



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

## ECH8420 — N-Channel Silicon MOSFET General-Purpose Switching Device Applications

### Features

- ON-resistance  $R_{DS(on)} = 5.2\text{m}\Omega$  (typ.)
- 1.8V drive
- Halogen free compliance

### Specifications

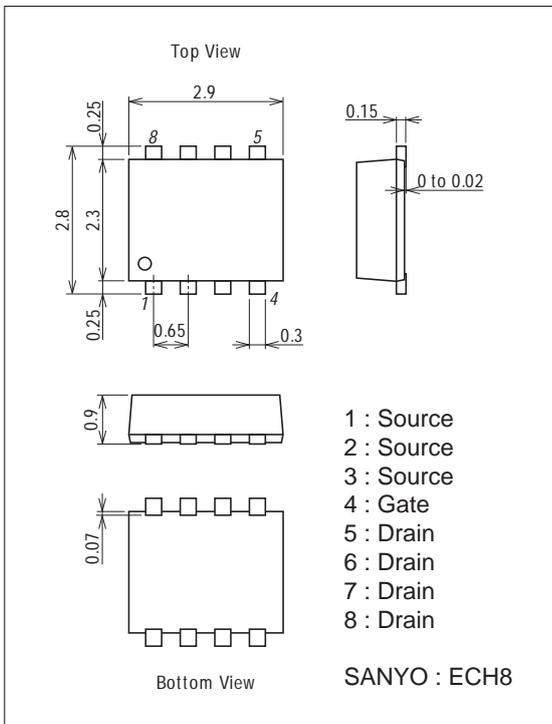
Absolute Maximum Ratings at  $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DS}$		20	V
Gate-to-Source Voltage	$V_{GS}$		$\pm 12$	V
Drain Current (DC)	$I_D$		14	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	50	A
Allowable Power Dissipation	$P_D$	When mounted on ceramic substrate (900mm <sup>2</sup> × 0.8mm)	1.6	W
Channel Temperature	$T_{ch}$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

### Package Dimensions

unit : mm (typ)

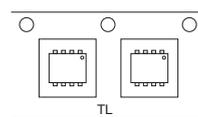
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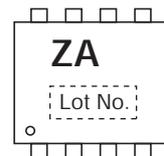
### Product & Package Information

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

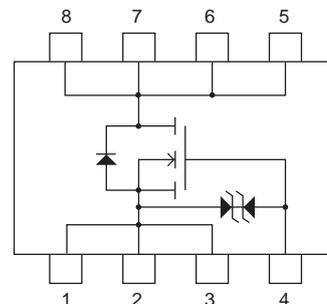
Packing Type : TL



Marking



### Electrical Connection

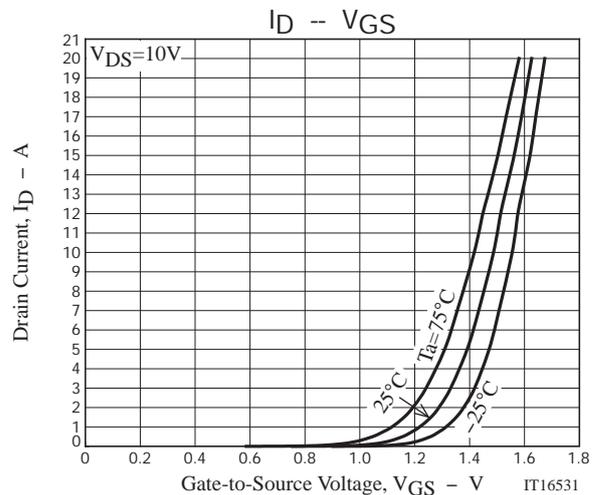
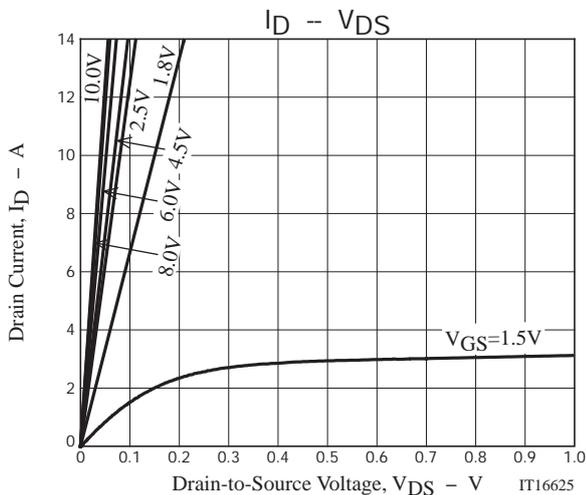
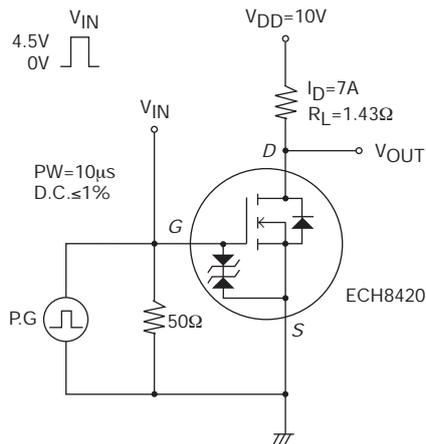


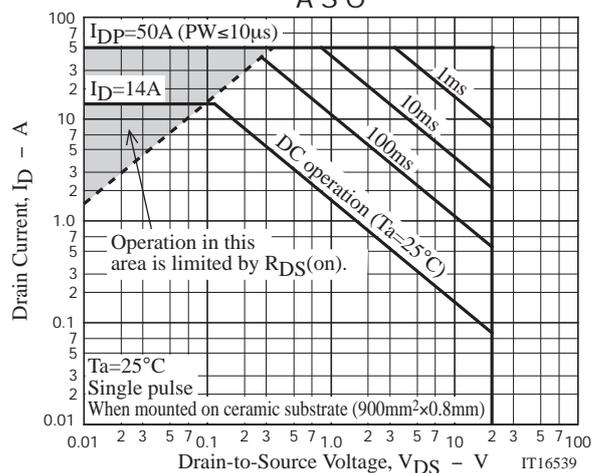
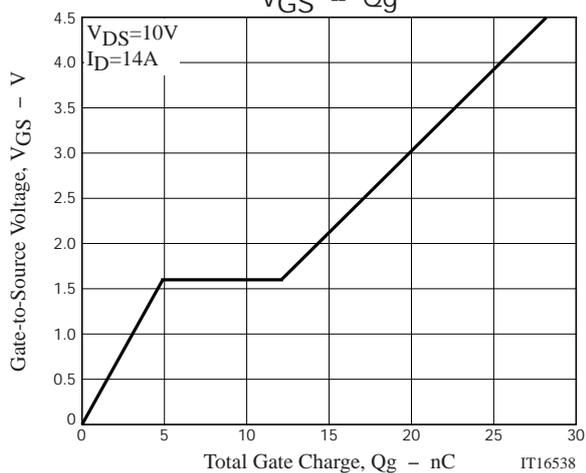
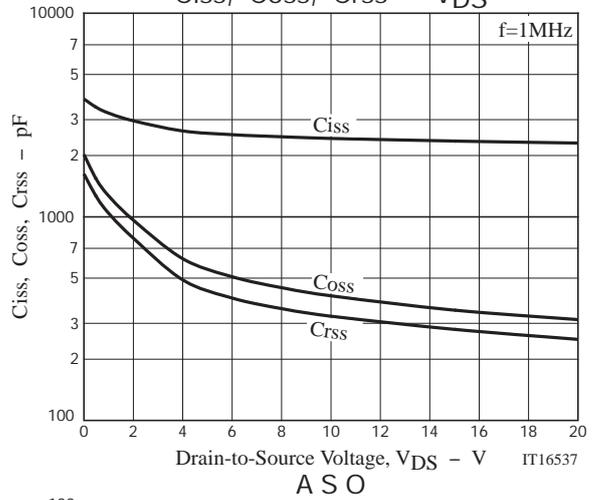
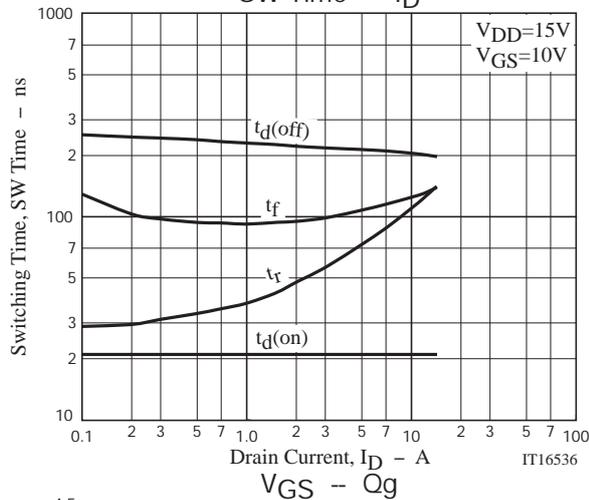
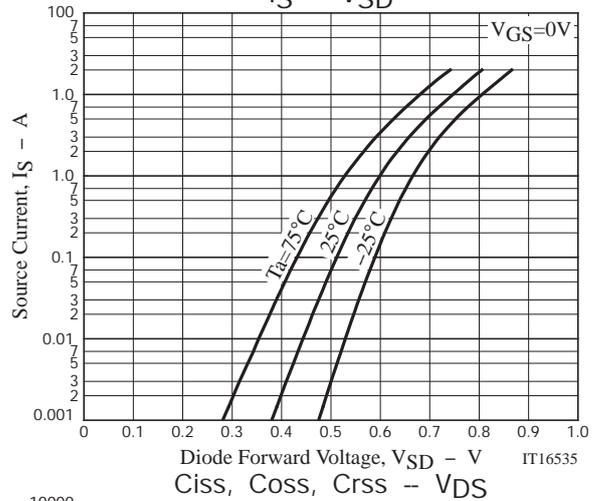
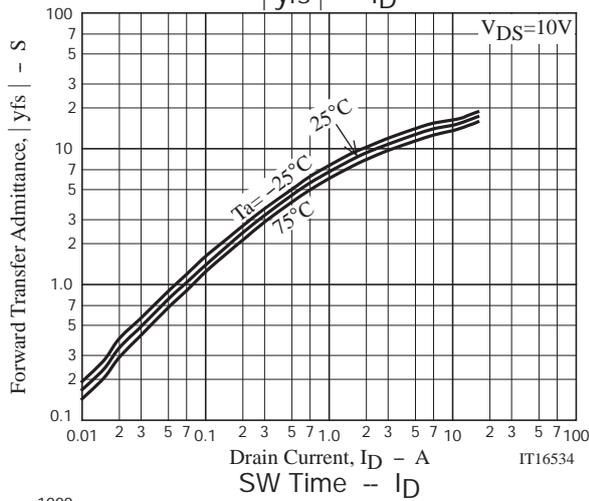
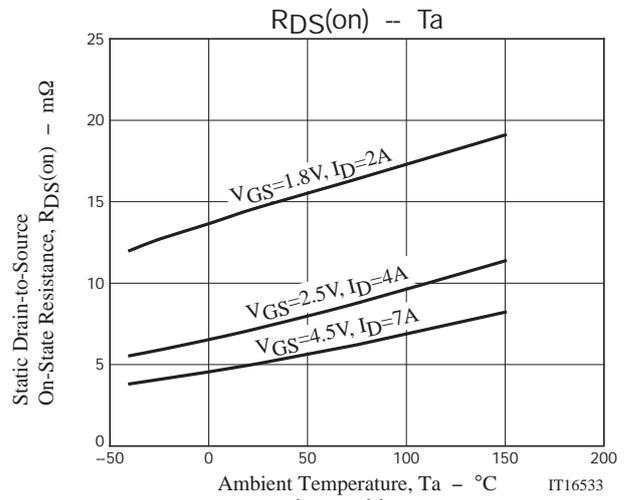
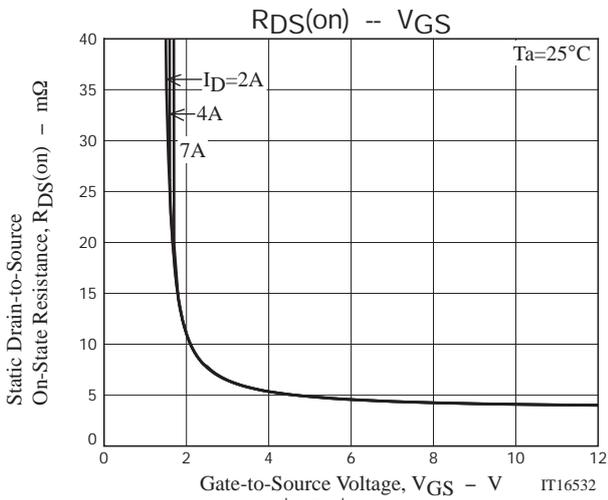
# ECH8420

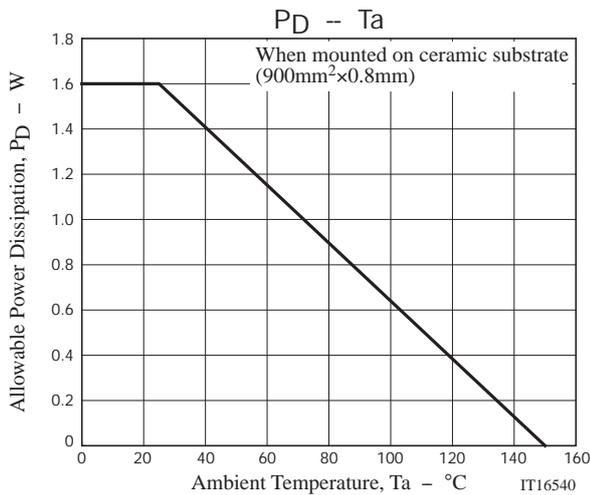
## Electrical Characteristics at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1\text{mA}, V_{GS}=0\text{V}$	20			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=20\text{V}, V_{GS}=0\text{V}$			1	$\mu\text{A}$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 8\text{V}, V_{DS}=0\text{V}$			$\pm 10$	$\mu\text{A}$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10\text{V}, I_D=1\text{mA}$	0.4		1.3	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10\text{V}, I_D=7\text{A}$		14.5		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=7\text{A}, V_{GS}=4.5\text{V}$		5.2	6.8	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D=4\text{A}, V_{GS}=2.5\text{V}$		8	11.5	$\text{m}\Omega$
	$R_{DS(on)3}$	$I_D=2\text{A}, V_{GS}=1.8\text{V}$		15	22.5	$\text{m}\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=10\text{V}, f=1\text{MHz}$		2430		pF
Output Capacitance	$C_{oss}$			410		pF
Reverse Transfer Capacitance	$C_{rss}$			330		pF
Turn-ON Delay Time	$t_d(on)$			21		ns
Rise Time	$t_r$	See specified Test Circuit.		88		ns
Turn-OFF Delay Time	$t_d(off)$			210		ns
Fall Time	$t_f$			115		ns
Total Gate Charge	$Q_g$			29		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=10\text{V}, V_{GS}=4.5\text{V}, I_D=14\text{A}$		4.8		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$			8.7		nC
Diode Forward Voltage	$V_{SD}$		$I_S=14\text{A}, V_{GS}=0\text{V}$		0.75	1.2

## Switching Time Test Circuit







Note on usage : Since the ECH8420 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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