

**ECH8401**

Ultrahigh-Speed Switching Applications

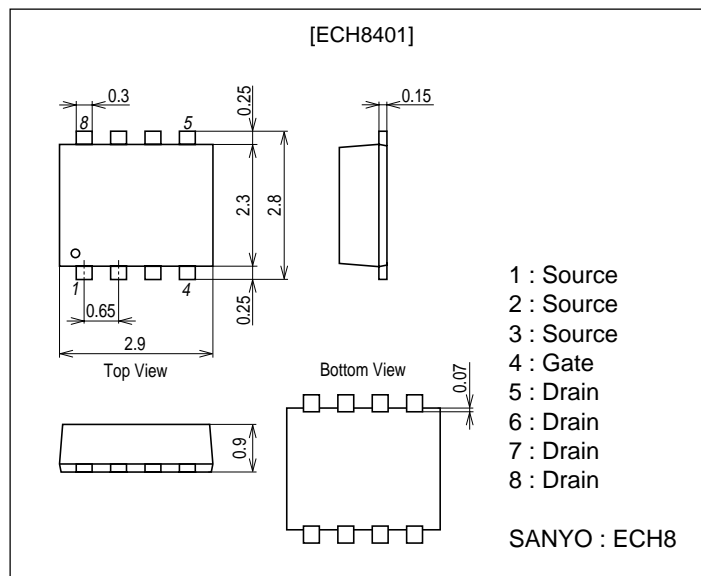
Features

- Low ON-resistance.
- Ultrahigh-speed switching.
- 2.5V drive.

Package Dimensions

unit : mm

2222



Specifications

Absolute Maximum Ratings at Ta=25°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		10	A
Drain Current (Pulse)	I _{DP}	PW≤10μs, duty cycle≤1%	40	A
Allowable Power Dissipation	P _D	Mounted on a ceramic board (900mm ² ×0.8mm)	1.6	W
Channel Temperature	T _{ch}		150	°C
Storage Temperature	T _{stg}		-55 to +150	°C

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} =0	20			V
Zero-Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V, V _{GS} =0			1	μA
Gate-to-Source Leakage Current	I _{GSS}	V _{GS} =±8V, V _{DS} =0			±10	μA
Cutoff Voltage	V _{GS(off)}	V _{DS} =10V, I _D =1mA	0.5		1.3	V

Marking : KA

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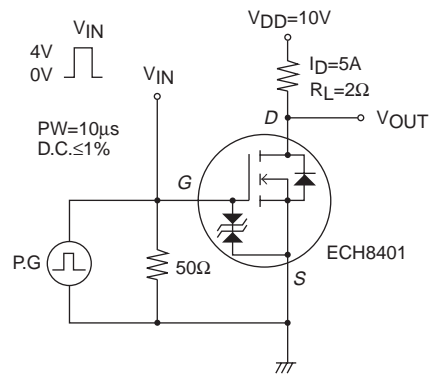
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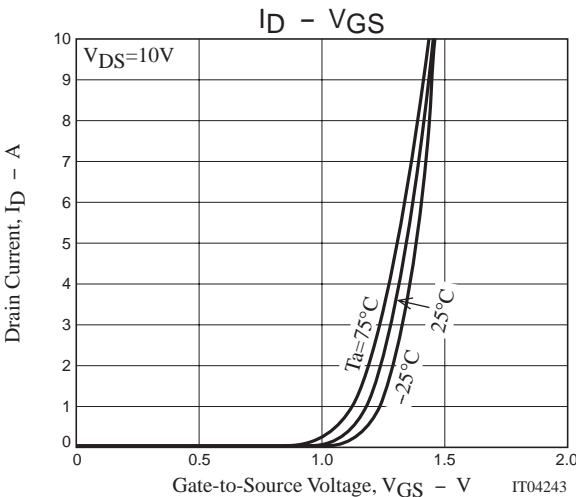
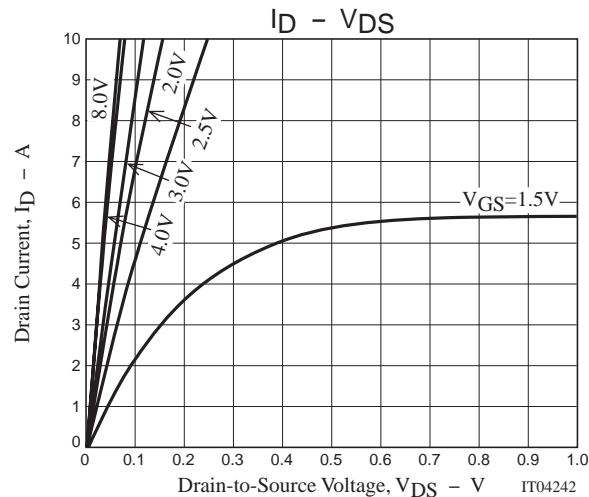
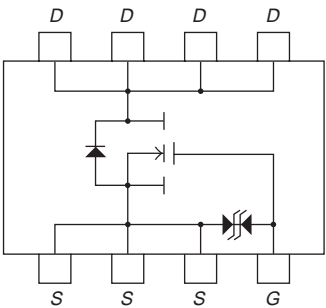
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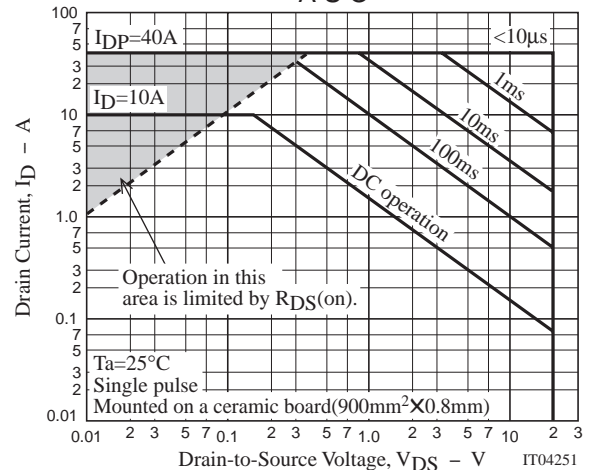
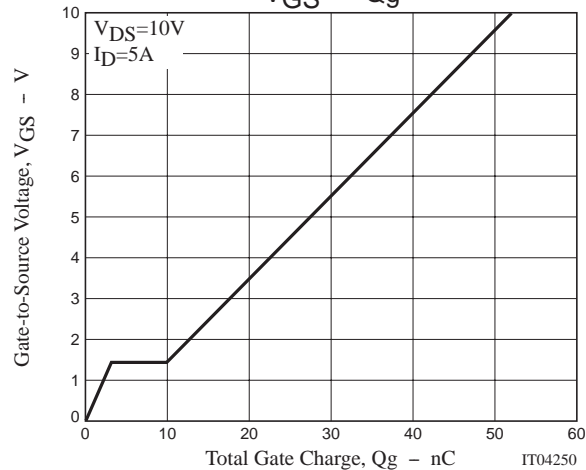
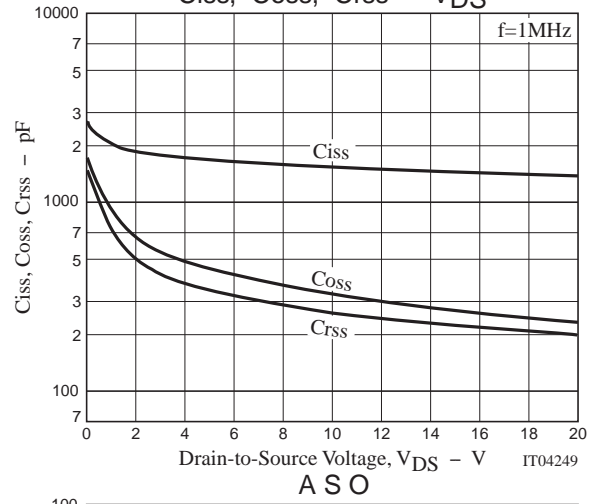
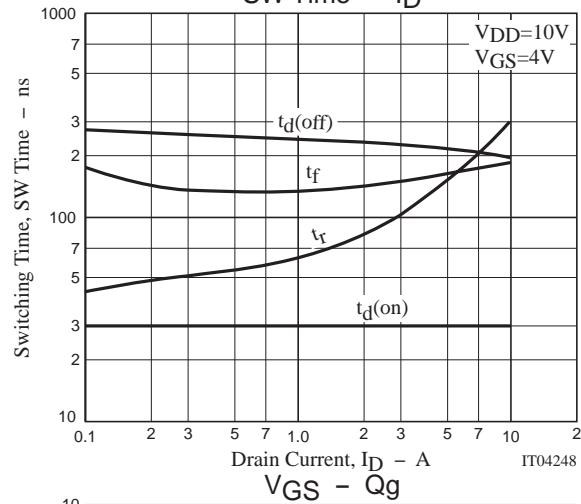
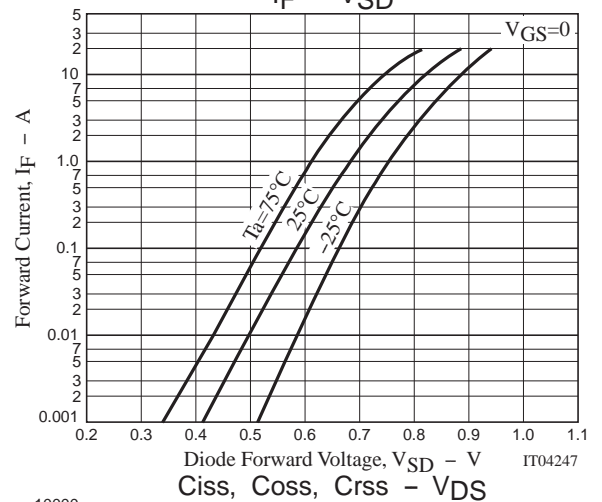
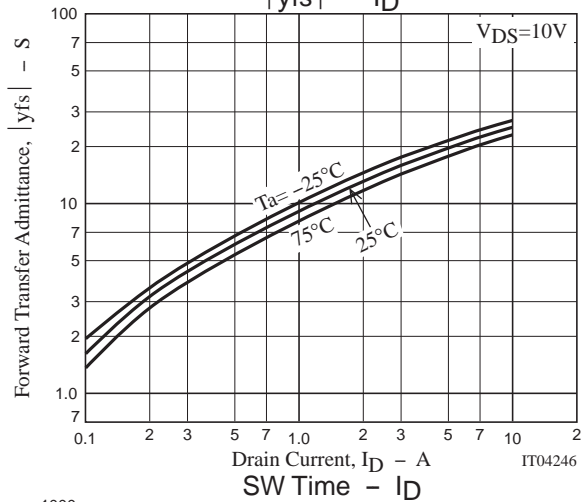
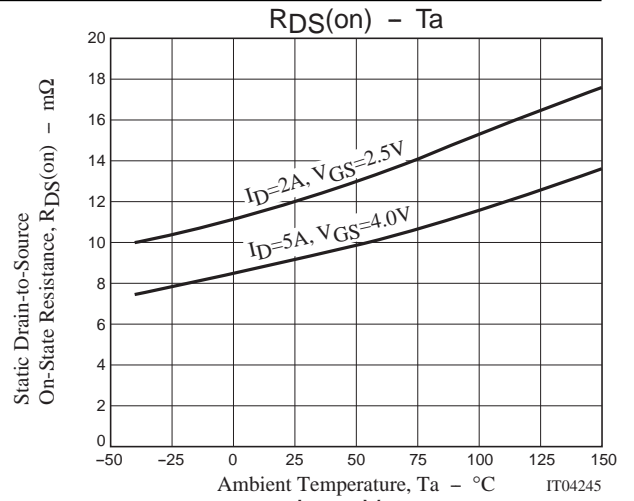
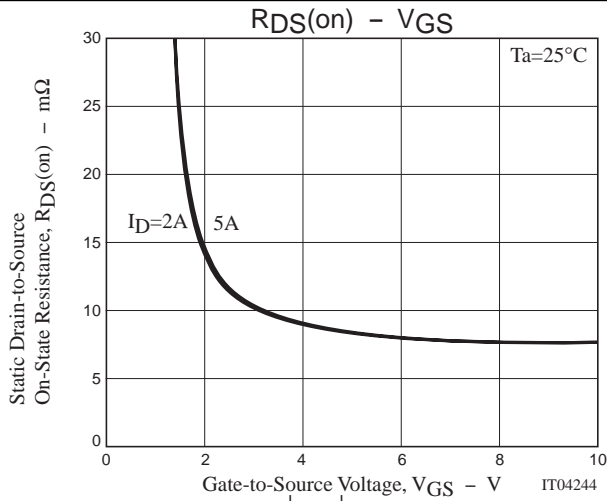
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=5A$	14	20		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=5A, V_{GS}=4V$		9	14	$m\Omega$
	$R_{DS(on)2}$	$I_D=5A, V_{GS}=3.1V$		10	15.5	$m\Omega$
	$R_{DS(on)3}$	$I_D=2A, V_{GS}=2.5V$		12	19	$m\Omega$
Input Capacitance	C_{iss}	$V_{DS}=10V, f=1MHz$		1700		pF
Output Capacitance	C_{oss}	$V_{DS}=10V, f=1MHz$		330		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS}=10V, f=1MHz$		270		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit		29		ns
Rise Time	t_r	See specified Test Circuit		150		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit		220		ns
Fall Time	t_f	See specified Test Circuit		160		ns
Total Gate Charge	Q_g	$V_{DS}=10V, V_{GS}=10V, I_D=5A$		52		nC
Gate-to-Source Charge	Q_{gs}	$V_{DS}=10V, V_{GS}=10V, I_D=5A$		2.6		nC
Gate-to-Drain "Miller" Charge	Q_{gd}	$V_{DS}=10V, V_{GS}=10V, I_D=5A$		7.4		nC
Diode Forward Voltage	V_{SD}	$I_S=10A, V_{GS}=0$		0.82	1.2	V

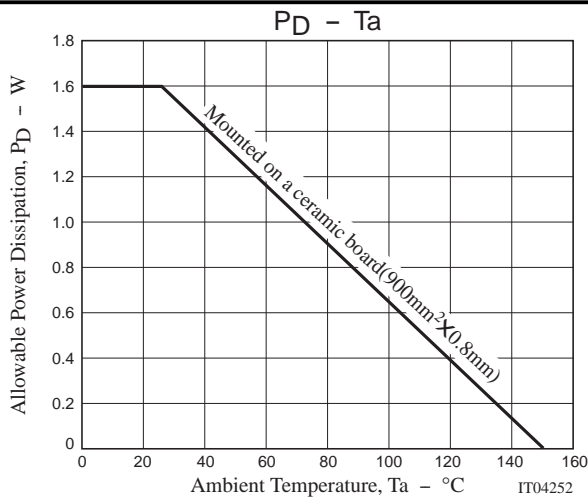
Switching Time Test Circuit



Electrical Connection







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