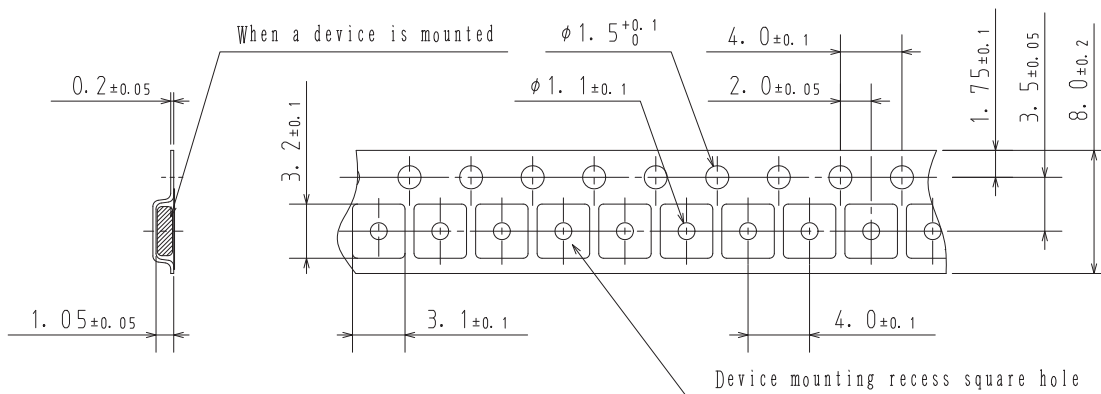
NOTE (1)

The LEAD FREE * description shows that the surface treatment of the terminal is lead free.

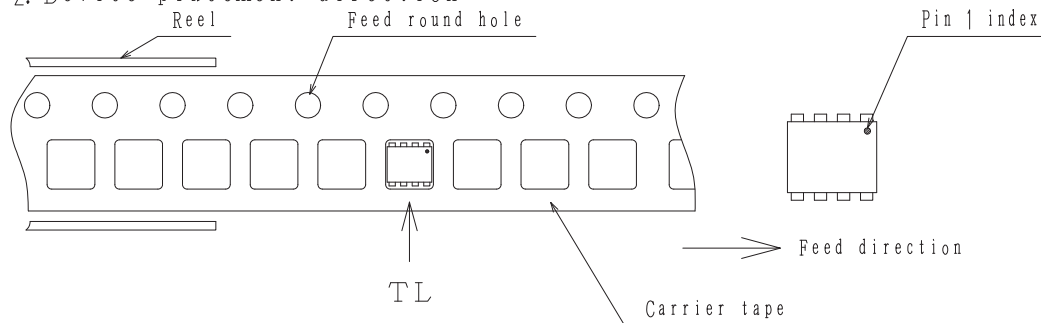
| Label | JEITA Phase |
|-------------|----------------|
| LEAD FREE 3 | JEITA Phase 3A |
| LEAD FREE 4 | JEITA Phase 3 |

2. Taping configuration

2-1. Carrier tape size (unit:mm)



2-2. Device placement direction



Those with pin 1 index on the feed hole side.....TL

ECH8309

Note on usage : Since the ECH8309 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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