



# ECH8693R

## N-Channel Power MOSFET 24V, 14A, 7mΩ, Dual ECH8 Common Drain

ON Semiconductor®

<http://onsemi.com>

### Features

- Low ON-resistance
- 2.5V drive
- Common-drain type
- Protection diode in
- Built-in gate protection resistor
- 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 <sub>DSS</sub>		24	V
Gate to Source Voltage	V <sub>GSS</sub>		±12.5	V
Drain Current (DC)	I <sub>D</sub>		14	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	60	A
Allowable Power Dissipation	P <sub>D</sub>	When mounted on ceramic substrate (900mm <sup>2</sup> ×0.8mm) 1unit	1.4	W
Total Dissipation	P <sub>T</sub>	When mounted on ceramic substrate (900mm <sup>2</sup> ×0.8mm)	1.5	W
Channel Temperature	T <sub>ch</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

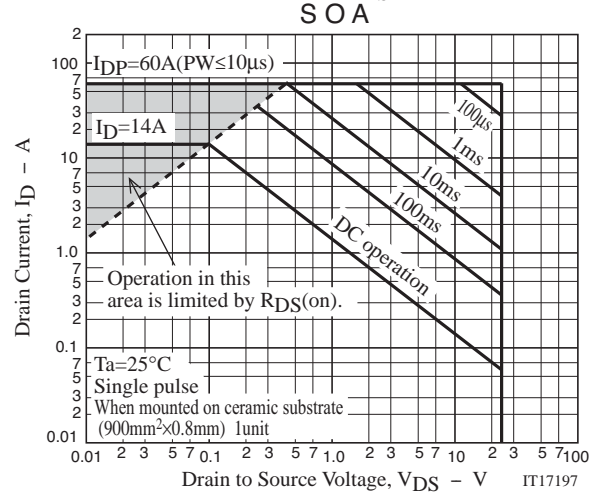
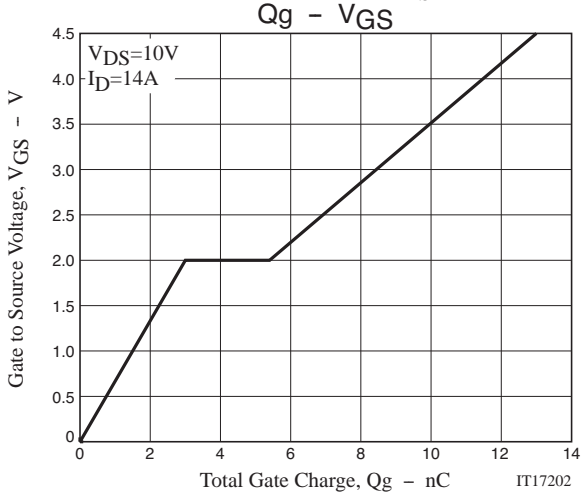
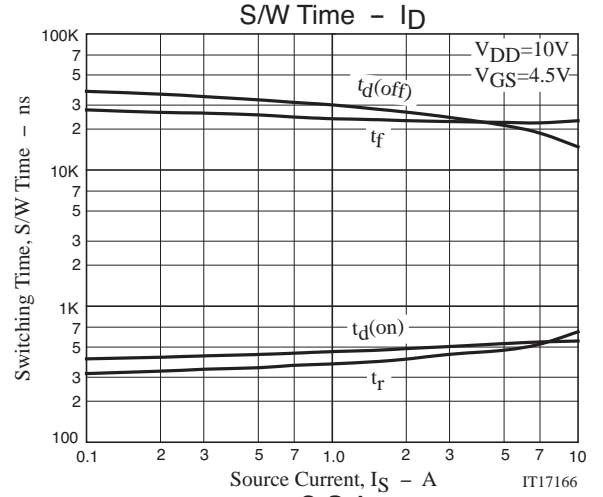
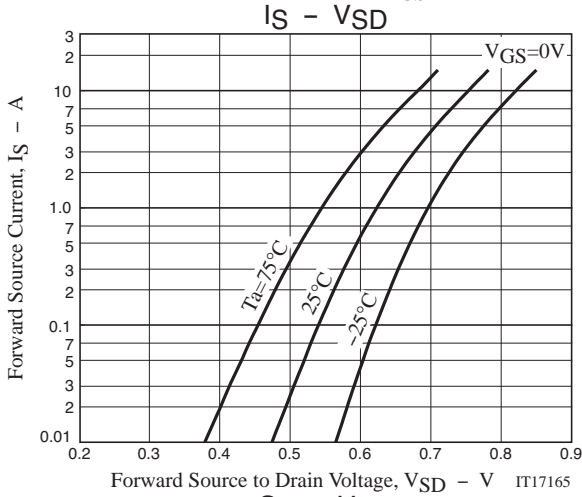
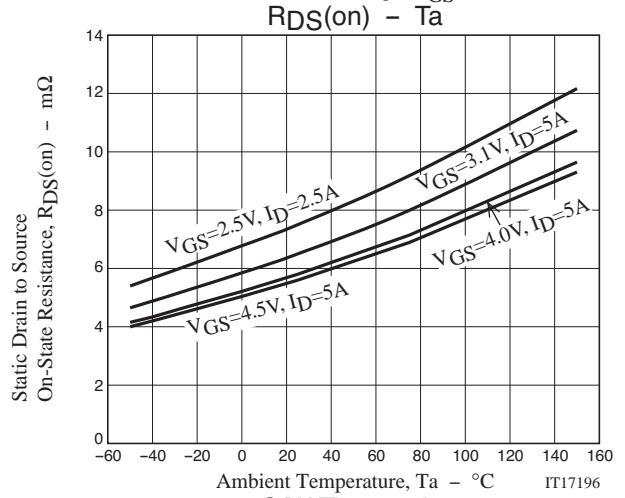
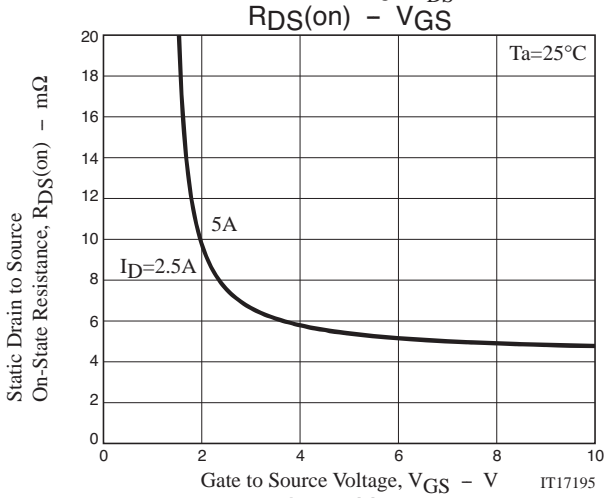
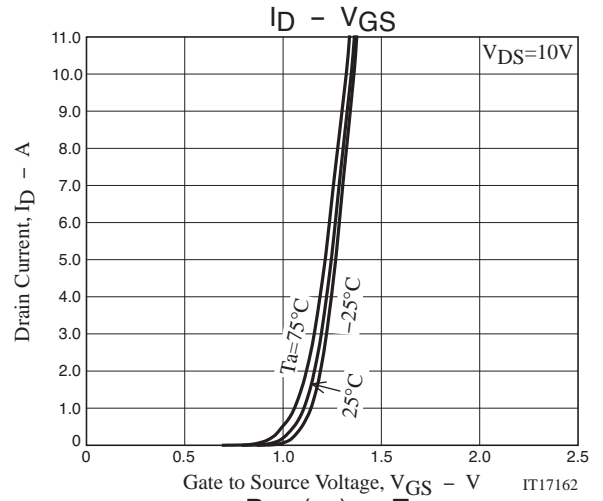
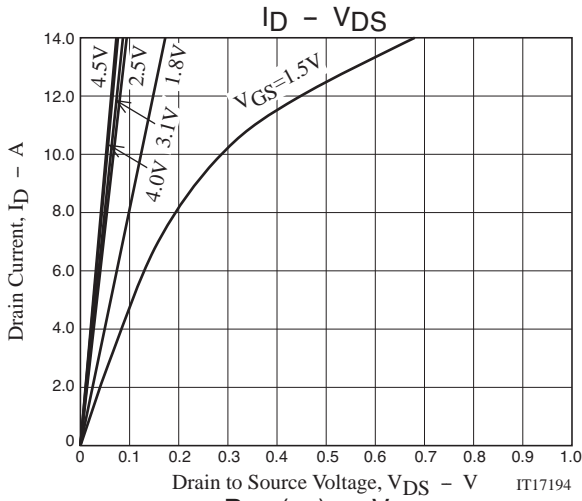
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

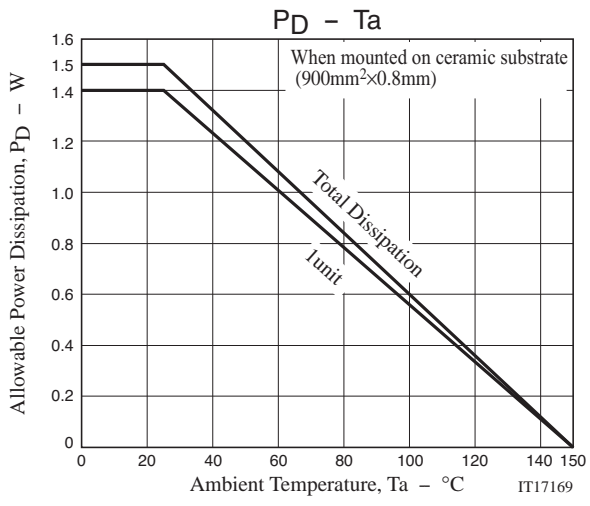
#### Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	V <sub>(BR)DSS</sub>	I <sub>D</sub> =1mA, V <sub>GS</sub> =0V	24			V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =20V, V <sub>GS</sub> =0V			1	μA
Gate to Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±8V, V <sub>DS</sub> =0V			±1	μA
Cutoff Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =1mA	0.5		1.3	V
Forward Transfer Admittance	y <sub>fs</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =5A		8		S
Static Drain to Source On-State Resistance	R <sub>DS(on)1</sub>	I <sub>D</sub> =5A, V <sub>GS</sub> =4.5V	4.4	5.6	7	mΩ
	R <sub>DS(on)2</sub>	I <sub>D</sub> =5A, V <sub>GS</sub> =4.0V	4.6	5.8	7.5	mΩ
	R <sub>DS(on)3</sub>	I <sub>D</sub> =5A, V <sub>GS</sub> =3.1V	5.2	6.5	9.1	mΩ
	R <sub>DS(on)4</sub>	I <sub>D</sub> =2.5A, V <sub>GS</sub> =2.5V	6	7.5	10.5	mΩ
Turn-ON Delay Time	t <sub>d(on)</sub>	See specified Test Circuit.		545		ns
Rise Time	t <sub>r</sub>			525		ns
Turn-OFF Delay Time	t <sub>d(off)</sub>			18650		ns
Fall Time	t <sub>f</sub>			22200		ns
Total Gate Charge	Q <sub>g</sub>				13	
Gate to Source Charge	Q <sub>gs</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =14A			3	nC
Gate to Drain "Miller" Charge	Q <sub>gd</sub>				2.4	nC
Diode Forward Voltage	V <sub>SD</sub>		I <sub>S</sub> =14A, V <sub>GS</sub> =0V		0.78	1.2

### ORDERING INFORMATION

See detailed ordering and shipping information on page 4 of this data sheet.





# ECH8693R

## Package Dimensions

ECH8693R-TL-W

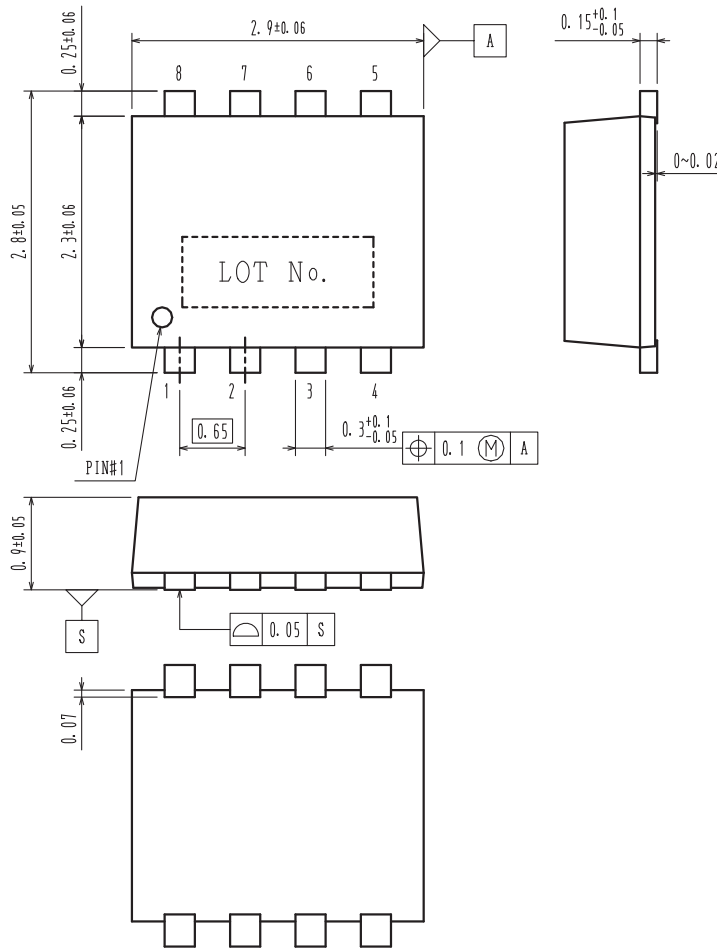
### SOT-28FL/ECH8

CASE 318BF

ISSUE O

Unit : mm

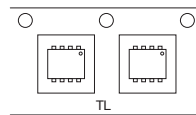
- 1: Source1
- 2: Gate1
- 3: Source2
- 4: Gate2
- 5: Drain
- 6: Drain
- 7: Drain
- 8: Drain



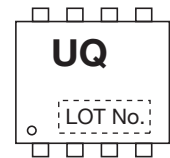
## Ordering & Package Information

Device	Package	Shipping	memo
ECH8693R-TL-W	ECH8	3,000 pcs./reel	Pb-Free and Halogen Free

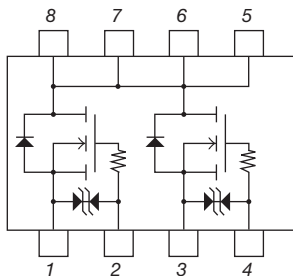
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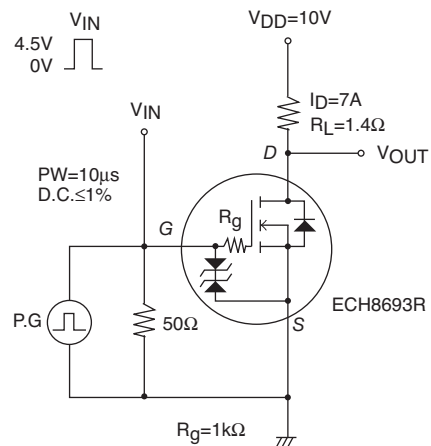
## Marking



## Electrical Connection



## Switching Time Test Circuit



Note on usage : Since the ECH8693R is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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