



ON Semiconductor®

**ON Semiconductor**  
**DATA SHEET****SCH1406** — N-Channel Silicon MOSFET  
**General-Purpose Switching Device**  
**Applications****Features**

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

**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)	$I_D$		1.7	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	4.8	A
Allowable Power Dissipation	$P_D$	Mounted on a ceramic board (900mm <sup>2</sup> ×0.8mm)	0.8	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	$V_{(BR)DSS}$	$I_D=1\text{mA}$ , $V_{GS}=0\text{V}$	20			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=20\text{V}$ , $V_{GS}=0\text{V}$			1	$\mu\text{A}$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 8\text{V}$ , $V_{DS}=0\text{V}$			$\pm 10$	$\mu\text{A}$
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
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=1\text{A}$ , $V_{GS}=4\text{V}$		160	210	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D=0.5\text{A}$ , $V_{GS}=2.5\text{V}$		200	280	$\text{m}\Omega$
	$R_{DS(on)3}$	$I_D=0.1\text{A}$ , $V_{GS}=1.8\text{V}$		280	390	$\text{m}\Omega$

Marking : KF

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# SCH1406

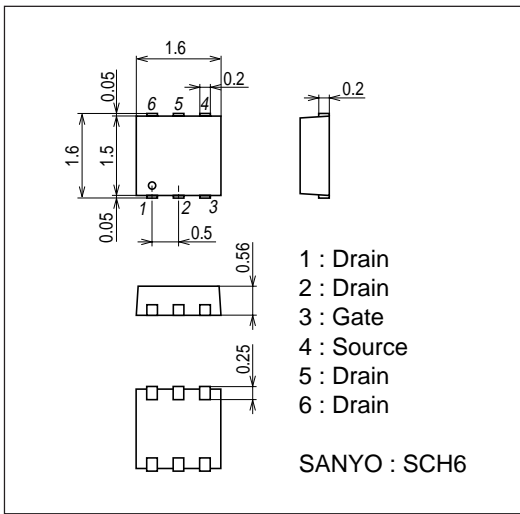
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	$C_{iss}$	$V_{DS}=10V, f=1MHz$		100		pF
Output Capacitance	$C_{oss}$	$V_{DS}=10V, f=1MHz$		22		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=10V, f=1MHz$		15		pF
Turn-ON 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	$Q_g$	$V_{DS}=10V, V_{GS}=10V, I_D=1.2A$		4.5		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=10V, V_{GS}=10V, I_D=1.2A$		0.4		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=10V, V_{GS}=10V, I_D=1.2A$		0.4		nC
Diode Forward Voltage	$V_{SD}$	$I_S=-1.2A, V_{GS}=0V$		0.9	1.2	V

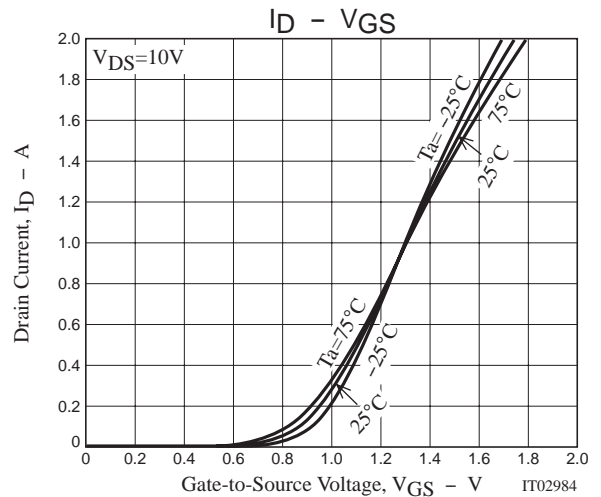
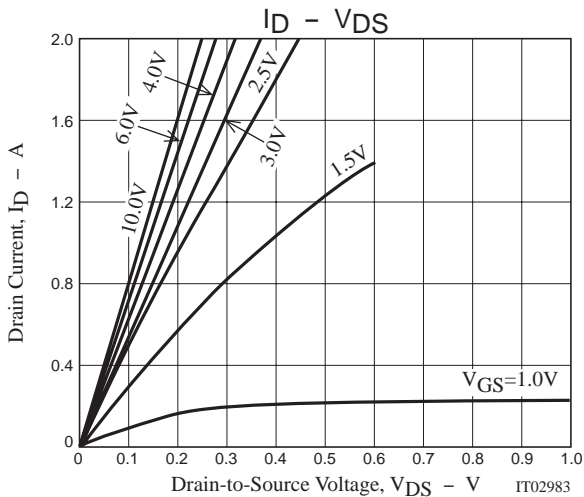
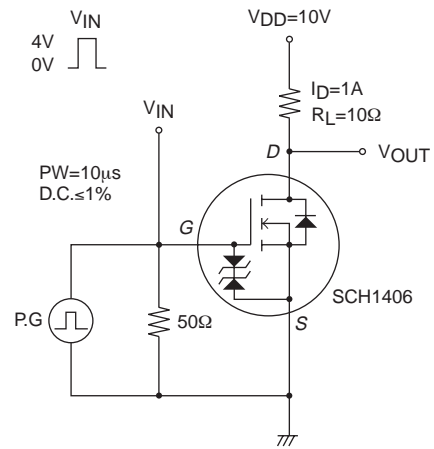
## Package Dimensions

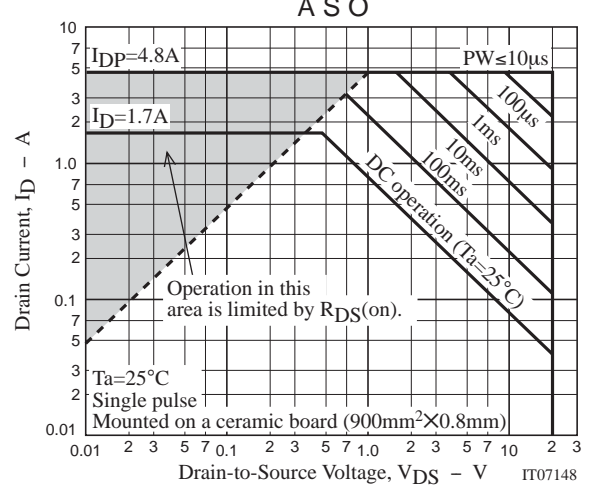
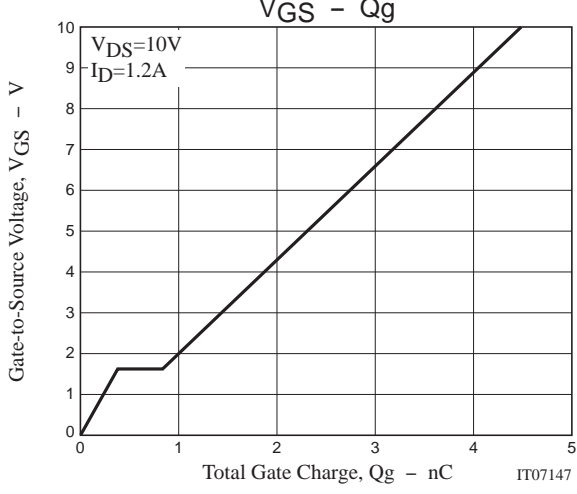
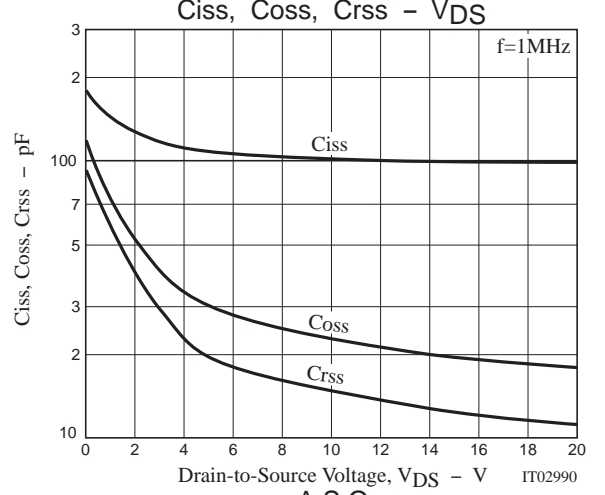
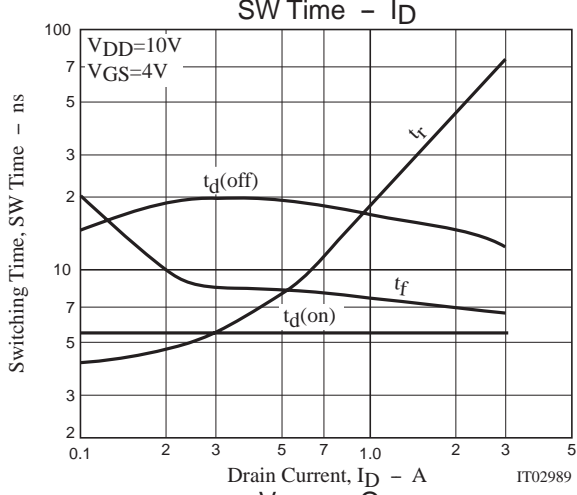
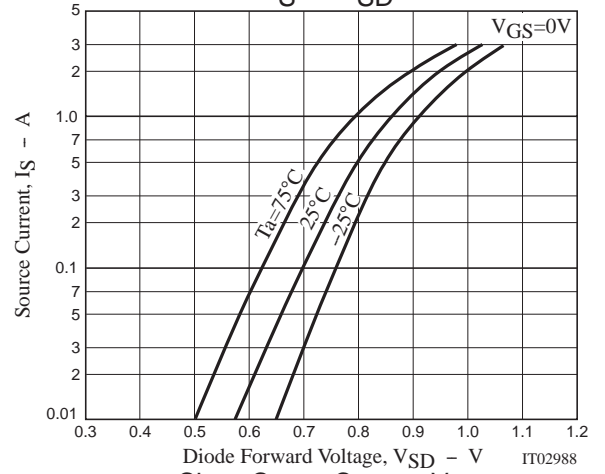
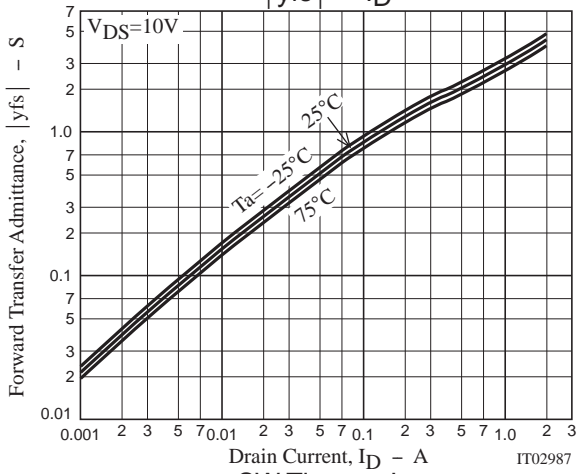
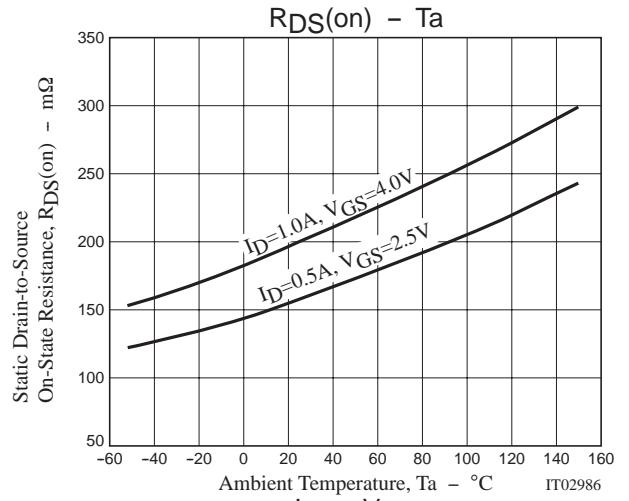
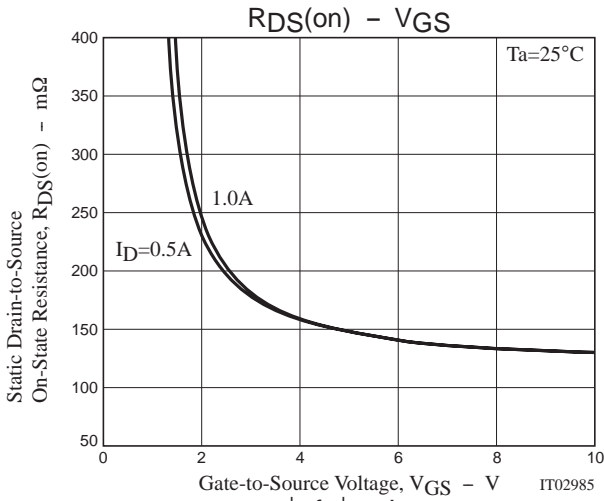
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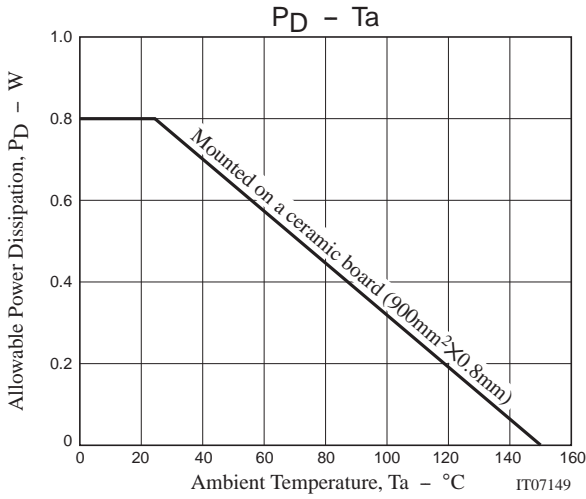


## Switching Time Test Circuit





# SCH1406



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