



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

N-Channel and P-Channel Silicon MOSFETs

ECH8661 — General-Purpose Switching Device Applications

Features

- ON-resistance Nch: $R_{DS(on)1}=18m\Omega$ (typ.), Pch: ON-resistance $R_{DS(on)1}=30m\Omega$ (typ.)
- The ECH8661 incorporates an N-channel MOSFET and a P-channel MOSFET that feature low ON-resistance and high-speed switching, thereby enabling high-density mounting
- 4V drive
- Halogen free compliance
- Protection diode in

Specifications

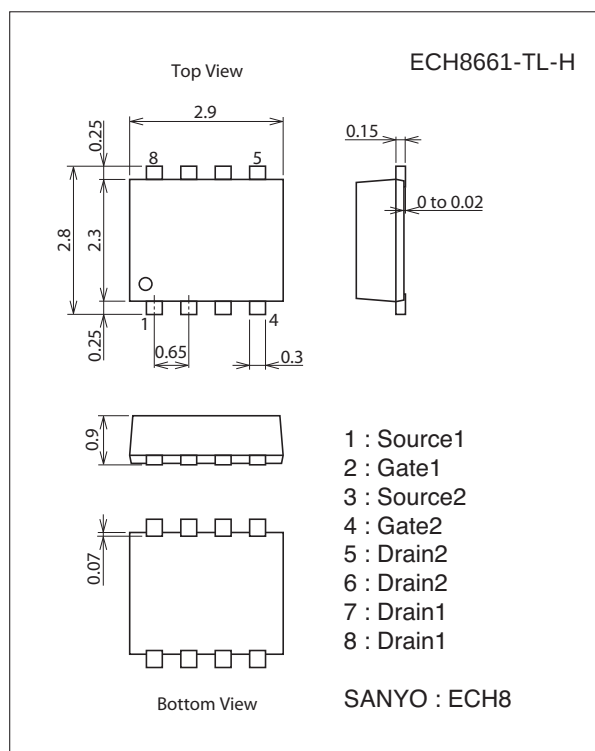
Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	N-channel	P-channel	Unit
Drain-to-Source Voltage	V_{DS}		30	-30	V
Gate-to-Source Voltage	V_{GS}		± 20	± 20	V
Drain Current (DC)	I_D		7	-5.5	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu s$, duty cycle $\leq 1\%$	40	-40	A
Allowable Power Dissipation	P_D	When mounted on ceramic substrate (900mm ² ×0.8mm) 1unit	1.3		W
Total Dissipation	P_T	When mounted on ceramic substrate (900mm ² ×0.8mm)	1.5		W
Channel Temperature	T_{ch}		150		$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150		$^\circ\text{C}$

Package Dimensions

unit : mm (typ.)

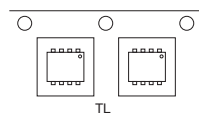
7011A-001



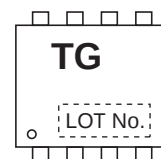
Product & Package Information

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

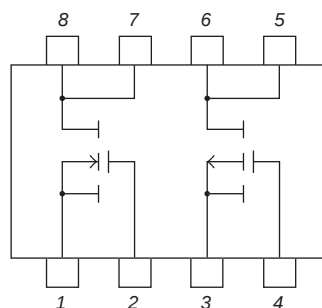
Packing Type : TL



Marking



Electrical Connection



SANYO Semiconductor Co., Ltd.

<http://semicon.sanyo.com/en/network>

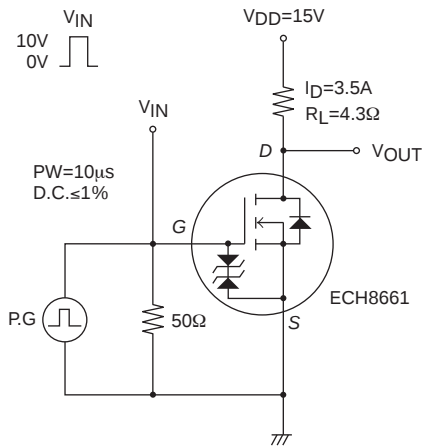
ECH8661

Electrical Characteristics at Ta=25°C

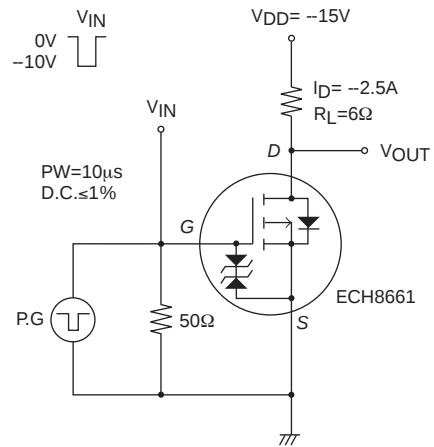
Parameter	Symbol	Conditions	Ratings			Unit
			min.	typ.	max.	
[N-channel]						
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=1mA, VGS=0V	30			V
Zero-Gate Voltage Drain Current	IDSS	VDS=30V, VGS=0V			1	μA
Gate-to-Source Leakage Current	IGSS	VGS=±16V, VDS=0V			±10	μA
Cutoff Voltage	VGS(off)	VDS=10V, ID=1mA	1.2		2.6	V
Forward Transfer Admittance	yfs	VDS=10V, ID=3.5A		3.7		S
Static Drain-to-Source On-State Resistance	RDS(on)1	ID=3.5A, VGS=10V		18	24	mΩ
	RDS(on)2	ID=2A, VGS=4.5V		29	41	mΩ
	RDS(on)3	ID=2A, VGS=4V		39	55	mΩ
Input Capacitance	Ciss	VDS=10V, f=1MHz		710		pF
Output Capacitance	Coss	VDS=10V, f=1MHz		120		pF
Reverse Transfer Capacitance	Crss	VDS=10V, f=1MHz		72		pF
Turn-ON Delay Time	tD(on)	See specified Test Circuit.		10		ns
Rise Time	tr			25		ns
Turn-OFF Delay Time	tD(off)			43		ns
Fall Time	tf			25		ns
Total Gate Charge	Qg	VDS=15V, VGS=10V, ID=7A		11.8		nC
Gate-to-Source Charge	Qgs			2.4		nC
Gate-to-Drain “Miller” Charge	Qgd			2.0		nC
Diode Forward Voltage	VSD	IS=7A, VGS=0V		0.79	1.2	V
[P-channel]						
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=-1mA, VGS=0V	-30			V
Zero-Gate Voltage Drain Current	IDSS	VDS=-30V, 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=-2.5A		5.2		S
Static Drain-to-Source On-State Resistance	RDS(on)1	ID=-2.5A, VGS=-10V		30	39	mΩ
	RDS(on)2	ID=-1.5A, VGS=-4.5V		55	77	mΩ
	RDS(on)3	ID=-1.5A, VGS=-4V		58	82	mΩ
Input Capacitance	Ciss	VDS=-10V, f=1MHz		600		pF
Output Capacitance	Coss			145		pF
Reverse Transfer Capacitance	Crss			110		pF
Turn-ON Delay Time	tD(on)	See specified Test Circuit.		7.2		ns
Rise Time	tr			23		ns
Turn-OFF Delay Time	tD(off)			63		ns
Fall Time	tf			42		ns
Total Gate Charge	Qg	VDS=-15V, VGS=-10V, ID=-5.5A		13		nC
Gate-to-Source Charge	Qgs			1.8		nC
Gate-to-Drain “Miller” Charge	Qgd			3.2		nC
Diode Forward Voltage	VSD	IS=-5.5A, VGS=0V		-0.82	-1.2	V

Switching Time Test Circuit

[N-channel]

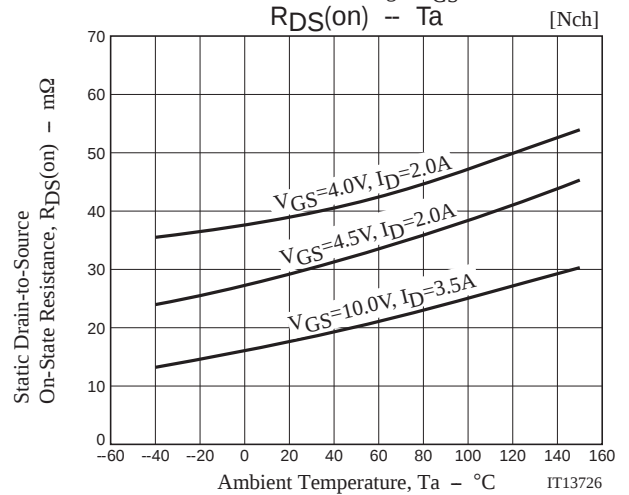
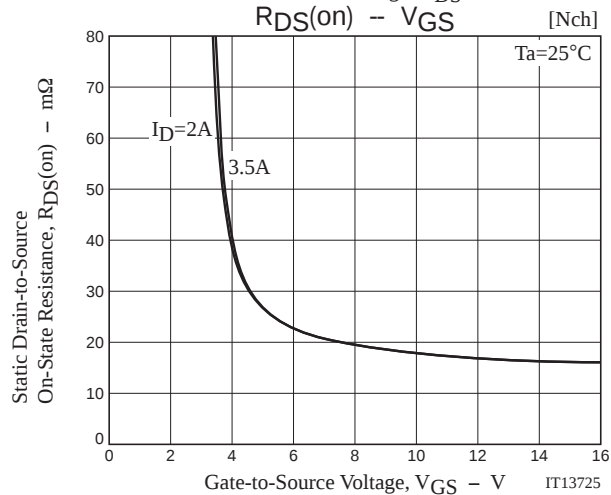
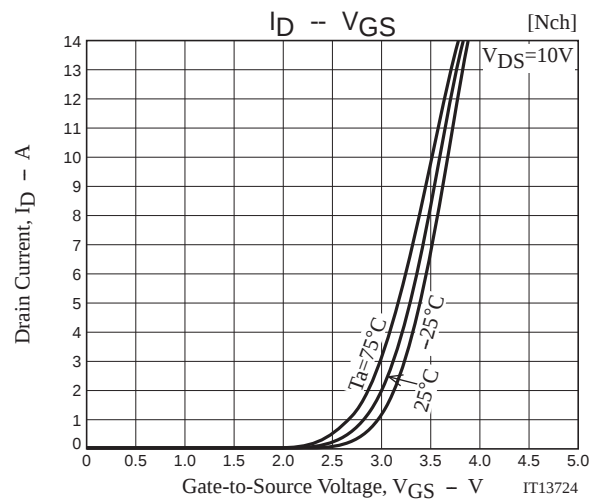
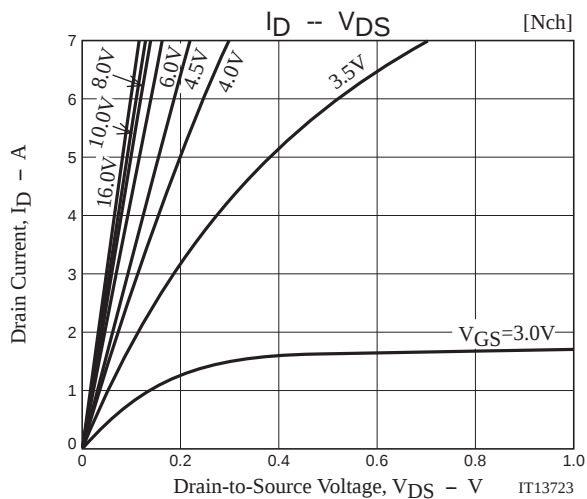


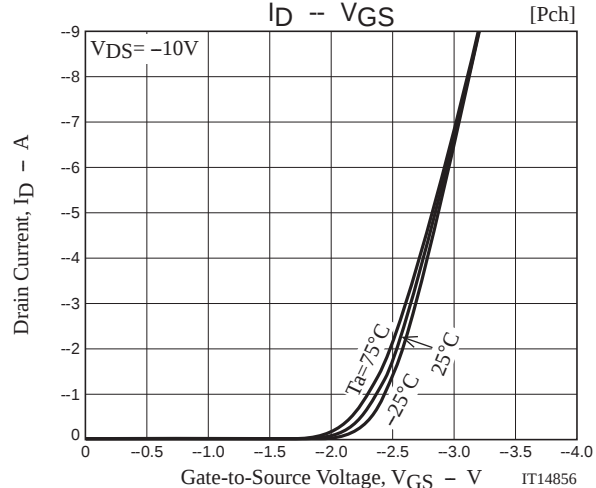
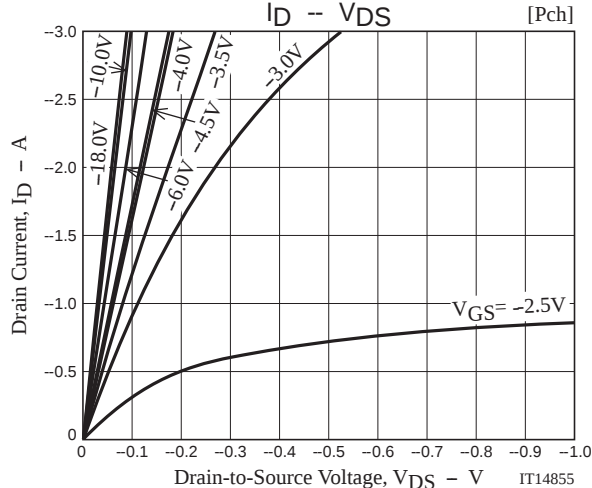
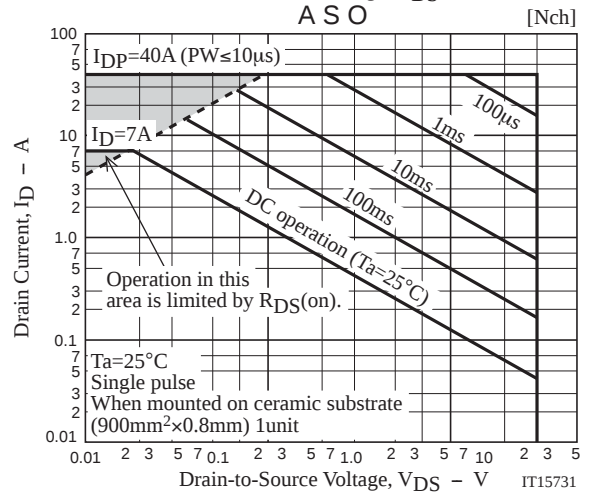
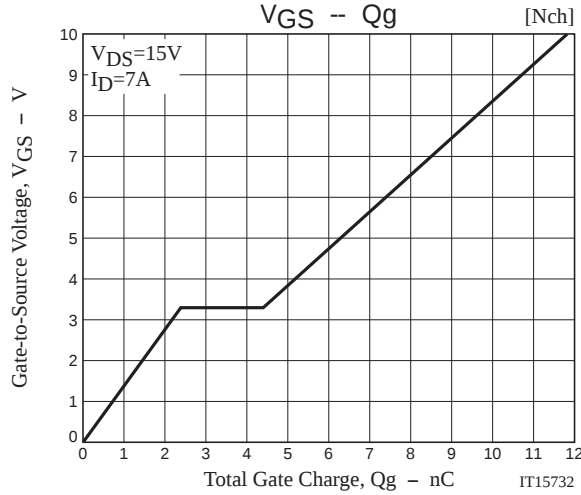
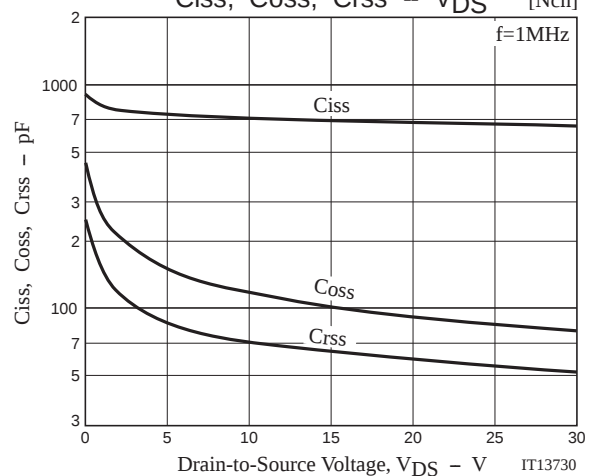
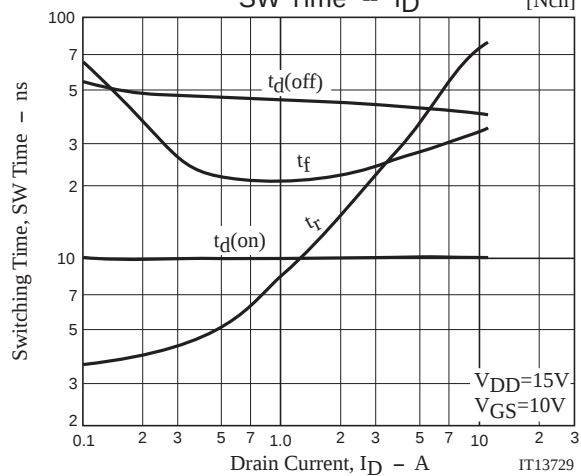
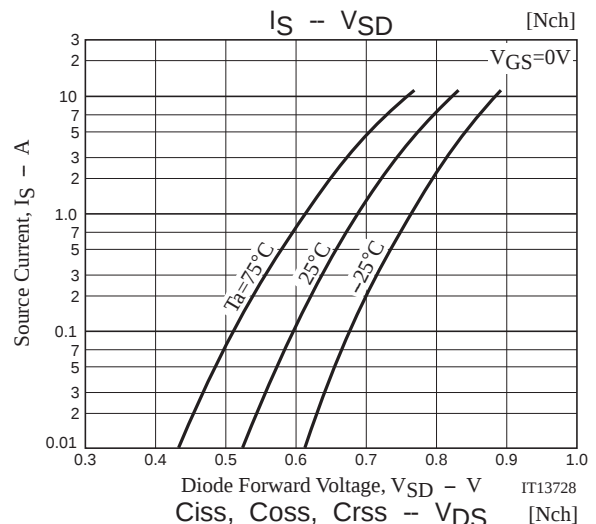
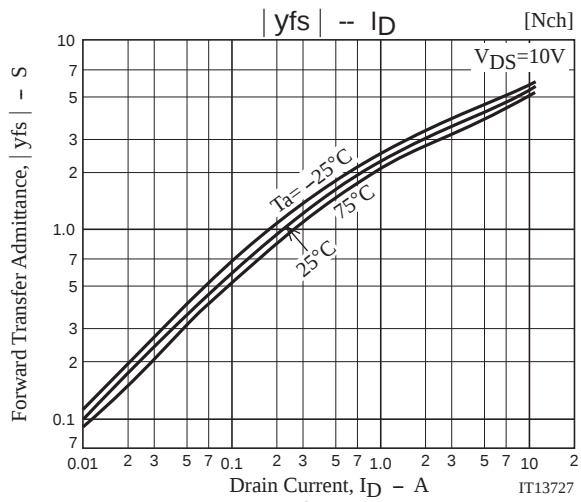
[P-channel]

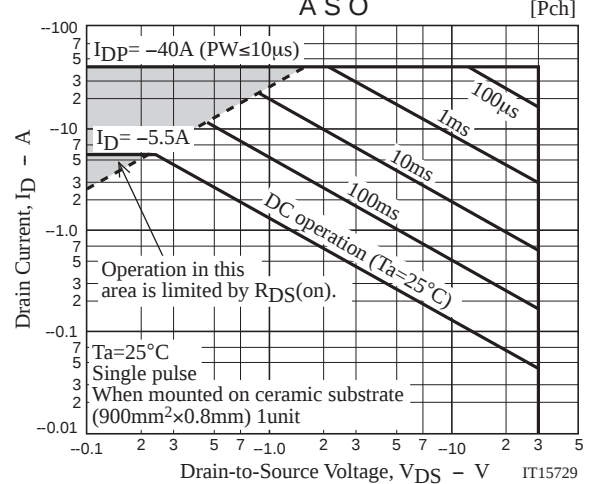
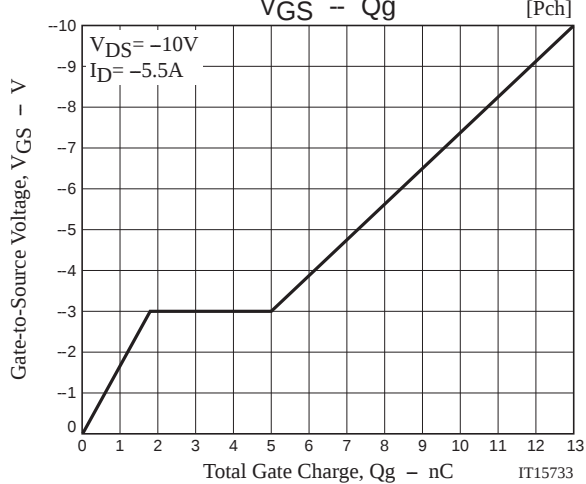
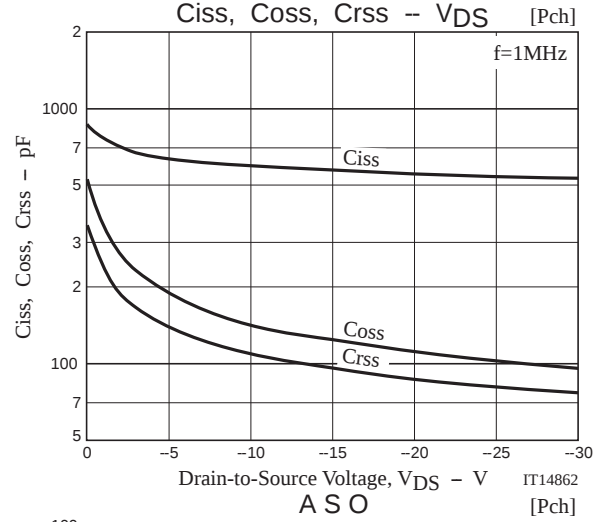
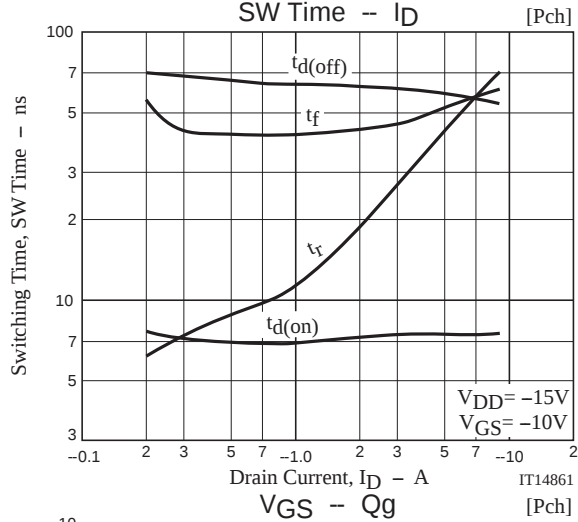
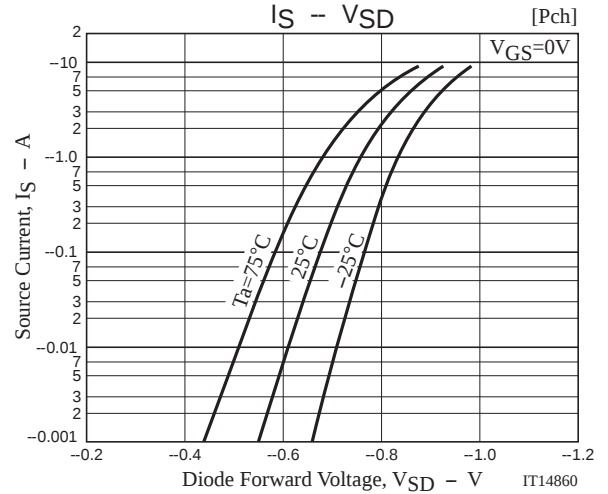
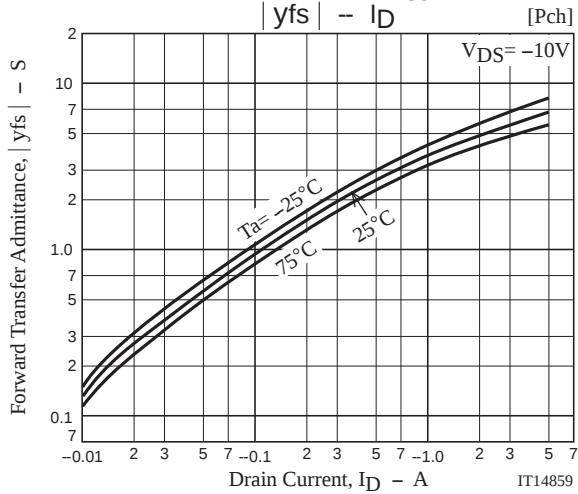
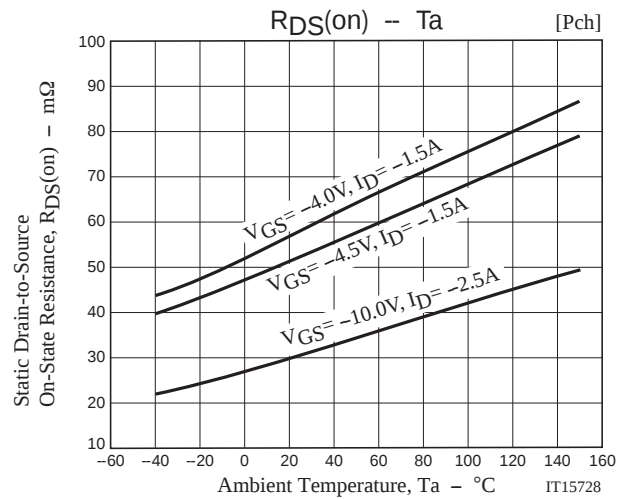
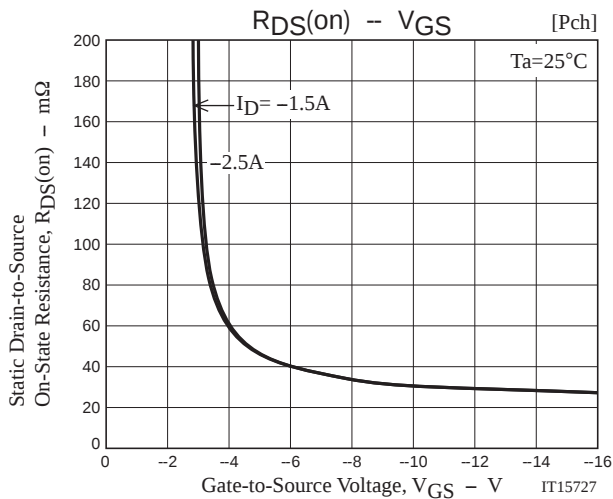


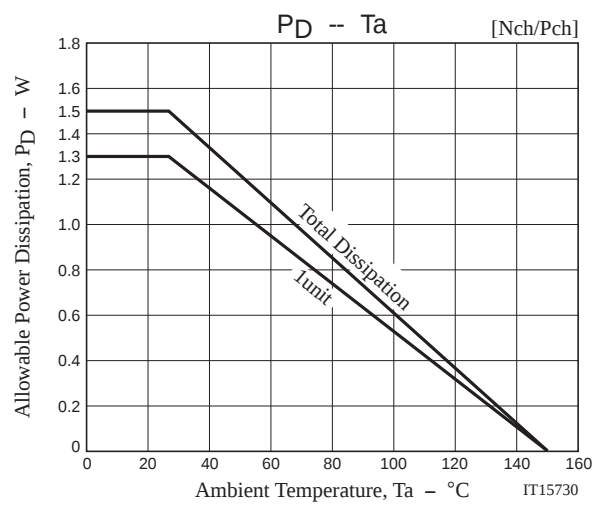
Ordering Information

Device	Package	Shipping	memo
ECH8661-TL-H	ECH8	3,000pcs./reel	Pb-Free and Halogen Free









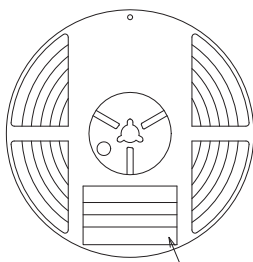
Embossed Taping Specification

ECH8661-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

Packing method



Reel label

Type No.
LOT No.
Quantity
Origin

Reel label, Inner box label
(unit:mm)

(P) TYPE	000000000
(1) LOT	00
(Q) QTY	0,000 (1) LEAD FREE *
(2) SPECIAL	
	20722005310C
	ASSEMBLY:**** (DIFFUSION:****)

Outer box label

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

TYPE CODE	00000000000000000000
TYPE	00000000
QTY	0,000 PCS (1) LEAD FREE *
LOT	00000000
PACKAGE	00000000
SPECIAL	
	20722005310C
	ASSEMBLY:**** (DIFFUSION:****)

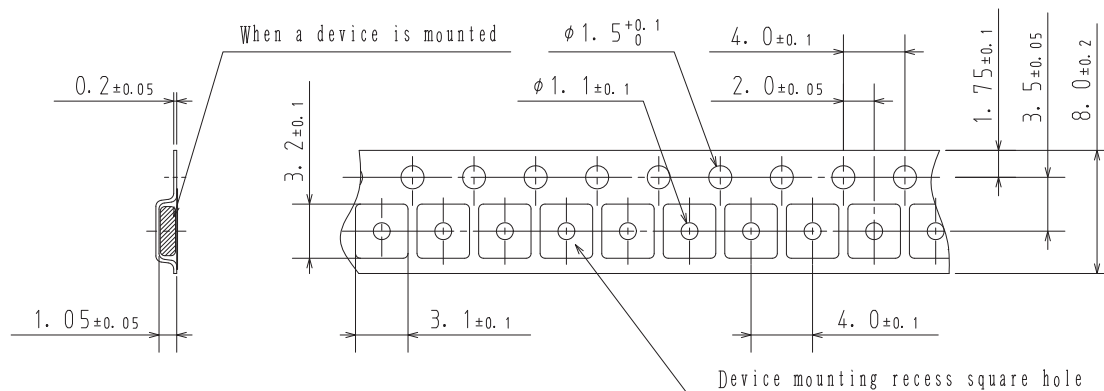
NOTE (1)

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

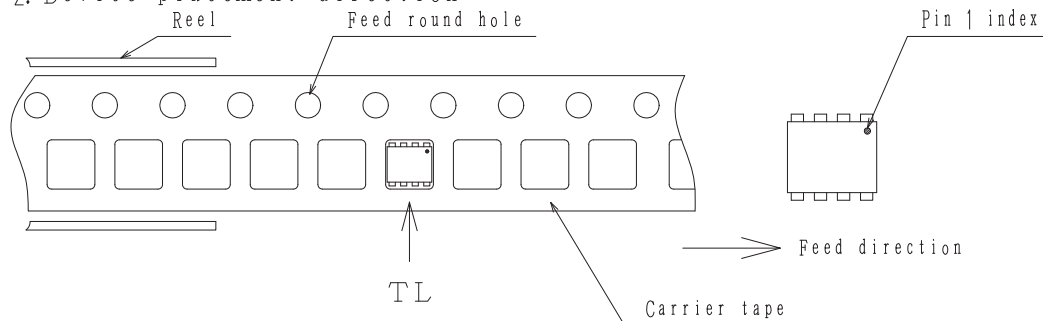
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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

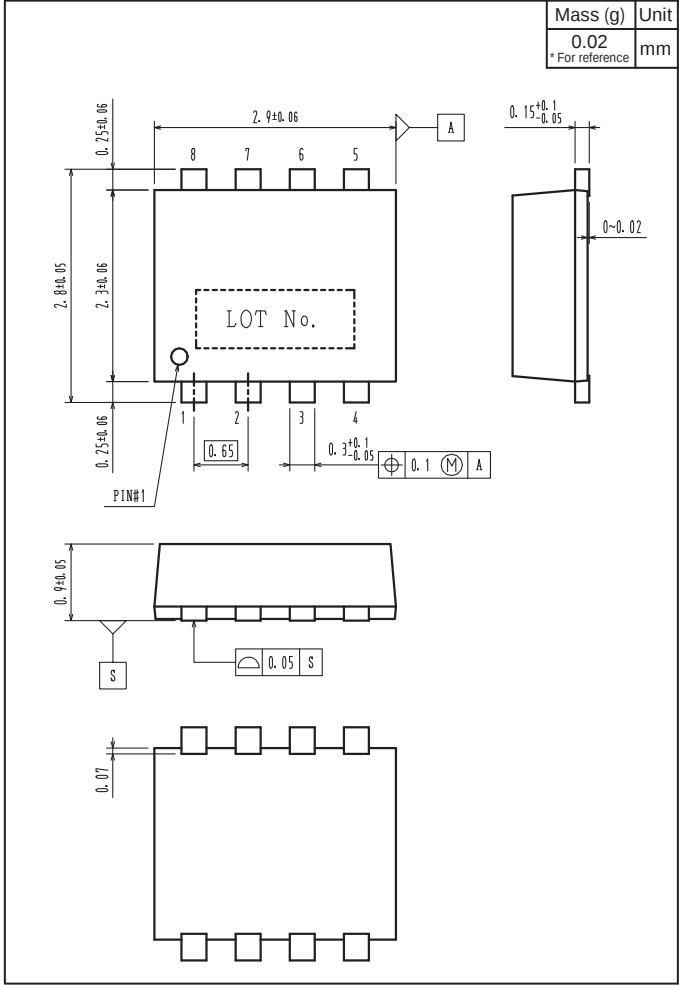


2-2. Device placement direction

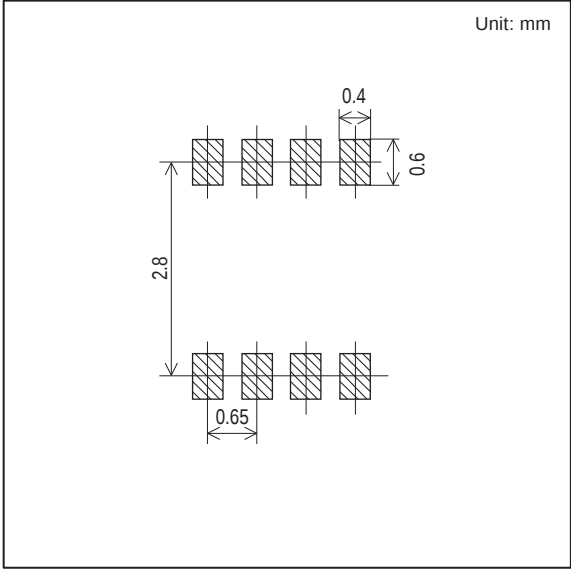


Those with pin 1 index on the feed hole side.....TL

Outline Drawing
ECH8661-TL-H



Land Pattern Example



Note on usage : Since the ECH8661 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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