



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

ECH8601M — N-Channel Silicon MOSFET — General-Purpose Switching Device Applications

Features

- Low ON-resistance
- 2.5V drive
- Common-drain type
- Protection diode in
- Built-in gate protection resistor
- Best suited for LiB charging and discharging switch
- Halogen free compliance

Specifications

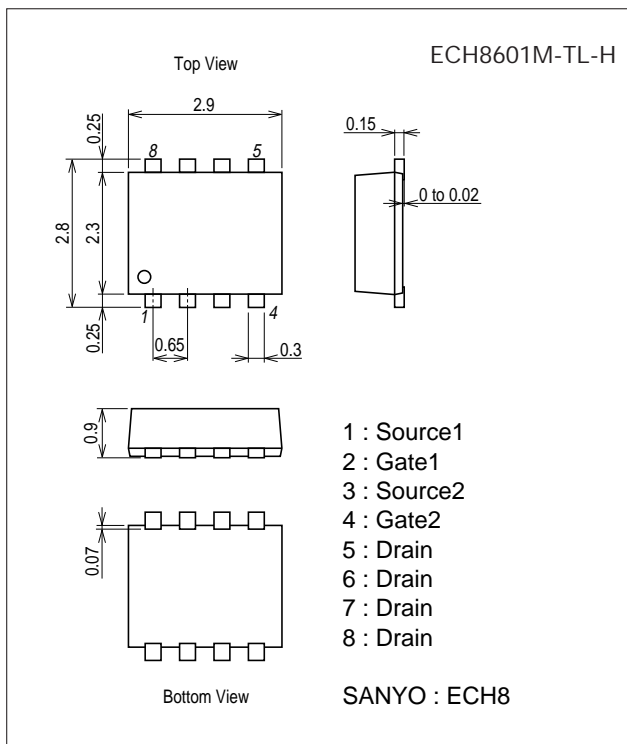
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V _{DSS}		24	V
Gate-to-Source Voltage	V _{GSS}		±12	V
Drain Current (DC)	I _D		8	A
Drain Current (Pulse)	I _{DP}	PW≤10μs, duty cycles≤1%	60	A
Allowable Power Dissipation	P _D	When mounted on ceramic substrate (1000mm ² ×0.8mm) 1unit	1.5	W
Total Dissipation	P _T	When mounted on ceramic substrate (1000mm ² ×0.8mm)	1.6	W
Channel Temperature	T _{ch}		150	°C
Storage Temperature	T _{stg}		-55 to +150	°C

Package Dimensions

unit : mm (typ.)

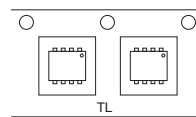
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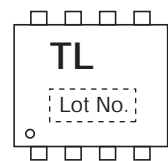
Product & Package Information

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

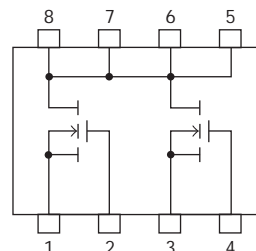
Packing Type : TL



Marking



Electrical Connection

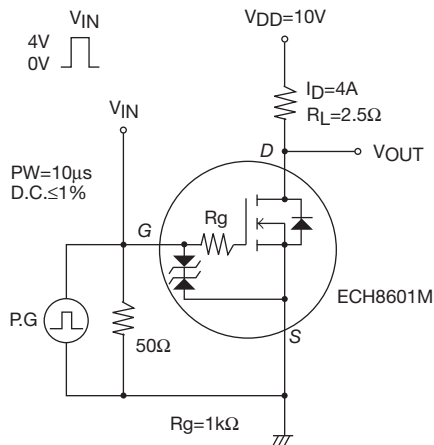


ECH8601M

Electrical Characteristics at $T_a=25^\circ\text{C}$

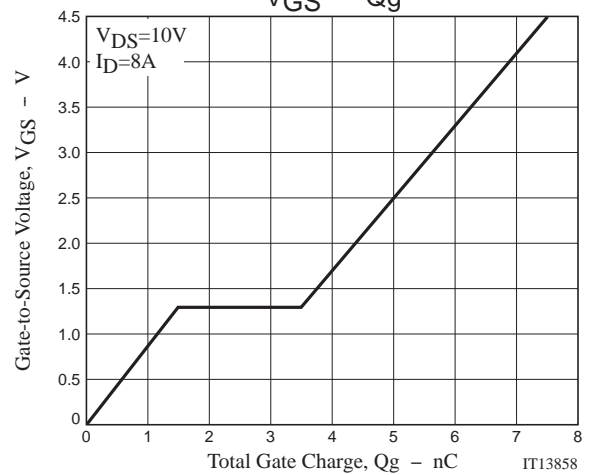
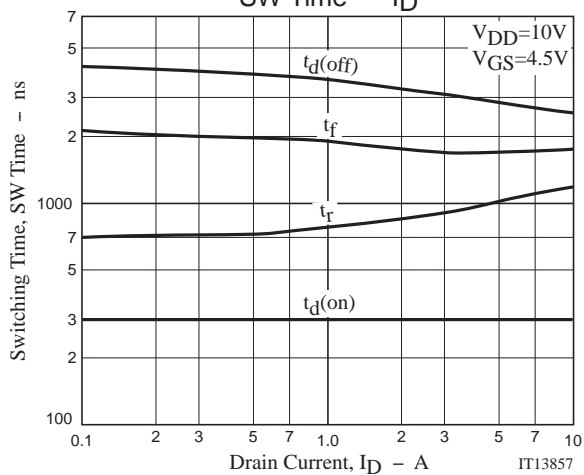
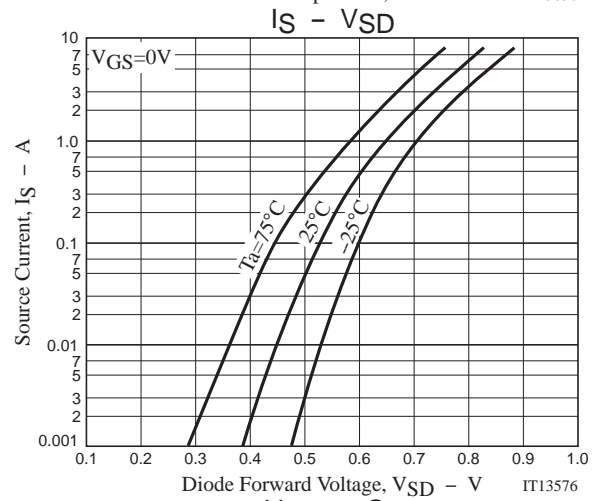
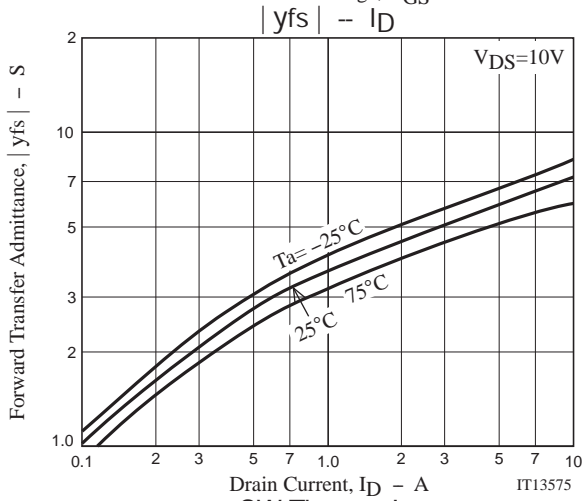
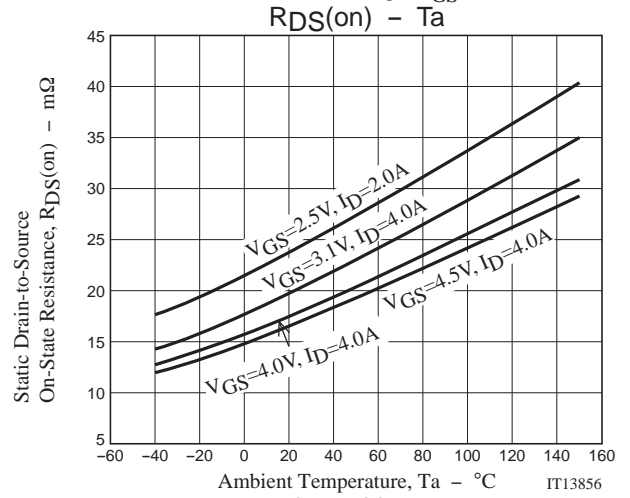
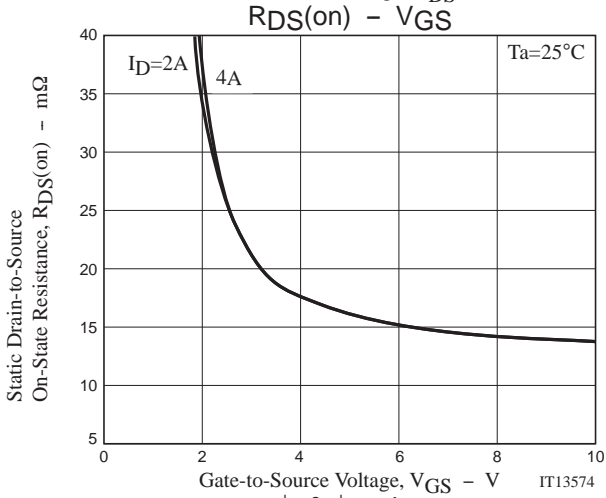
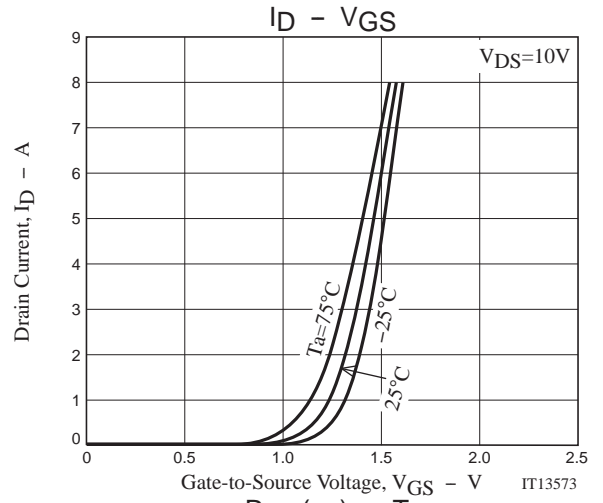
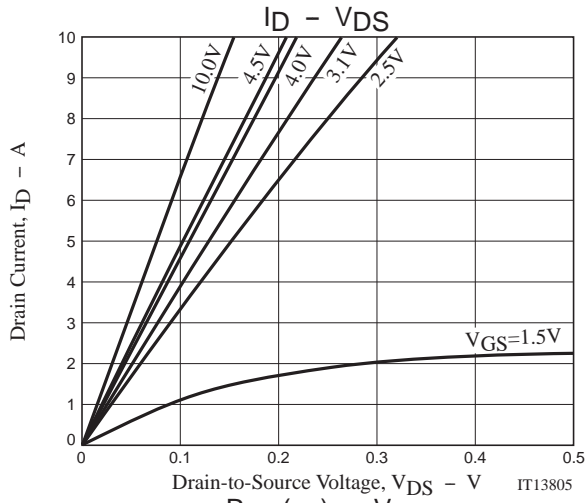
Parameter	Symbol	Conditions	Ratings			Unit
			min.	typ.	max.	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1\text{mA}, V_{GS}=0\text{V}$	24			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=20\text{V}, V_{GS}=0\text{V}$			1	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 8\text{V}, V_{DS}=0\text{V}$			± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10\text{V}, I_D=1\text{mA}$	0.5		1.3	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10\text{V}, I_D=4\text{A}$	3.1	5.3		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=4\text{A}, V_{GS}=4.5\text{V}$	13.5	17	23	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D=4\text{A}, V_{GS}=4.0\text{V}$	14	18	24	$\text{m}\Omega$
	$R_{DS(on)3}$	$I_D=4\text{A}, V_{GS}=3.1\text{V}$	14.5	20	30	$\text{m}\Omega$
	$R_{DS(on)4}$	$I_D=2\text{A}, V_{GS}=2.5\text{V}$	16	24	35	$\text{m}\Omega$
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		300		ns
Rise Time	t_r			1000		ns
Turn-OFF Delay Time	$t_{d(off)}$			3000		ns
Fall Time	t_f			1800		ns
Total Gate Charge	Q_g		$V_{DS}=10\text{V}, V_{GS}=4.5\text{V}, I_D=8\text{A}$		7.5	
Gate-to-Source Charge	Q_{gs}			1.5		nC
Gate-to-Drain "Miller" Charge	Q_{gd}			2.0		nC
Diode Forward Voltage	V_{SD}	$I_S=8\text{A}, V_{GS}=0\text{V}$			0.8	1.2

Switching Time Test Circuit

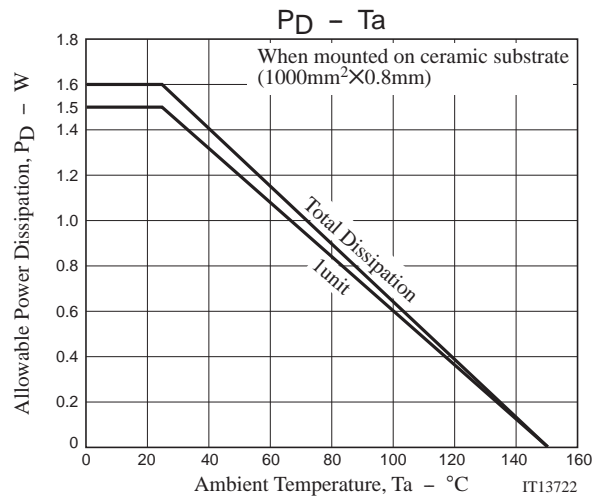
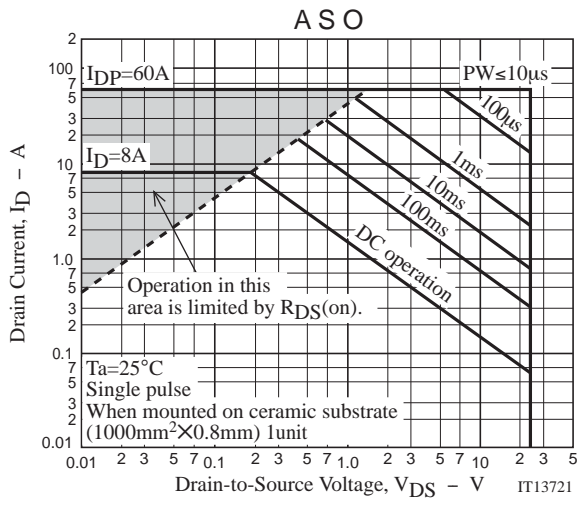


Ordering Information

Device	Package	Shipping	memo
ECH8601M-TL-H	ECH8	3,000pcs./reel	Pb-Free and Halogen Free



ECH8601M



ECH8601M

Embossed Taping Specification

ECH8601M-TL-H

1. Packing Format

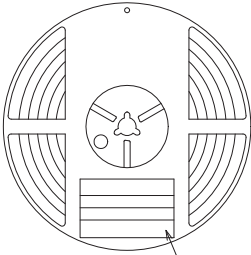
Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	Inner BOX (C-1)	Outer BOX (A-7)
ECH8	CPH6	3,000	15,000	90,000	5 reels contained Dimensions:mm (external) 183×72×185	6 inner boxes contained Dimensions:mm (external) 440×195×210

Reel label, Inner box label
(unit :mm)

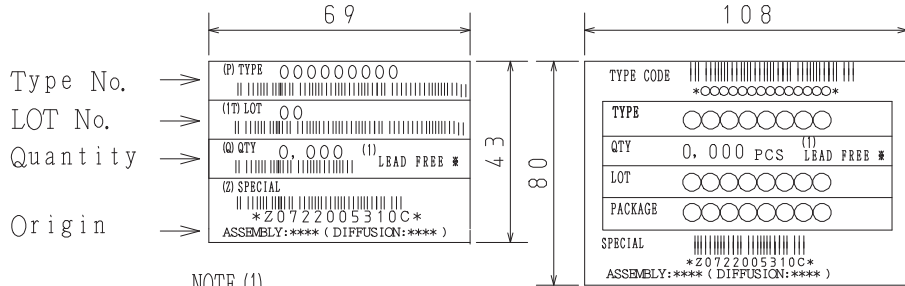
Outer box label

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



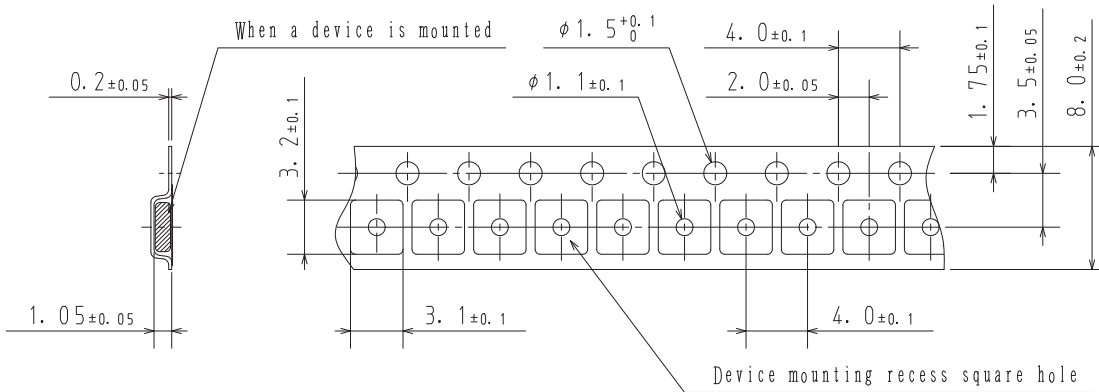
NOTE (1)

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

ECH8601M

Outline Drawing ECH8601M-TL-H



Land Pattern Example



Note on usage : Since the ECH8601M is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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