



N-Channel and P-Channel Silicon MOSFETs

# ECH8673 — General-Purpose Switching Device Applications

## Features

- ON-resistance Nch:  $R_{DS(on)1}=65m\Omega(\text{typ.})$ , Pch: ON-resistance  $R_{DS(on)1}=125m\Omega(\text{typ.})$
- 4V drive
- Halogen free compliance
- Nch+Pch MOSFET

## Specifications

### Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	N-channel	P-channel	Unit
Drain-to-Source Voltage	$V_{DSS}$		40	-40	V
Gate-to-Source Voltage	$V_{GSS}$		$\pm 20$	$\pm 20$	V
Drain Current (DC)	$I_D$		3.5	-2.5	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	30	-30	A
Allowable Power Dissipation	$P_D$	When mounted on ceramic substrate (1200mm <sup>2</sup> ×0.8mm) 1unit	1.3		W
Total Dissipation	$P_T$	When mounted on ceramic substrate (1200mm <sup>2</sup> ×0.8mm)	1.5		W
Channel Temperature	$T_{ch}$		150		°C
Storage Temperature	$T_{stg}$		-55 to +150		°C

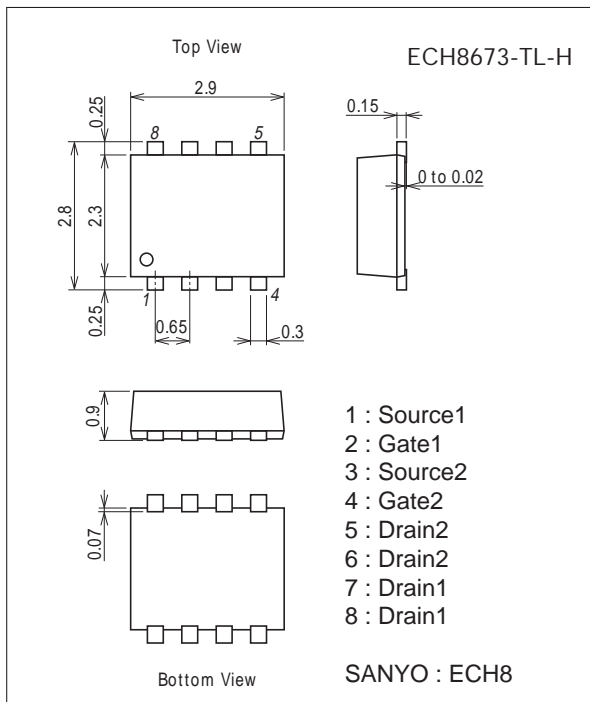
This product is designed to "ESD immunity < 200V\*\*", so please take care when handling.

\* Machine Model

## Package Dimensions

unit : mm (typ)

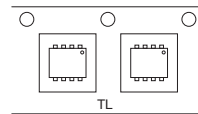
7011A-001



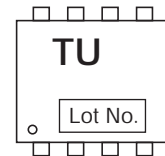
## Product & Package Information

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

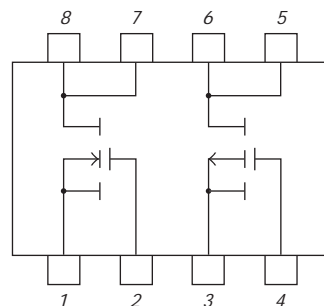
## Packing Type : TL



## Marking



## Electrical Connection



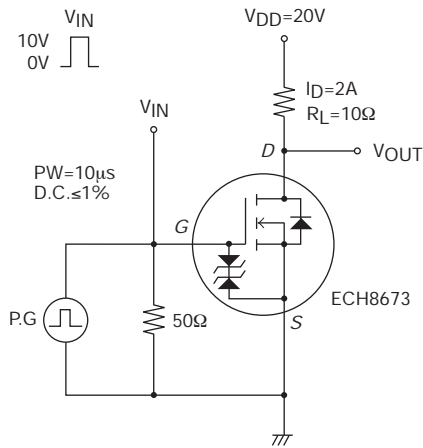
# ECH8673

## Electrical Characteristics at Ta=25°C

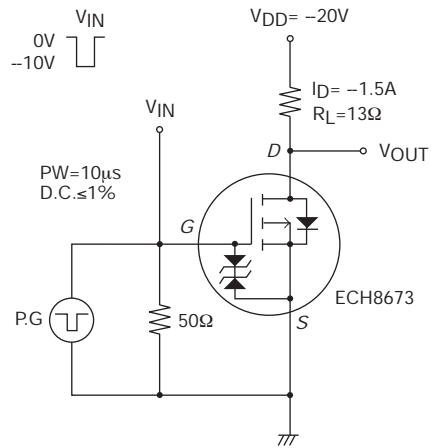
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[N-channel]						
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=1mA, VGS=0V	40			V
Zero-Gate Voltage Drain Current	IDSS	VDS=40V, VGS=0V			1	μA
Gate-to-Source Leakage Current	IGSS	VGS=±16V, VDS=0V			±10	μA
Cutoff Voltage	VGS(off)	VDS=10V, ID=1mA	1.2		2.6	V
Forward Transfer Admittance	yfs	VDS=10V, ID=2A		1.7		S
Static Drain-to-Source On-State Resistance	RDS(on)1	ID=2A, VGS=10V		65	85	mΩ
	RDS(on)2	ID=1A, VGS=4.5V		105	147	mΩ
	RDS(on)3	ID=1A, VGS=4V		125	175	mΩ
Input Capacitance	Ciss	VDS=20V, f=1MHz		230		pF
Output Capacitance	Coss			36		pF
Reverse Transfer Capacitance	Crss			9.9		pF
Turn-ON Delay Time	t <sub>d(on)</sub>		See specified Test Circuit.		5.8	
Rise Time	t <sub>r</sub>			10.6		ns
Turn-OFF Delay Time	t <sub>d(off)</sub>			18.5		ns
Fall Time	t <sub>f</sub>			9.8		ns
Total Gate Charge	Qg	VDS=20V, VGS=10V, ID=3.5A			5.3	
Gate-to-Source Charge	Qgs			1.1		nC
Gate-to-Drain "Miller" Charge	Qgd			1.1		nC
Diode Forward Voltage	VSD		IS=3.5A, VGS=0V		0.84	1.2
[P-channel]						
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=-1mA, VGS=0V	-40			V
Zero-Gate Voltage Drain Current	IDSS	VDS=-40V, VGS=0V			-1	μA
Gate-to-Source Leakage Current	IGSS	VGS=±16V, VDS=0V			±10	μA
Cutoff Voltage	VGS(off)	VDS=-10V, ID=-1mA	-1.2		-2.6	V
Forward Transfer Admittance	yfs	VDS=-10V, ID=-1.5A		2.7		S
Static Drain-to-Source On-State Resistance	RDS(on)1	ID=-1.5A, VGS=-10V		125	163	mΩ
	RDS(on)2	ID=-0.75A, VGS=-4.5V		190	266	mΩ
	RDS(on)3	ID=-0.75A, VGS=-4V		215	301	mΩ
Input Capacitance	Ciss	VDS=-20V, f=1MHz		198		pF
Output Capacitance	Coss			36		pF
Reverse Transfer Capacitance	Crss			8.1		pF
Turn-ON Delay Time	t <sub>d(on)</sub>		See specified Test Circuit.		5.8	
Rise Time	t <sub>r</sub>			10.3		ns
Turn-OFF Delay Time	t <sub>d(off)</sub>			27.6		ns
Fall Time	t <sub>f</sub>			17.3		ns
Total Gate Charge	Qg	VDS=-20V, VGS=-10V, ID=-2.5A			5.9	
Gate-to-Source Charge	Qgs			0.84		nC
Gate-to-Drain "Miller" Charge	Qgd			1.3		nC
Diode Forward Voltage	VSD		IS=-2.5A, VGS=0V		-0.87	-1.2

Switching Time Test Circuit

[N-channel]

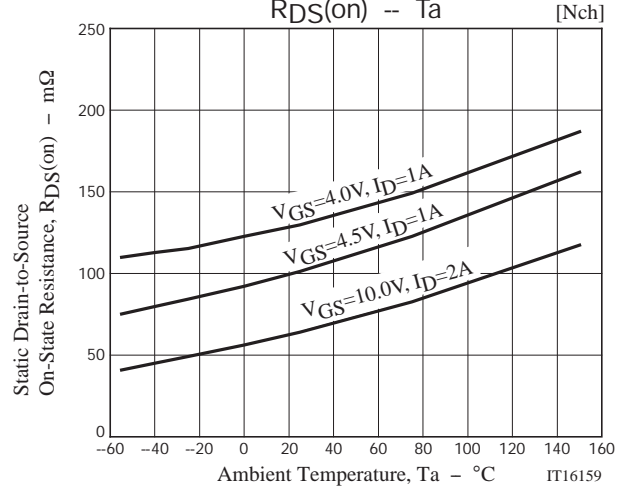
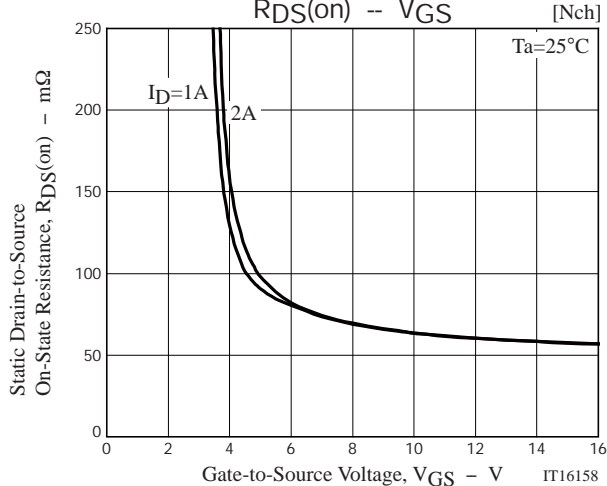
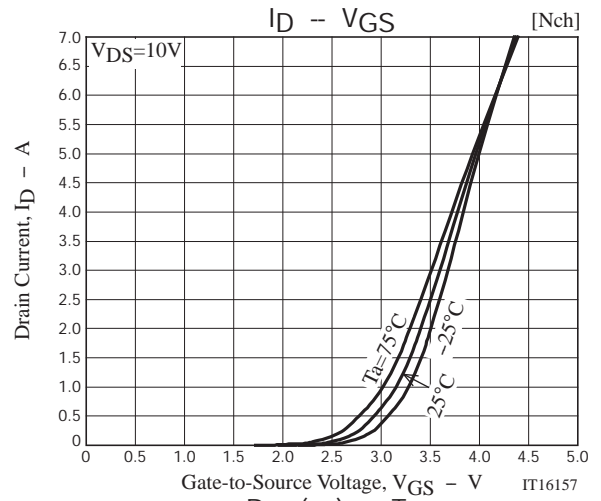
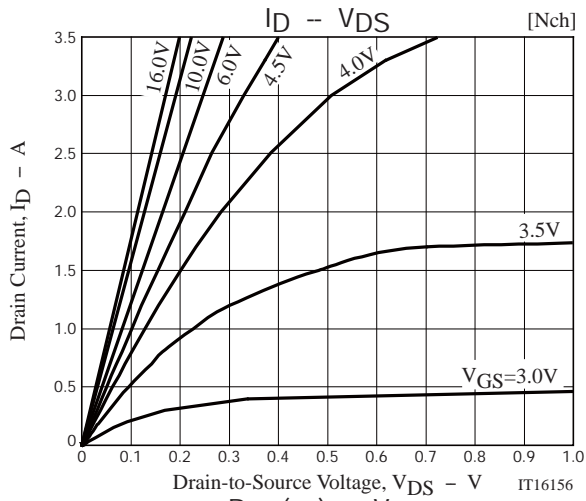


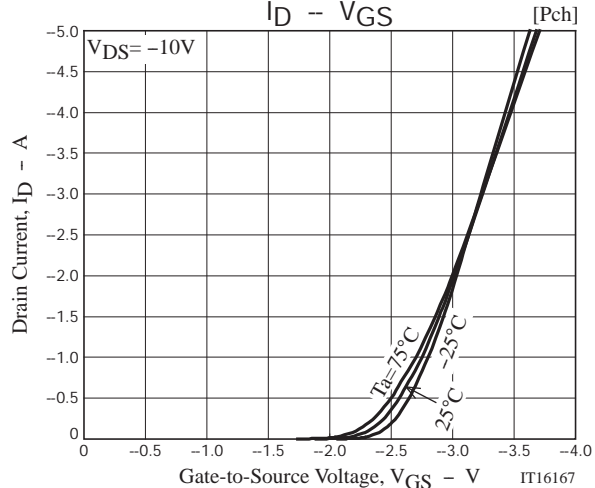
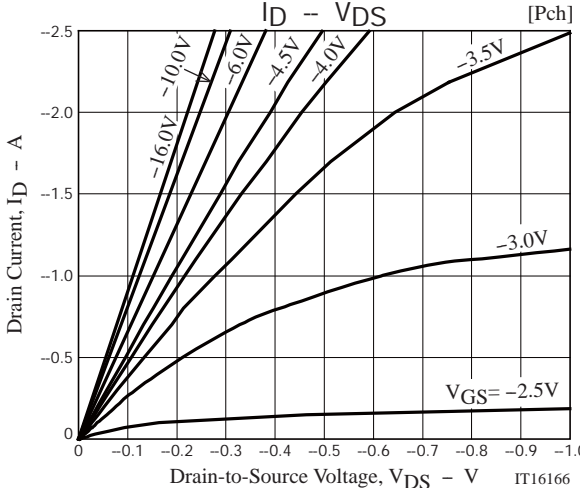
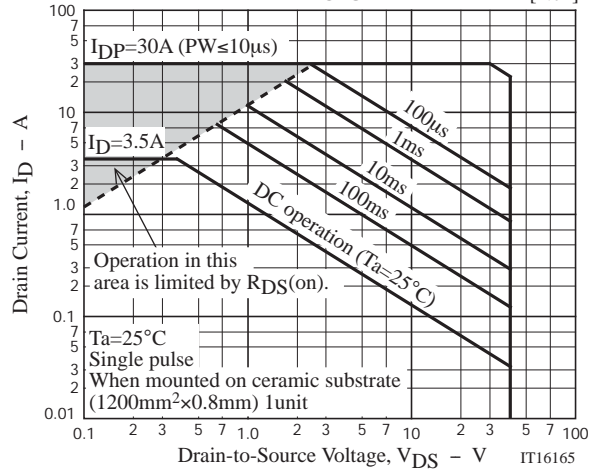
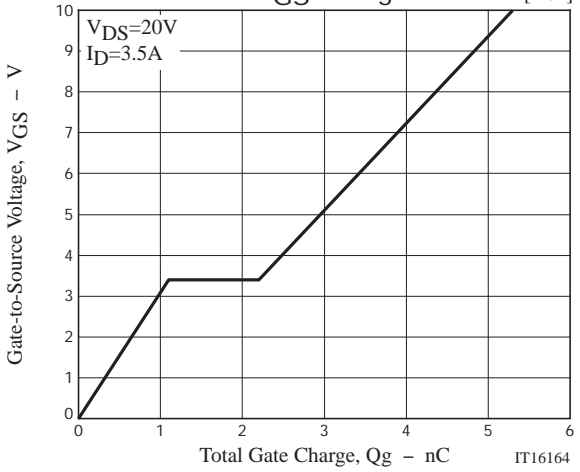
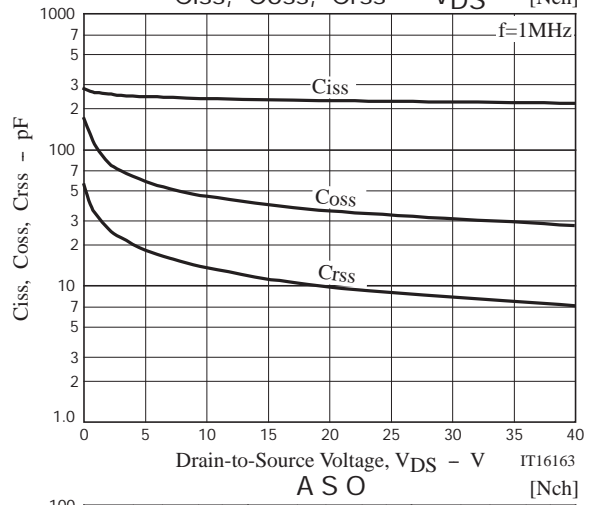
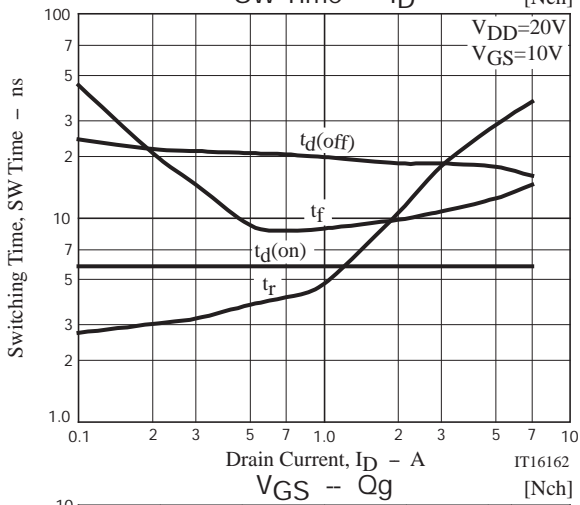
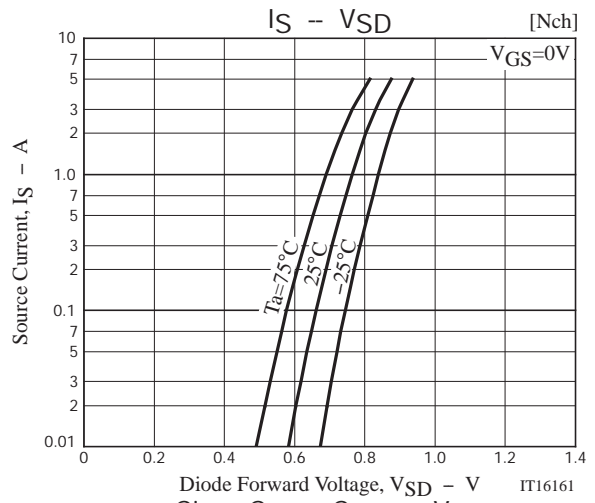
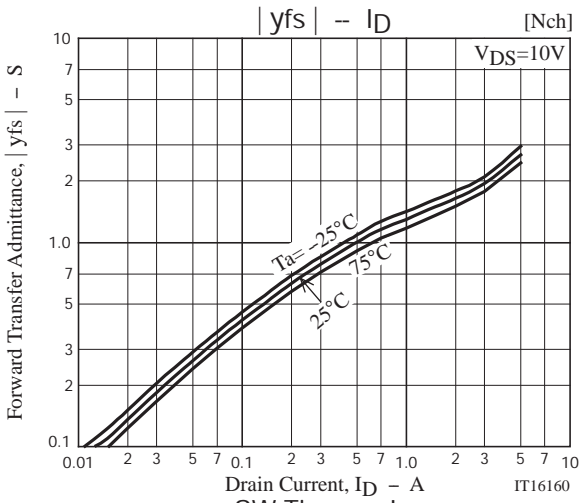
[P-channel]

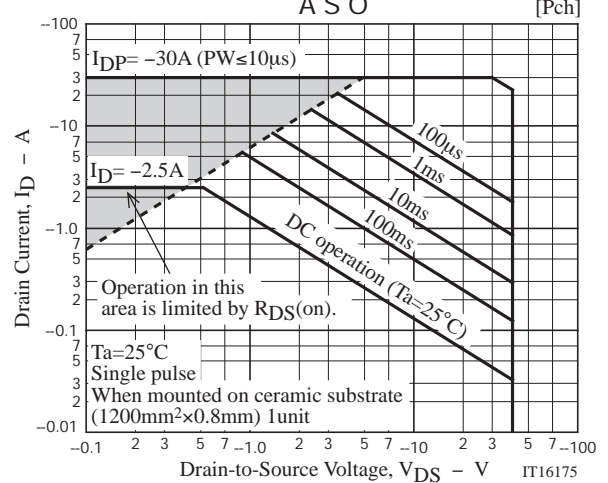
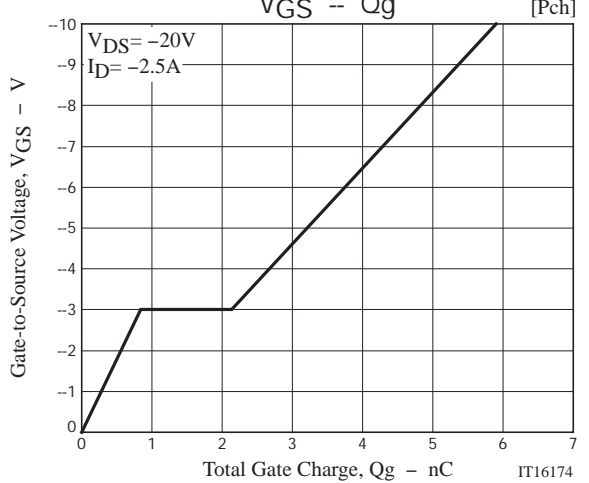
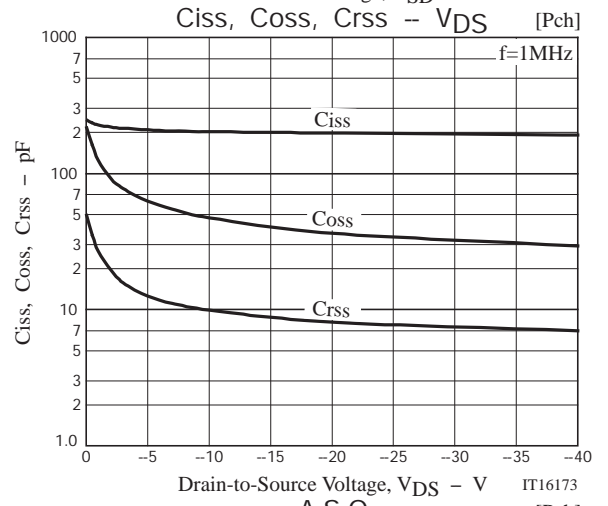
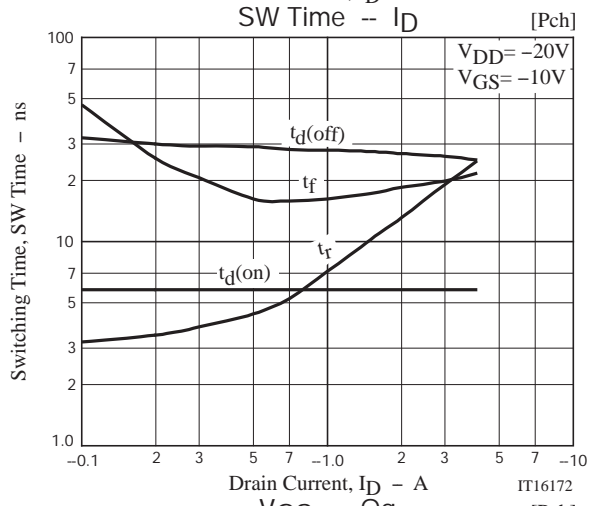
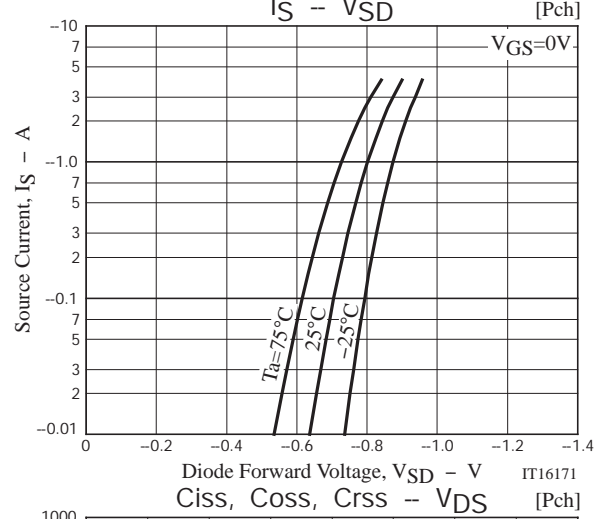
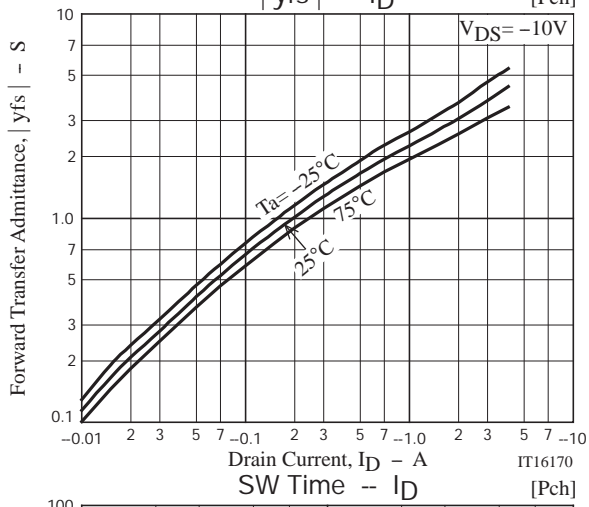
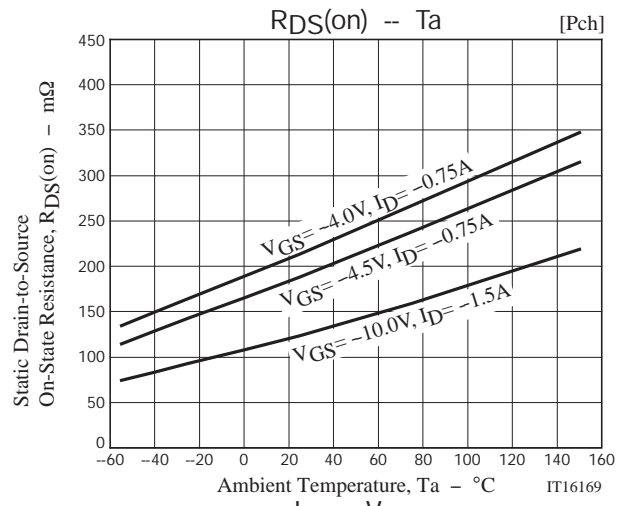
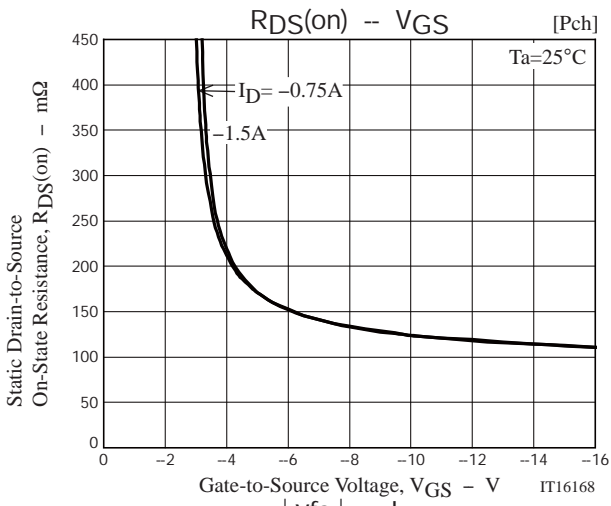


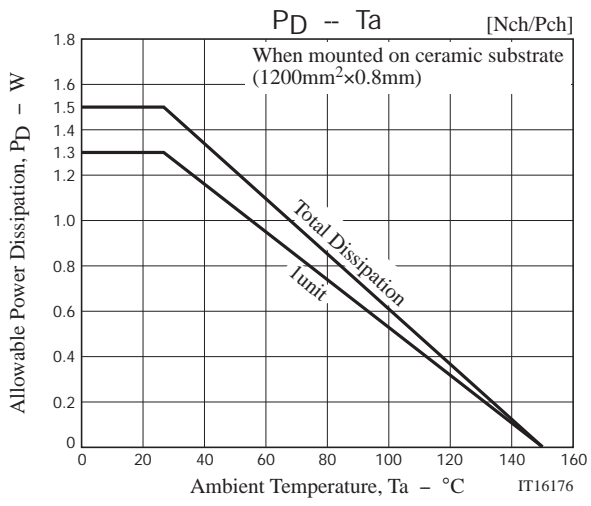
Ordering Information

Device	Package	Shipping	memo
ECH8673-TL-H	ECH8	3,000pcs./reel	Pb Free and Halogen Free









Embossed Taping Specification

ECH8673-TL-H

1. Packing Format

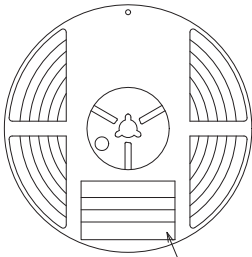
Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	Inner BOX (C-1)	Outer BOX (A-7)
ECH8	CPH6	3,000	15,000	90,000	5 reels contained Dimensions:mm (external) 183×72×185	6 inner boxes contained Dimensions:mm (external) 440×195×210

Reel label, Inner box label  
(unit :mm)

Outer box label

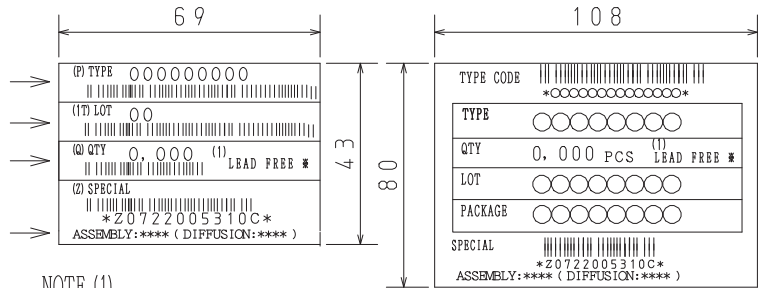
It is a label at the time of factory shipments.  
The form of a label may change in physical distribution process.

Packing method



Reel label

Type No.  
LOT No.  
Quantity  
Origin



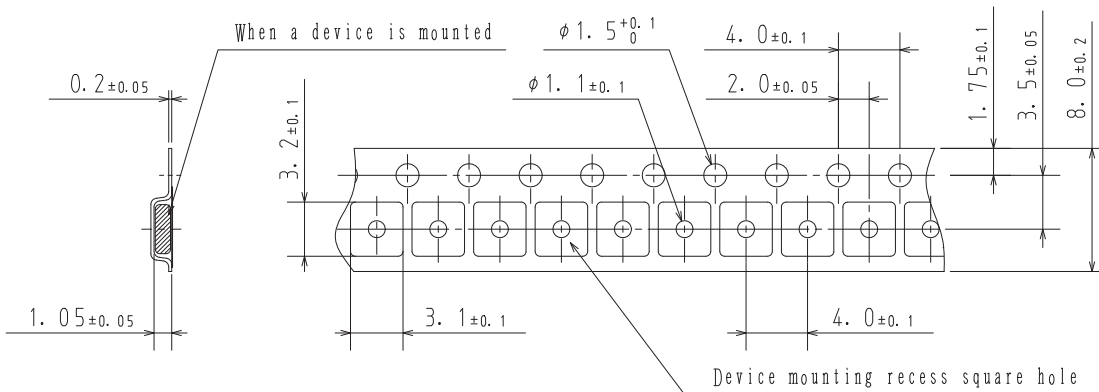
NOTE (1)

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

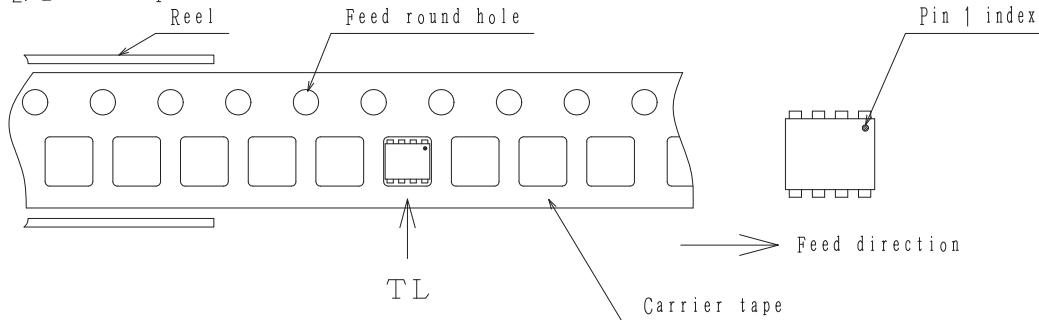
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

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





Note on usage : Since the ECH8673 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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