

**CPH6401**

Ultrahigh-Speed Switching Applications

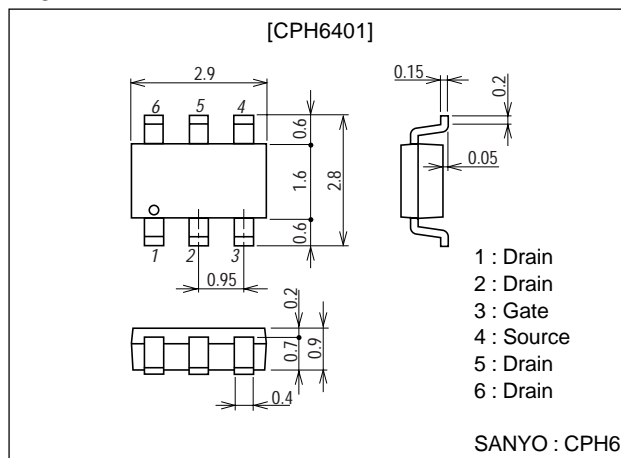
Features

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

Package Dimensions

unit:mm

2151A



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}		± 12	V
Drain Current (DC)	I_D		4	A
Drain Current (pulse)	I_{DP}	$PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	16	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (900mm \times 0.8mm)	1.6	W
Channel Temperature	T_{ch}		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DS}$	$I_D = 1\text{mA}$, $V_{GS} = 0$	20			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 20\text{V}$, $V_{GS} = 0$			10	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS} = \pm 8\text{V}$, $V_{DS} = 0$			± 10	μA
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} $	$V_{DS} = 10\text{V}$, $I_D = 2\text{A}$	5	7.2		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D = 2\text{A}$, $V_{GS} = 4\text{V}$		55	75	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D = 1\text{A}$, $V_{GS} = 2.5\text{V}$		75	105	$\text{m}\Omega$
Input Capacitance	C_{iss}	$V_{DS} = 10\text{V}$, $f = 1\text{MHz}$		300		pF
Output Capacitance	C_{oss}	$V_{DS} = 10\text{V}$, $f = 1\text{MHz}$		180		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS} = 10\text{V}$, $f = 1\text{MHz}$		90		pF

Marking : KA

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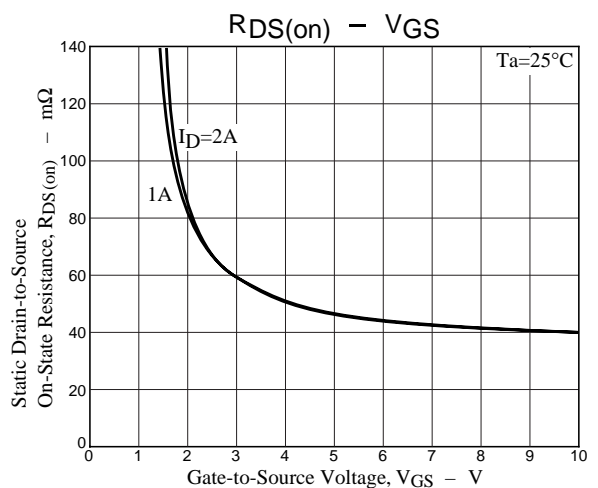
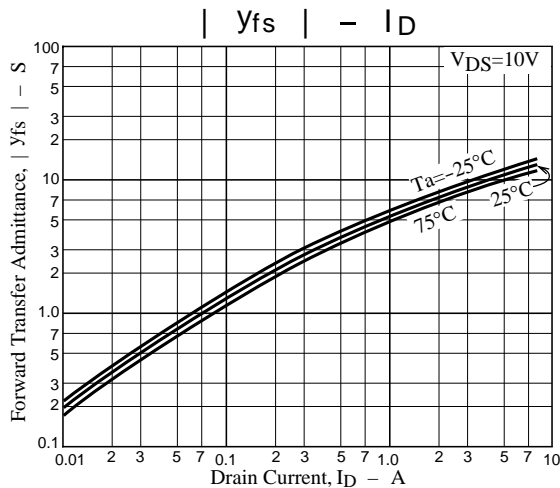
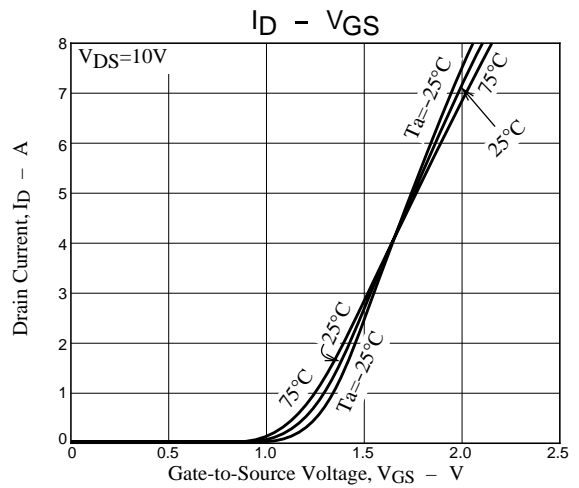
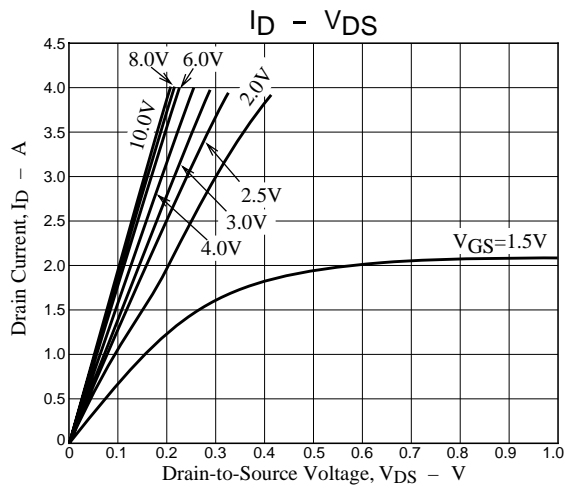
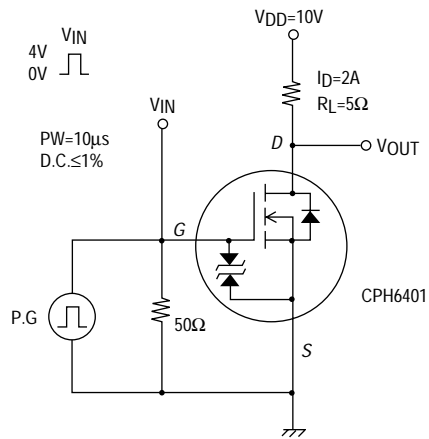
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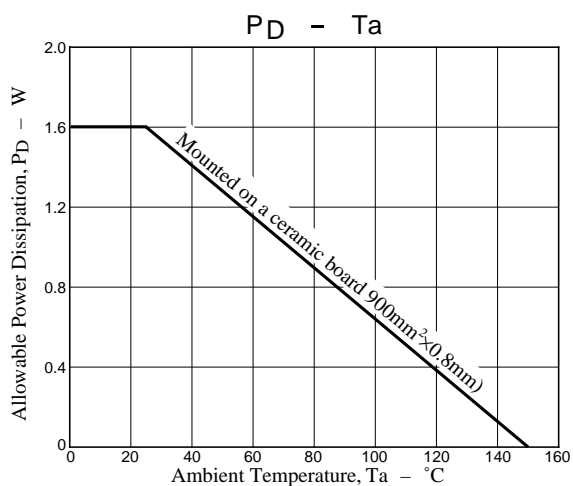
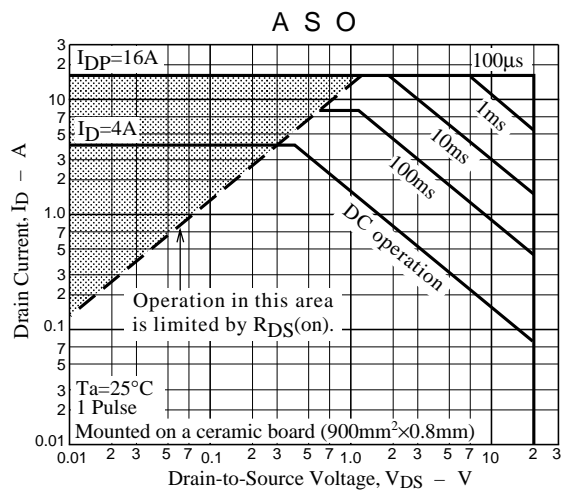
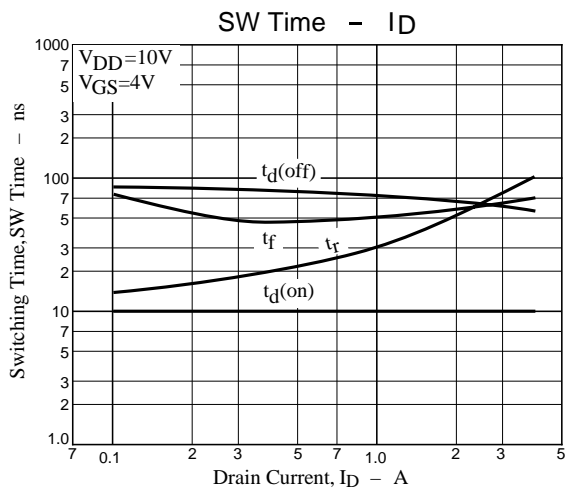
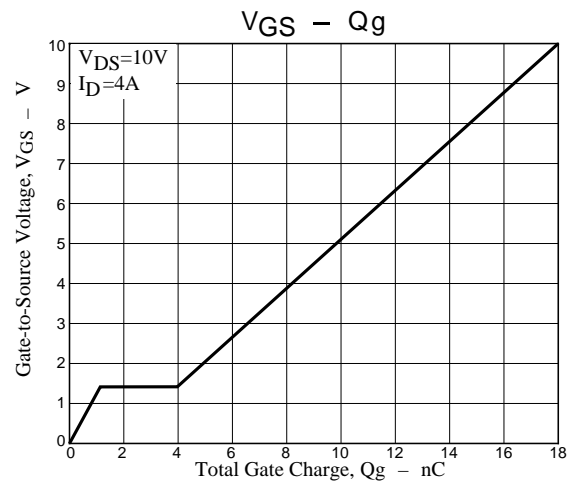
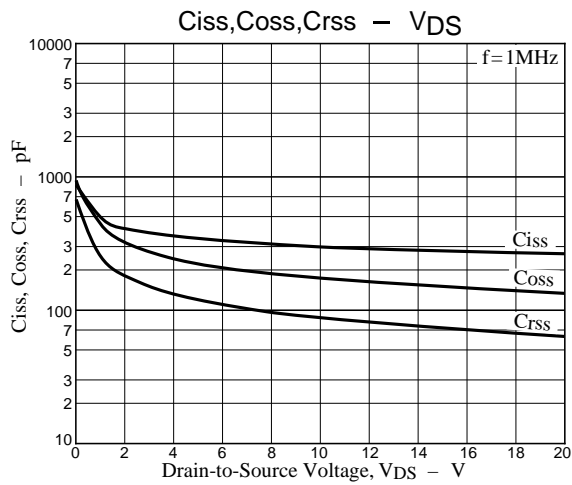
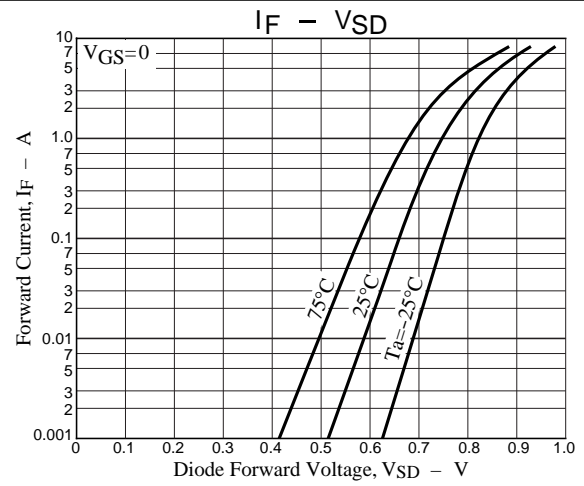
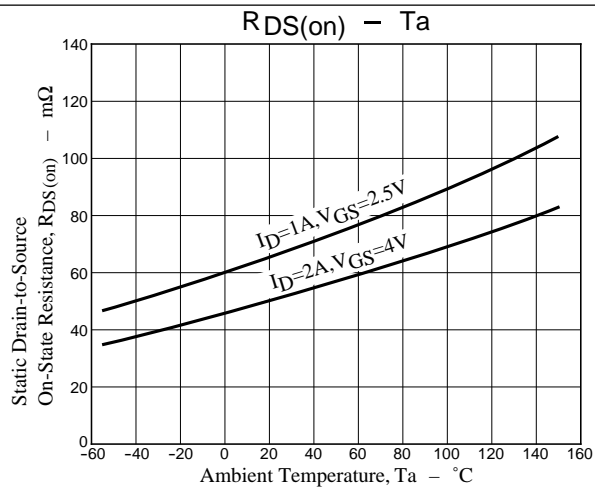
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit		10		ns
Rise Time	t_r	See specified Test Circuit		50		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit		68		ns
Fall Time	t_f	See specified Test Circuit		58		ns
Total Gate Charge	Q_g	$V_{DS}=10V, V_{GS}=10V, I_D=4A$		18		nC
Gate-to-Source Charge	Q_{gs}	$V_{DS}=10V, V_{GS}=10V, I_D=4A$		1		nC
Gate-to-Drain "Miller" Charge	Q_{gd}	$V_{DS}=10V, V_{GS}=10V, I_D=4A$		3		nC
Diode Forward Voltage	V_{SD}	$I_S=4A, V_{GS}=0$		0.85	1.2	V

Switching Time Test Circuit





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