



ECH8656

N-Channel Power MOSFET 20V, 7.5A, 17mΩ, Dual ECH8

ON Semiconductor®

<http://onsemi.com>

Features

- ON-resistance $R_{DS(on)1}=13m\Omega$ (typ.)
- Halogen free compliance
- Protection diode in
- 1.8V drive
- Nch + Nch MOSFET

Specifications

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

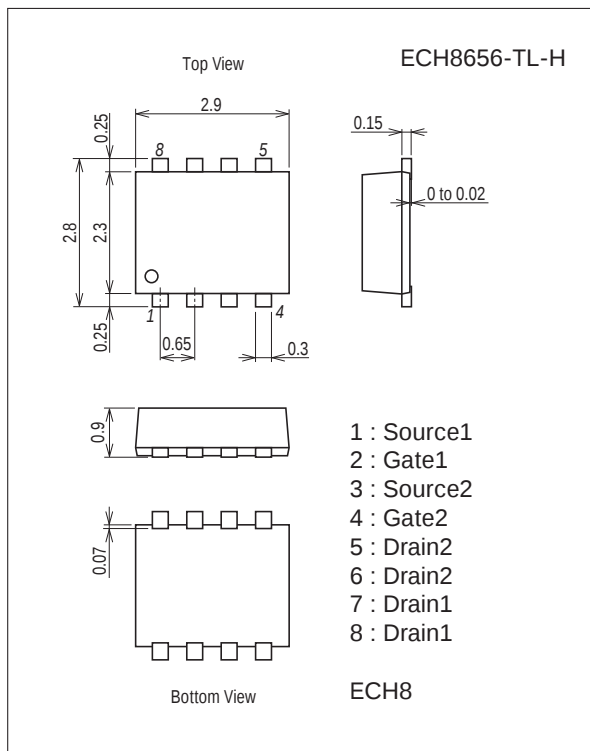
Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DS}		20	V
Gate-to-Source Voltage	V_{GS}		± 10	V
Drain Current (DC)	I_D		7.5	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu s$, duty cycle $\leq 1\%$	40	A
Allowable Power Dissipation	P_D	When mounted on ceramic substrate (900mm ² ×0.8mm) 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)

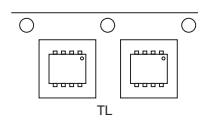
7011A-001



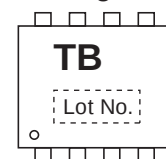
Product & Package Information

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

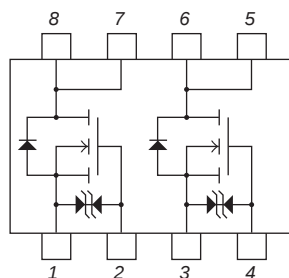
Packing Type : TL



Marking



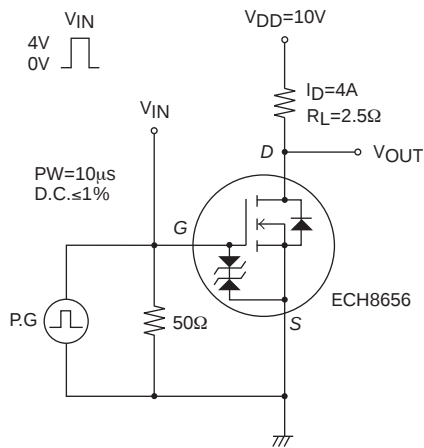
Electrical Connection



Electrical Characteristics at Ta=25°C

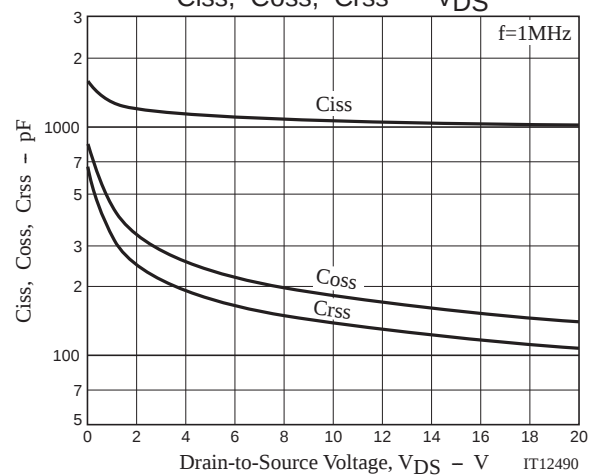
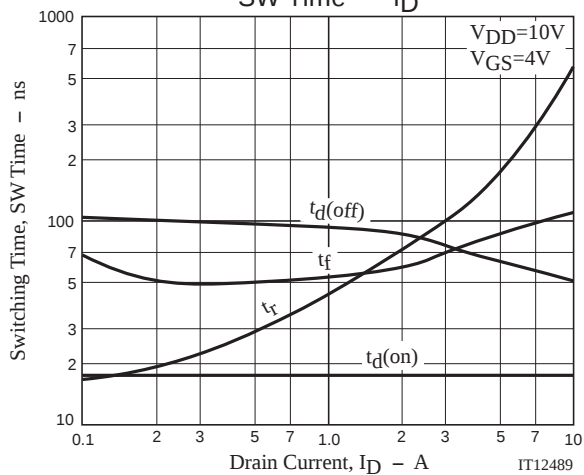
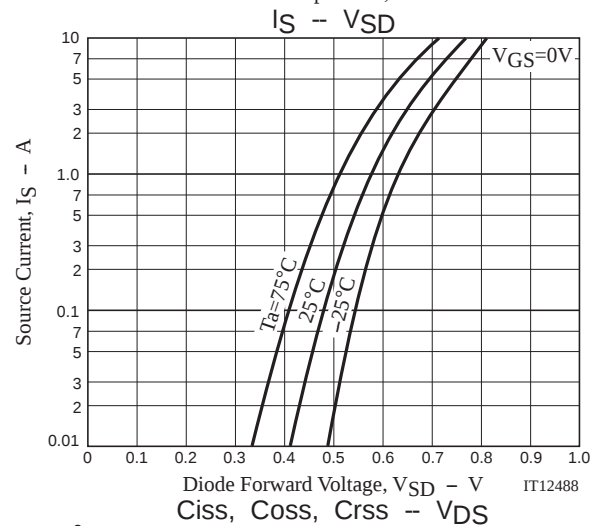
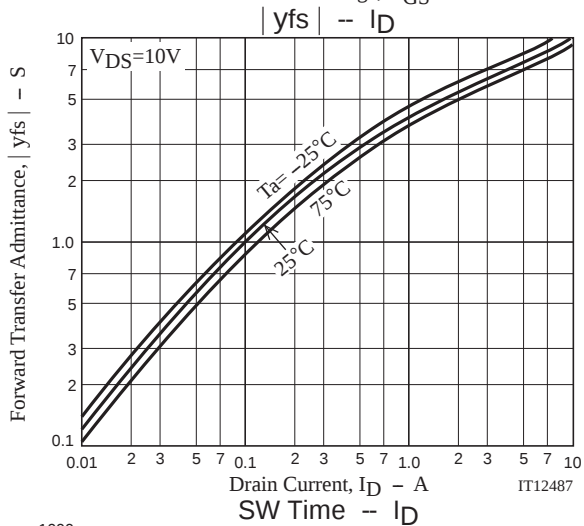
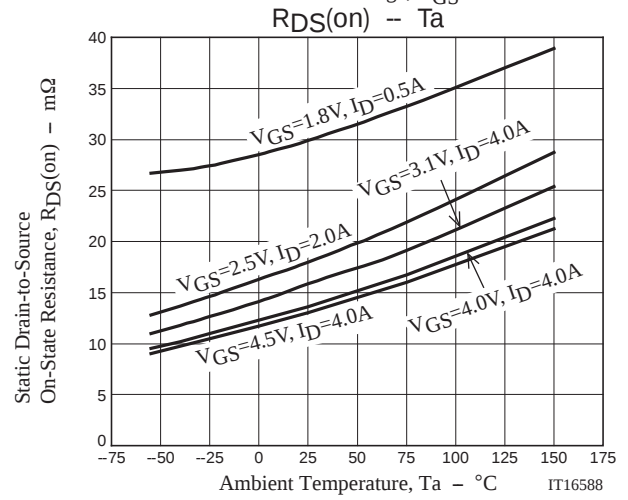
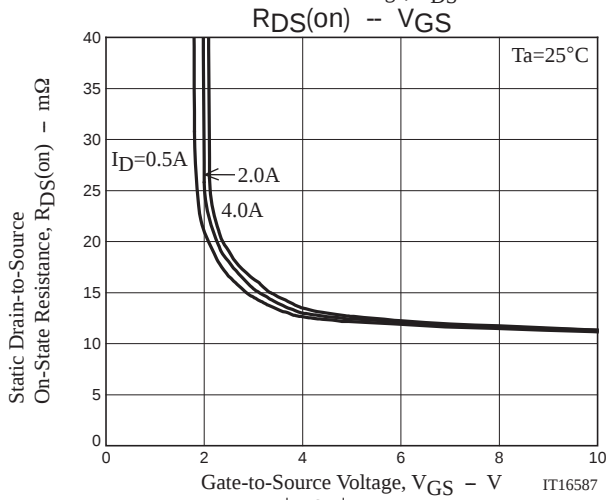
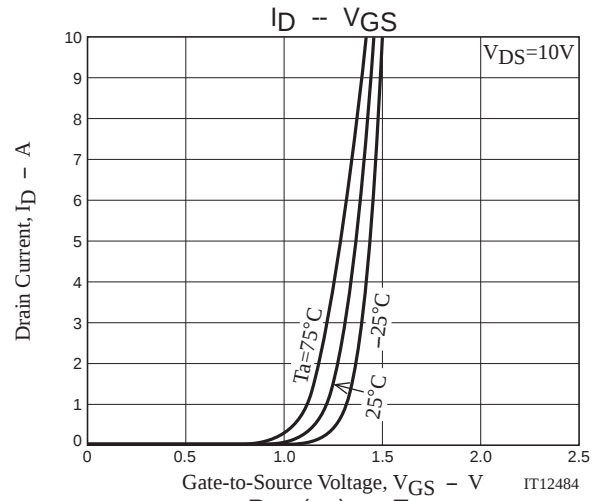
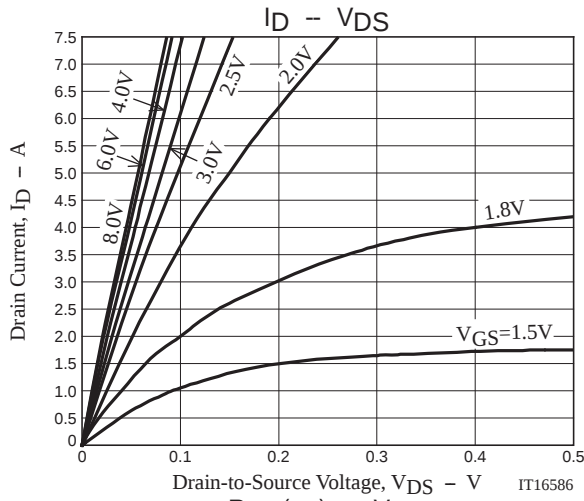
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1mA, V_{GS}=0V$	20			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=20V, V_{GS}=0V$			1	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 8V, V_{DS}=0V$			± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10V, I_D=1mA$	0.5		1.3	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=4A$		7		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=4A, V_{GS}=4.5V$	9	13	17	$m\Omega$
	$R_{DS(on)2}$	$I_D=4A, V_{GS}=4.0V$	9.4	13.5	18	$m\Omega$
	$R_{DS(on)3}$	$I_D=4A, V_{GS}=3.1V$	11	16	22	$m\Omega$
	$R_{DS(on)4}$	$I_D=2A, V_{GS}=2.5V$	12.5	18	26	$m\Omega$
	$R_{DS(on)5}$	$I_D=0.5A, V_{GS}=1.8V$	17	30	48	$m\Omega$
Input Capacitance	C_{iss}	$V_{DS}=10V, f=1MHz$		1060		pF
Output Capacitance	C_{oss}			180		pF
Reverse Transfer Capacitance	C_{rss}			135		pF
Turn-ON Delay Time	$t_{d(on)}$			17.5		ns
Rise Time	t_r	See specified Test Circuit.		120		ns
Turn-OFF Delay Time	$t_{d(off)}$			68		ns
Fall Time	t_f			80		ns
Total Gate Charge	Q_g	$V_{DS}=10V, V_{GS}=4.5V, I_D=7.5A$		10.8		nC
Gate-to-Source Charge	Q_{gs}			2.1		nC
Gate-to-Drain "Miller" Charge	Q_{gd}			2.9		nC
Diode Forward Voltage	V_{SD}	$I_S=7.5A, V_{GS}=0V$		0.74	1.2	V

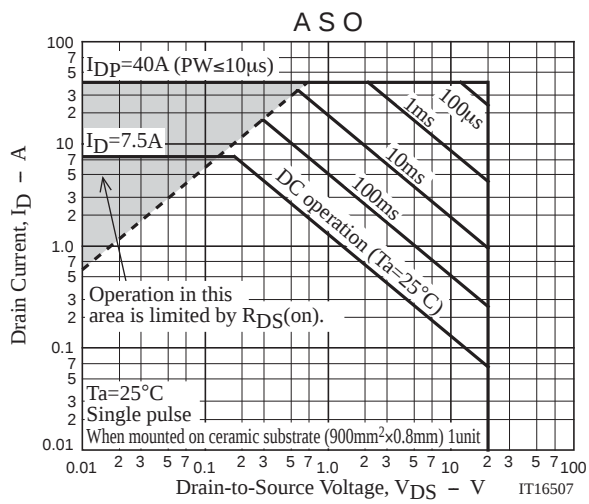
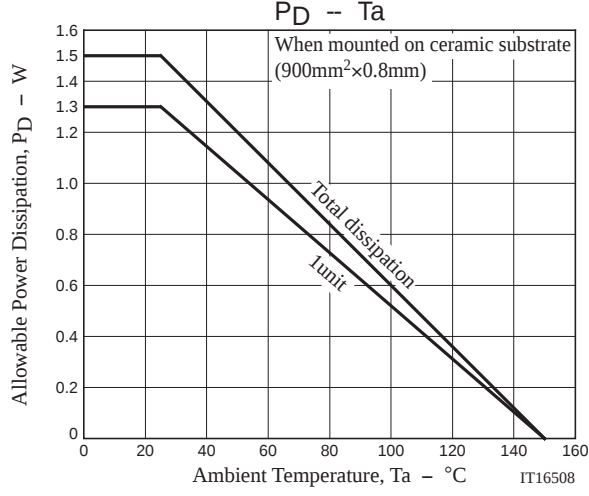
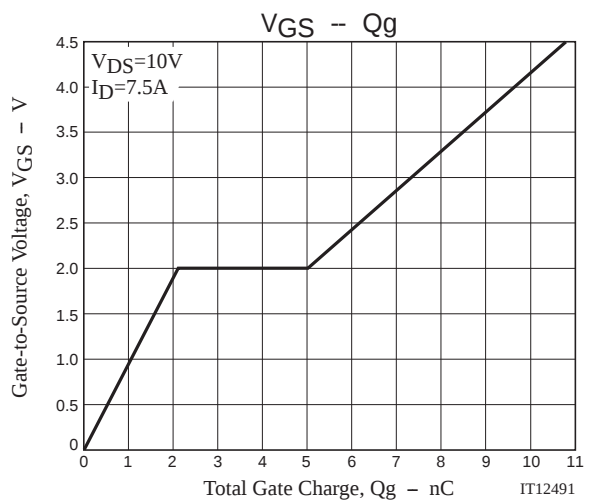
Switching Time Test Circuit



Ordering Information

Device	Package	Shipping	memo
ECH8656-TL-H	ECH8	3,000pcs./reel	Pb Free and Halogen Free





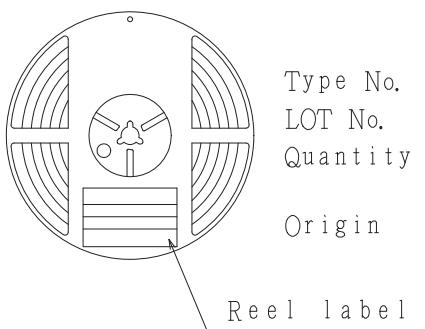
Embossed Taping Specification

ECH8656-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

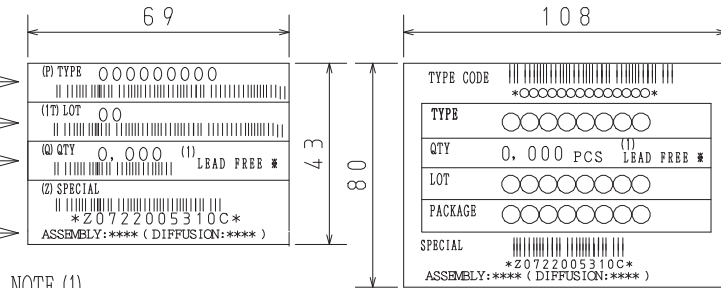
Packing method



Reel label, Inner box label
(unit:mm)

Outer box label

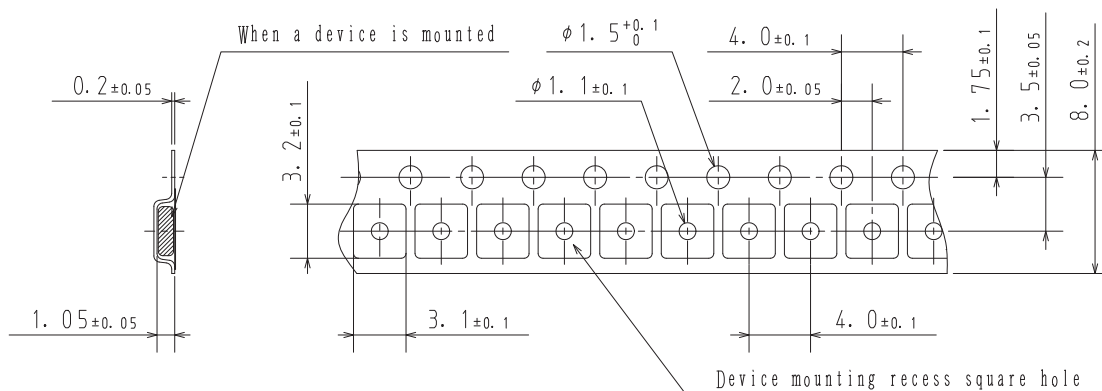
It is a label at the time of factory shipments.
The form of a label may change in physical distribution process.



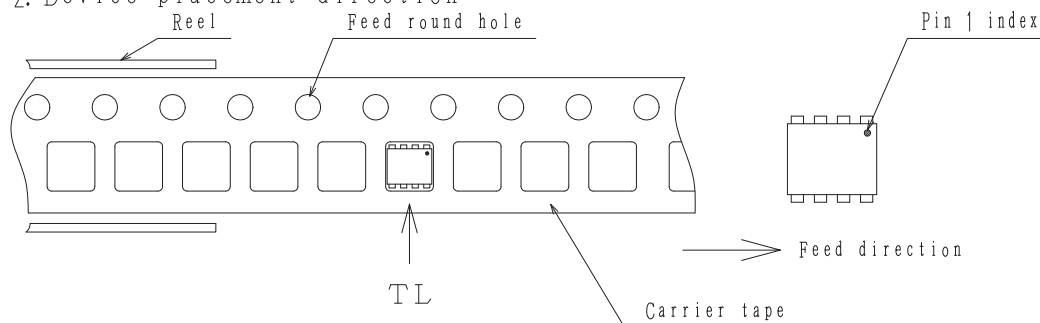
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



2-2. Device placement direction

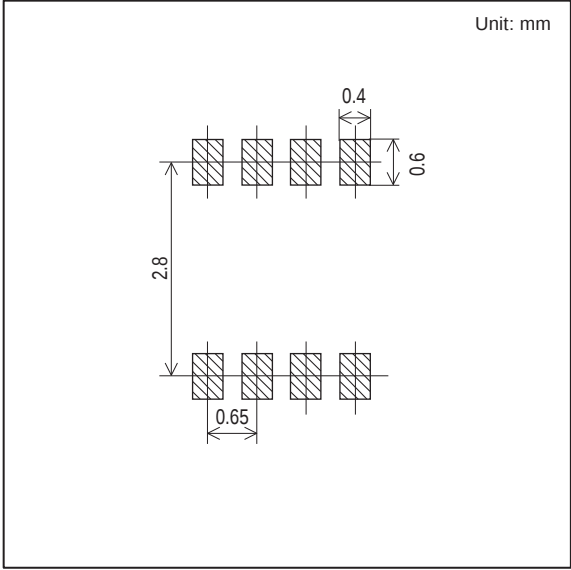


Those with pin 1 index on the feed hole side.....TL

Outline Drawing
ECH8656-TL-H



Land Pattern Example



Note on usage : Since the ECH8656 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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