



ECH8661

Power MOSFET

30V, 7A, 24mΩ, -30V, -5.5A, 39mΩ, Complementary Dual ECH8

ON Semiconductor®

<http://onsemi.com>

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 $T_a=25^\circ\text{C}$

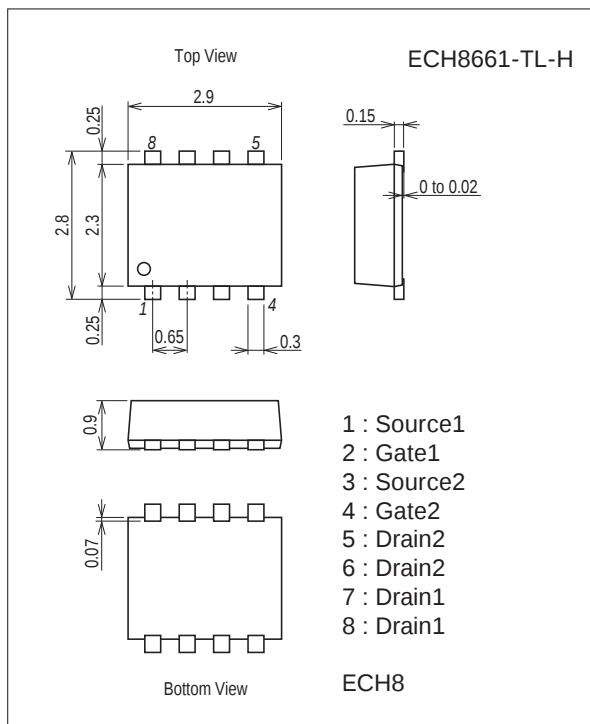
Parameter	Symbol	Conditions	N-channel	P-channel	Unit
Drain-to-Source Voltage	V_{DS}		30	-30	V
Gate-to-Source Voltage	V_{GS}		± 20	± 20	V
Drain Current (DC)	I_D		7	-5.5	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu s$, duty cycle $\leq 1\%$	40	-40	A
Allowable Power Dissipation	P_D	When mounted on ceramic 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		°C
Storage Temperature	T_{stg}		-55 to +150		°C

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Package Dimensions

unit : mm (typ)

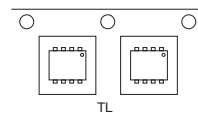
7011A-001



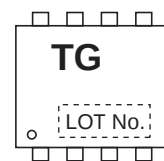
Product & Package Information

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

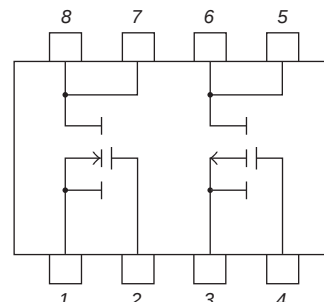
Packing Type : TL



Marking



Electrical Connection

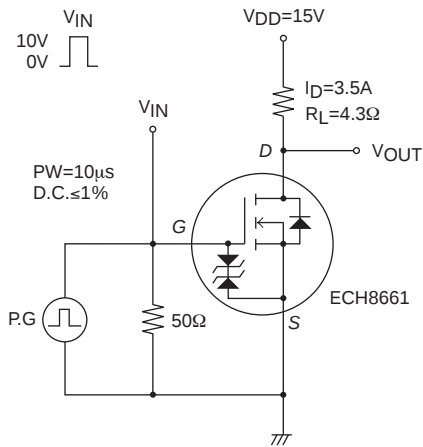


Electrical Characteristics at Ta=25°C

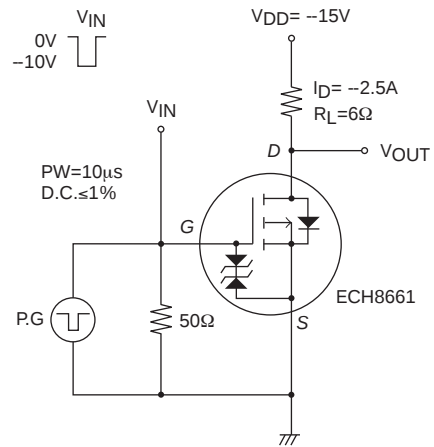
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[N-channel]						
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=1mA, VGS=0V	30			V
Zero-Gate Voltage Drain Current	IDSS	VDS=30V, VGS=0V			1	μA
Gate-to-Source Leakage Current	IGSS	VGS=±16V, VDS=0V			±10	μA
Cutoff Voltage	VGS(off)	VDS=10V, ID=1mA	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	tq(on)	See specified Test Circuit.		10		ns
Rise Time	tr			25		ns
Turn-OFF Delay Time	tq(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	tq(on)			7.2		ns
Rise Time	tr	See specified Test Circuit.		23		ns
Turn-OFF Delay Time	tq(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]

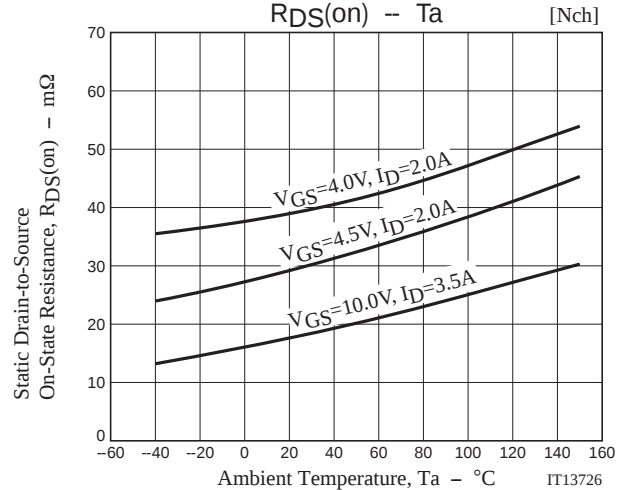
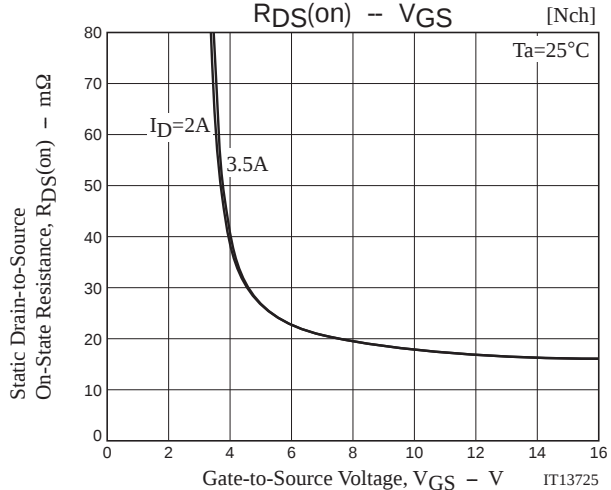
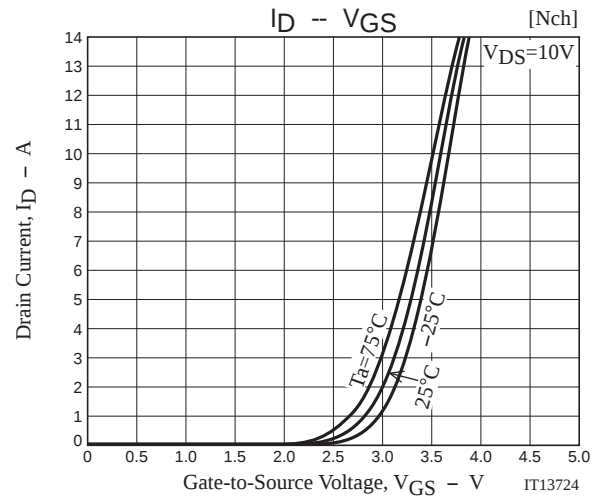
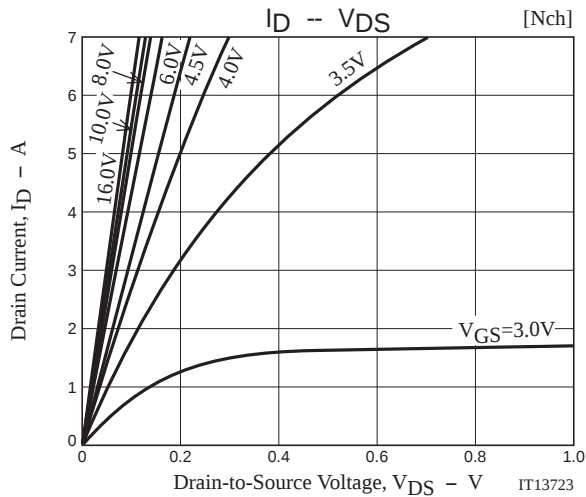


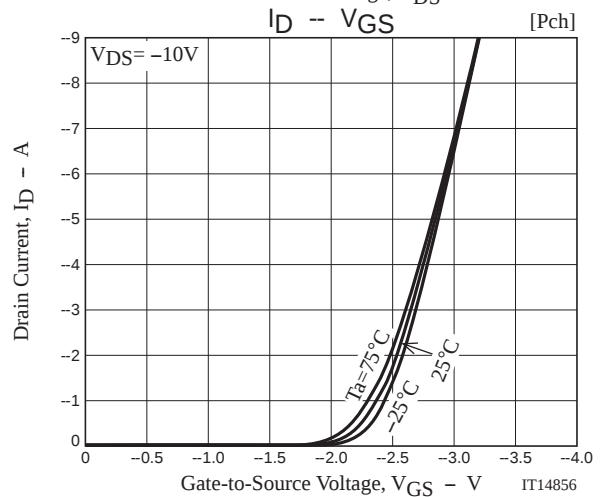
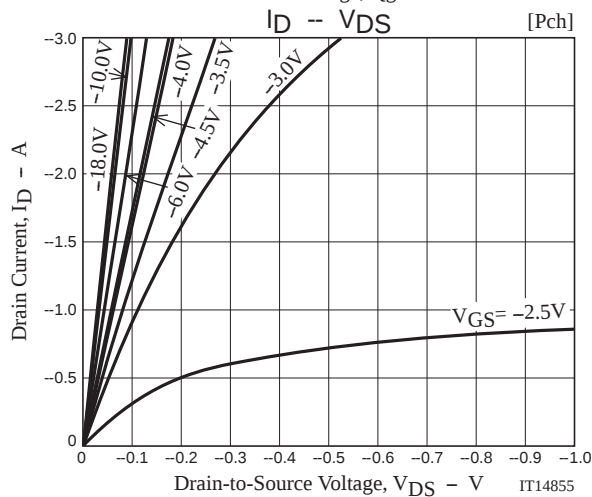
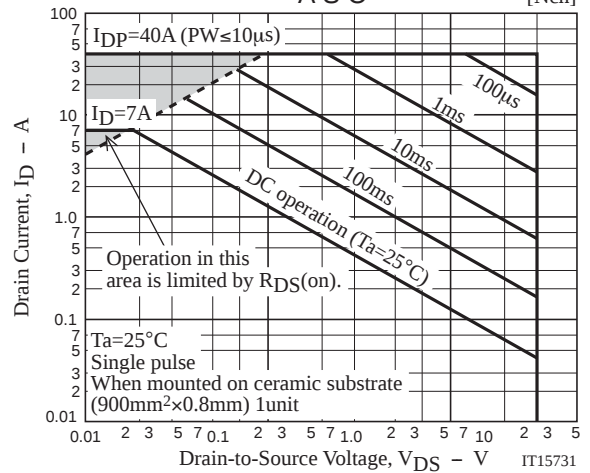
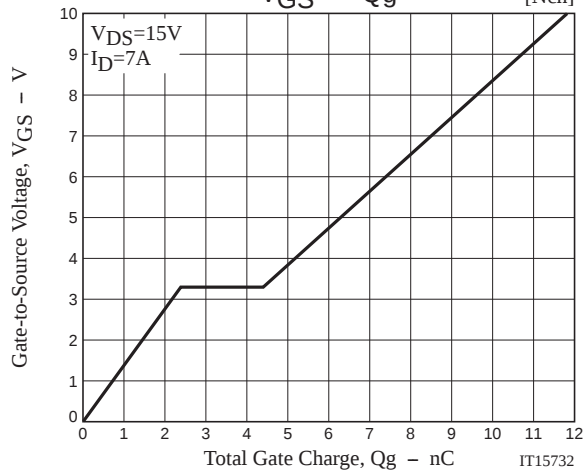
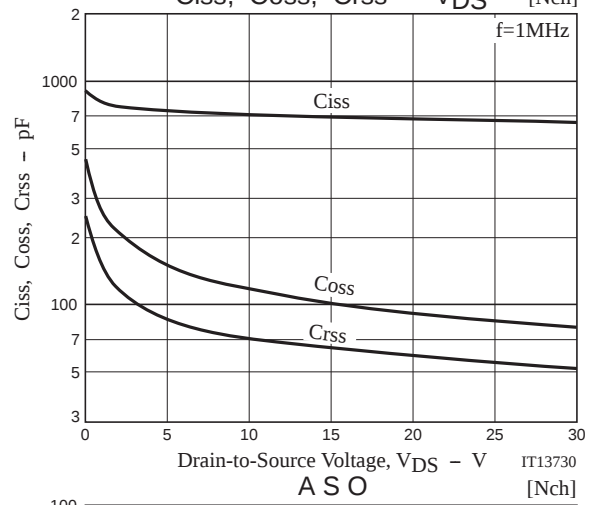
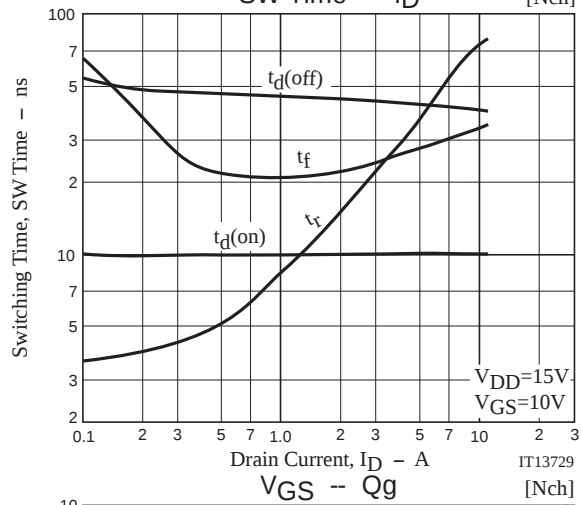
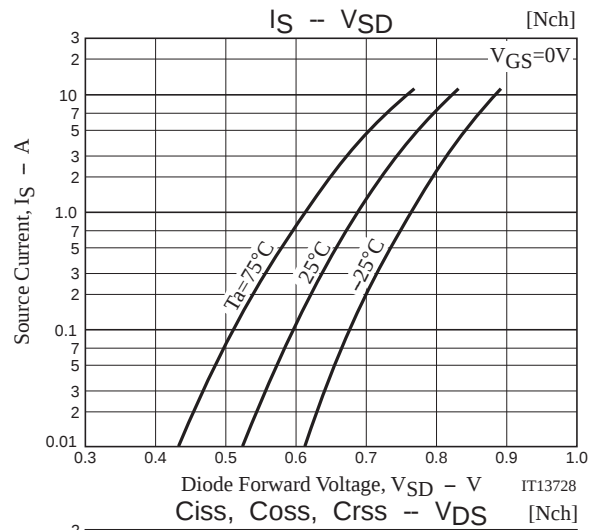
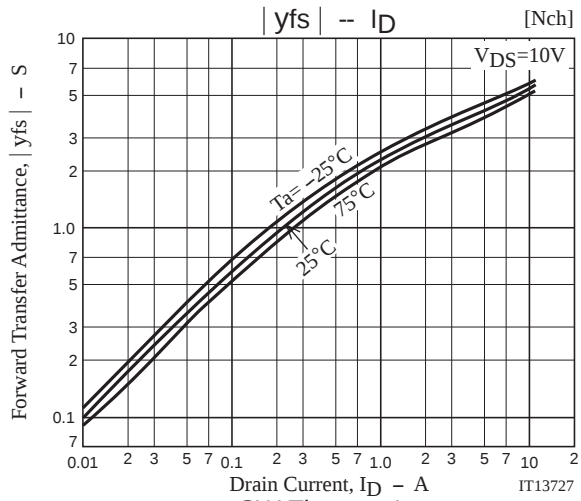
[P-channel]

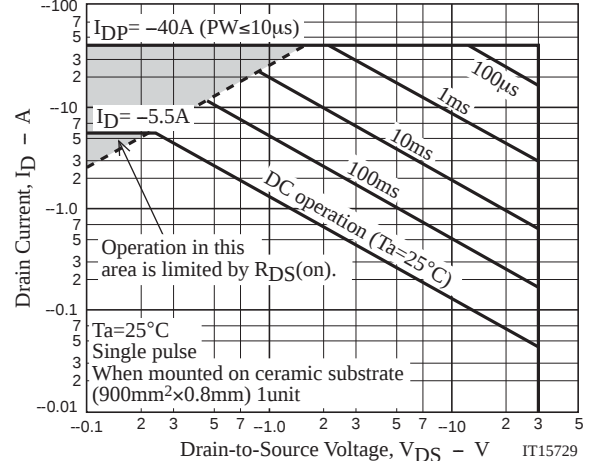
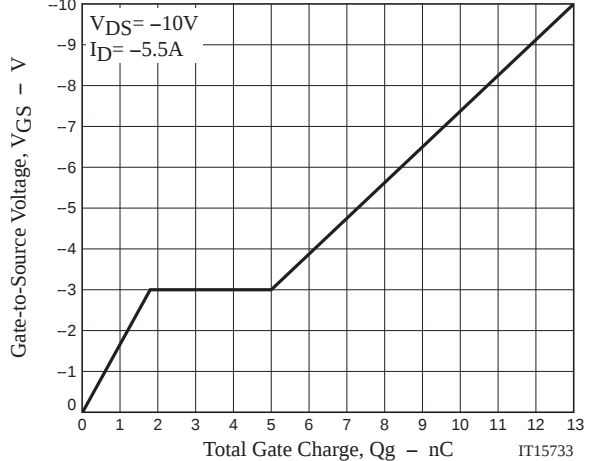
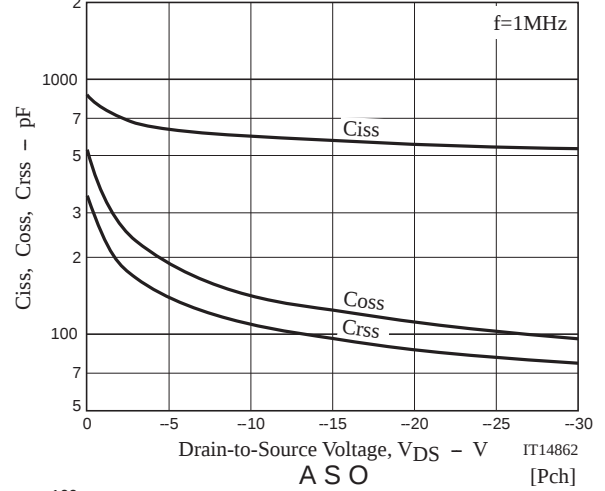
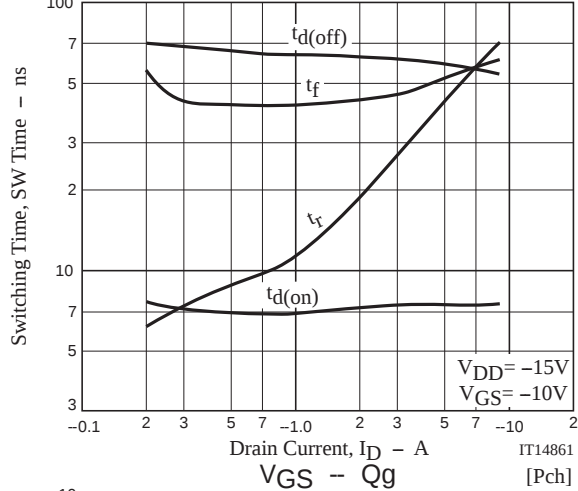
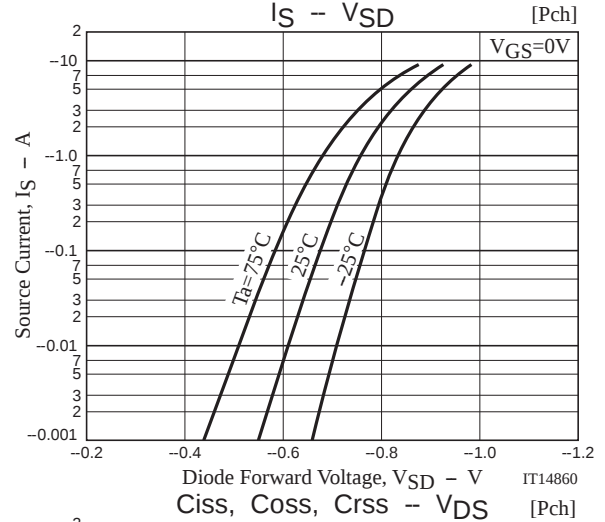
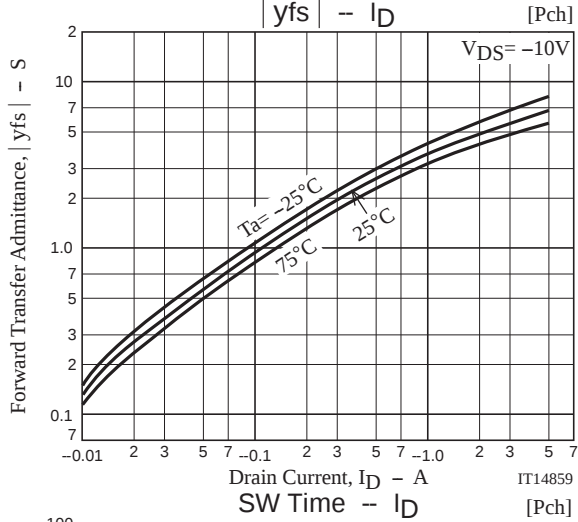
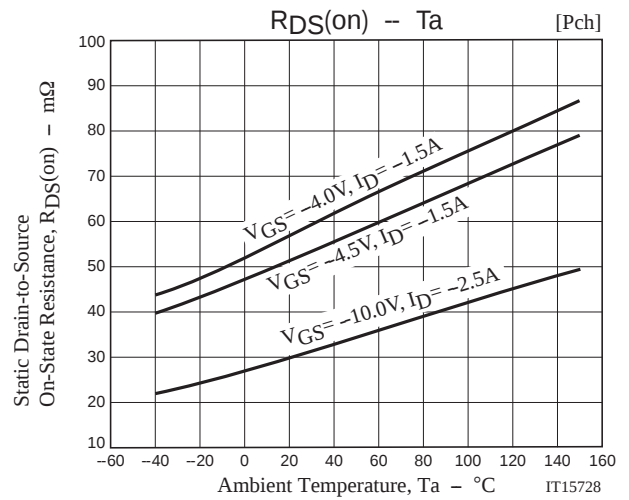
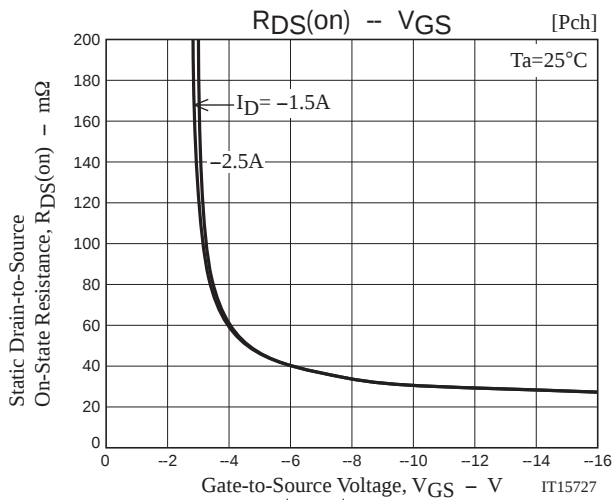


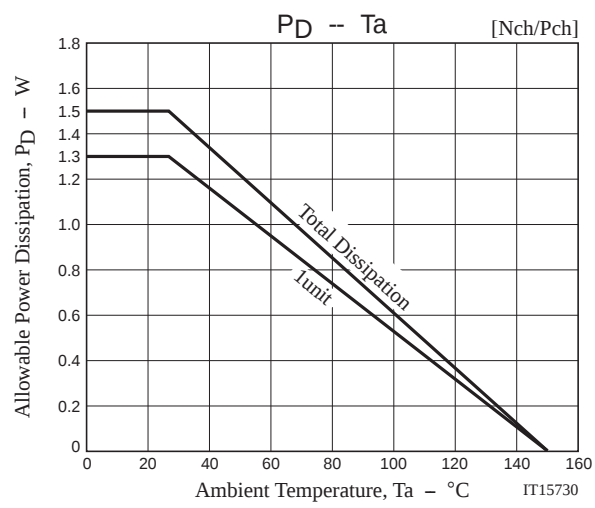
Ordering Information

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









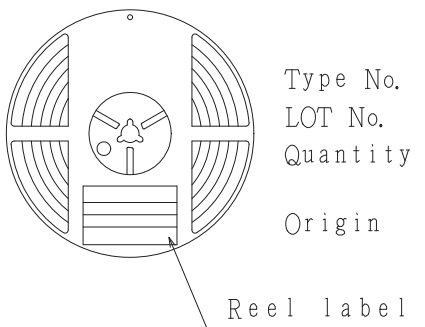
Embossed Taping Specification

ECH8661-TL-H

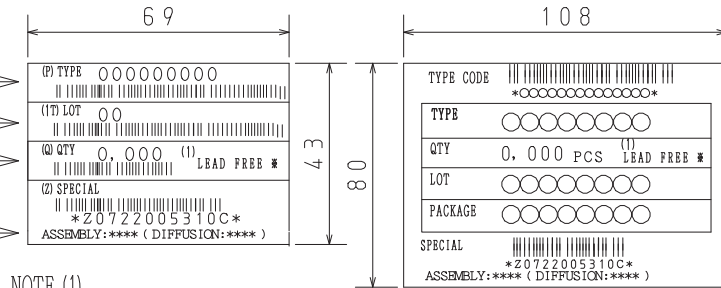
1. Packing Format

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, Inner box label
(unit:mm)

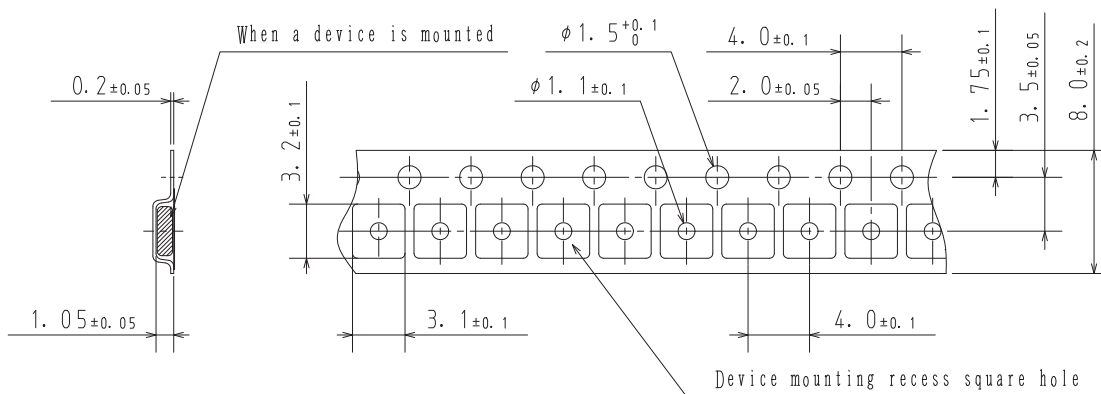
Outer box label

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

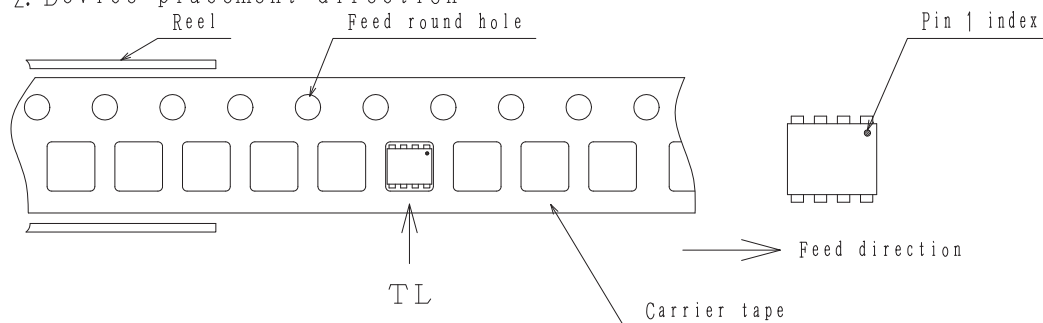
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

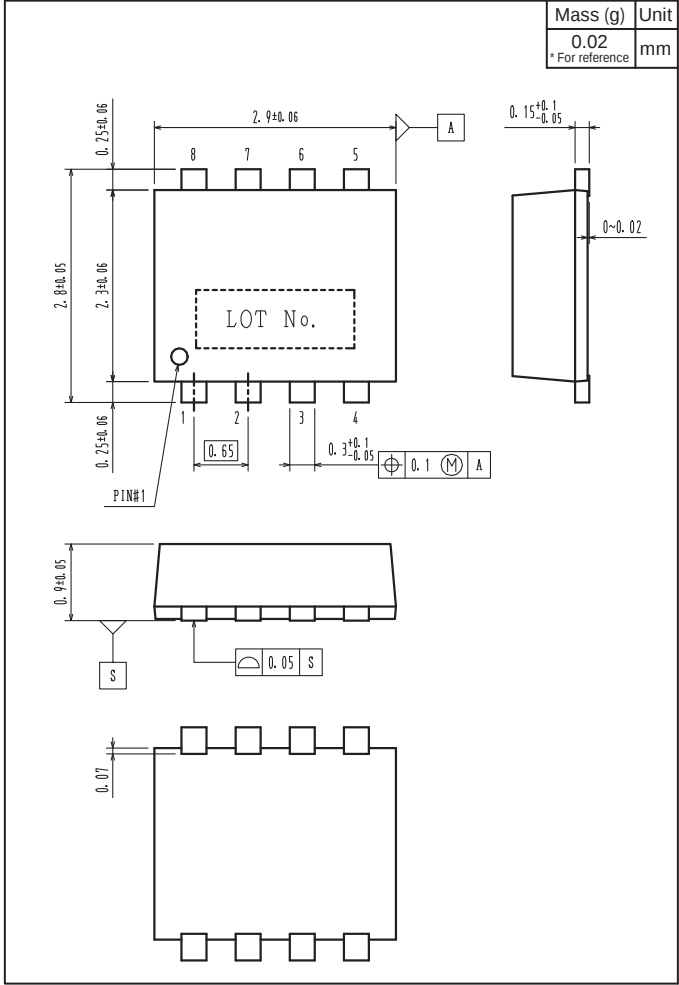
2-1. Carrier tape size (unit:mm)



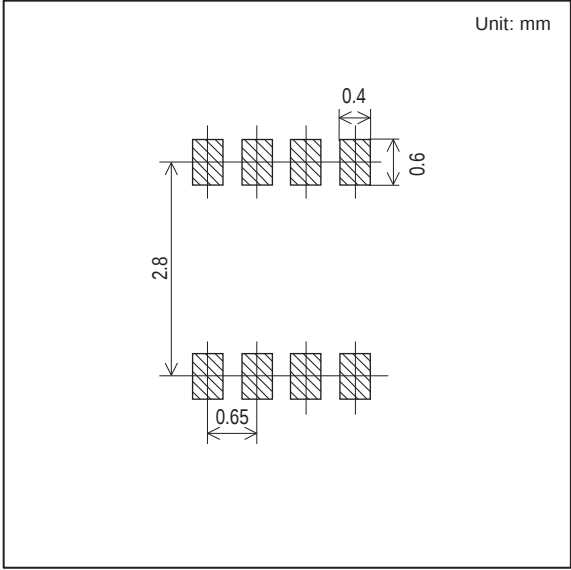
2-2. Device placement direction



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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