



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

## ECH8664R — 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

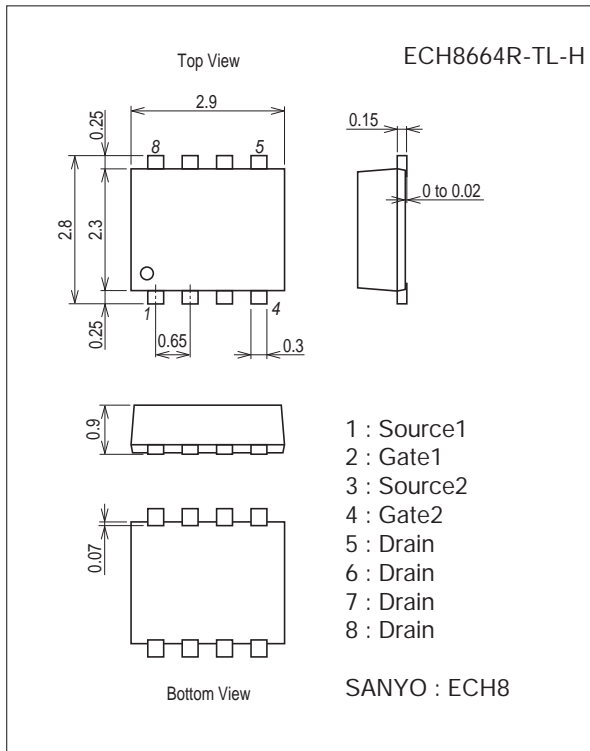
### Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V <sub>DSS</sub>		30	V
Gate-to-Source Voltage	V <sub>GSS</sub>		±12	V
Drain Current (DC)	I <sub>D</sub>		7	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	60	A
Allowable Power Dissipation	P <sub>D</sub>	When mounted on ceramic substrate (900mm <sup>2</sup> ×0.8mm) 1unit	1.3	W
Total Power Dissipation	P <sub>T</sub>	When mounted on ceramic substrate (900mm <sup>2</sup> ×0.8mm)	1.4	W
Channel Temperature	T <sub>ch</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

### Package Dimensions

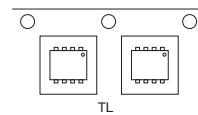
unit : mm (typ)  
7011A-003



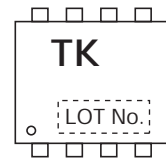
### Product & Package Information

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

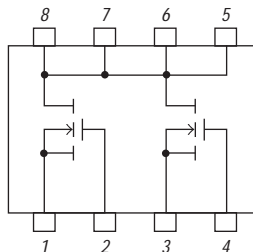
### Packing Type : TL



### Marking



### Electrical Connection

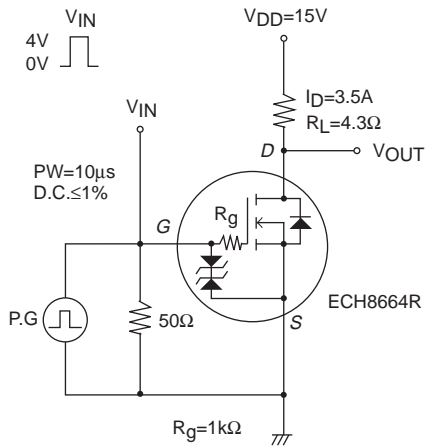


# ECH8664R

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

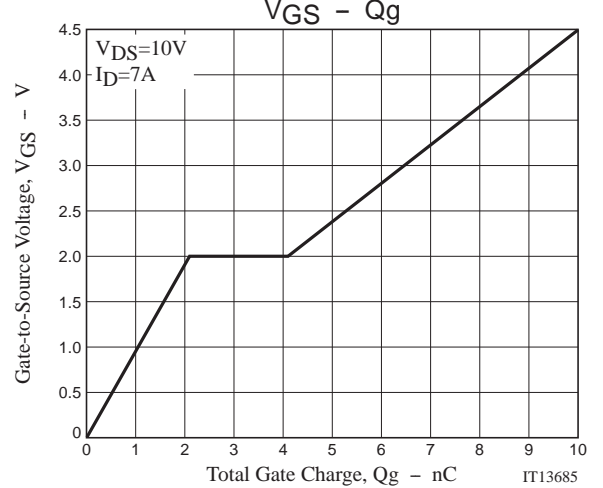
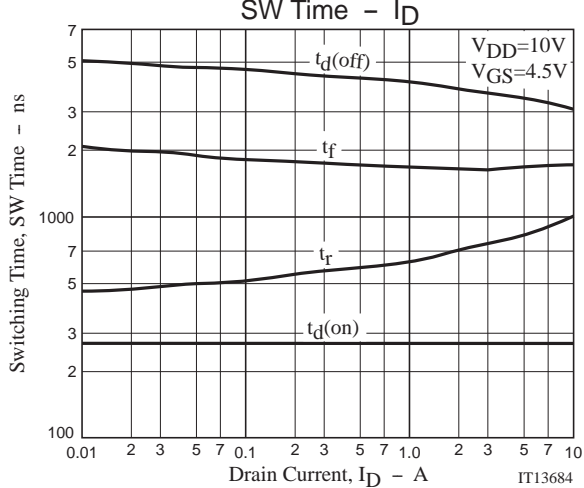
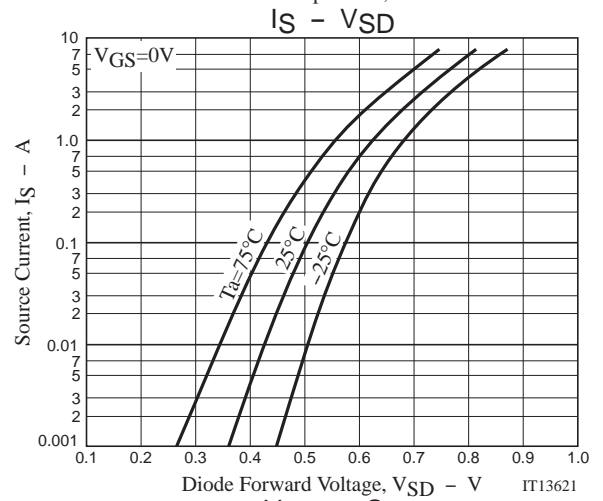
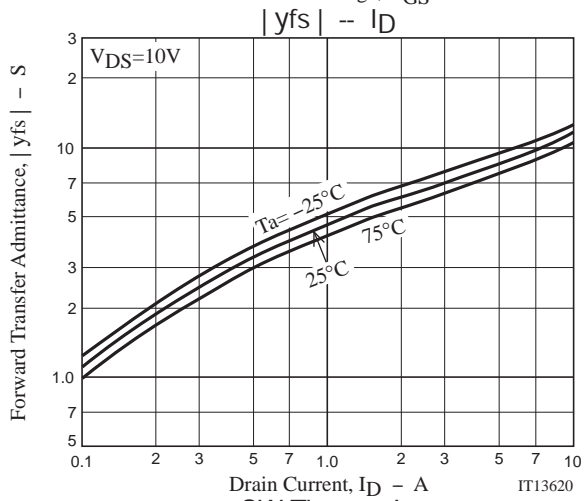
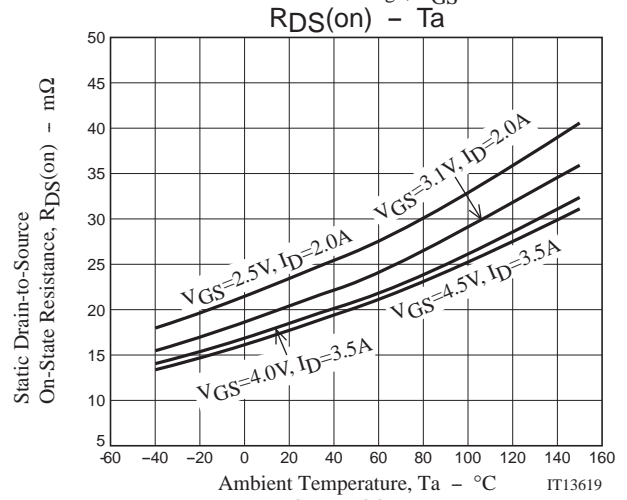
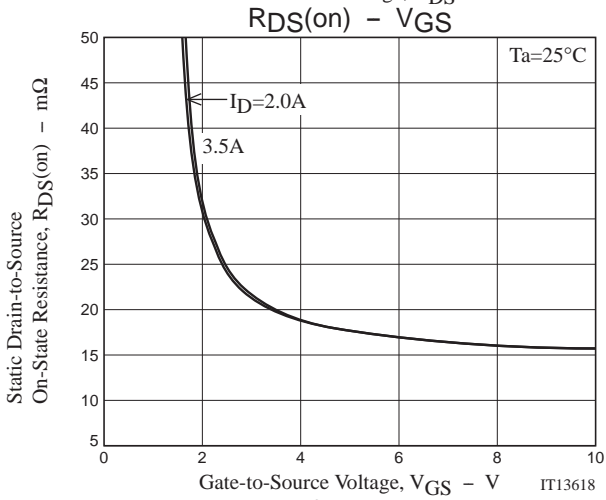
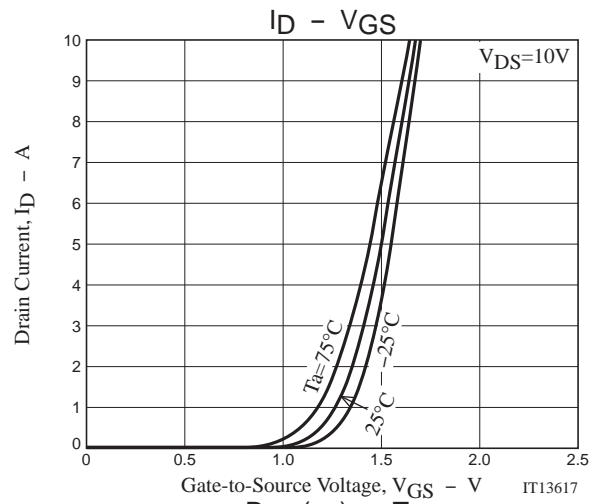
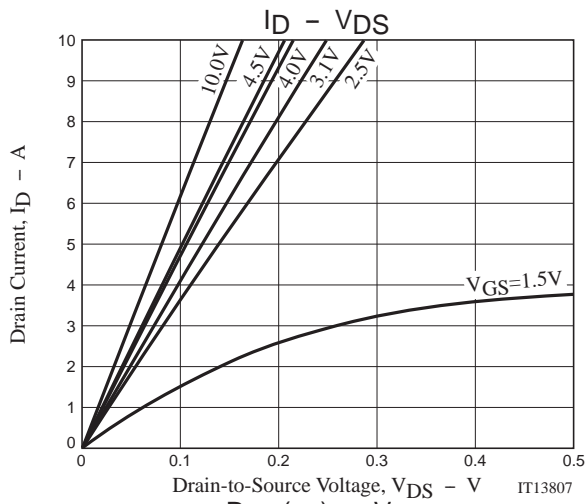
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1\text{mA}$ , $V_{GS}=0\text{V}$	30			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=30\text{V}$ , $V_{GS}=0\text{V}$			1	$\mu\text{A}$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 8\text{V}$ , $V_{DS}=0\text{V}$			$\pm 10$	$\mu\text{A}$
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} $	$V_{DS}=10\text{V}$ , $I_D=3.5\text{A}$	4.5	7.5		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=3.5\text{A}$ , $V_{GS}=4.5\text{V}$	12.5	18	23.5	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D=3.5\text{A}$ , $V_{GS}=4.0\text{V}$	13	19	25	$\text{m}\Omega$
	$R_{DS(on)3}$	$I_D=2\text{A}$ , $V_{GS}=3.1\text{V}$	14.5	21	27.3	$\text{m}\Omega$
	$R_{DS(on)4}$	$I_D=2\text{A}$ , $V_{GS}=2.5\text{V}$	14.5	24	34	$\text{m}\Omega$
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		270		ns
Rise Time	$t_r$			850		ns
Turn-OFF Delay Time	$t_{d(off)}$			3300		ns
Fall Time	$t_f$			1700		ns
Total Gate Charge	$Q_g$			10		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=10\text{V}$ , $V_{GS}=4.5\text{V}$ , $I_D=7\text{A}$		2.1		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$			2.0		nC
Diode Forward Voltage	$V_{SD}$		$I_S=7\text{A}$ , $V_{GS}=0\text{V}$		0.75	1.2

## Switching Time Test Circuit

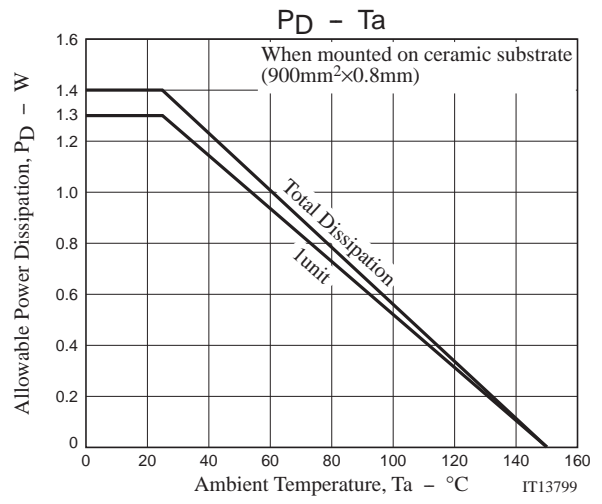
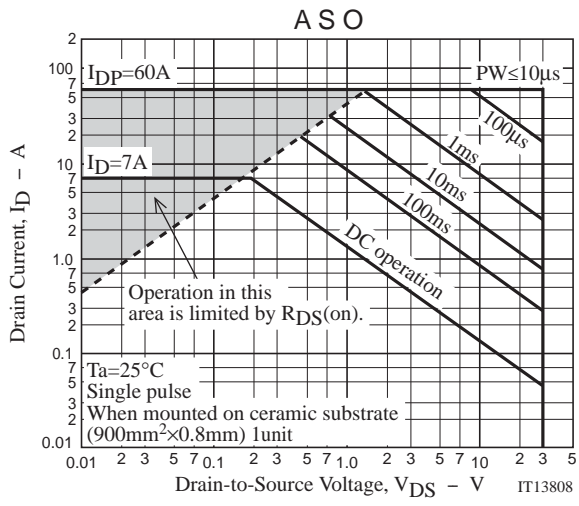


## Ordering Information

Device	Package	Shipping	memo
ECH8664R-TL-H	ECH8	3,000pcs./reel	Pb Free and Halogen Free



# ECH8664R



# ECH8664R

## Embossed Taping Specification

ECH8664R-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)

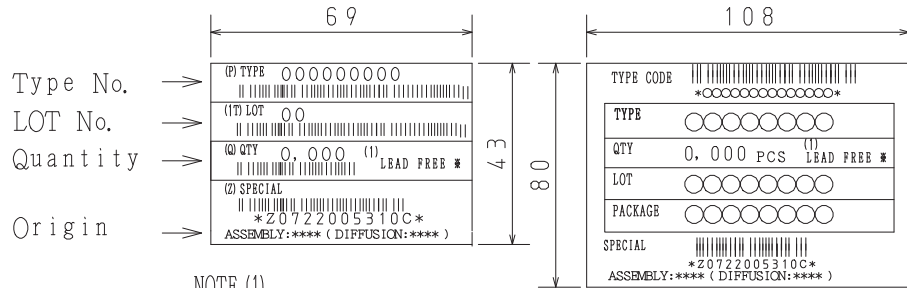
Outer box label

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.

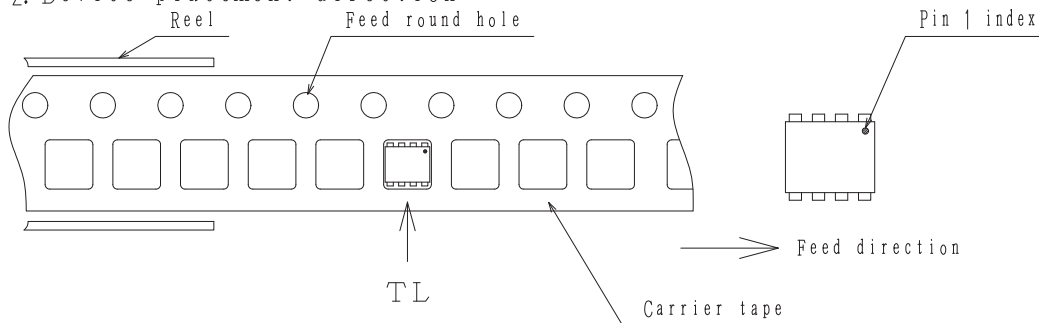
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

### 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

# ECH8664R

## Outline Drawing ECH8664R-TL-H



## Land Pattern Example



Note on usage : Since the ECH8664R is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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