

MOSFET – Power, N-Channel

20 V, 14 A, 6.8 mΩ, Single ECH8

ECH8420

特長

- オン抵抗 $R_{DS(on)1} = 5.2 \text{ m}\Omega$ (Typ.)
- 1.8 V 駆動
- 保護ダイオード入り
- This Device is Pb-Free and Halide Free

外形図

Unit : mm (typ)
7011A-002

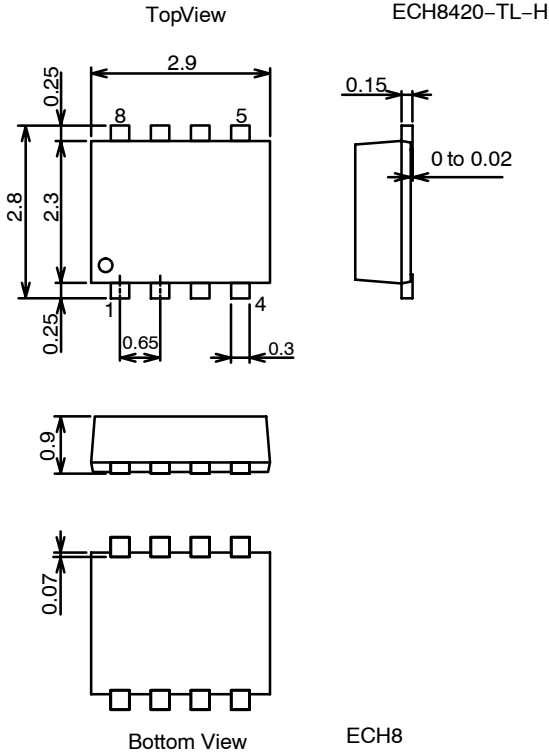
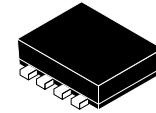
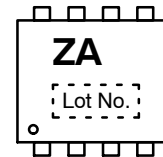


図 1. 外形図

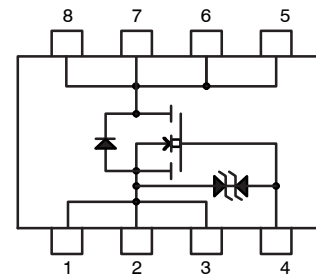


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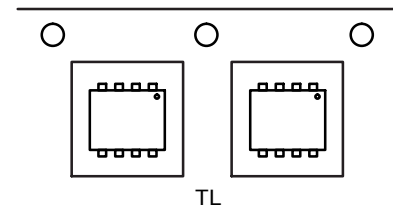
マーキング



電氣的接続図



パッキングタイプ: TL



ORDERING INFORMATION

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

†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](#).

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絶対最大定格 ABSOLUTE MAXIMUM RATINGS / $T_A = 25^\circ\text{C}$

項目	記号	条件	定格値	Unit
ドレイン・ソース電圧	V_{DSS}		20	V
ゲート・ソース電圧	V_{GSS}		± 12	V
ドレイン電流 (DC)	I_D		14	A
ドレイン電流 (パルス)	I_{DP}	$PW \leq 10 \mu\text{s}$, duty cycle $\leq 1\%$	50	A
許容損失	P_D	セラミック基板 (900 mm ² × 0.8 mm) 装着時	1.6	W
チャンネル温度	T_{ch}		150	$^\circ\text{C}$
保存周囲温度	T_{stg}		-55 to +150	$^\circ\text{C}$

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.

(参考訳)

最大定格を超えるストレスは、デバイスにダメージを与える危険性があります。これらの定格値を超えた場合は、デバイスの機能性を損ない、ダメージが生じ、信頼性に影響を及ぼす危険性があります。

電気的特性 ELECTRICAL CHARACTERISTICS at $T_A = 25^\circ\text{C}$

項目	記号	条件	定格値			Unit
			Min	Typ	Max	
ドレイン・ソース降伏電圧	$V_{(BR)DSS}$	$I_D = 1 \text{ mA}$, $V_{GS} = 0 \text{ V}$	20	-	-	V
ドレイン・ソースしゃ断電流	I_{DSS}	$V_{DS} = 20 \text{ V}$, $V_{GS} = 0 \text{ V}$	-	-	1	μA
ゲート・ソースもれ電流	I_{GSS}	$V_{GS} = \pm 8 \text{ V}$, $V_{DS} = 0 \text{ V}$	-	-	± 10	μA
ゲート・ソースしゃ断電圧	$V_{GS(off)}$	$V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$	0.4	-	1.3	V
順伝達アドミタンス	$ y_{fs} $	$V_{DS} = 10 \text{ V}$, $I_D = 7 \text{ A}$	-	14.5	-	S
ドレイン・ソース間オン抵抗	$R_{DS(on)1}$	$I_D = 7 \text{ A}$, $V_{GS} = 4.5 \text{ V}$	-	5.2	6.8	m Ω
	$R_{DS(on)2}$	$I_D = 4 \text{ A}$, $V_{GS} = 2.5 \text{ V}$	-	8	11.5	m Ω
	$R_{DS(on)3}$	$I_D = 2 \text{ A}$, $V_{GS} = 1.8 \text{ V}$	-	15	22.5	m Ω
入力容量	C_{iss}	$V_{DS} = 10 \text{ V}$, $f = 1 \text{ MHz}$	-	2430	-	pF
出力容量	C_{oss}		-	410	-	pF
帰還容量	C_{rss}		-	330	-	pF
ターンオン遅延時間	$t_d(on)$	指定回路において	-	21	-	ns
立ち上がり時間	t_r		-	88	-	ns
ターンオフ遅延時間	$t_d(off)$		-	210	-	ns
下降時間	t_f		-	115	-	ns
総ゲート電荷量	Q_g		$V_{DS} = 10 \text{ V}$, $V_{GS} = 4.5 \text{ V}$, $I_D = 14 \text{ A}$	-	29	-
ゲート・ソース電荷量	Q_{gs}	-		4.8	-	nC
ゲート・ドレイン電荷量	Q_{gd}	-		8.7	-	nC
ダイオード順電圧	V_{SD}	$I_S = 14 \text{ A}$, $V_{GS} = 0 \text{ V}$	-	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.

(参考訳)

製品パラメータは、特別な記述が無い限り、記載されたテスト条件に対する電気的特性で示しています。異なる条件下で製品動作を行った時には、電気的特性で示している特性を得られない場合があります。

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スイッチングタイム測定回路図

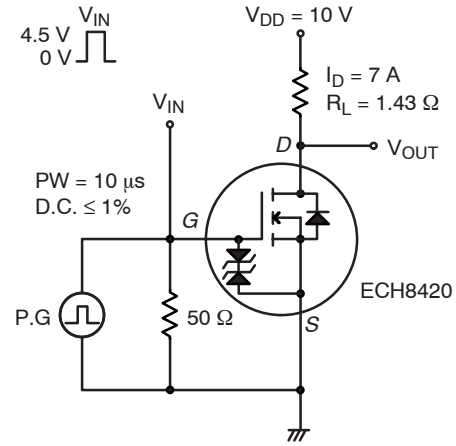


図 2. スwitchingタイム測定回路図

TYPICAL CHARACTERISTICS

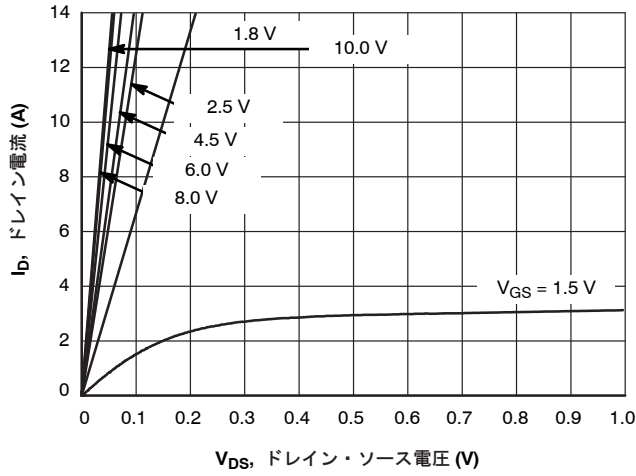


図 3. $I_D - V_{DS}$

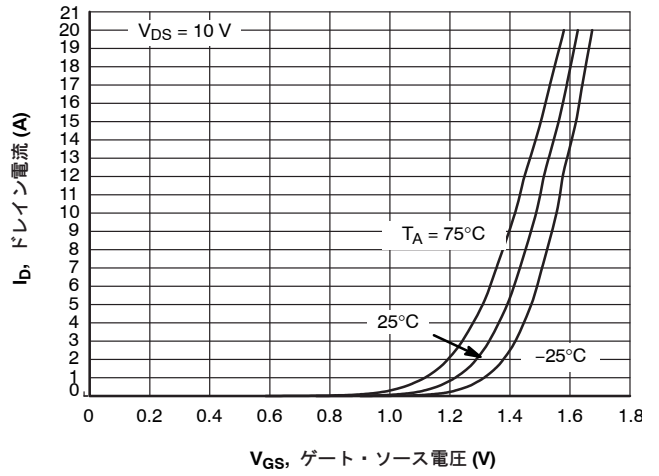


図 4. $I_D - V_{GS}$

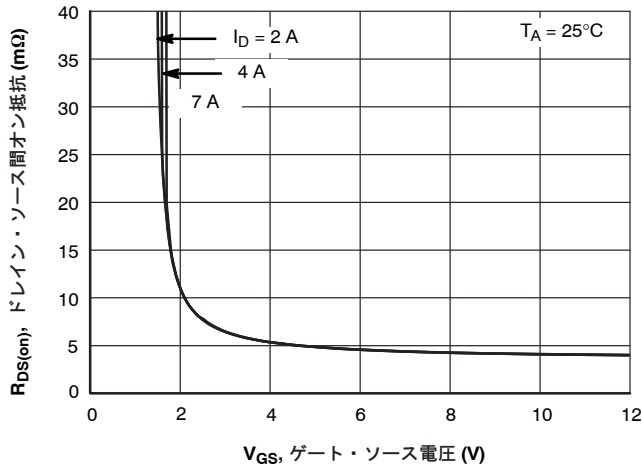


図 5. $R_{DS(on)} - V_{GS}$

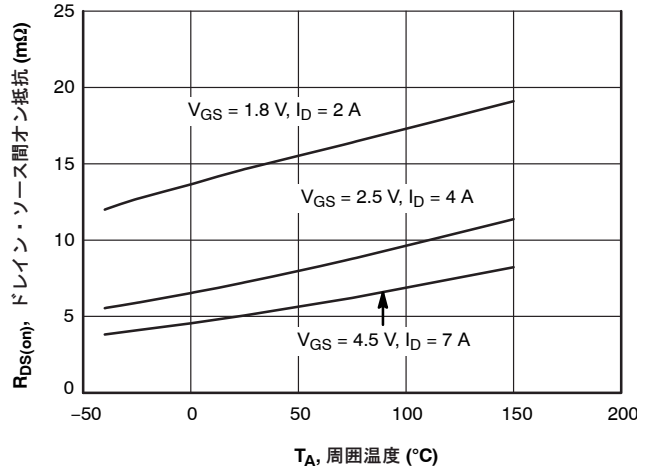


図 6. $R_{DS(on)} - T_A$

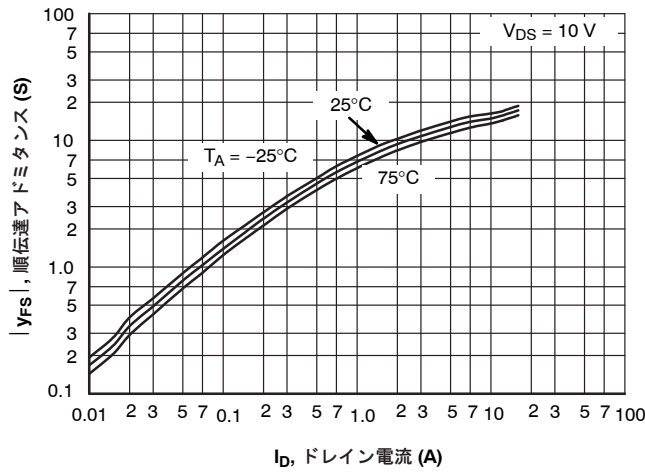


図 7. $|y_{fs}| - I_D$

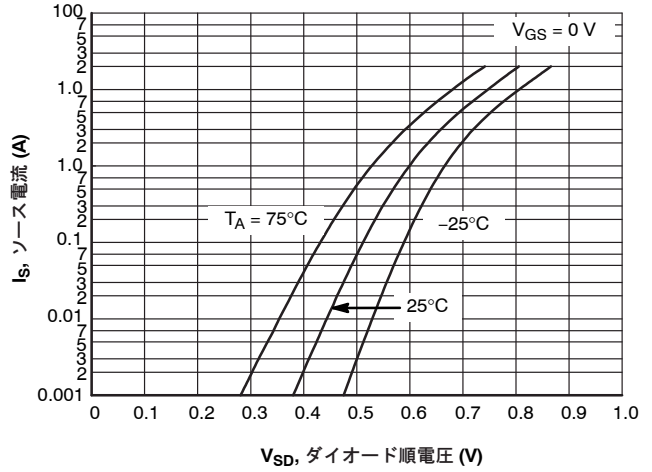


図 8. $I_S - V_{SD}$

TYPICAL CHARACTERISTICS (continued)

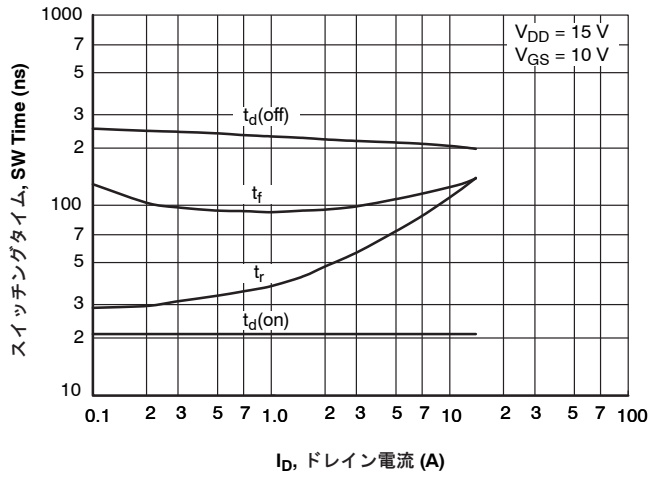


図 9. SW Time - I_D

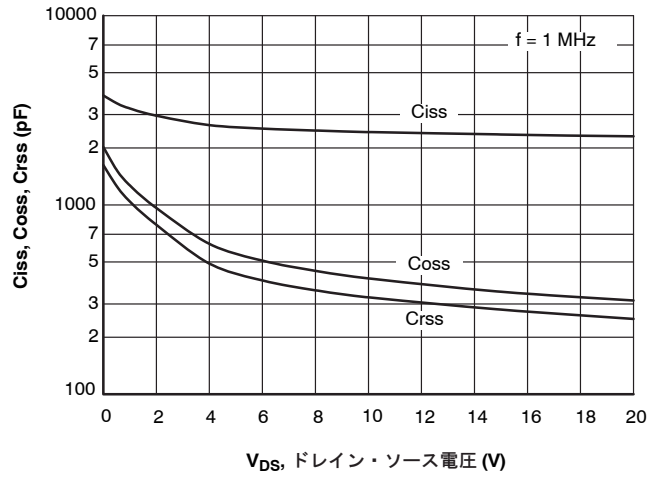


図 10. Ciss, Coss, Crss - V_{DS}

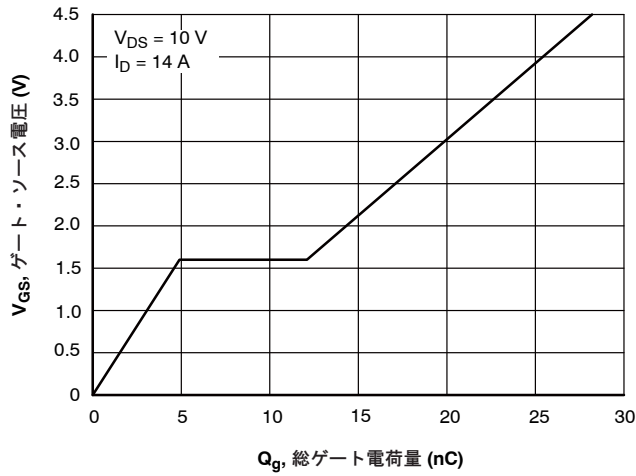


図 11. V_{GS} - Q_g

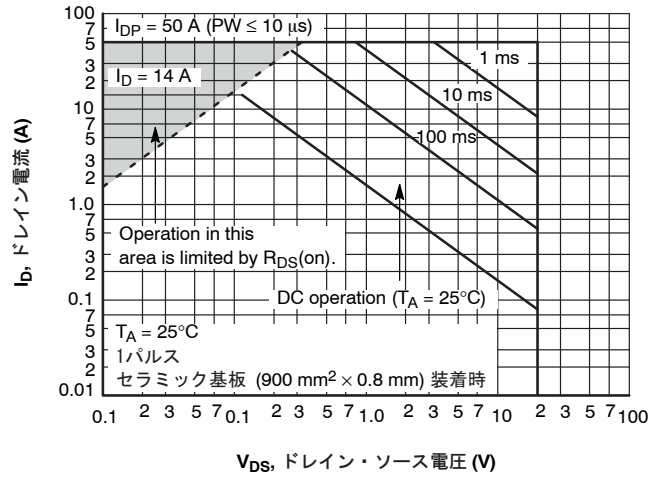


図 12. ASO

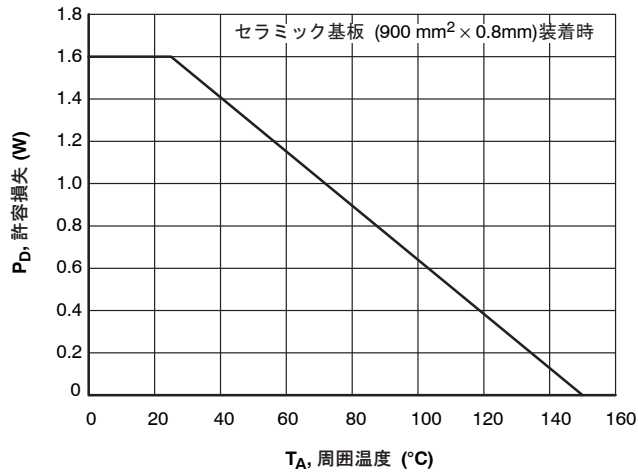
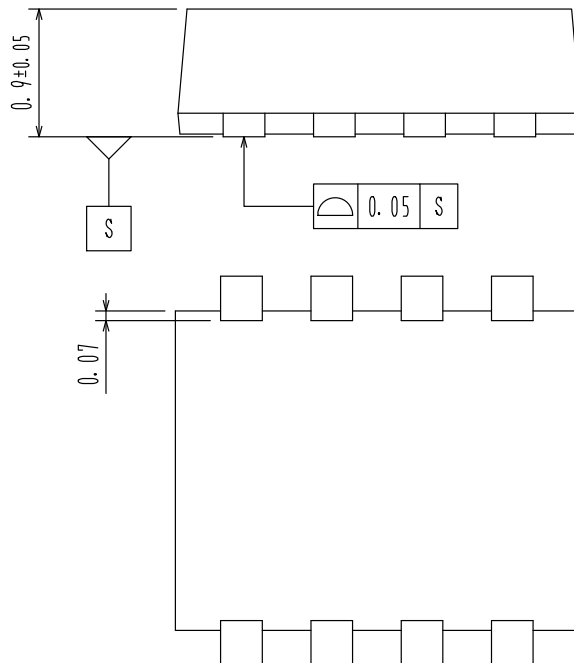
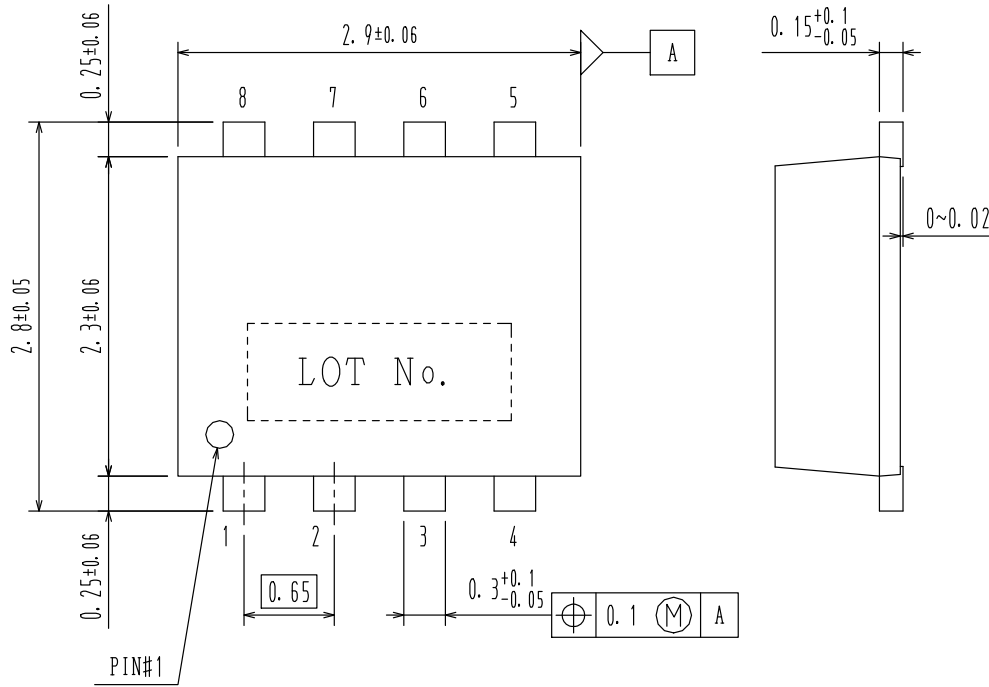


図 13. P_D - T_A

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