Ordering number : EN8641

ON Semiconductor®

ON Semiconductor
DATA SHEET

N-Channel Silicon MOSFET

2SK3980 — General-Purpose Switching Device Applications

Features

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

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		60	V
Gate-to-Source Voltage	V_{GSS}		±10	V
Drain Current (DC)	I_D		0.9	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	3.6	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (250mm²×0.8mm)	0.9	W
		Tc=25°C	3.5	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−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}=0V	60			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V			1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0V			±10	μA
Cutoff Voltage	$V_{GS}(off)$	V_{DS}=10V, I_D=1mA	0.4		1.3	V
Forward Transfer Admittance	$\|yfs\|$	V_{DS}=10V, I_D=0.5A	0.9	1.5		S
Static Drain-to-Source On-State Resistance	$R_{DS}(on)1$	I_D=0.5A, V_{GS}=4V		635	830	mΩ
	$R_{DS}(on)2$	I_D=0.3A, V_{GS}=2.5V		705	990	mΩ
	$R_{DS}(on)3$	I_D=0.1A, V_{GS}=1.8V		850	1310	mΩ
Input Capacitance	Ciss	V_{DS}=20V, f=1MHz		100		pF
Output Capacitance	Coss	V_{DS}=20V, f=1MHz		9.5		pF
Reverse Transfer Capacitance	Crss	V_{DS}=20V, f=1MHz		6.7		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		8.8		ns
Rise Time	t_r	See specified Test Circuit.		10.5		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		21.5		ns
Fall Time	t_f	See specified Test Circuit.		15.8		ns

Marking : LS

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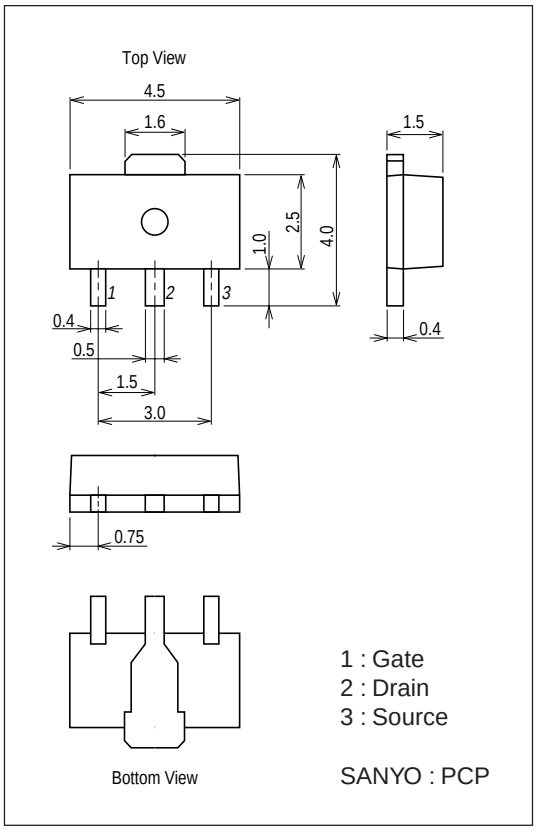
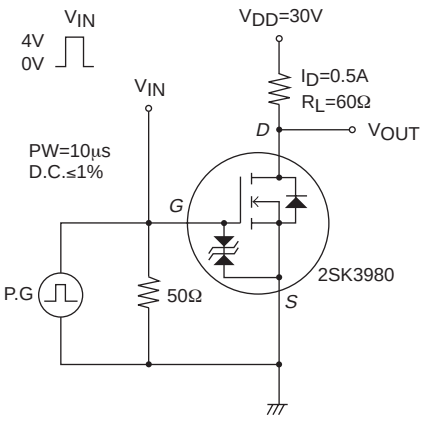
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Total Gate Charge	Qg	V_{DS}=30V, V_{GS}=4V, I_D=0.9A		2.1		nC
Gate-to-Source Charge	Qgs	V_{DS}=30V, V_{GS}=4V, I_D=0.9A		0.39		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=30V, V_{GS}=4V, I_D=0.9A		0.28		nC
Diode Forward Voltage	V_{SD}	I_S=0.9A, V_{GS}=0V		0.91	1.2	V

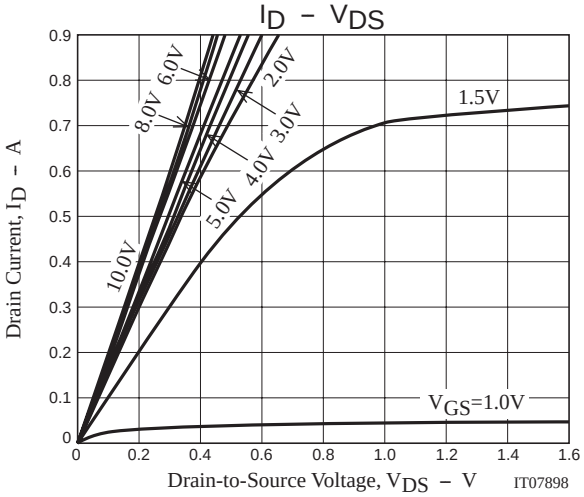
Package Dimensions

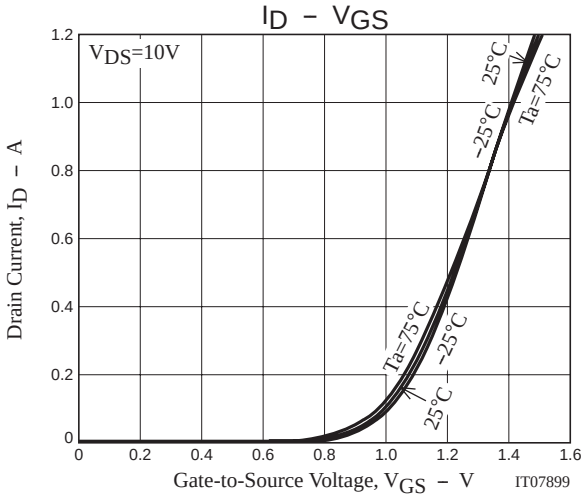
unit : mm (typ)
7007A-003

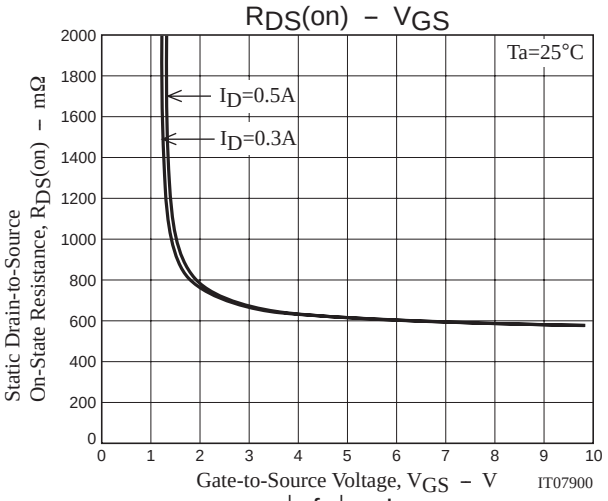


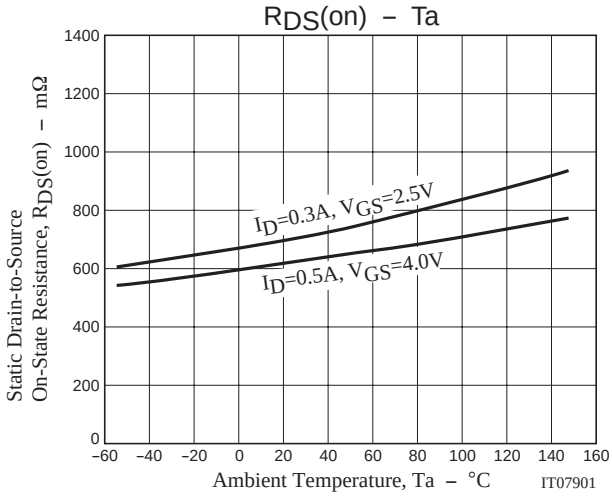
Switching Time Test Circuit

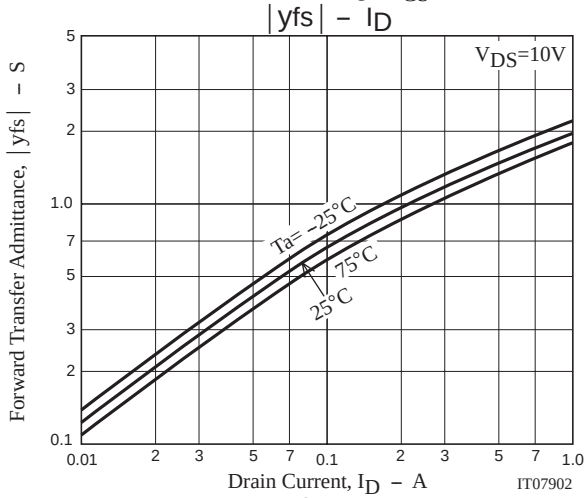


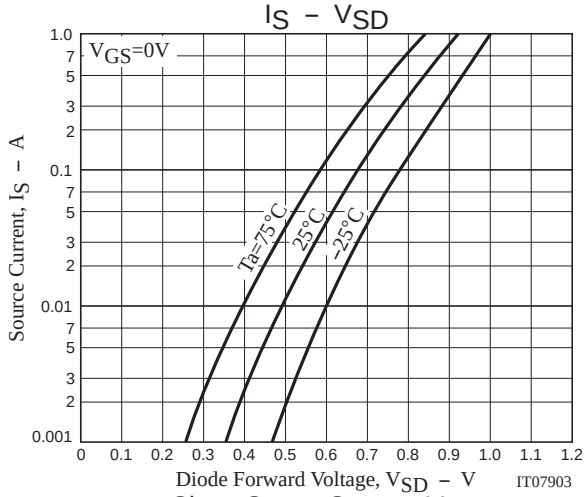


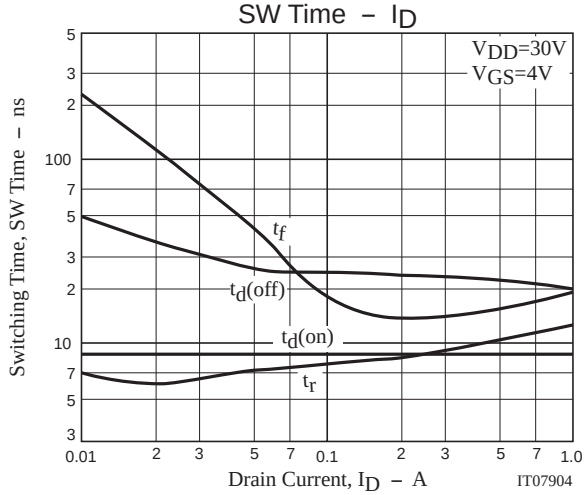


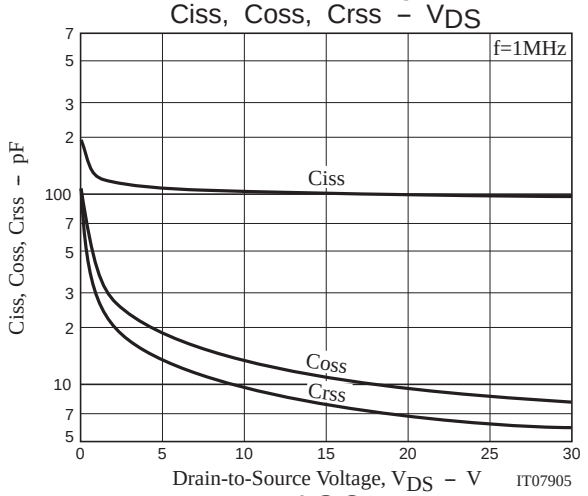


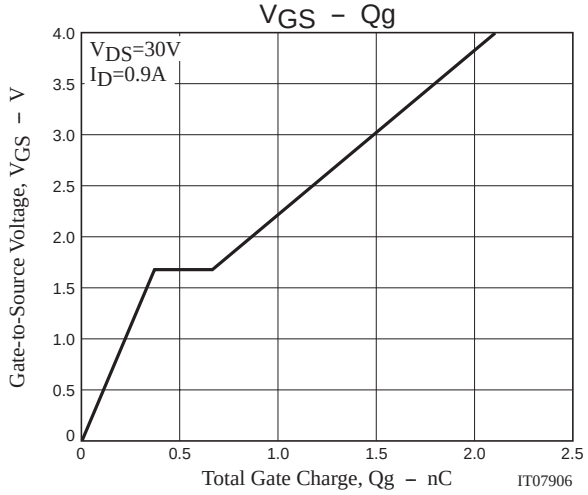


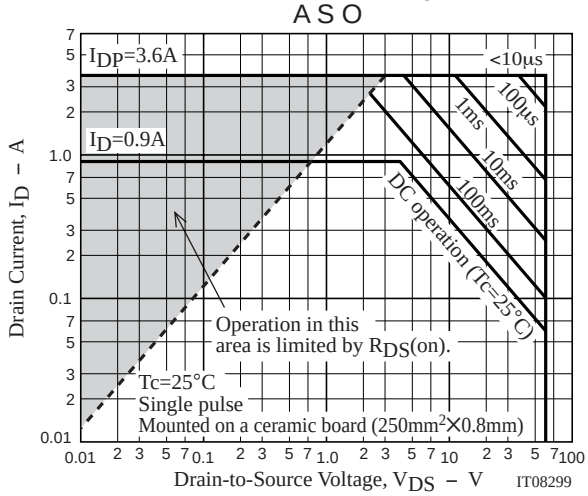


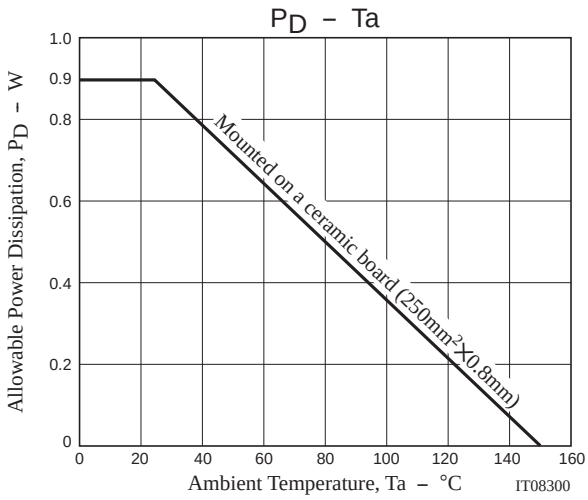


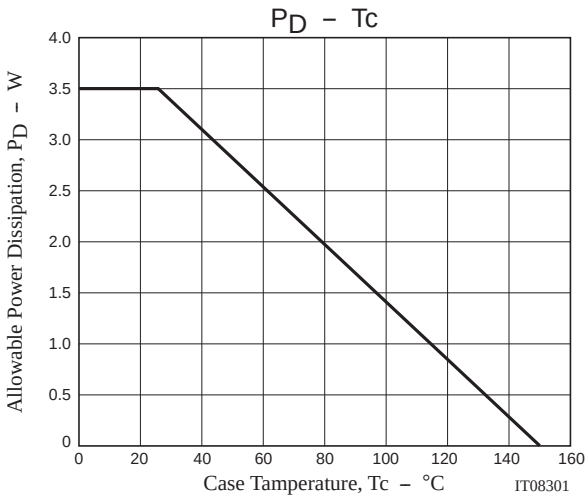












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