



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

## ECH8420 — N-Channel Silicon MOSFET — General-Purpose Switching Device Applications

### Features

- ON-resistance  $R_{DS(on)1}=5.2m\Omega$  (typ.)
- 1.8V drive.
- Halogen free compliance.
- Protection diode in

### Specifications

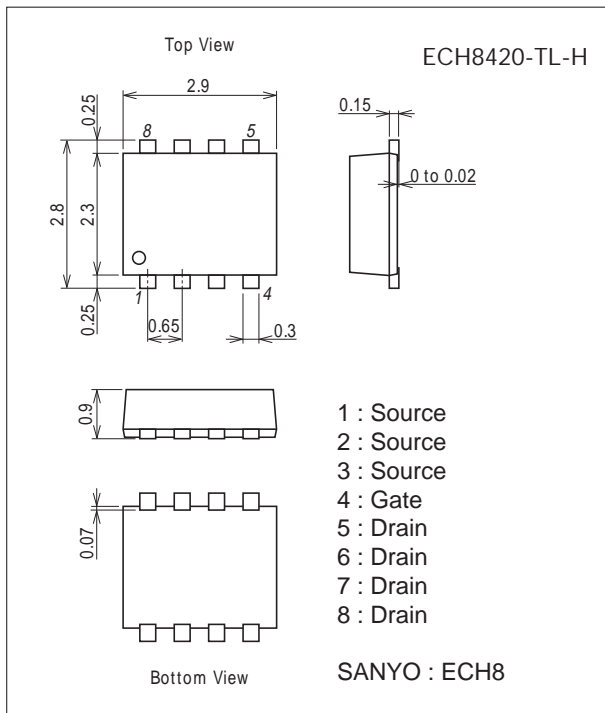
Absolute Maximum Ratings at  $T_a=25^\circ C$

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DSS}$		20	V
Gate-to-Source Voltage	$V_{GSS}$		$\pm 12$	V
Drain Current (DC)	$I_D$		14	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu s$ , duty cycle $\leq 1\%$	50	A
Allowable Power Dissipation	$P_D$	When mounted on ceramic substrate (900mm <sup>2</sup> ×0.8mm)	1.6	W
Channel Temperature	$T_{ch}$		150	°C
Storage Temperature	$T_{stg}$		-55 to +150	°C

### Package Dimensions

unit : mm (typ)

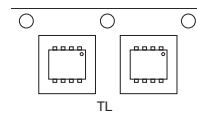
7011A-002



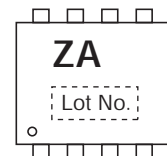
### Product & Package Information

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

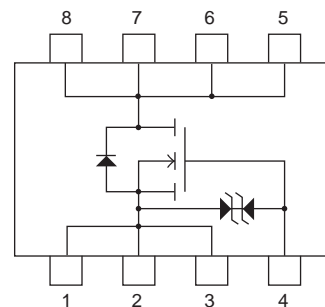
### Packing Type : TL



### Marking



### Electrical Connection

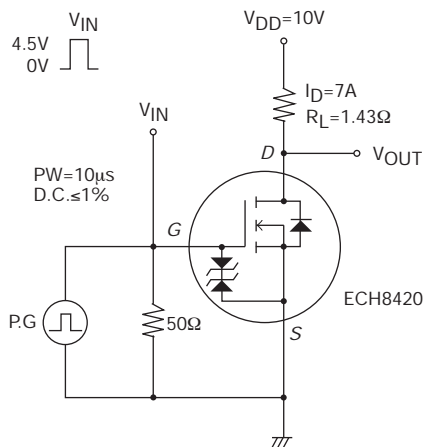


# ECH8420

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

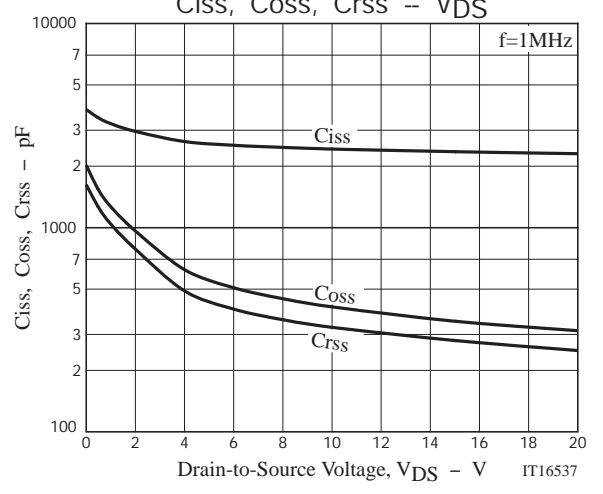
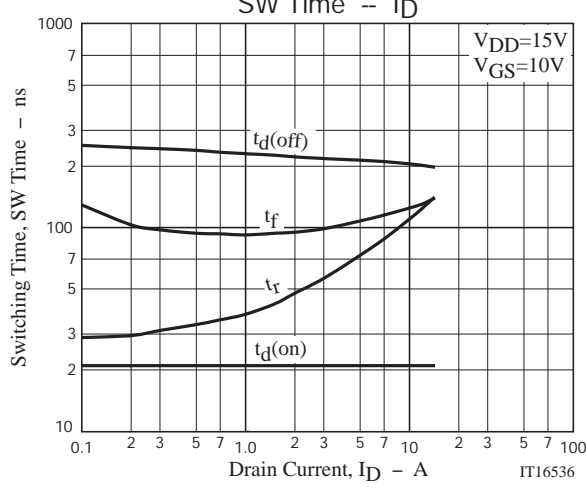
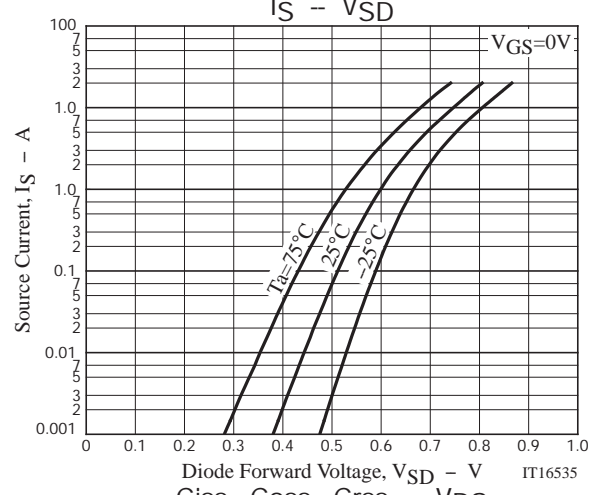
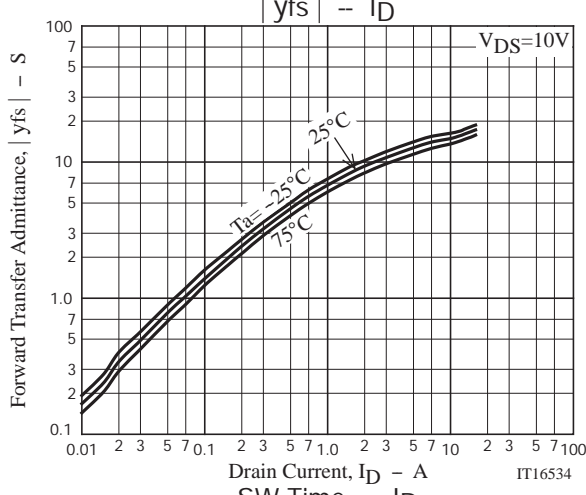
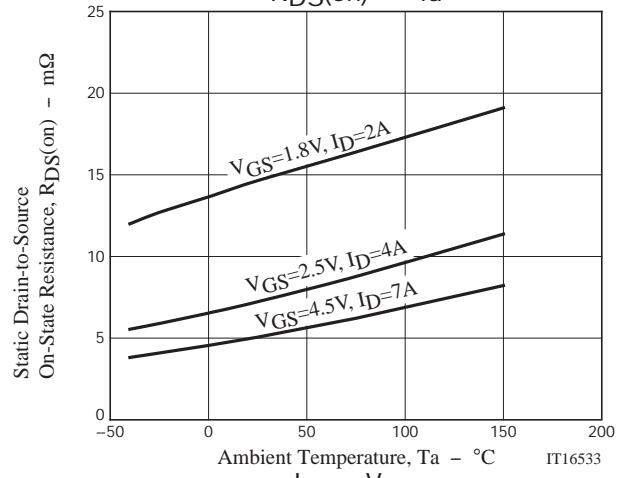
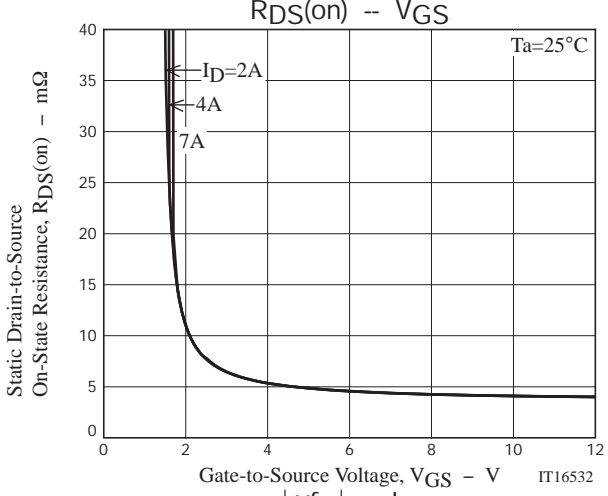
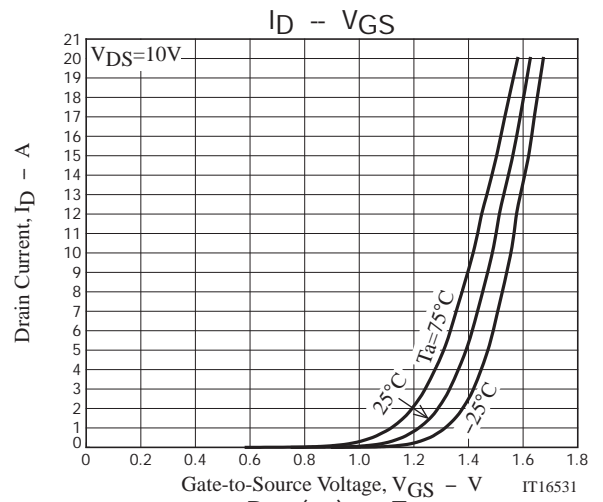
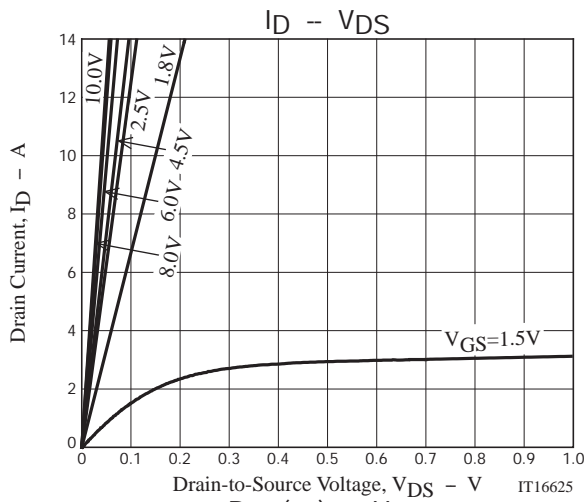
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1\text{mA}$ , $V_{GS}=0\text{V}$	20			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=20\text{V}$ , $V_{GS}=0\text{V}$			1	$\mu\text{A}$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 8\text{V}$ , $V_{DS}=0\text{V}$			$\pm 10$	$\mu\text{A}$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10\text{V}$ , $I_D=1\text{mA}$	0.4		1.3	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10\text{V}$ , $I_D=7\text{A}$		14.5		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=7\text{A}$ , $V_{GS}=4.5\text{V}$		5.2	6.8	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D=4\text{A}$ , $V_{GS}=2.5\text{V}$		8	11.5	$\text{m}\Omega$
	$R_{DS(on)3}$	$I_D=2\text{A}$ , $V_{GS}=1.8\text{V}$		15	22.5	$\text{m}\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=10\text{V}$ , $f=1\text{MHz}$		2430		$\text{pF}$
Output Capacitance	$C_{oss}$			410		$\text{pF}$
Reverse Transfer Capacitance	$C_{rss}$			330		$\text{pF}$
Turn-ON Delay Time	$t_{d(on)}$		See specified Test Circuit.		21	
Rise Time	$t_r$			88		ns
Turn-OFF Delay Time	$t_{d(off)}$			210		ns
Fall Time	$t_f$			115		ns
Total Gate Charge	$Q_g$	$V_{DS}=10\text{V}$ , $V_{GS}=4.5\text{V}$ , $I_D=14\text{A}$			29	
Gate-to-Source Charge	$Q_{gs}$			4.8		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$			8.7		nC
Diode Forward Voltage	$V_{SD}$	$I_S=14\text{A}$ , $V_{GS}=0\text{V}$		0.75	1.2	V

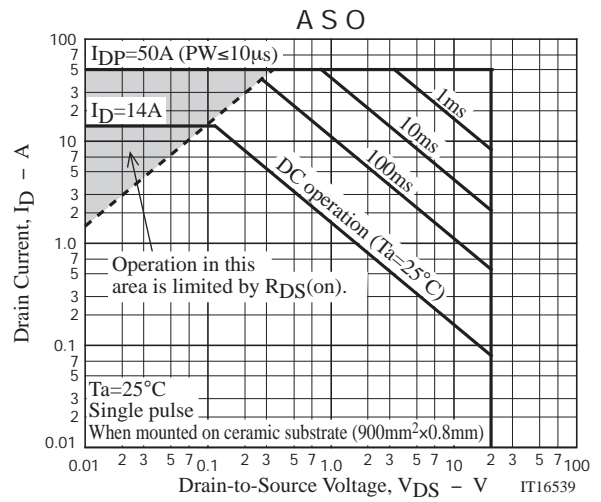
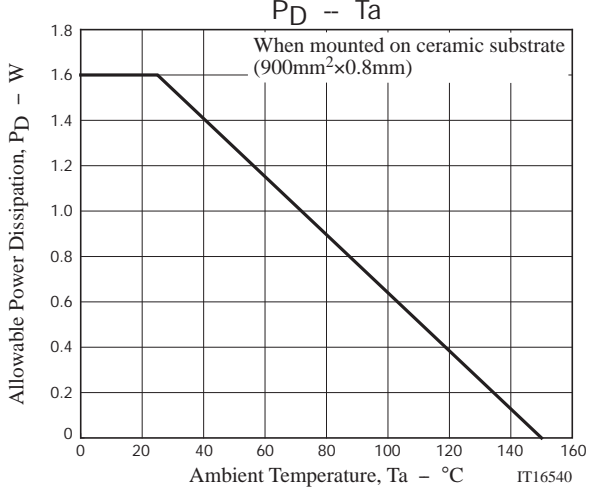
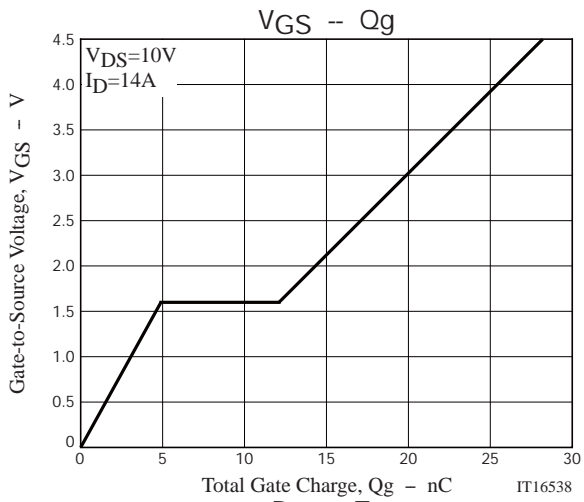
## Switching Time Test Circuit



## Ordering Information

Device	Package	Shipping	memo
ECH8420-TL-H	ECH8	3,000pcs./reel	Pb Free and Halogen Free





Embossed Taping Specification

ECH8420-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

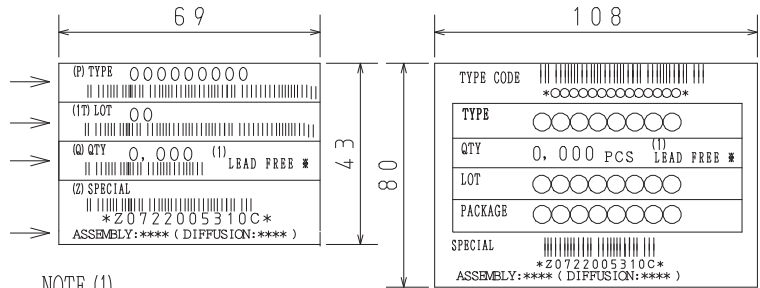
It is a label at the time of factory shipments.  
The form of a label may change in physical distribution process.

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.

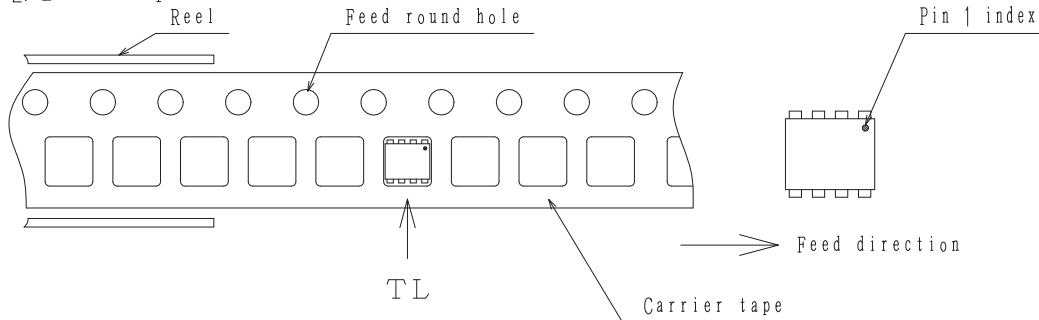
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

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

# ECH8420

## Outline Drawing ECH8420-TL-H



## Land Pattern Example



Note on usage : Since the ECH8420 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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