



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

ECH8654 — P-Channel Silicon MOSFET General-Purpose Switching Device Applications

Features

- Low ON-resistance
- Halogen free compliance
- 1.8V drive
- Protection diode in

Specifications

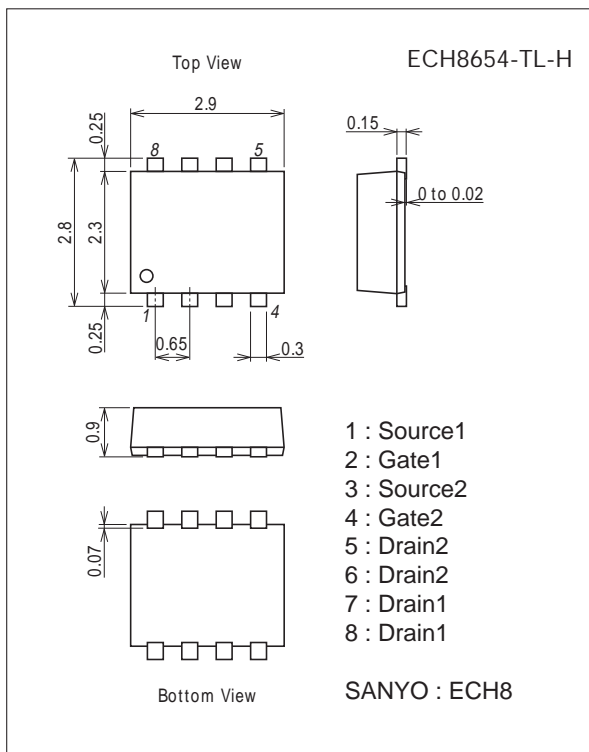
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V _{DSS}		-20	V
Gate-to-Source Voltage	V _{GSS}		±10	V
Drain Current (DC)	I _D		-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) 1unit	1.3	W
Total Power Dissipation	P _T	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

Package Dimensions

unit : mm (typ)

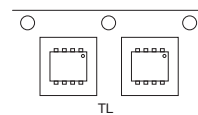
7011A-001



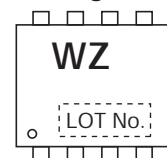
Product & Package Information

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

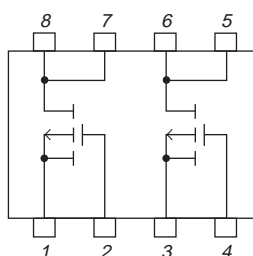
Packing Type : TL



Marking



Electrical Connection

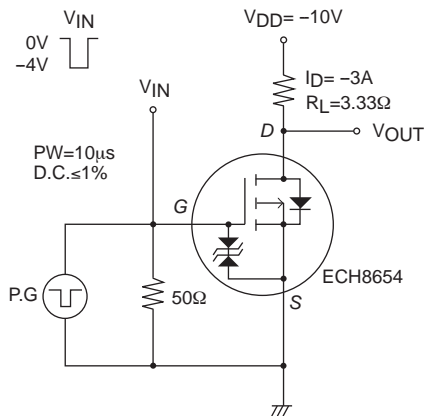


ECH8654

Electrical Characteristics at Ta=25°C

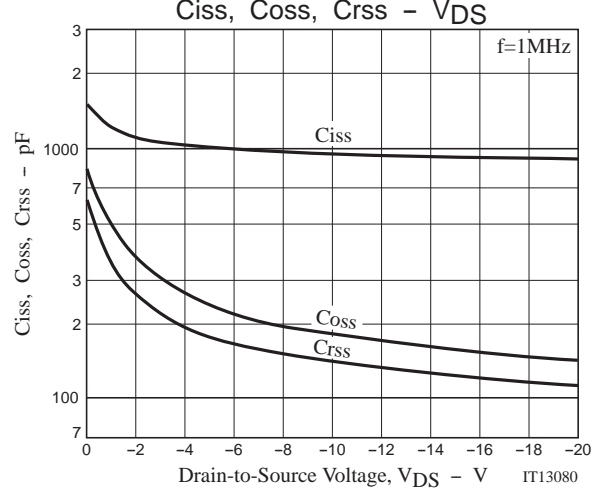
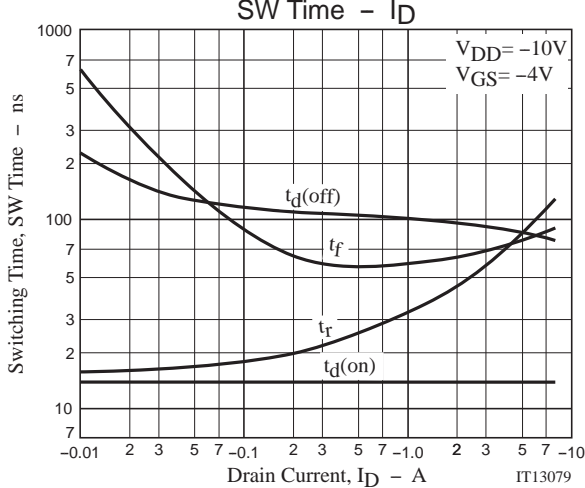
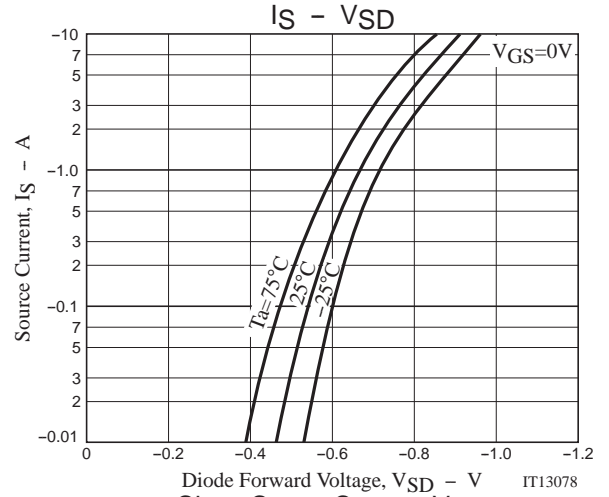
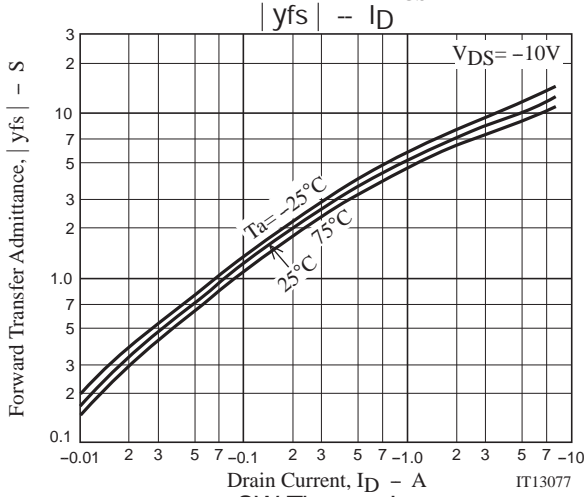
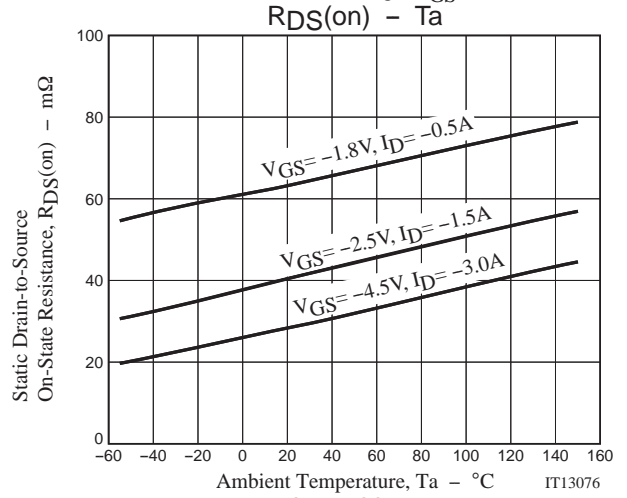
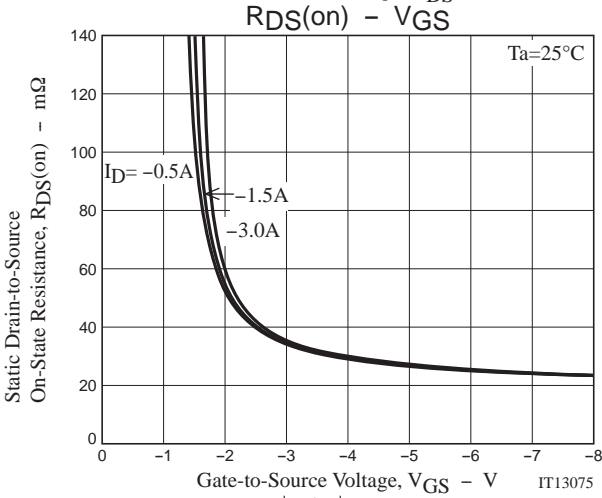
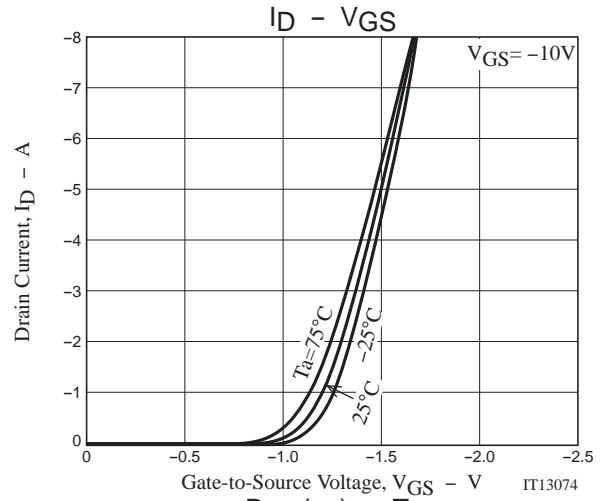
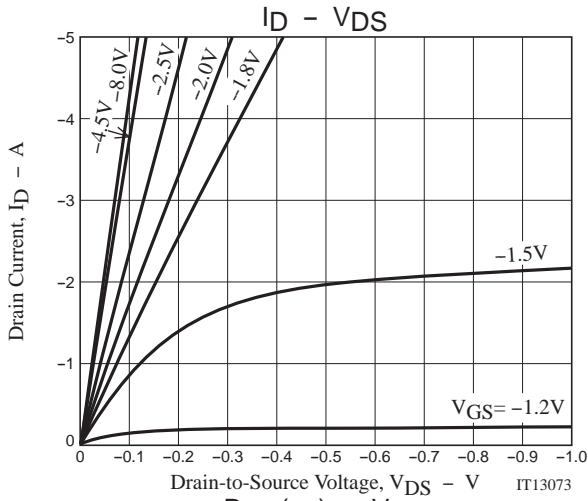
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	V(BR)DSS	I _D =-1mA, V _{GS} =0V	-20			V
Zero-Gate Voltage Drain Current	I _{DSS}	V _{DS} =-20V, V _{GS} =0V			-1	μA
Gate-to-Source Leakage Current	I _{GSS}	V _{GS} =±8V, V _{DS} =0V			±10	μA
Cutoff Voltage	V _{GS(off)}	V _{DS} =-10V, I _D =-1mA	-0.4		-1.3	V
Forward Transfer Admittance	y _{fs}	V _{DS} =-10V, I _D =-3A	4.9	8.3		S
Static Drain-to-Source On-State Resistance	R _{DS(on)1}	I _D =-3A, V _{GS} =-4.5V		29	38	mΩ
	R _{DS(on)2}	I _D =-1.5A, V _{GS} =-2.5V		41	58	mΩ
	R _{DS(on)3}	I _D =-0.5A, V _{GS} =-1.8V		64	98	mΩ
Input Capacitance	C _{iss}			960		pF
Output Capacitance	C _{oss}	V _{DS} =-10V, f=1MHz		180		pF
Reverse Transfer Capacitance	C _{rss}			140		pF
Turn-ON Delay Time	t _{d(on)}	See specified Test Circuit.		14		ns
Rise Time	t _r			55		ns
Turn-OFF Delay Time	t _{d(off)}			92		ns
Fall Time	t _f			68		ns
Total Gate Charge	Q _g				11	
Gate-to-Source Charge	Q _{gs}	V _{DS} =-10V, V _{GS} =-4.5V, I _D =-5A		2.0		nC
Gate-to-Drain "Miller" Charge	Q _{gd}			2.8		nC
Diode Forward Voltage	V _{SD}		I _S =-5A, V _{GS} =0V		-0.82	-1.2

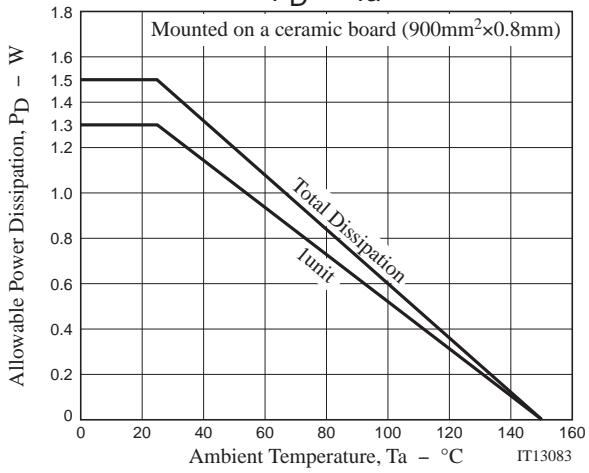
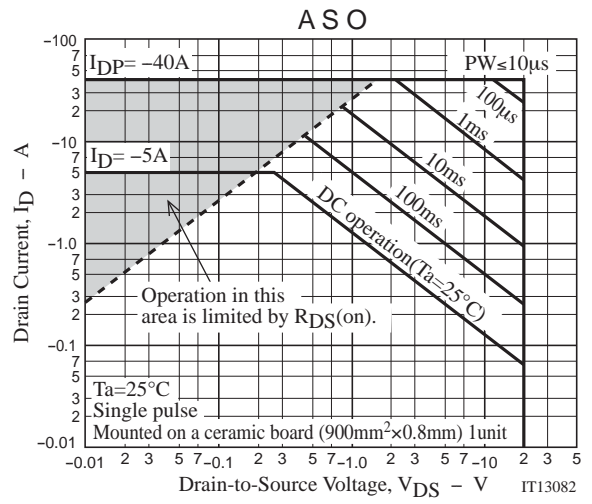
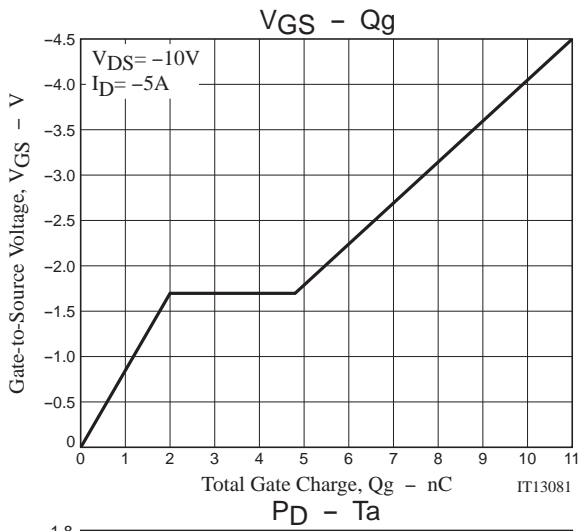
Switching Time Test Circuit



Ordering Information

Device	Package	Shipping	memo
ECH8654-TL-H	ECH8	3,000pcs./reel	Pb Free and Halogen Free





Embossed Taping Specification

ECH8654-TL-H

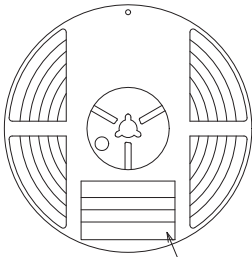
1. Packing Format

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)

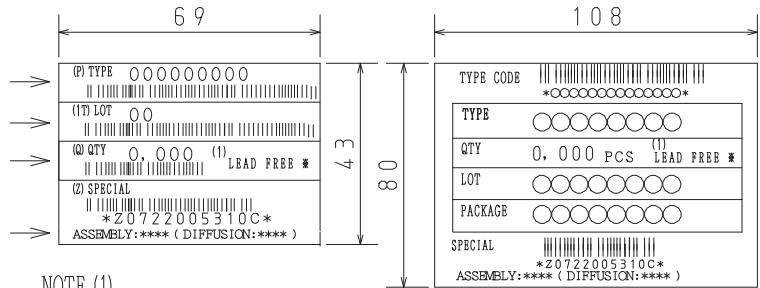
Outer box label
It is a label at the time of factory shipments.
The form of a label may change in physical distribution process.

Packing method



Reel label

Type No.
LOT No.
Quantity
Origin



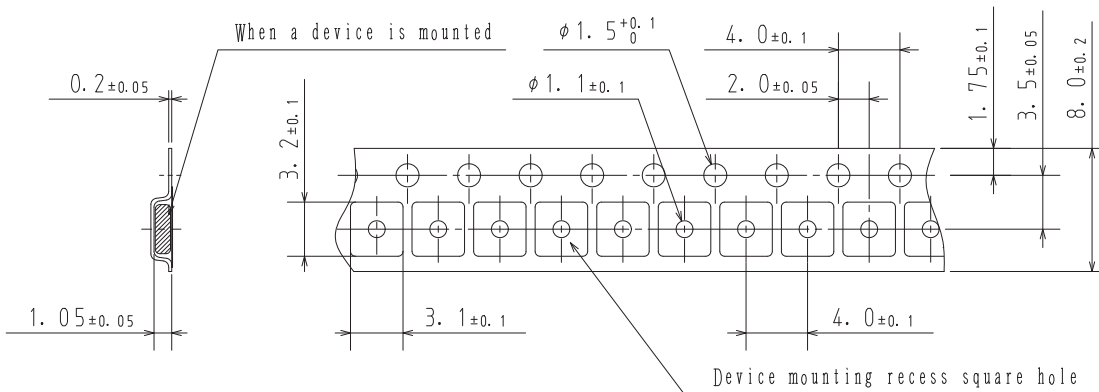
NOTE (1)

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

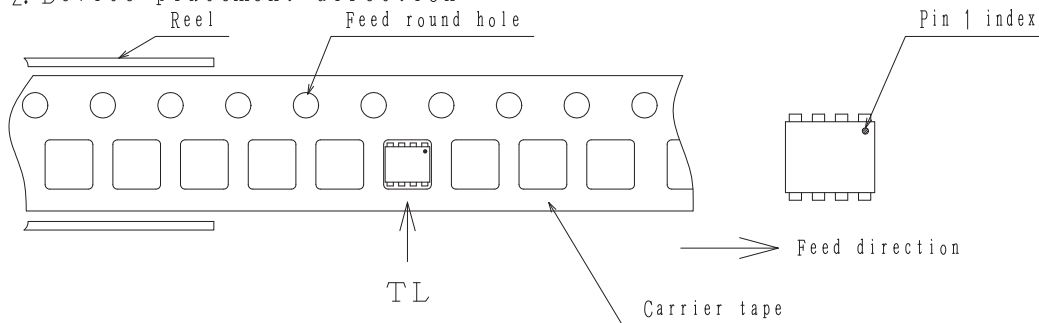
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



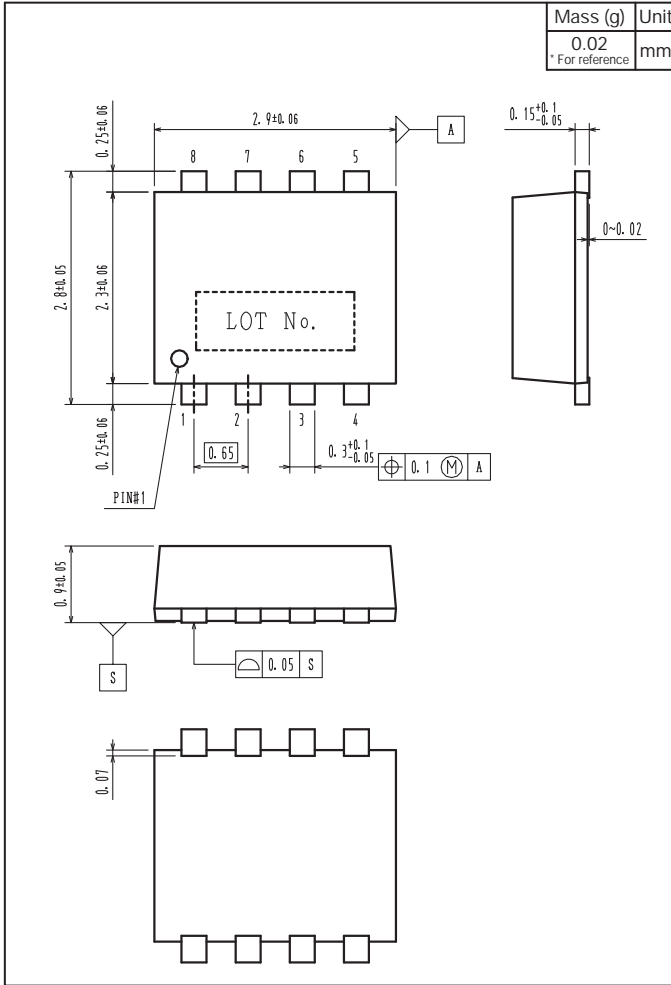
2-2. Device placement direction



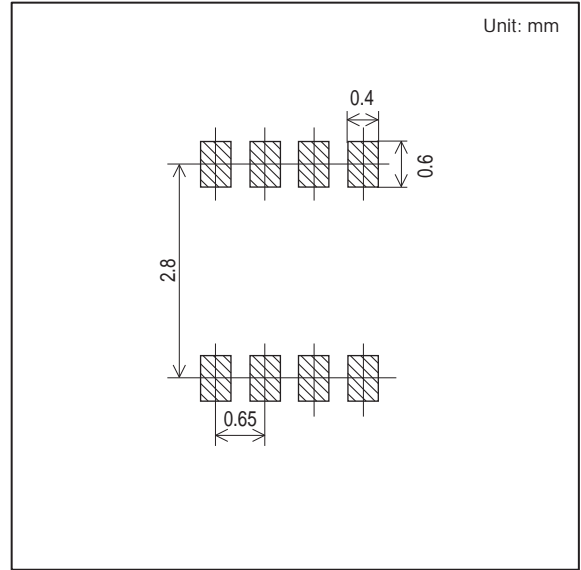
Those with pin 1 index on the feed hole side.....TL

ECH8654

Outline Drawing ECH8654-TL-H



Land Pattern Example



Note on usage : Since the ECH8654 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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