

MOSFET - Power, N-Channel

20 V, 14 A, 6.8 m Ω , Single ECH8

ECH8420

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SOT-28FL / ECH8 CASE 318BF

Features

- ON-resistance $R_{DS}(on)1 = 5.2 \text{ m}\Omega \text{ (Typ.)}$
- 1.8 V Drive
- Protection Diode in
- This Device is Pb-Free and Halide Free

Package Dimension
Unit: mm (typ)
7011A-002

TopView

ECH8420-TL-H

Figure 1. Package Dimensions

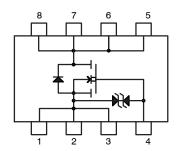
Bottom View

ECH8

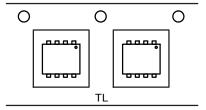
MARKING DIAGRAM



ELECTRICAL CONNECTION



PACKING TYPE: TL



ORDERING INFORMATION

Device	Package	Shipping [†]
ECH8420-TL-H	SOT-28FL / ECH8	3000 /
	(Pb-Free,	Tape & Reel
	Halide Free)	

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

Specifications

ABSOLUTE MAXIMUM RATINGS at $T_A = 25^{\circ}C$

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		20	V
Gate-to-Source Voltage	V_{GSS}		±12	V
Drain Current (DC)	I _D		14	Α
Drain Current (Pulse)	I _{DP}	PW ≤ 10 μs, duty cycle ≤ 1%	50	Α
Allowable Power Dissipation	P_{D}	When mounted on ceramic substrate (900 mm ² × 0.8 mm)	1.6	W
Channel Temperature	T _{ch}		150	°C
Storage Temperature	T _{stg}		-55 to +150	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

ELECTRICAL CHARACTERISTICS at $T_A = 25$ °C

				Ratings		
Parameter	Symbol	Conditions	Min	Тур	Max	Unit
Drain-to-Source Breakdown Voltage	V _{(BR)DSS}	I _D = 1 mA, V _{GS} = 0 V	20	-	-	V
Zero-Gate Voltage Drain Current	I _{DSS}	V _{DS} = 20 V, V _{GS} = 0V	-	-	1	μΑ
Gate-to-Source Leakage Current	I _{GSS}	$V_{GS} = \pm 8 \text{ V}, V_{DS} = 0 \text{ V}$	-	-	±10	μΑ
Cutoff Voltage	V _{GS} (off)	V _{DS} = 10 V, I _D = 1 mA	0.4	-	1.3	V
Forward Transfer Admittance	yfs	V _{DS} = 10 V, I _D = 7 A	_	14.5	-	S
Static Drain-to-Source On-State Resistance	R _{DS} (on)1	I _D = 7 A, V _{GS} = 4.5 V	-	5.2	6.8	mΩ
	R _{DS} (on)2	I _D = 4 A, V _{GS} = 2.5 V	-	8	11.5	mΩ
	R _{DS} (on)3	I _D = 2 A, V _{GS} = 1.8 V	-	15	22.5	mΩ
Input Capacitance	Ciss	V _{DS} = 10 V, f = 1 MHz	-	2430	-	pF
Output Capacitance	Coss		-	410	-	pF
Reverse Transfer Capacitance	Crss	1	-	330	-	pF
Turn-ON Delay Time	t _d (on)	See specified Test Circuit.	-	21	-	ns
Rise Time	t _r		-	88	-	ns
Turn-OFF Delay Time	t _d (off)	1	-	210	-	ns
Fall Time	t _f	1	-	115	-	ns
Total Gate Charge	Qg	V _{DS} = 10 V, V _{GS} = 4.5 V,	-	29	-	nC
Gate-to-Source Charge	Qgs	I _D = 14 A	-	4.8	-	nC
Gate-to-Drain "Miller" Charge	Qgd	1	-	8.7	-	nC
Diode Forward Voltage	V _{SD}	I _S = 14 A, V _{GS} = 0 V	-	0.75	1.2	V

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

Switching Time Test Circuit

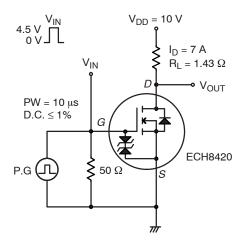


Figure 2. Switching Time Test Circuit

TYPICAL CHARACTERISTICS

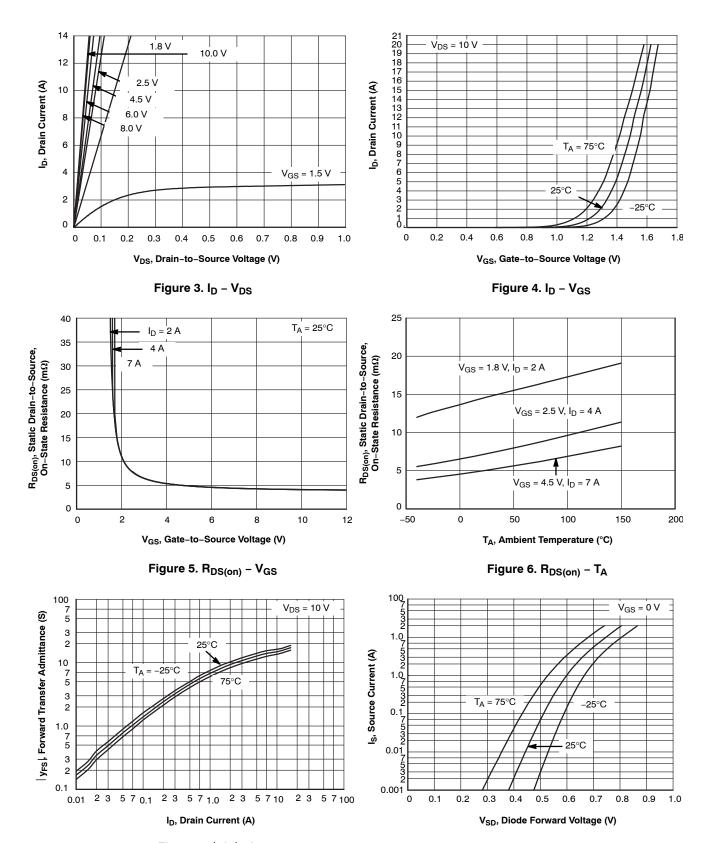


Figure 7. |yfs| - I_D

Figure 8. I_S - V_{SD}

TYPICAL CHARACTERISTICS (continued)

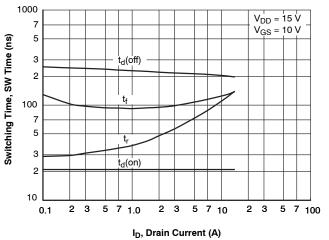


Figure 9. SW Time - I_D

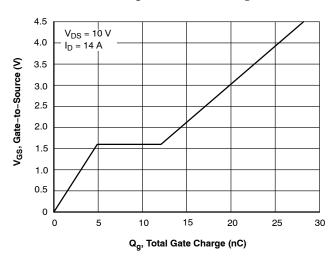


Figure 11. V_{GS} - Qg

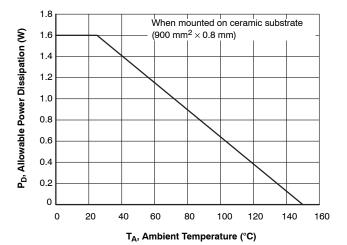


Figure 13. P_D - T_A

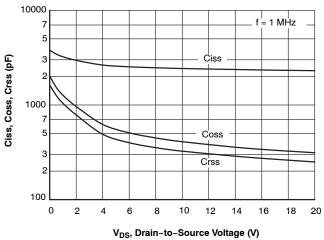


Figure 10. Ciss, Coss, Crss – V_{DS}

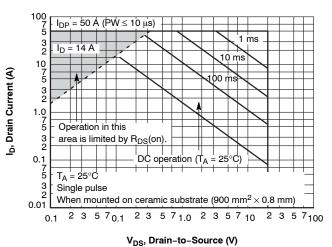


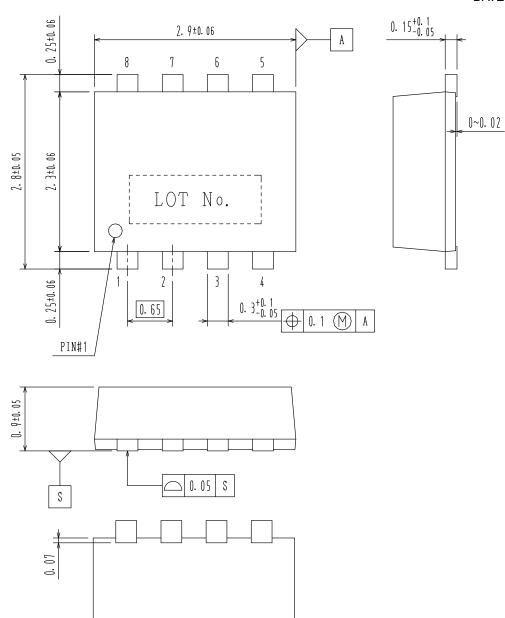
Figure 12. ASO



PACKAGE DIMENSIONS

SOT-28FL / ECH8 CASE 318BF ISSUE O

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