

P-Channel Silicon MOSFET

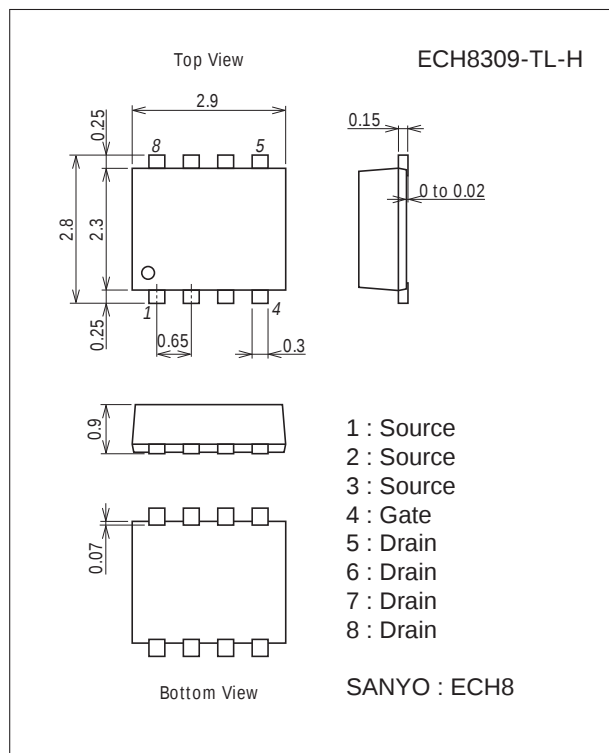
ECH8309 — General-Purpose Switching Device Applications

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

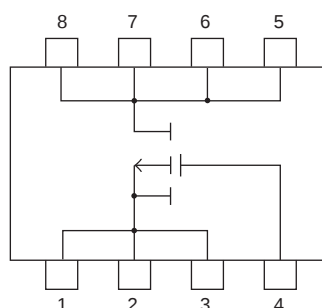
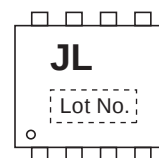
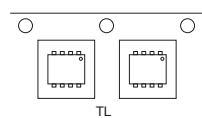
Absolute Maximum Ratings at Ta=25°C

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

7011A-002



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

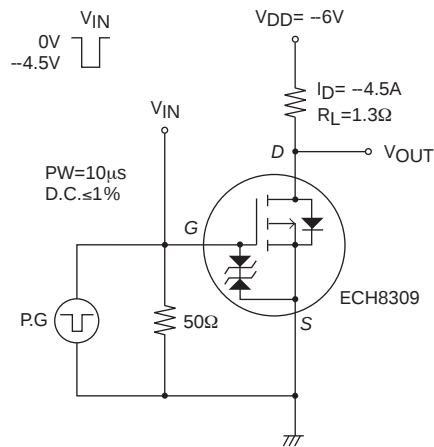


ECH8309

Electrical Characteristics at Ta=25°C

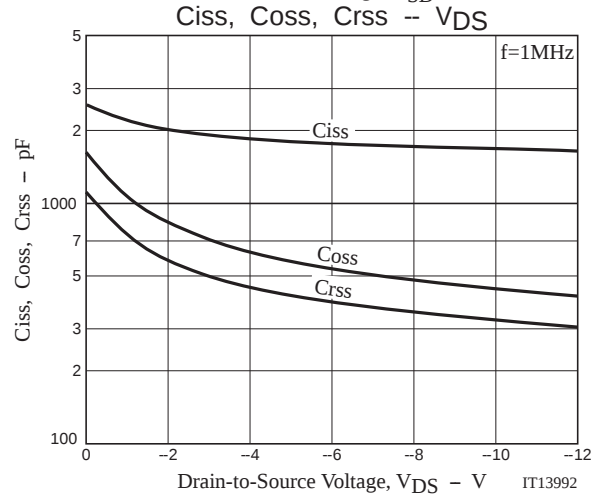
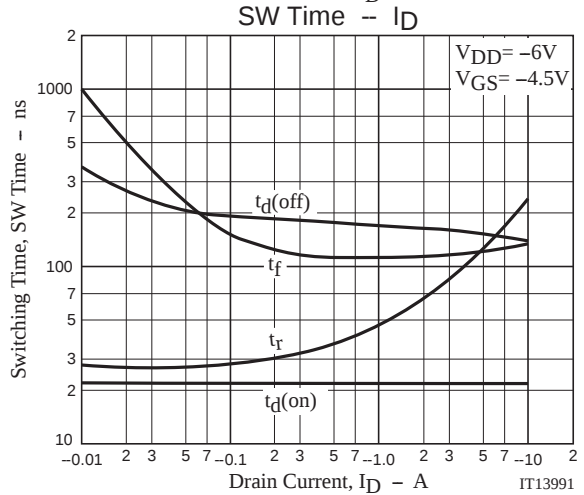
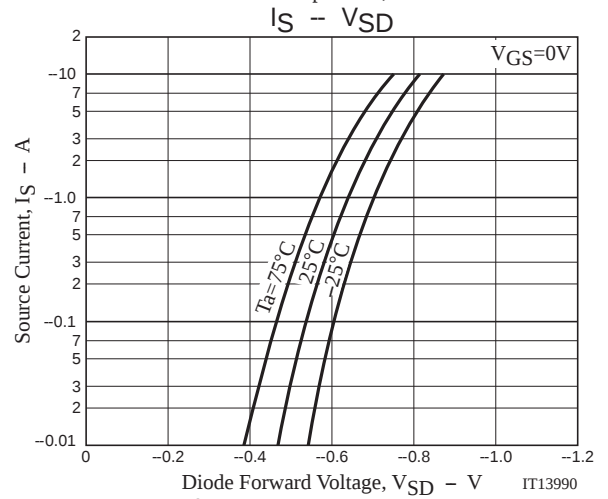
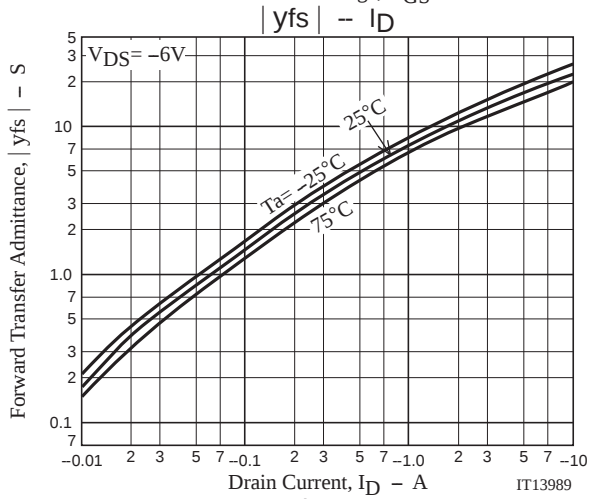
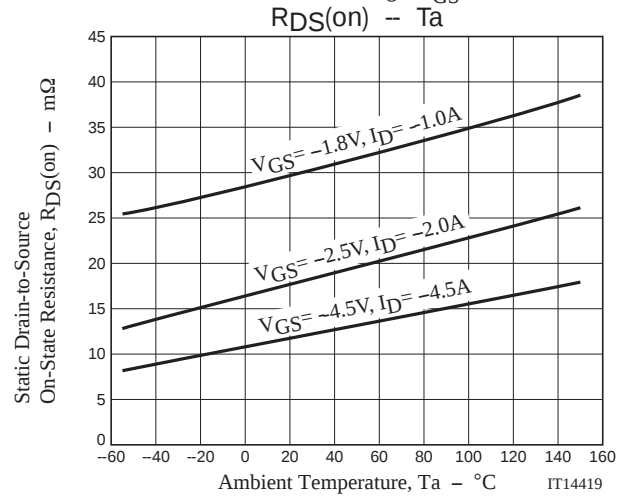
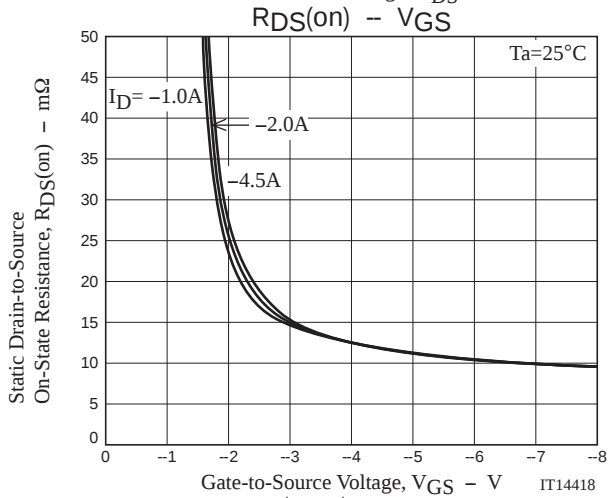
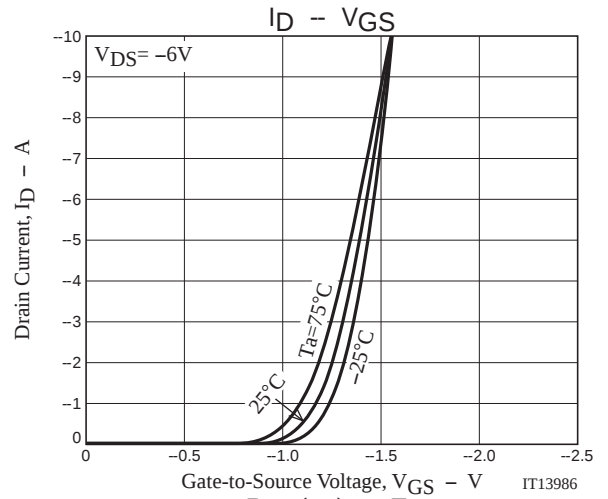
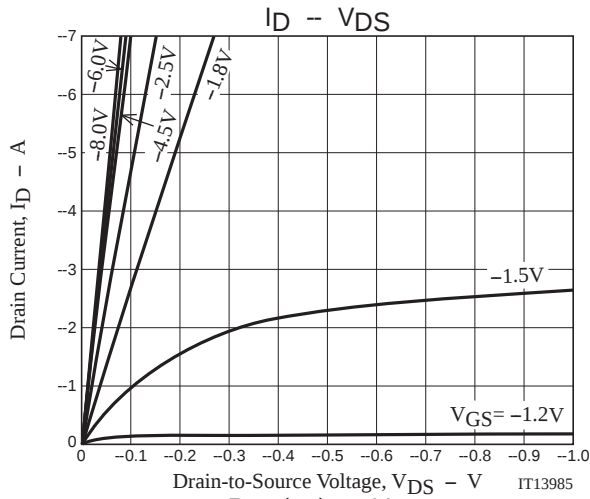
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = -1mA, V_{GS} = 0V$	-12			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -12V, V_{GS} = 0V$			-10	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS} = \pm 8V, V_{DS} = 0V$			± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = -6V, I_D = -1mA$	-0.4		-1.3	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = -6V, I_D = -4.5A$	9.6	16		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D = -4.5A, V_{GS} = -4.5V$		12	16	m Ω
	$R_{DS(on)2}$	$I_D = -2A, V_{GS} = -2.5V$		18	26	m Ω
	$R_{DS(on)3}$	$I_D = -1A, V_{GS} = -1.8V$		30	53	m Ω
Input Capacitance	C_{iss}	$V_{DS} = -6V, f = 1MHz$		1780		pF
Output Capacitance	C_{oss}			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	$V_{DS} = -6V, V_{GS} = -4.5V, I_D = -9.5A$		18		nC
Gate-to-Source Charge	Q_{gs}			2.8		nC
Gate-to-Drain "Miller" Charge	Q_{gd}			4.9		nC
Diode Forward Voltage	V_{SD}	$I_S = -9.5A, V_{GS} = 0V$		-0.8	-1.2	V

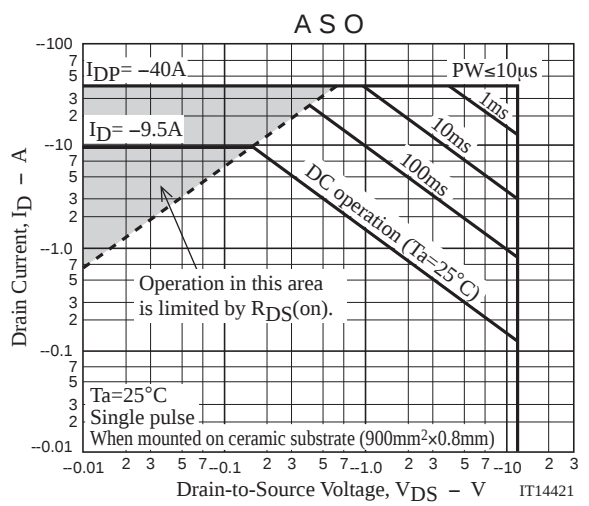
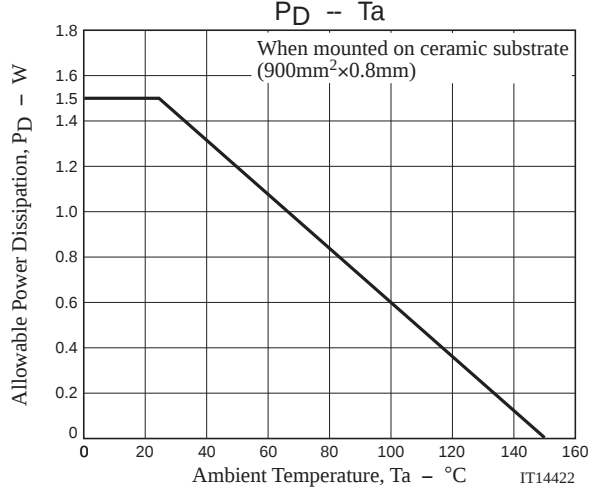
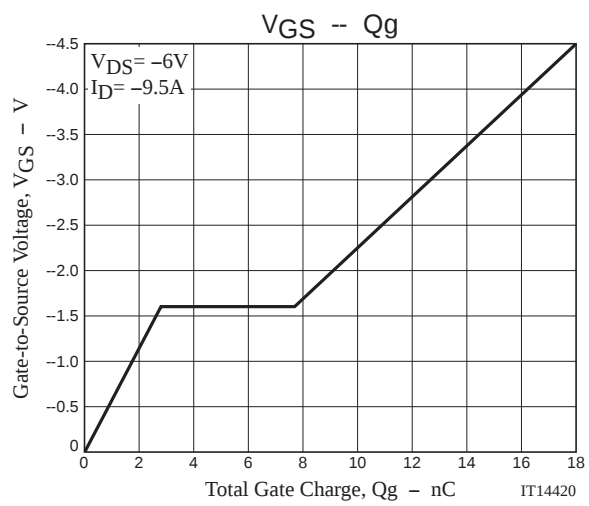
Switching Time Test Circuit



Ordering Information

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





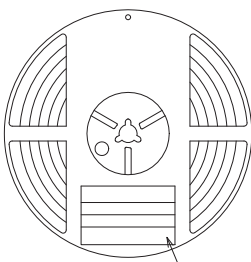
Embossed Taping Specification

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

Packing method



Reel label

Type No.
LOT No.
Quantity
Origin

Reel label, Inner box label
(unit:mm)

(P) TYPE	000000000
(1) LOT	00
(Q) QTY	0,000 (1) LEAD FREE *
(2) SPECIAL	
	20722005310C
	ASSEMBLY:**** (DIFFUSION:****)

Outer box label

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

TYPE CODE	00000000000000000000
TYPE	00000000
QTY	0,000 PCS (1) LEAD FREE *
LOT	00000000
PACKAGE	00000000
SPECIAL	
	20722005310C
	ASSEMBLY:**** (DIFFUSION:****)

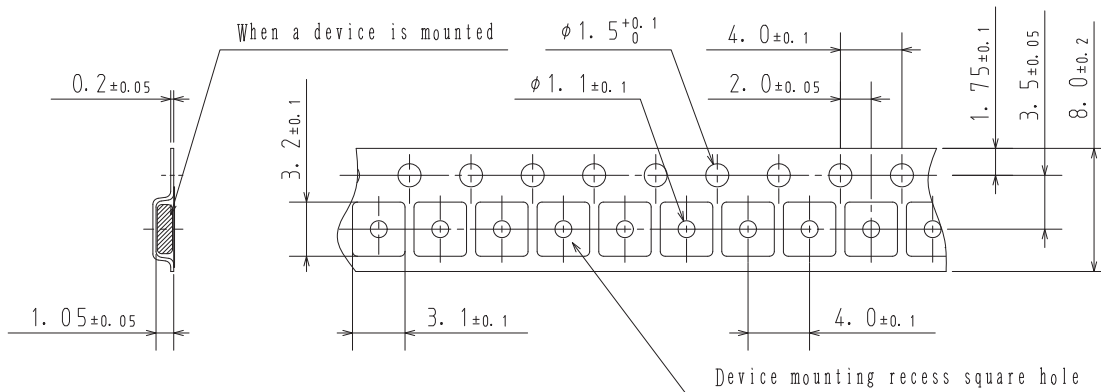
NOTE (1)

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

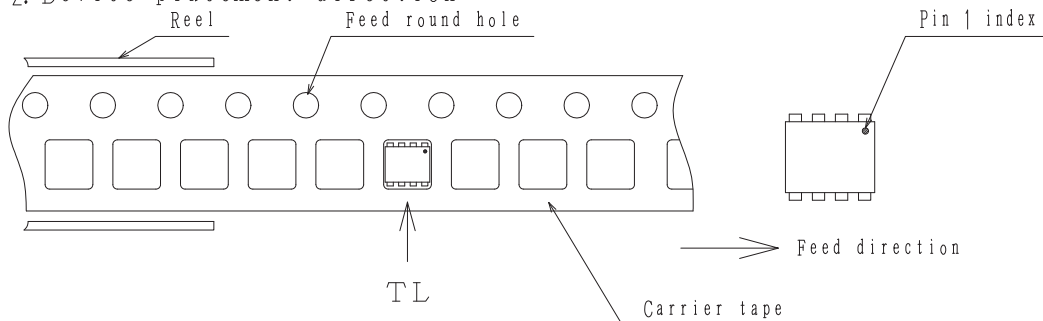
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



2-2. Device placement direction

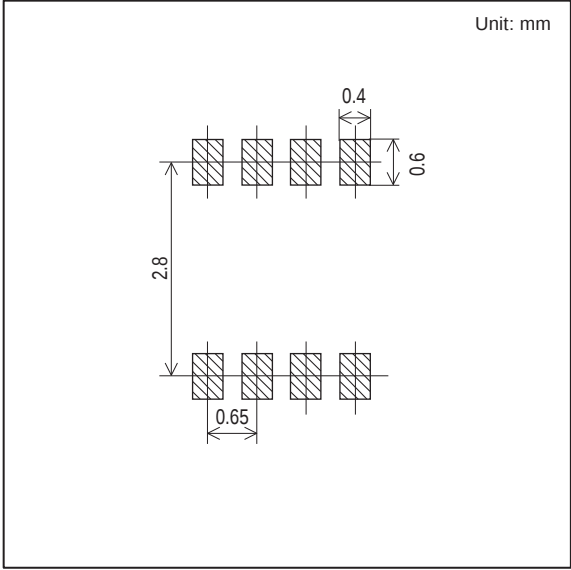


Those with pin 1 index on the feed hole side.....TL

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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