



# ECH8309 — P-Channel Silicon MOSFET — General-Purpose Switching Device Applications

## Features

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

## Specifications

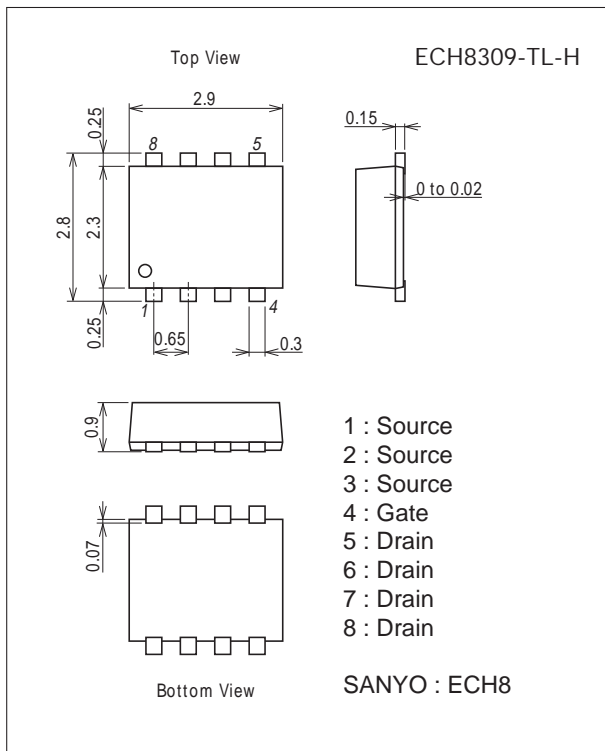
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	VDSS		-12	V
Gate-to-Source Voltage	VGSS		±10	V
Drain Current (DC)	ID		-9.5	A
Drain Current (Pulse)	IDP	PW≤10μs, duty cycle≤1%	-40	A
Allowable Power Dissipation	PD	When mounted on ceramic substrate (900mm <sup>2</sup> ×0.8mm)	1.5	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		-55 to +150	°C

## Package Dimensions

unit : mm (typ)

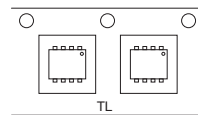
7011A-002



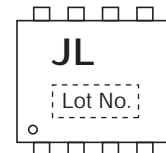
## Product & Package Information

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

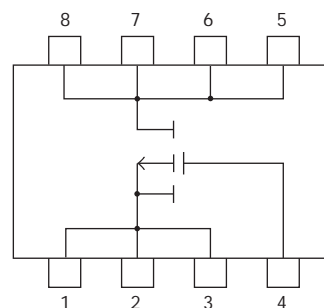
## Packing Type : TL



## Marking



## Electrical Connection

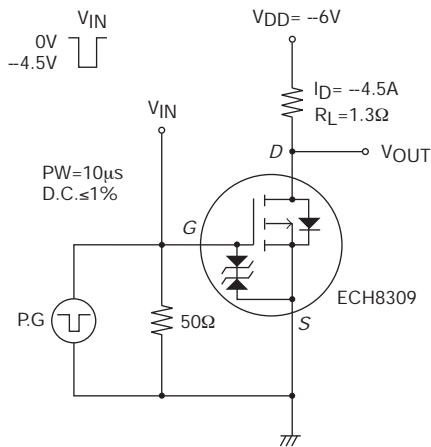


# ECH8309

## Electrical Characteristics at Ta=25°C

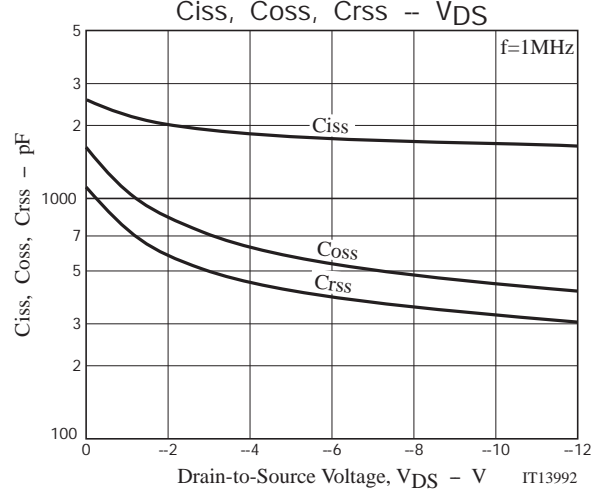
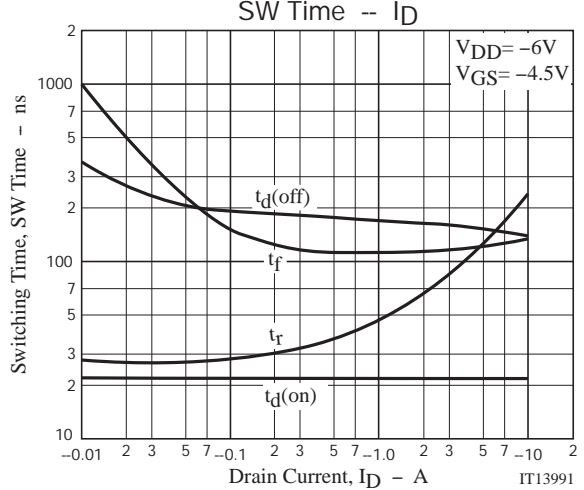
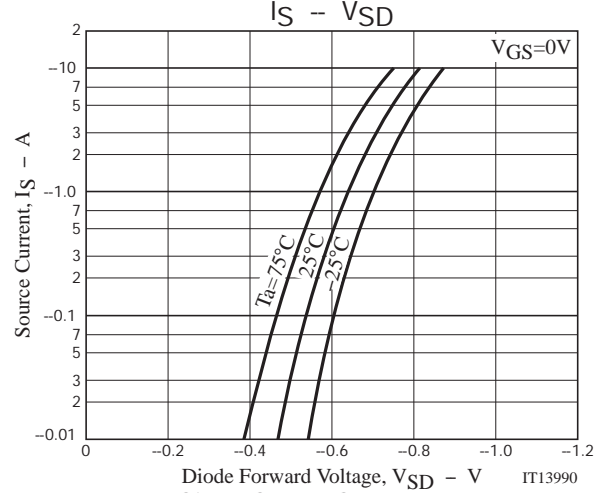
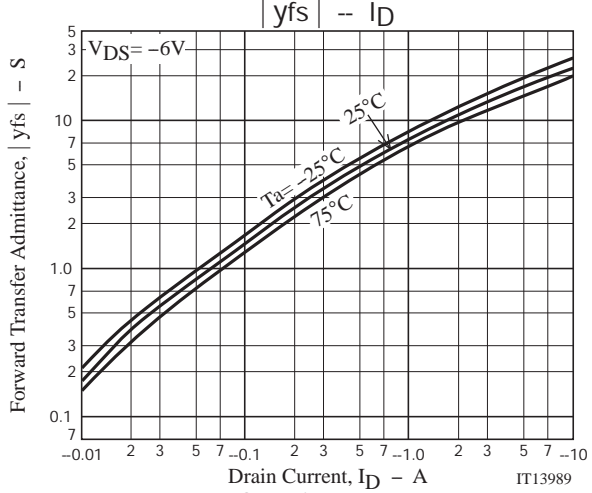
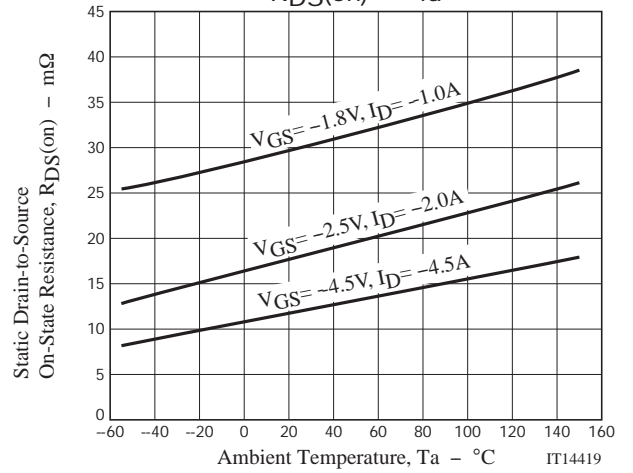
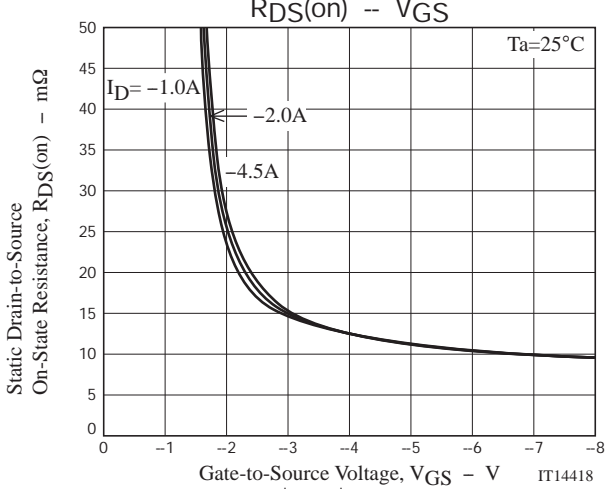
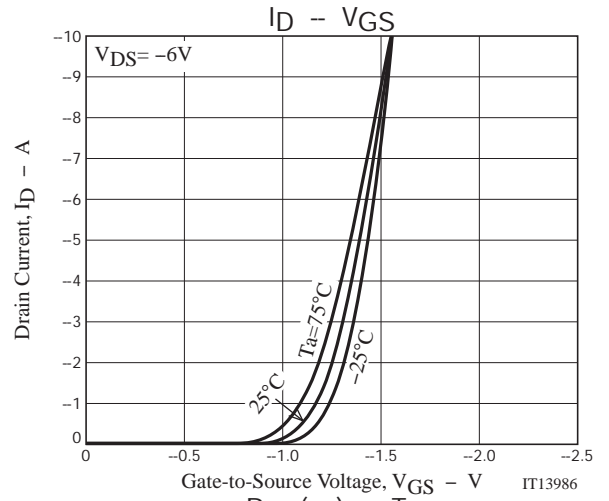
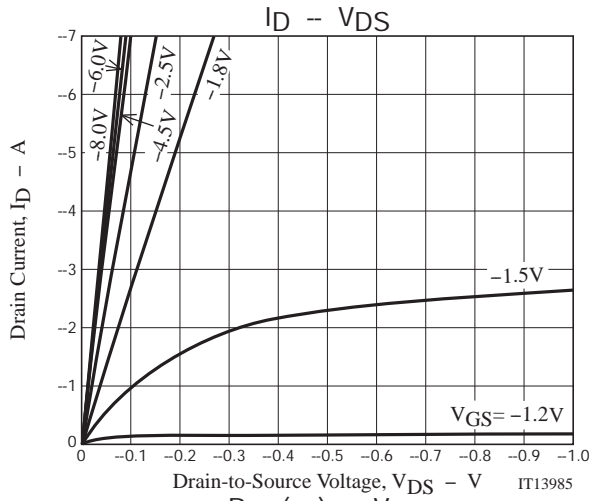
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=-1mA, VGS=0V	-12			V
Zero-Gate Voltage Drain Current	IDSS	VDS=-12V, VGS=0V			-10	μA
Gate-to-Source Leakage Current	IGSS	VGS=±8V, VDS=0V			±10	μA
Cutoff Voltage	VGS(off)	VDS=-6V, ID=-1mA	-0.4		-1.3	V
Forward Transfer Admittance	yfs	VDS=-6V, ID=-4.5A	9.6	16		S
Static Drain-to-Source On-State Resistance	RDS(on)1	ID=-4.5A, VGS=-4.5V		12	16	mΩ
	RDS(on)2	ID=-2A, VGS=-2.5V		18	26	mΩ
	RDS(on)3	ID=-1A, VGS=-1.8V		30	53	mΩ
Input Capacitance	Ciss	VDS=-6V, f=1MHz		1780		pF
Output Capacitance	Coss			540		pF
Reverse Transfer Capacitance	Crss			390		pF
Turn-ON Delay Time	td(on)		See specified Test Circuit.		22	
Rise Time	tr			110		ns
Turn-OFF Delay Time	td(off)			157		ns
Fall Time	tf			123		ns
Total Gate Charge	Qg	VDS=-6V, VGS=-4.5V, ID=-9.5A			18	
Gate-to-Source Charge	Qgs			2.8		nC
Gate-to-Drain "Miller" Charge	Qgd			4.9		nC
Diode Forward Voltage	VSD	IS=-9.5A, VGS=0V		-0.8	-1.2	V

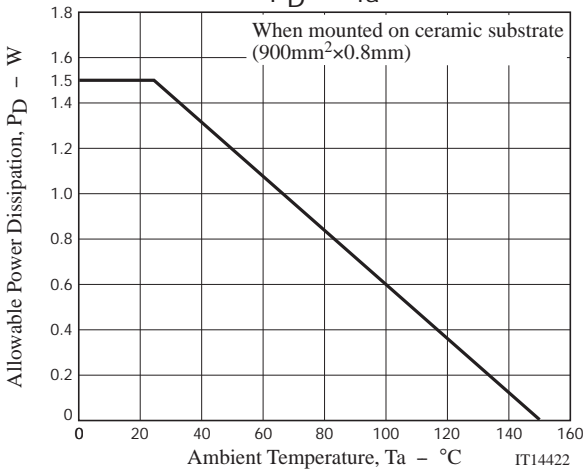
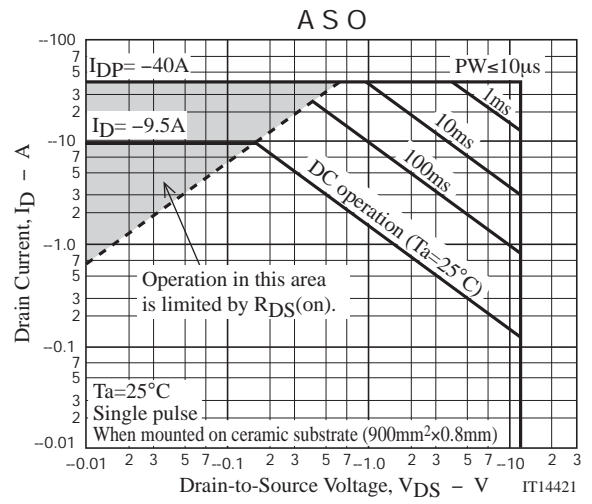
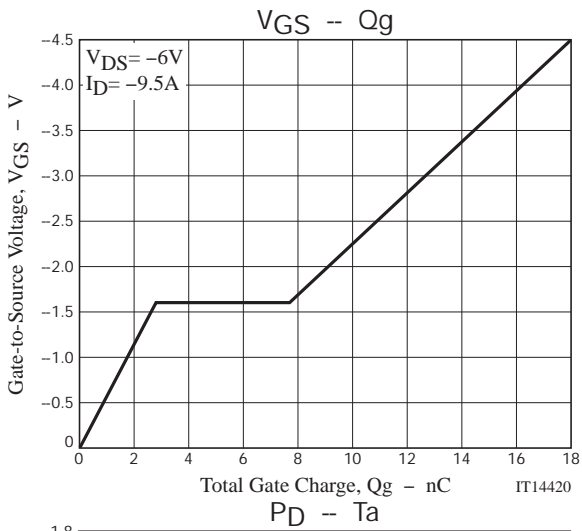
## Switching Time Test Circuit



## Ordering Information

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





Embossed Taping Specification

ECH8309-TL-H

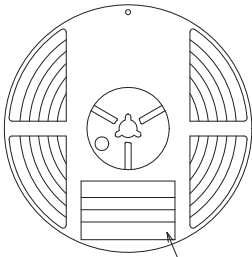
1. Packing Format

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

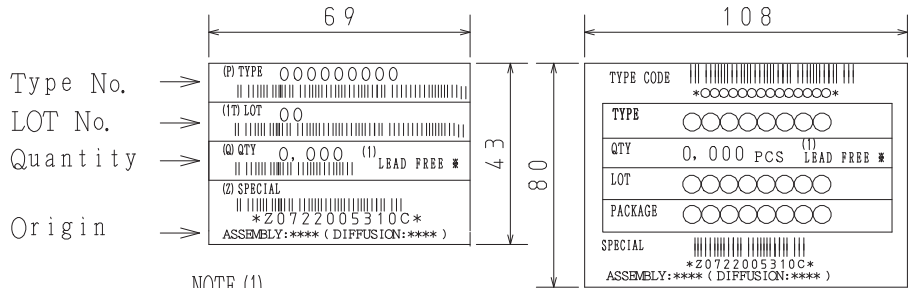
Reel label, Inner box label  
(unit :mm)

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



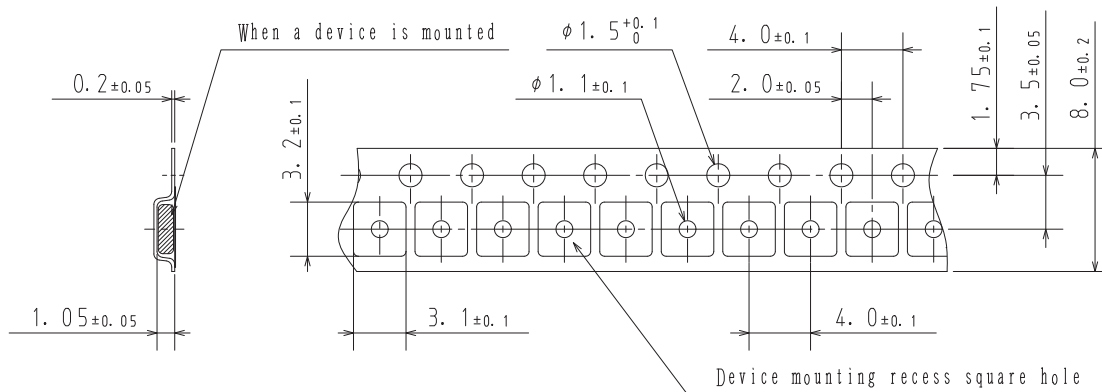
NOTE (1)

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

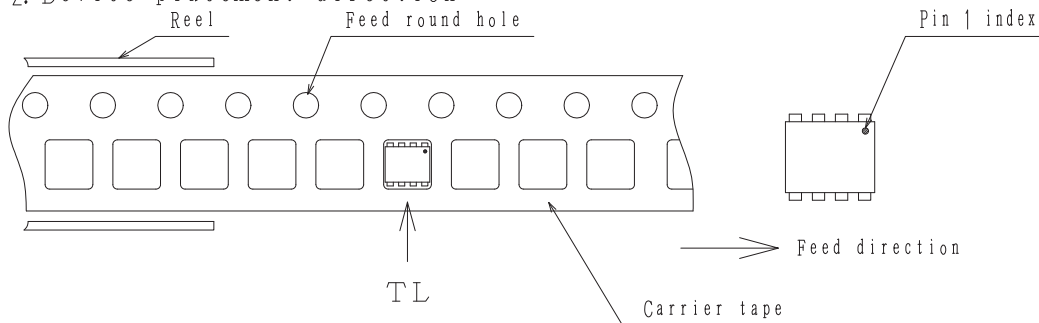
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



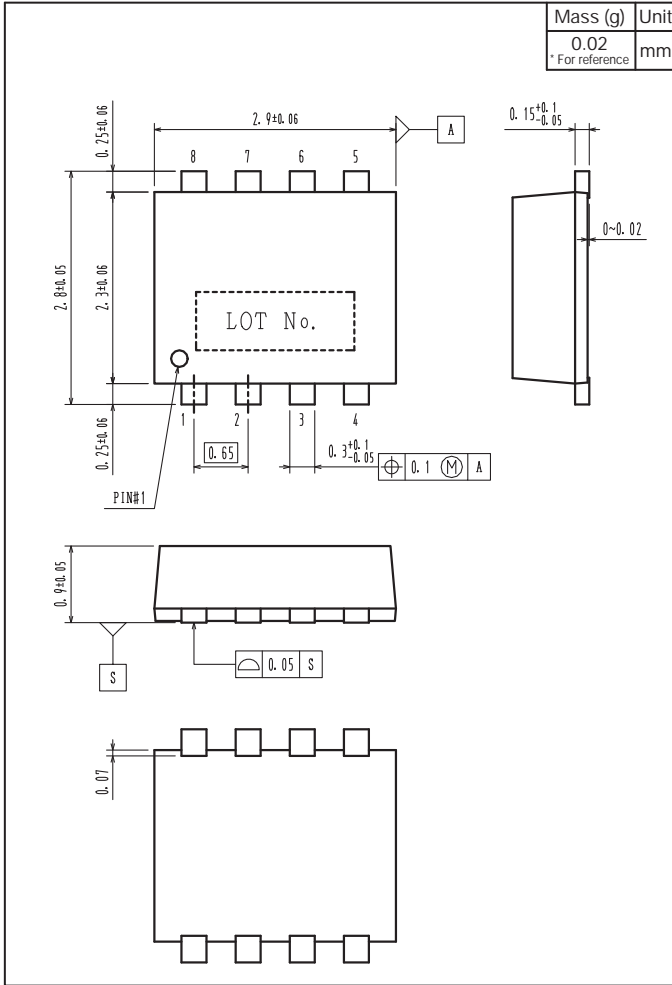
2-2. Device placement direction



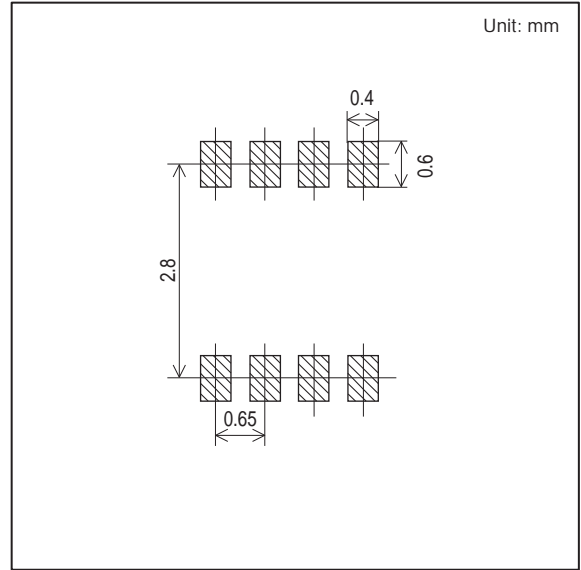
Those with pin 1 index on the feed hole side.....TL

# ECH8309

## Outline Drawing ECH8309-TL-H



## Land Pattern Example



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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