



ECH8668

Power MOSFET

20V, 7.5A, 17mΩ, -20V, -5A, 38mΩ, Complementary Dual ECH8

ON Semiconductor®

<http://onsemi.com>

Features

- The ECH8668 incorporates an N-channel MOSFET and a P-channel MOSFET that feature low ON-resistance and high-speed switching, thereby enabling high-density mounting
- 1.8V drive
- Halogen free compliance
- Protection diode in

Specifications

Absolute Maximum Ratings at Ta=25°C

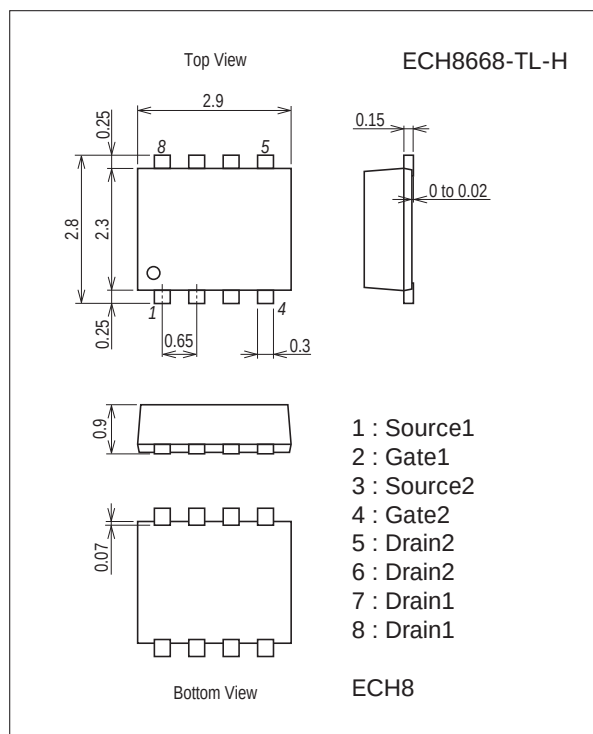
Parameter	Symbol	Conditions	N-channel	P-channel	Unit
Drain-to-Source Voltage	V _{DSS}		20	-20	V
Gate-to-Source Voltage	V _{GSS}		±10	±10	V
Drain Current (DC)	I _D		7.5	-5	A
Drain Current (Pulse)	I _{DP}	PW≤10μs, duty cycle≤1%	40	-40	A
Allowable Power Dissipation	P _D	When mounted on ceramic substrate (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)

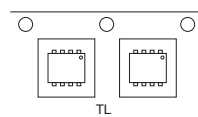
7011A-001



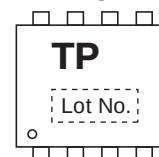
Product & Package Information

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

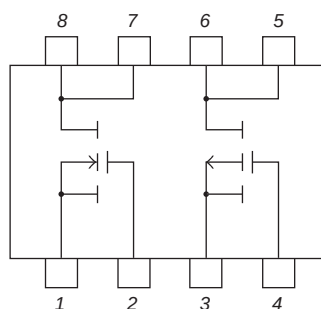
Packing Type : TL



Marking



Electrical Connection



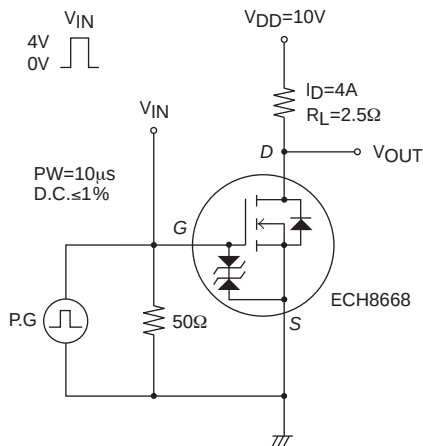
ECH8668

Electrical Characteristics at Ta=25°C

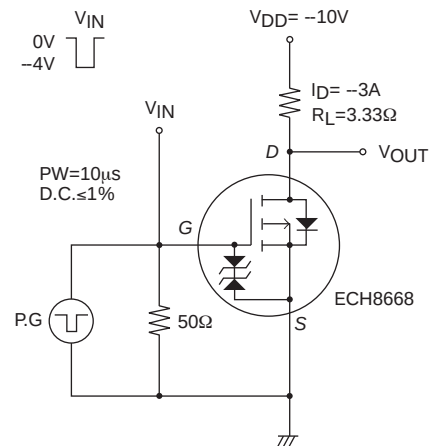
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[N-channel]						
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=1mA, VGS=0V	20			V
Zero-Gate Voltage Drain Current	IDSS	VDS=20V, VGS=0V			1	μA
Gate-to-Source Leakage Current	IGSS	VGS=±8V, VDS=0V			±10	μA
Cutoff Voltage	VGS(off)	VDS=10V, ID=1mA	0.5		1.3	V
Forward Transfer Admittance	yfs	VDS=10V, ID=4A	4.2	7		S
Static Drain-to-Source On-State Resistance	RDS(on)1	ID=4A, VGS=4.5V		13	17	mΩ
	RDS(on)2	ID=2A, VGS=2.5V		18	26	mΩ
	RDS(on)3	ID=0.5A, VGS=1.8V		30	48	mΩ
Input Capacitance	Ciss	VDS=10V, f=1MHz		1060		pF
Output Capacitance	Coss			180		pF
Reverse Transfer Capacitance	Crss			135		pF
Turn-ON Delay Time	td(on)	See specified Test Circuit.		17.5		ns
Rise Time	tr			120		ns
Turn-OFF Delay Time	td(off)			68		ns
Fall Time	tf			80		ns
Total Gate Charge	Qg	VDS=10V, VGS=4.5V, ID=7.5A		10.8		nC
Gate-to-Source Charge	Qgs			2.1		nC
Gate-to-Drain “Miller” Charge	Qgd			2.9		nC
Diode Forward Voltage	VSD	IS=7.5A, VGS=0V		0.74	1.2	V
[P-channel]						
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=-1mA, VGS=0V	-20			V
Zero-Gate Voltage Drain Current	IDSS	VDS=-20V, VGS=0V			-1	μA
Gate-to-Source Leakage Current	IGSS	VGS=±8V, VDS=0V			±10	μA
Cutoff Voltage	VGS(off)	VDS=-10V, ID=-1mA	-0.4		-1.3	V
Forward Transfer Admittance	yfs	VDS=-10V, ID=-3A	4.9	8.3		S
Static Drain-to-Source On-State Resistance	RDS(on)1	ID=-3A, VGS=-4.5V		29	38	mΩ
	RDS(on)2	ID=-1.5A, VGS=-2.5V		41	58	mΩ
	RDS(on)3	ID=-0.5A, VGS=-1.8V		64	98	mΩ
Input Capacitance	Ciss	VDS=-10V, f=1MHz		960		pF
Output Capacitance	Coss			180		pF
Reverse Transfer Capacitance	Crss			140		pF
Turn-ON Delay Time	td(on)	See specified Test Circuit.		14		ns
Rise Time	tr			55		ns
Turn-OFF Delay Time	td(off)			92		ns
Fall Time	tf			68		ns
Total Gate Charge	Qg	VDS=-10V, VGS=-4.5V, ID=-5A		11		nC
Gate-to-Source Charge	Qgs			2.0		nC
Gate-to-Drain “Miller” Charge	Qgd			2.8		nC
Diode Forward Voltage	VSD	IS=-5A, VGS=0V		-0.82	-1.2	V

Switching Time Test Circuit

[N-channel]

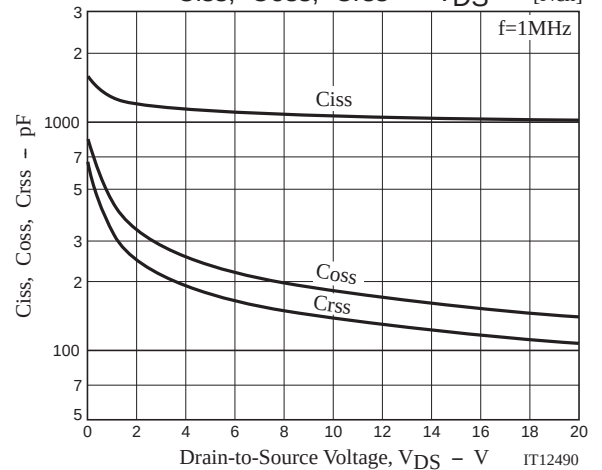
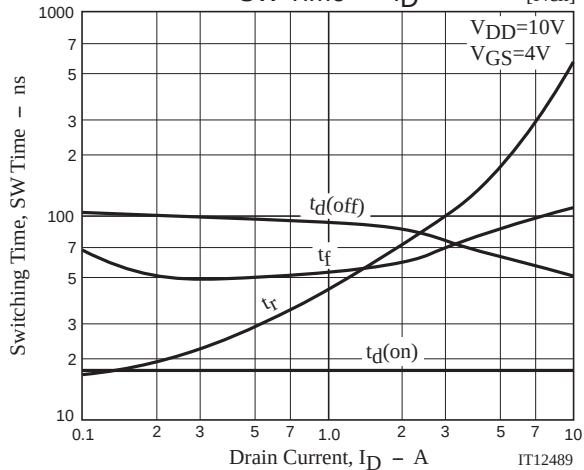
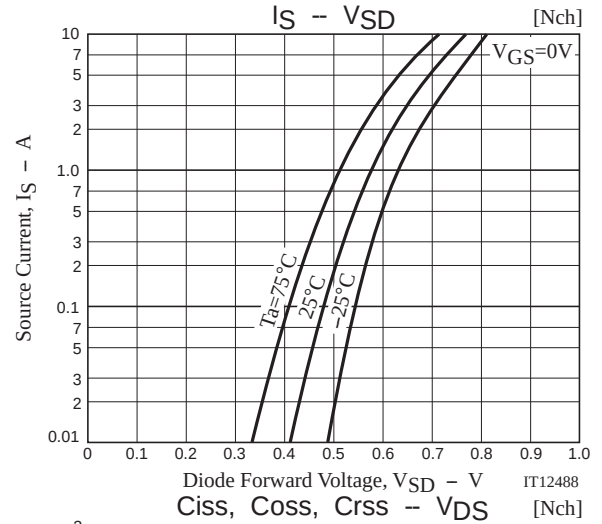
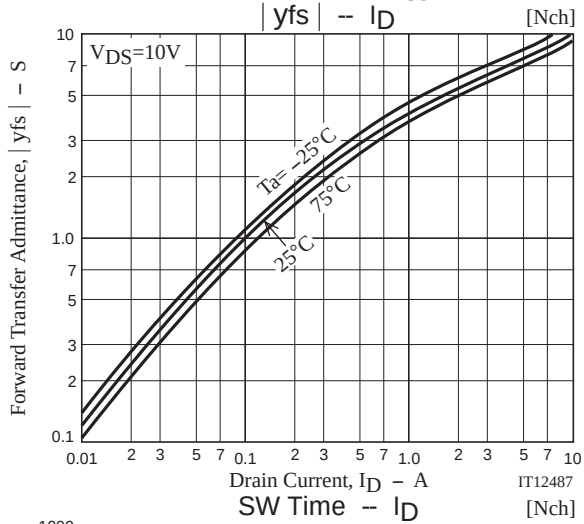
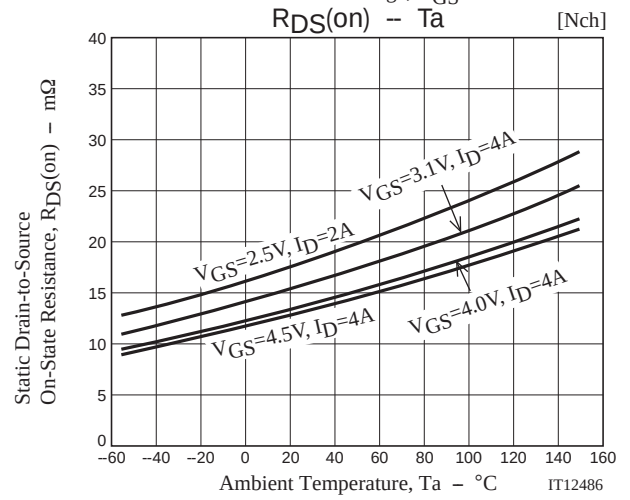
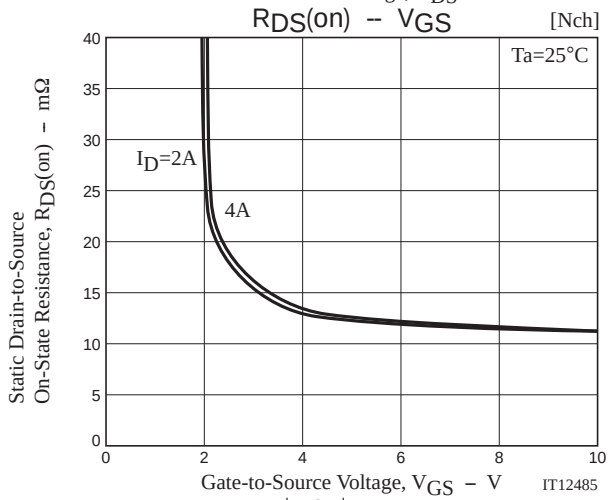
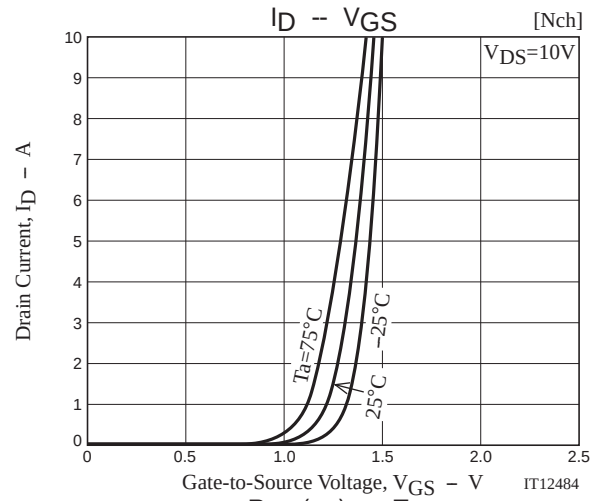
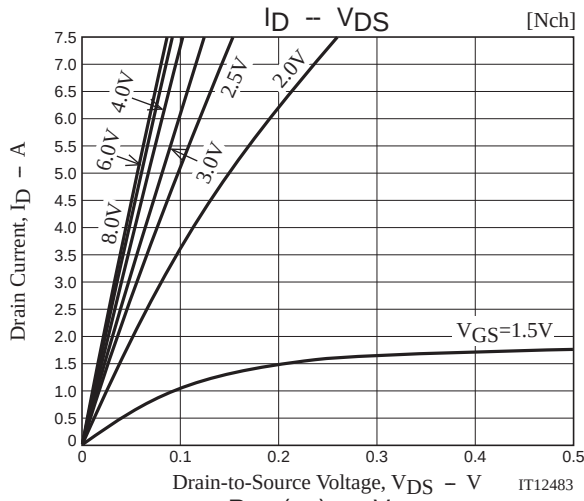


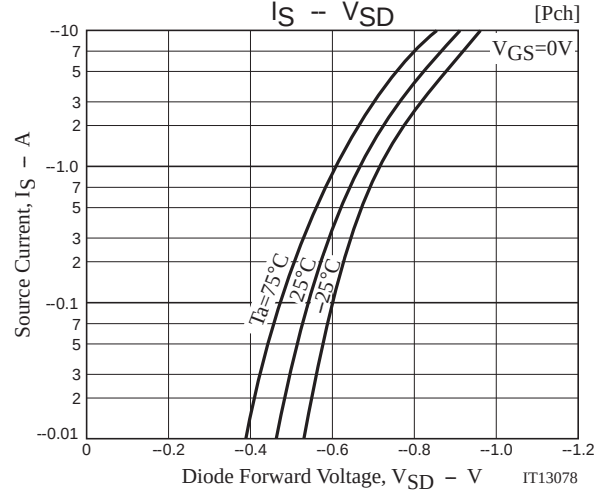
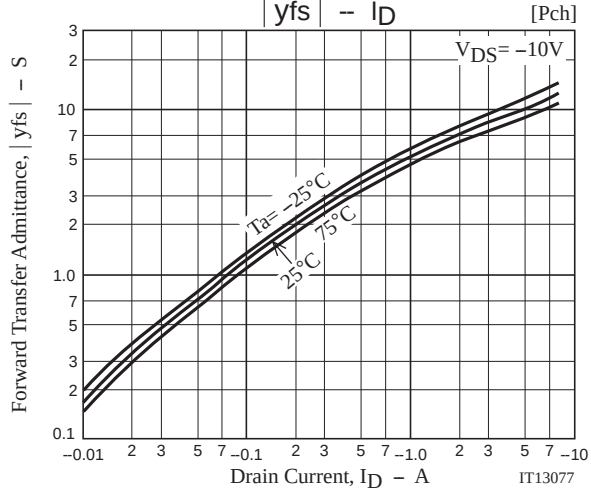
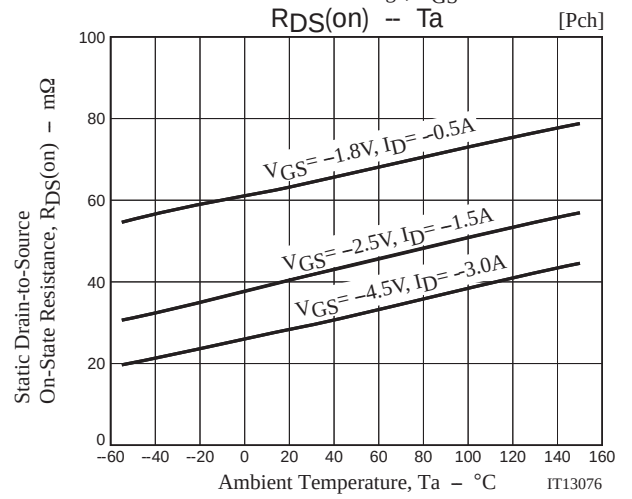
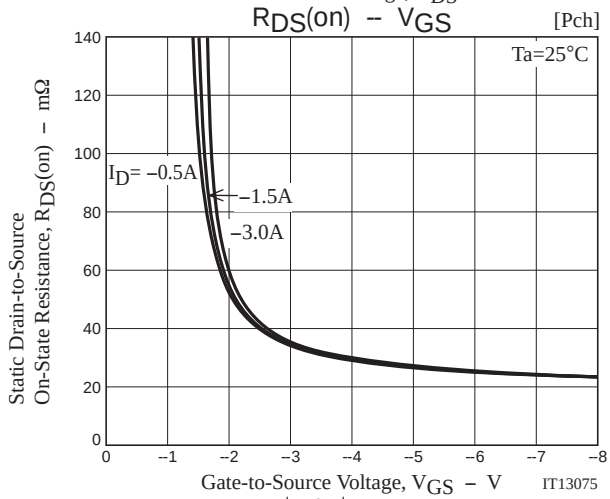
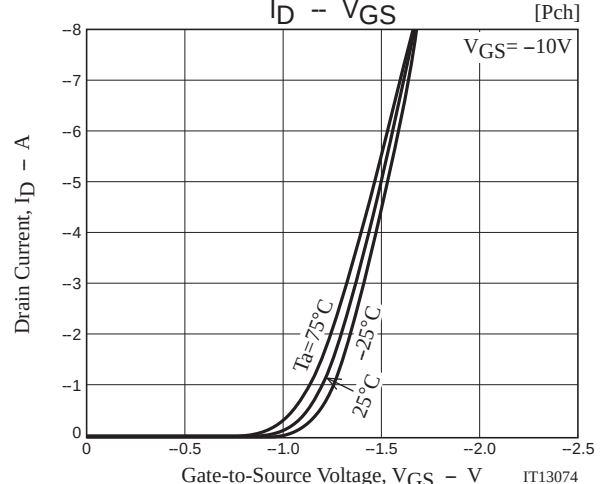
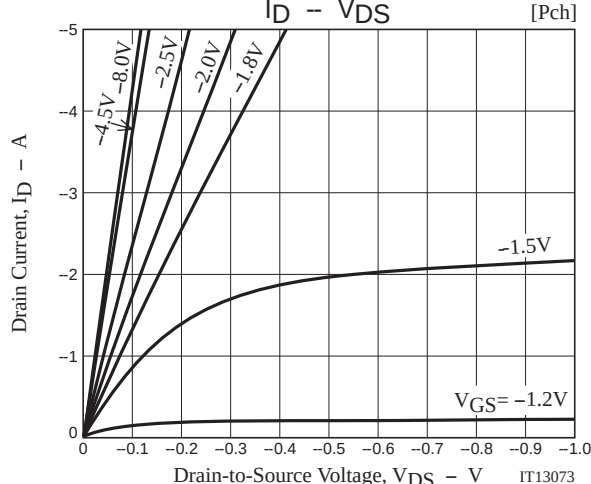
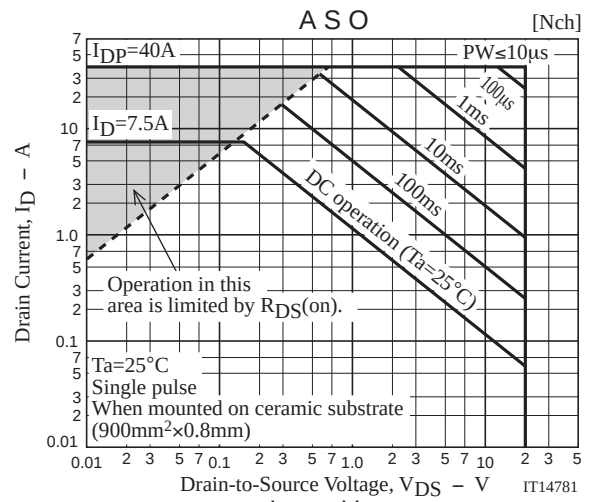
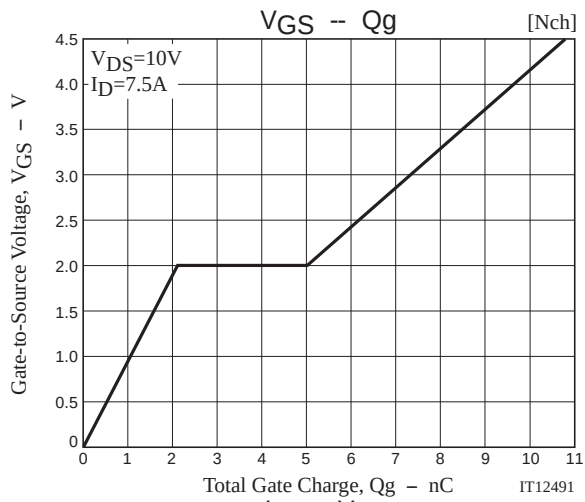
[P-channel]

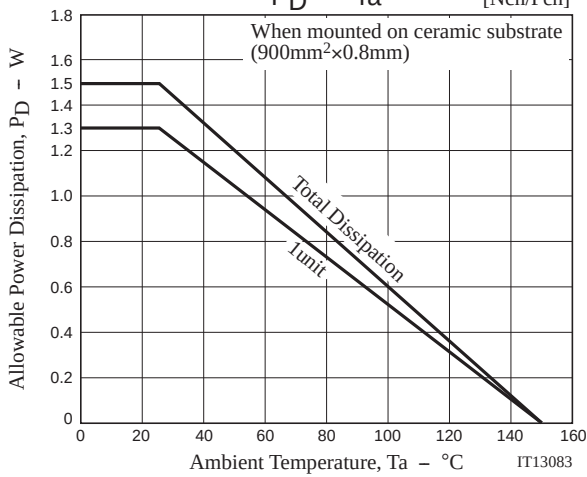
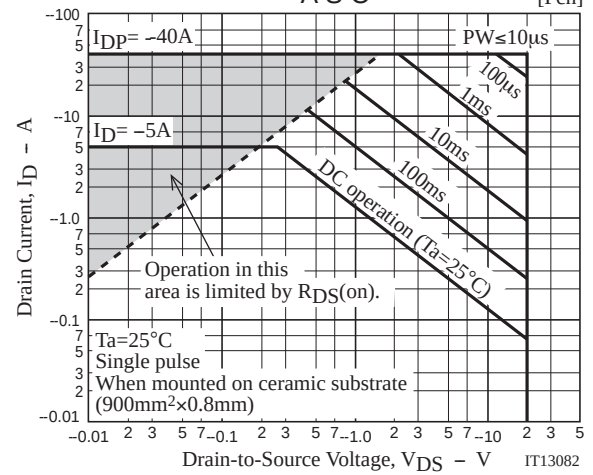
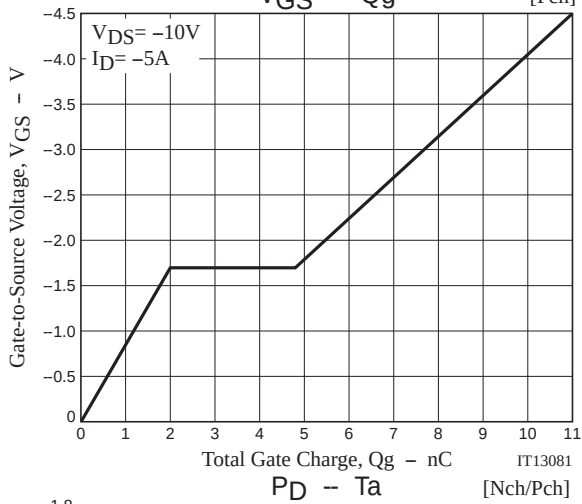
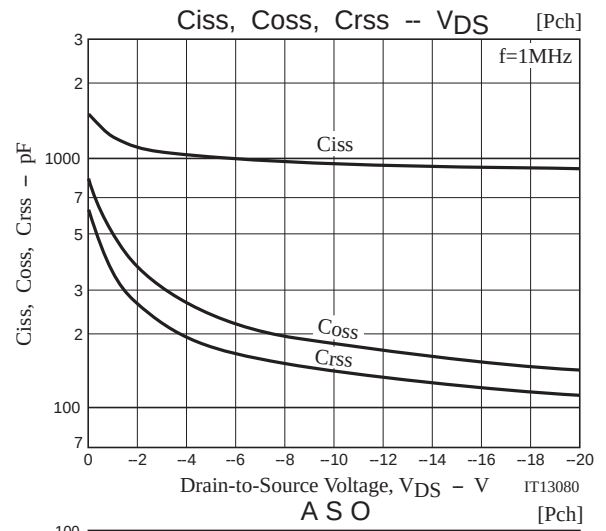
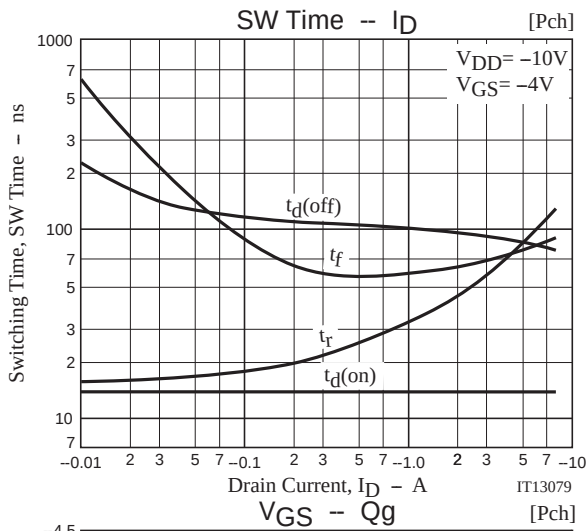


Ordering Information

Device	Package	Shipping	memo
ECH8668-TL-H	ECH8	3,000pcs./reel	Pb Free and Halogen Free







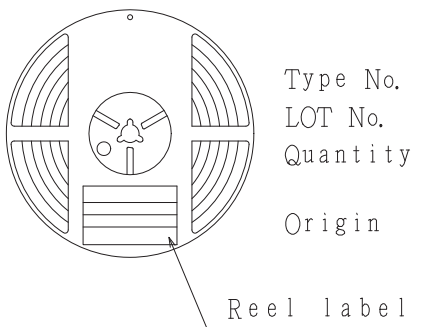
Embossed Taping Specification

ECH8668-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

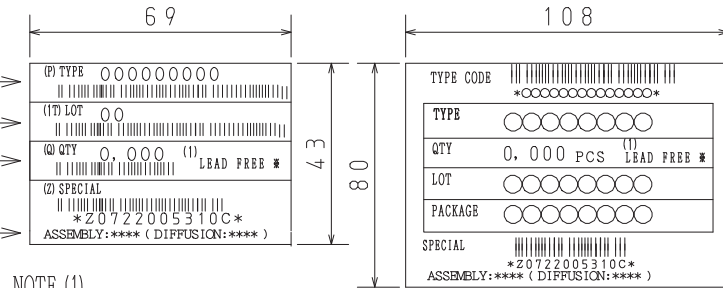
Packing method



Reel label, Inner box label
(unit:mm)

Outer box label

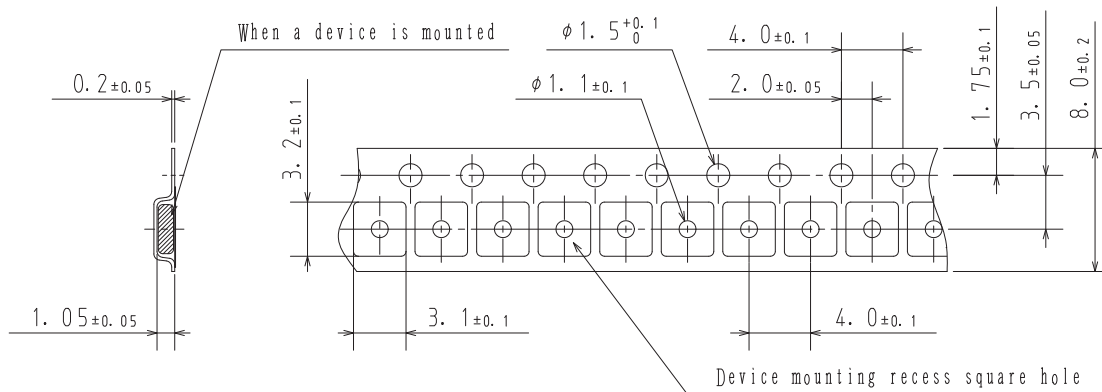
It is a label at the time of factory shipments.
The form of a label may change in physical distribution process.



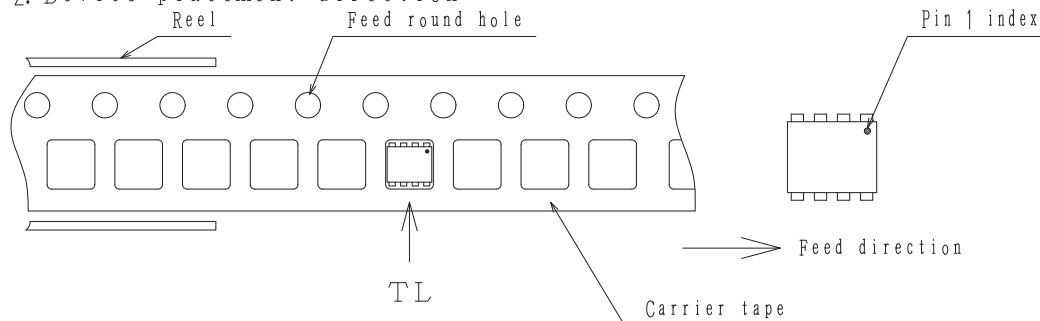
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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

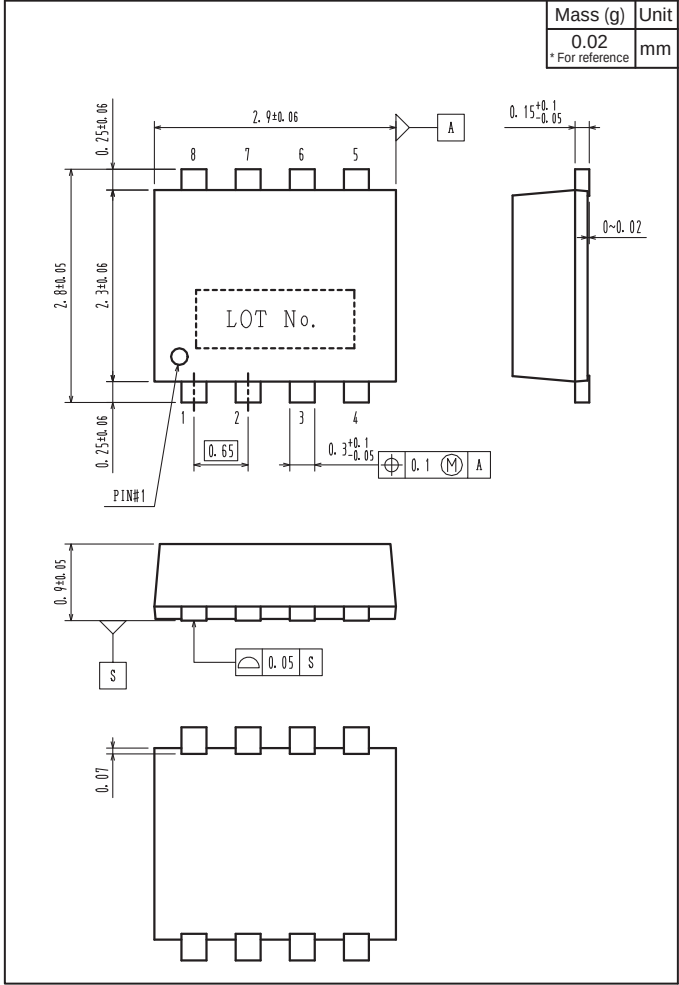


2-2. Device placement direction

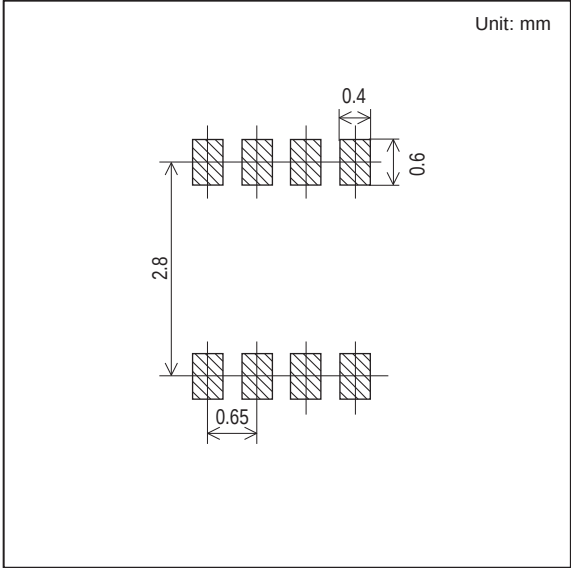


Those with pin 1 index on the feed hole side.....TL

Outline Drawing
ECH8668-TL-H



Land Pattern Example



Note on usage : Since the ECH8668 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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