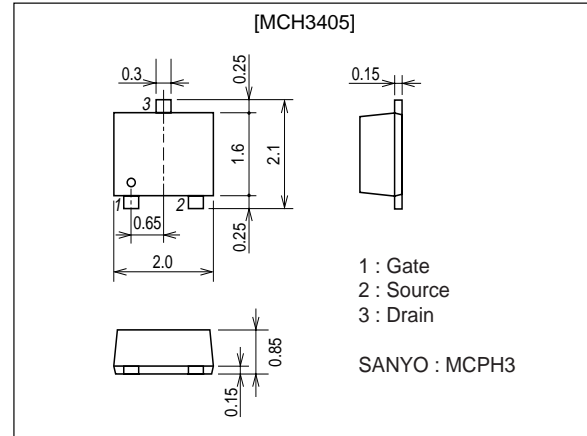


**MCH3405****Ultrahigh-Speed Switching Applications****Features**

- 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	$V_{DSS}$		20	V
Gate-to-Source Voltage	$V_{GSS}$		$\pm 10$	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 $\times$ 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	$\mu\text{A}$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 8\text{V}$ , $V_{DS}=0$			$\pm 10$	$\mu\text{A}$
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	yfs	$V_{DS}=10\text{V}$ , $I_D=1\text{A}$	1.9	2.8		S

Marking : KE

Continued on next page.

■ Any and all SANYO products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your SANYO representative nearest you before using any SANYO products described or contained herein in such applications.

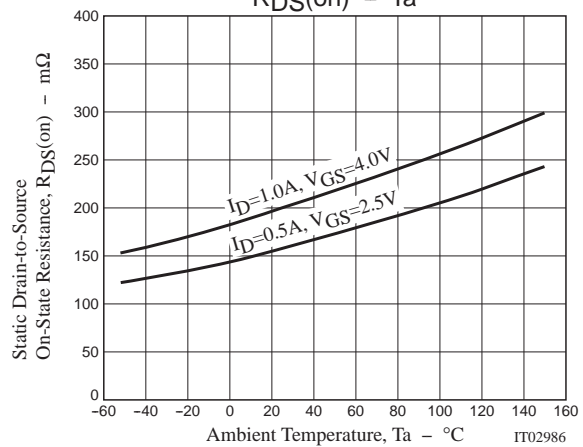
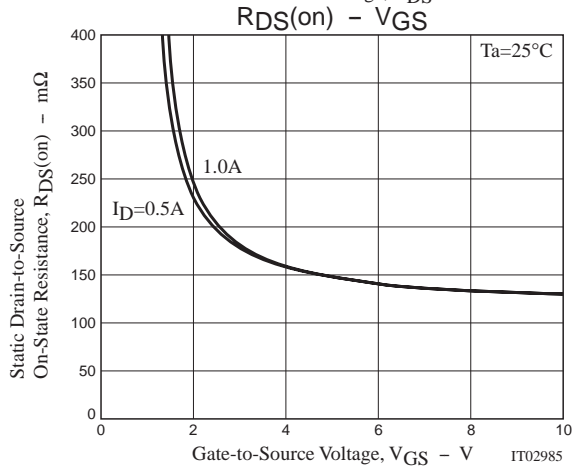
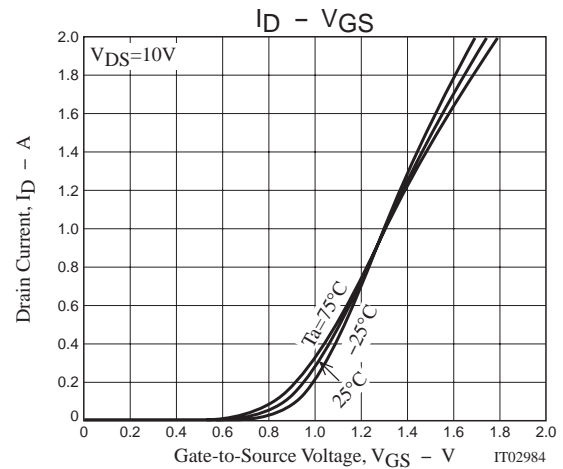
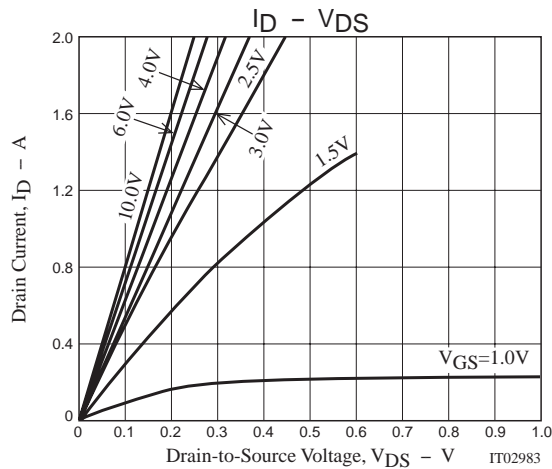
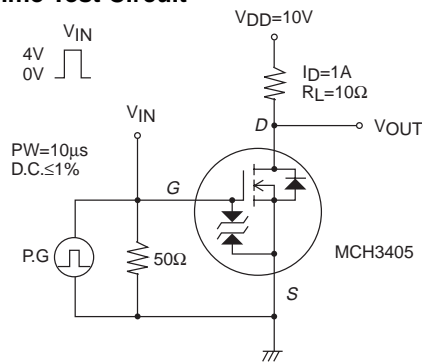
■ SANYO assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all SANYO products described or contained herein.

# MCH3405

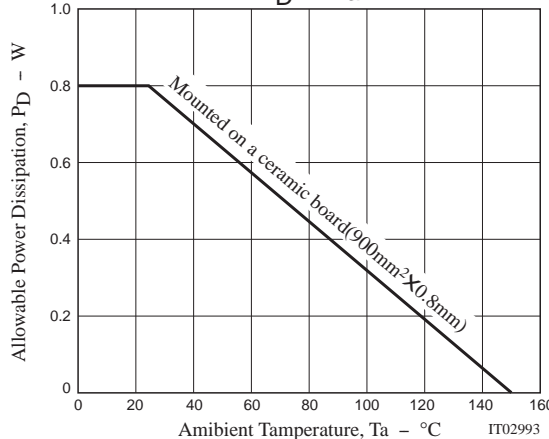
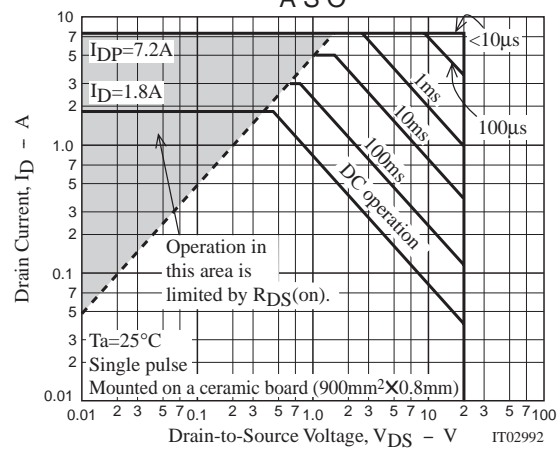
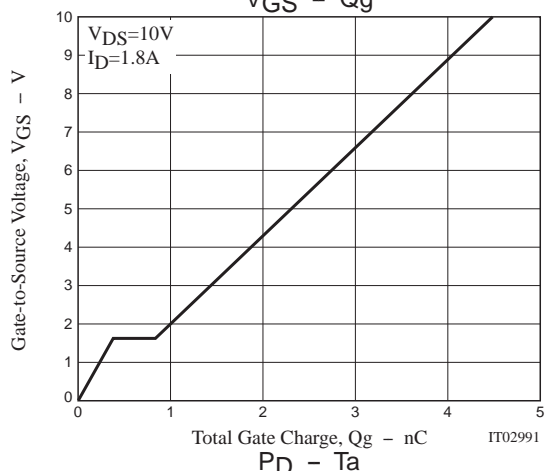
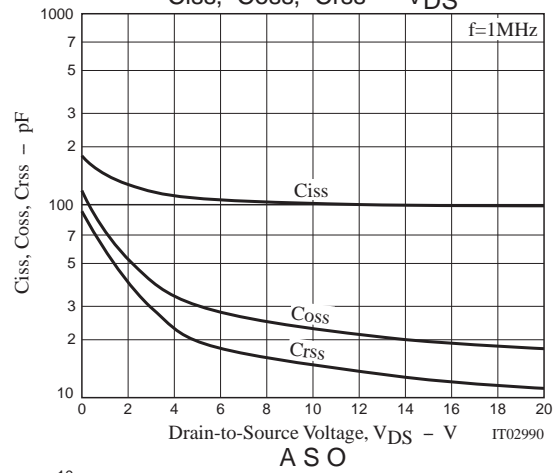
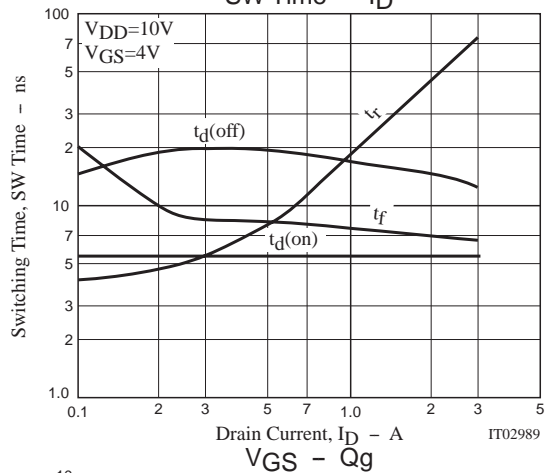
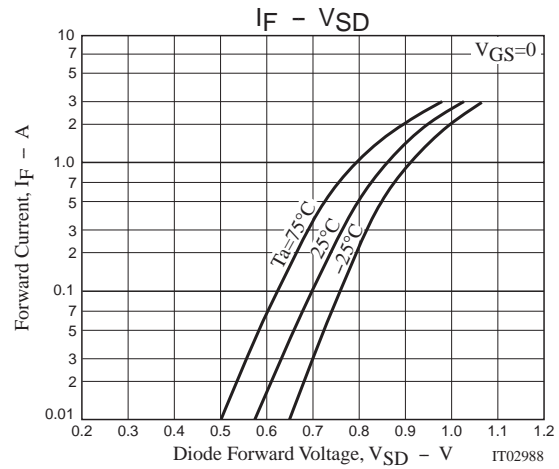
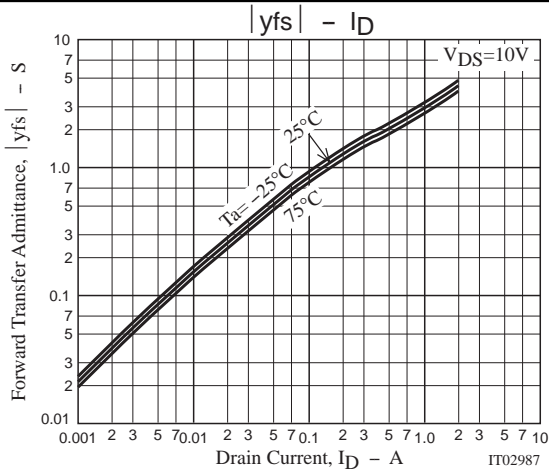
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=1A, V_{GS}=4V$		160	210	$m\Omega$
	$R_{DS(on)2}$	$I_D=0.5A, V_{GS}=2.5V$		200	280	$m\Omega$
	$R_{DS(on)3}$	$I_D=0.1A, V_{GS}=1.8V$		280	390	$m\Omega$
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



# MCH3405



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