Ordering number : ENA1562A

ECH8602M

ON Semiconductor®

http://onsemi.com

N-Channel Power MOSFET
30V, 6A, 30mΩ, Dual ECH8

Features

- 2.5V drive
- Common-drain type
- Protection diode in
- Best suited for LiB charging and discharging switch
- Halogen free compliance

Specifications

Absolute Maximum Ratings at Ta=25°C

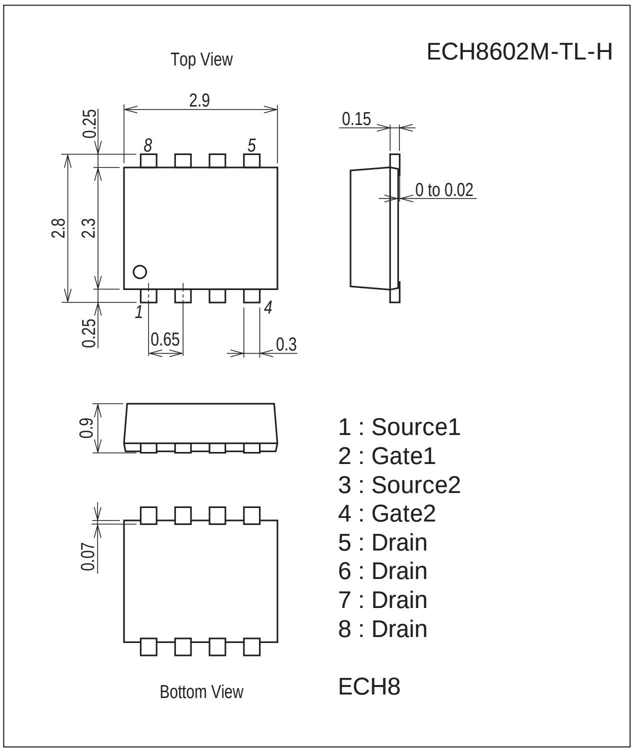
Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		30	V
Gate-to-Source Voltage	V_{GSS}		±12	V
Drain Current (DC)	I_D		6	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	60	A
Allowable Power Dissipation	P_D	When mounted on ceramic substrate (900mm^2×0.8mm) 1unit	1.4	W
Total Dissipation	P_T	When mounted on ceramic substrate (900mm^2×0.8mm)	1.5	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−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-003



ECH8602M-TL-H

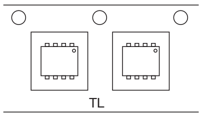
1 : Source1
2 : Gate1
3 : Source2
4 : Gate2
5 : Drain
6 : Drain
7 : Drain
8 : Drain

ECH8

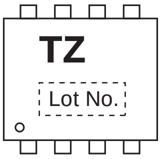
Product & Package Information

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

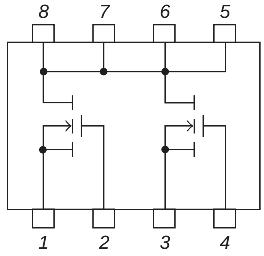
Packing Type : TL



Marking



Electrical Connection

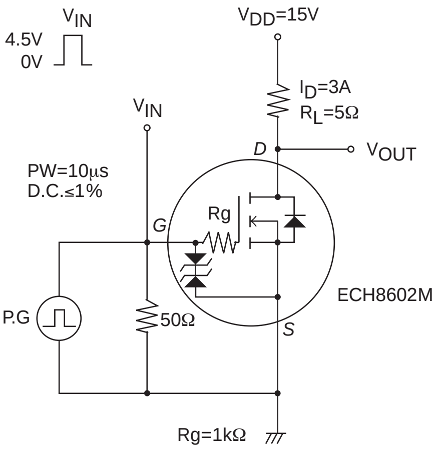


July, 2013

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	30			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V, 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	0.5		1.3	V
Forward Transfer Admittance	∣ yfs ∣	V_{DS}=10V, I_D=3A		5		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=3A, V_{GS}=4.5V	15.4	22	30	mΩ
	R_{DS}(on)2	I_D=3A, V_{GS}=4.0V	16.1	23	31	mΩ
	R_{DS}(on)3	I_D=1.5A, V_{GS}=2.5V	18	30	44	mΩ
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		305		ns
Rise Time	t_r			490		ns
Turn-OFF Delay Time	t_d(off)			3500		ns
Fall Time	t_f			1200		ns
Total Gate Charge	Qg	V_{DS}=15V, V_{GS}=4.5V, I_D=6A		7.5		nC
Gate-to-Source Charge	Qgs			1.7		nC
Gate-to-Drain “Miller” Charge	Qgd			1.6		nC
Diode Forward Voltage	V_{SD}	I_S=6A, V_{GS}=0V		0.8	1.2	V

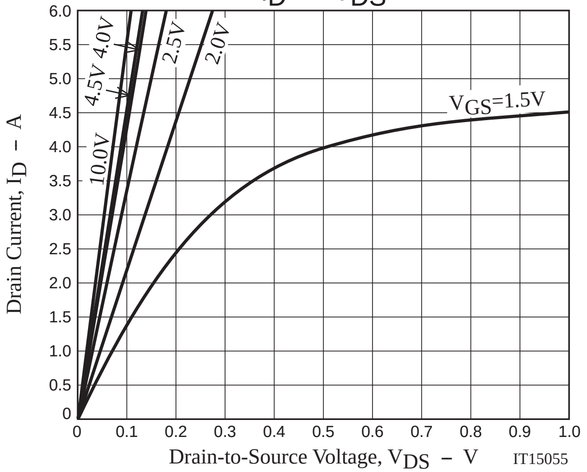
Switching Time Test Circuit



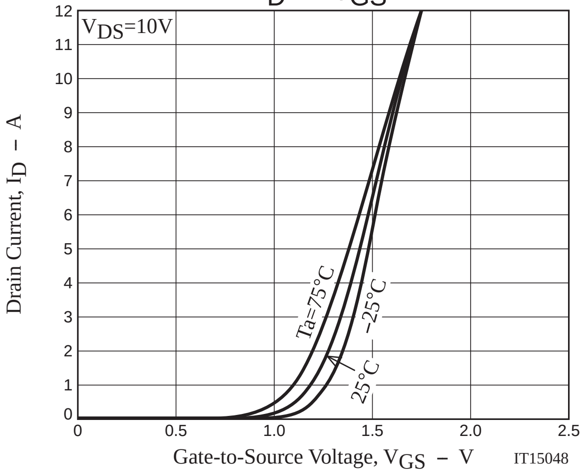
Ordering Information

Device	Package	Shipping	memo
ECH8602M-TL-H	ECH8	3,000pcs./reel	Pb Free and Halogen Free

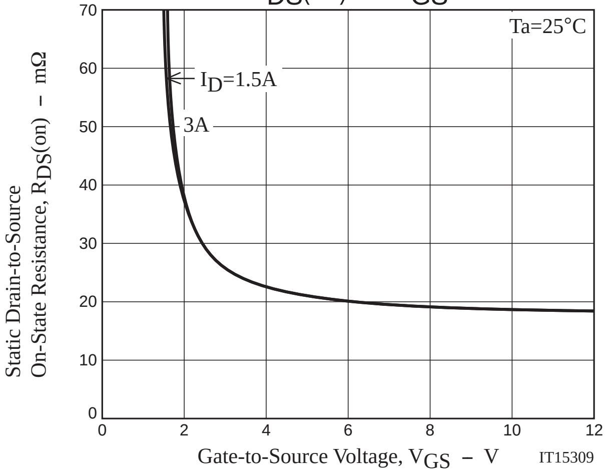
I_D -- V_{DS}



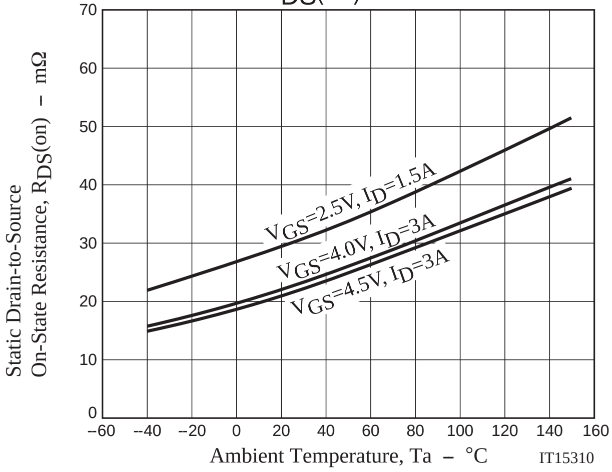
I_D -- V_{GS}



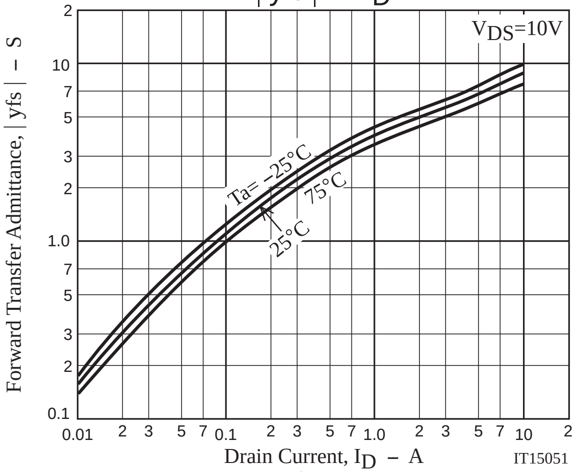
$R_{DS}(on)$ -- V_{GS}



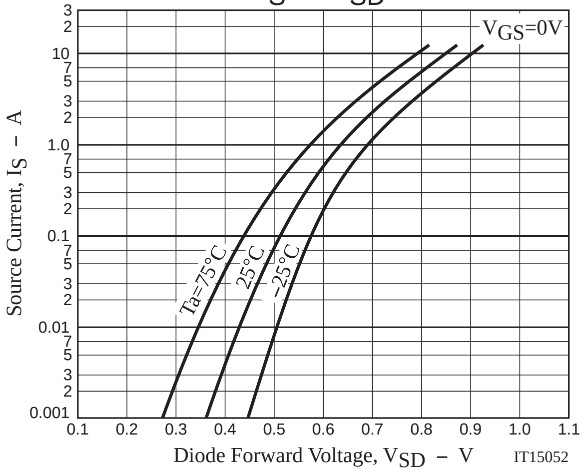
$R_{DS}(on)$ -- Ta



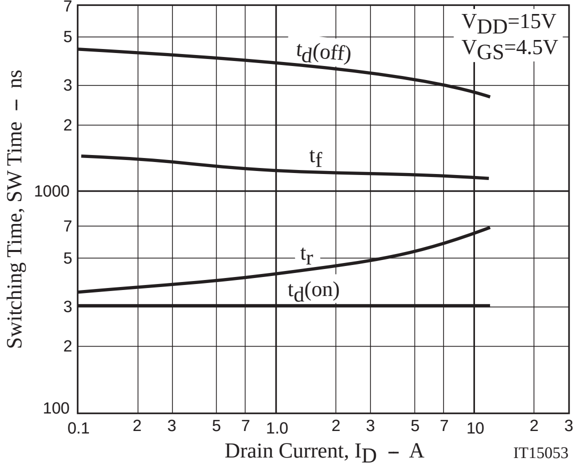
| yfs | -- I_D



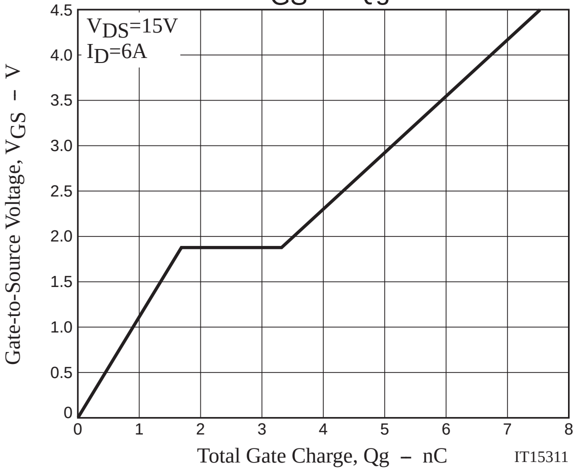
I_S -- V_{SD}

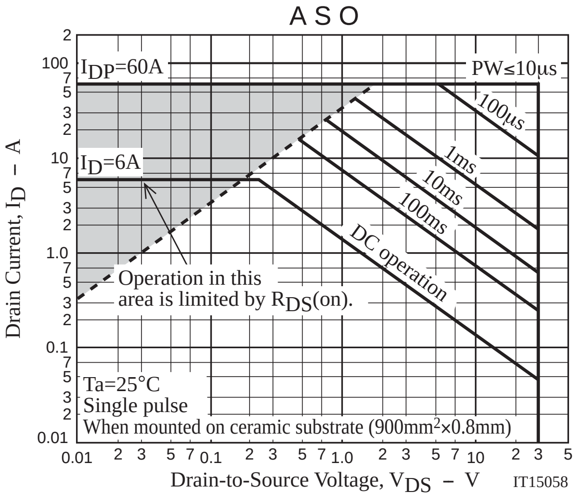


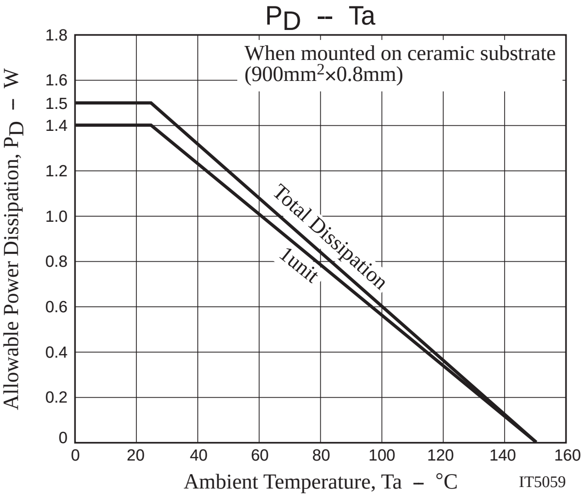
SW Time -- I_D



V_{GS} -- Qg




A S O
Drain Current, I_D – A
Drain-to-Source Voltage, V_{DS} – V
I_{DP}=60A
PW≤10μs
100μs
1ms
10ms
100ms
DC operation
I_D=6A
Operation in this area is limited by R_{DS}(on).
Ta=25°C
Single pulse
When mounted on ceramic substrate (900mm^2×0.8mm)
0.01
0.1
1.0
10
100
2
3
5
7
IT15058


P_D – Ta
Allowable Power Dissipation, P_D – W
Ambient Temperature, Ta – °C
When mounted on ceramic substrate (900mm^2×0.8mm)
Total Dissipation
1unit
0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.5
1.6
1.8
20
40
60
80
100
120
140
160
IT5059

Embossed Taping Specification

ECH8602M-TL-H

1. Packing Format

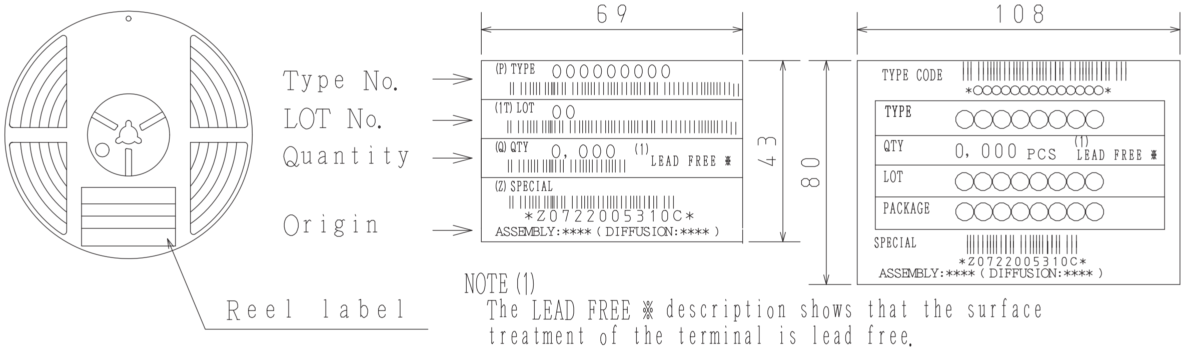
Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	Inner BOX (C-1)	Outer BOX (A-7)
ECH8	CPH6	3,000	15,000	90,000	5 reels contained Dimensions:mm(external) 183×72×185	6 inner boxes contained Dimensions:mm(external) 440×195×210

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.



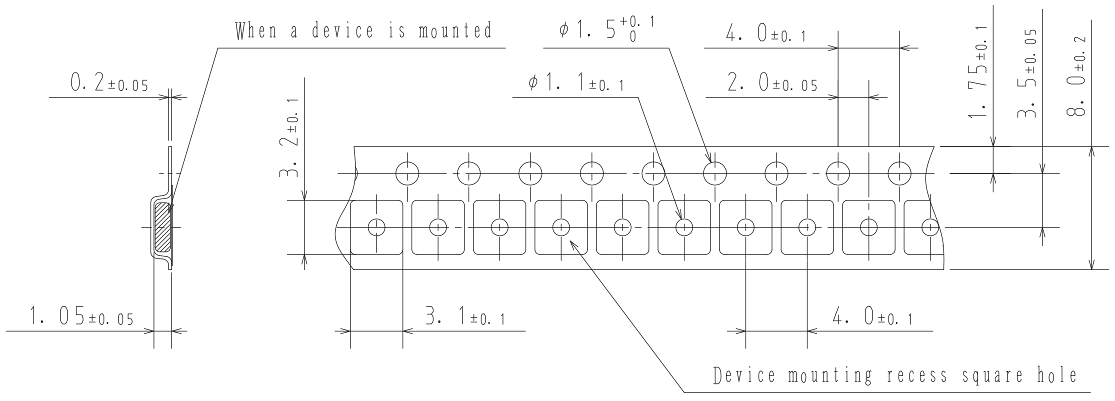
NOTE (1)

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

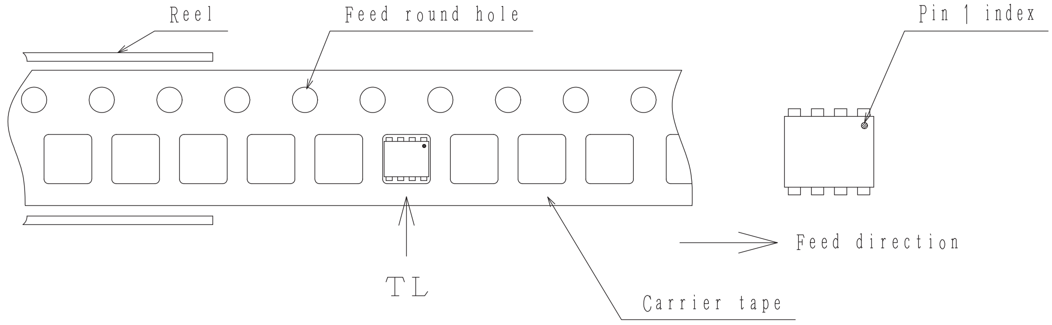
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



2-2. Device placement direction

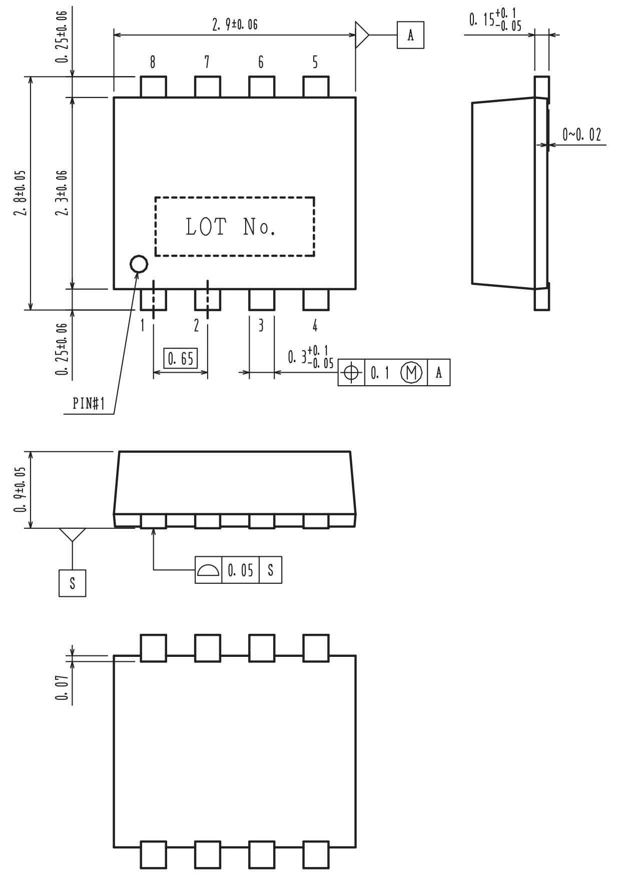


Those with pin 1 index on the feed hole side……TL

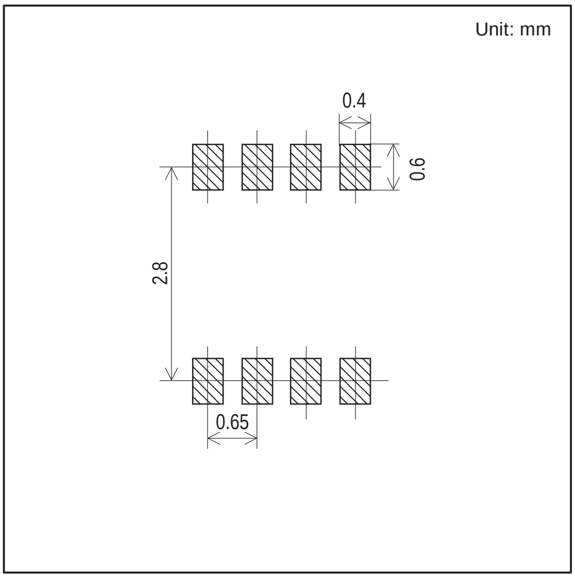
Outline Drawing

ECH8602M-TL-H

Mass (g)	Unit
0.02 * For reference	mm



Land Pattern Example



Note on usage : Since the ECH8602M is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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