



MCH3405

Ultrahigh-Speed Switching Applications

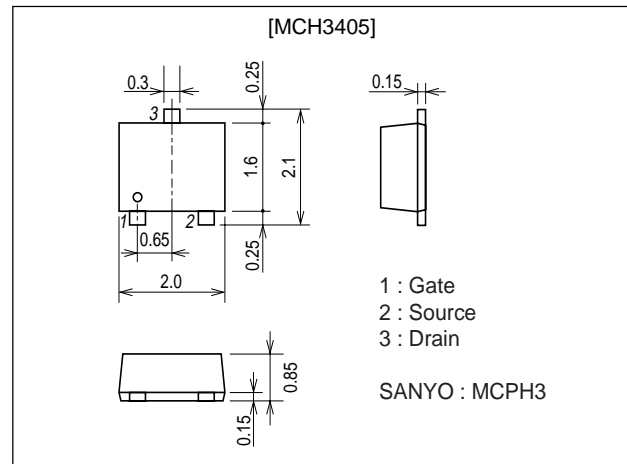
Features

- Low ON-resistance.
- Ultrahigh-speed switching.
- 1.8V drive.

Package Dimensions

unit : mm

2167



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}		± 10	V
Drain Current (DC)	I_D		1.8	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	7.2	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (900mm ² X0.8mm)	0.8	W
Channel Temperature	T_{ch}		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +125	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1\text{mA}$, $V_{GS}=0$	20			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=20\text{V}$, $V_{GS}=0$			1	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 8\text{V}$, $V_{DS}=0$			± 10	μA
Gate-to-Source 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} $	$V_{DS}=10\text{V}$, $I_D=1\text{A}$	1.9	2.8		S

Marking : KE

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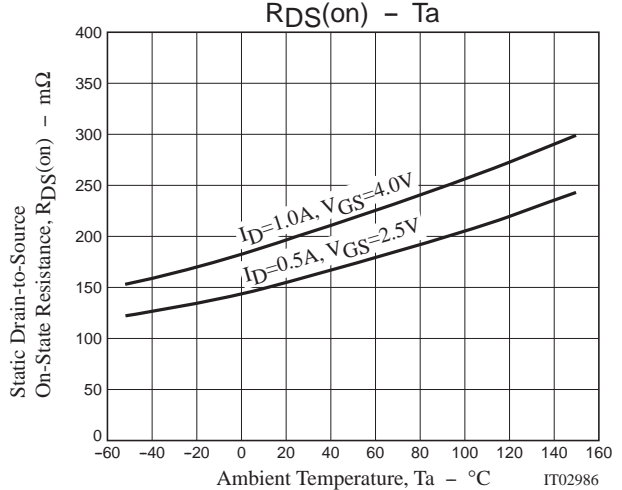
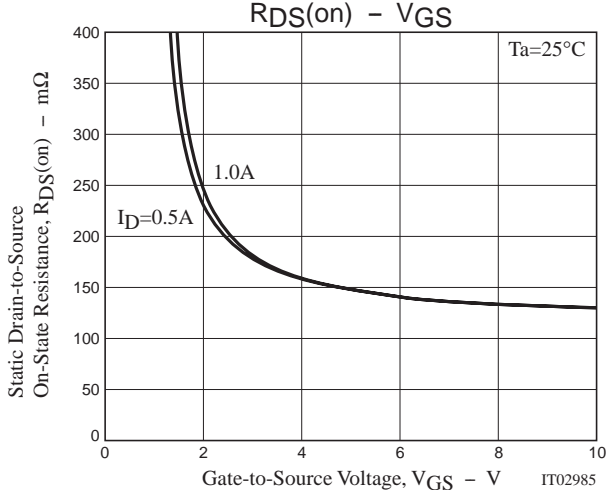
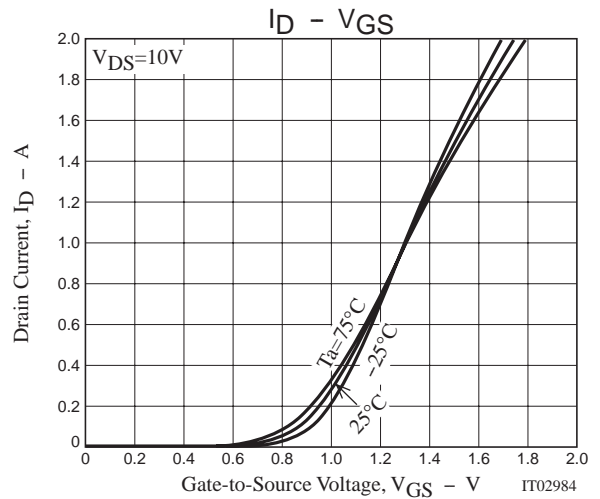
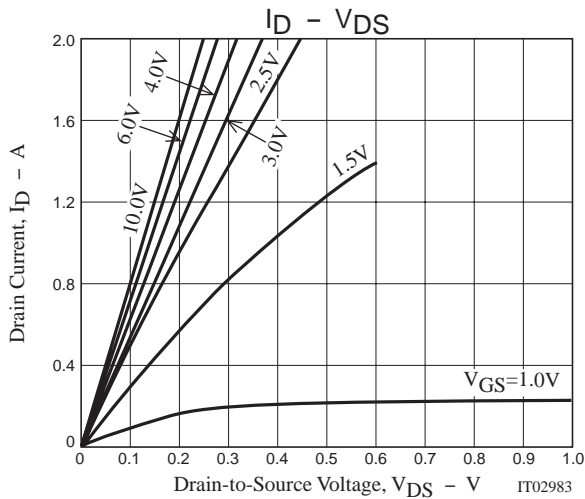
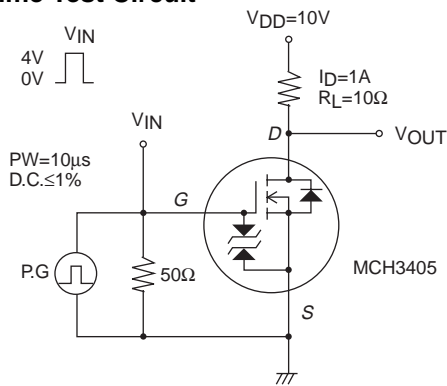
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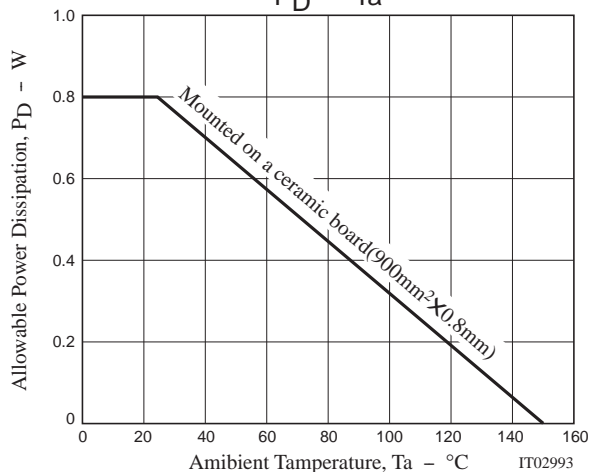
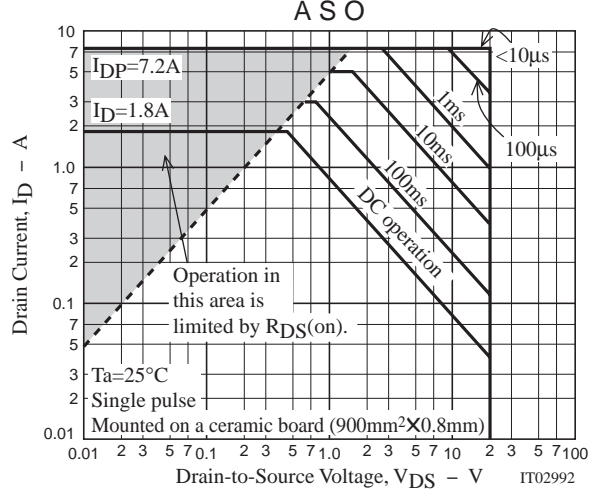
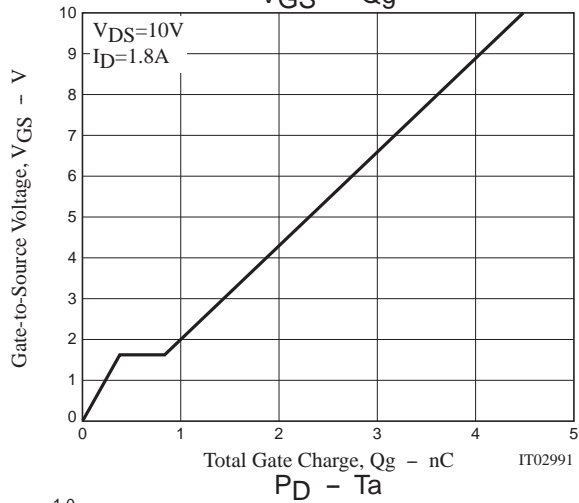
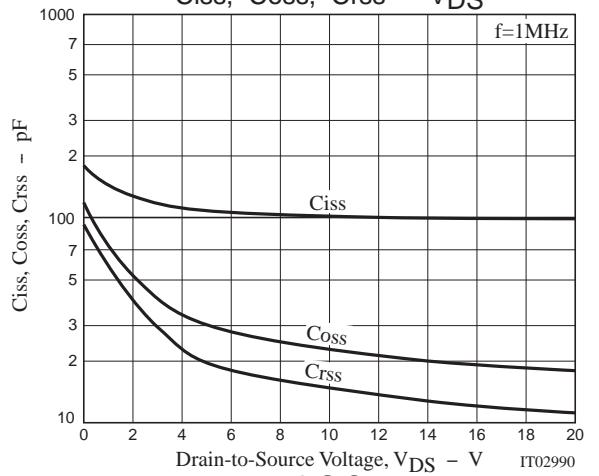
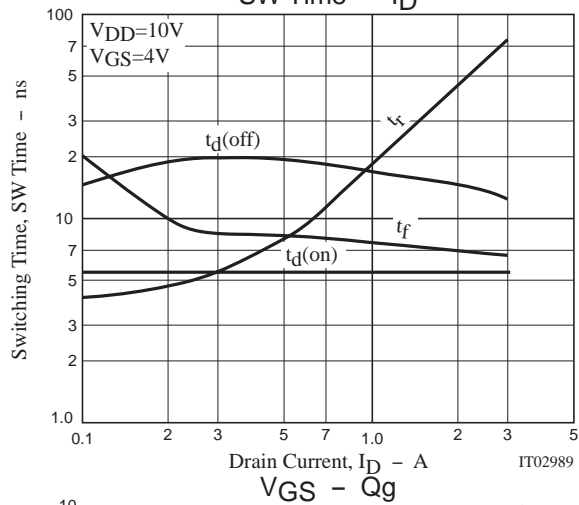
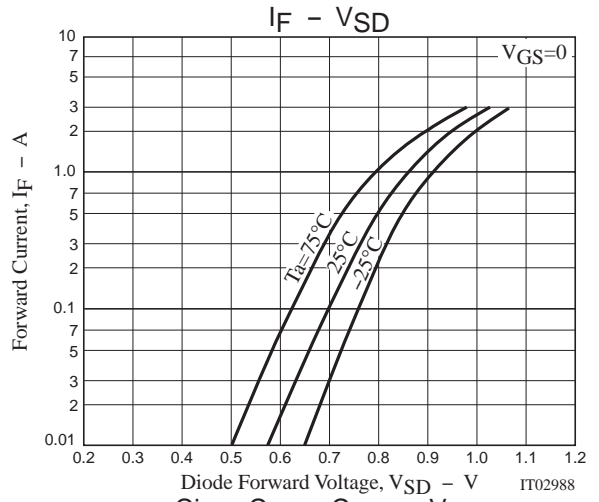
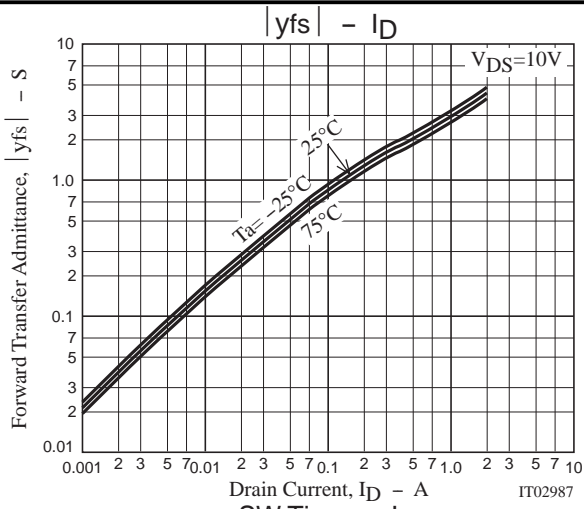
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=1A, V_{GS}=4V$		160	210	mΩ
	$R_{DS(on)2}$	$I_D=0.5A, V_{GS}=2.5V$		200	280	mΩ
	$R_{DS(on)3}$	$I_D=0.1A, V_{GS}=1.8V$		280	390	mΩ
Input Capacitance	C_{iss}	$V_{DS}=10V, f=1MHz$		100		pF
Output Capacitance	C_{oss}	$V_{DS}=10V, f=1MHz$		22		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS}=10V, f=1MHz$		15		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit		5.5		ns
Rise Time	t_r	See specified Test Circuit		18		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit		17		ns
Fall Time	t_f	See specified Test Circuit		8		ns
Total Gate Charge	Q_g	$V_{DS}=10V, V_{GS}=10V, I_D=1.8A$		4.5		nC
Gate-to-Source Charge	Q_{gs}	$V_{DS}=10V, V_{GS}=10V, I_D=1.8A$		0.4		nC
Gate-to-Drain "Miller" Charge	Q_{gd}	$V_{DS}=10V, V_{GS}=10V, I_D=1.8A$		0.4		nC
Diode Forward Voltage	V_{SD}	$I_S=1.8A, V_{GS}=0$		0.91	1.2	V

Switching Time Test Circuit



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