

# SANYO Semiconductors 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	VDSS		60	V
Gate-to-Source Voltage	VGSS		±10	V
Drain Current (DC)	ID		0.9	Α
Drain Current (Pulse)	IDP	PW≤10μs, duty cycle≤1%	3.6	Α
Allowable Power Dissipation	PD	Mounted on a ceramic board (250mm <sup>2</sup> X0.8mm)	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			Linit
			min	typ	max	Unit
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=1mA, VGS=0V	60			V
Zero-Gate Voltage Drain Current	IDSS	V <sub>DS</sub> =60V, V <sub>GS</sub> =0V			1	μΑ
Gate-to-Source Leakage Current	IGSS	VGS=±8V, VDS=0V			±10	μΑ
Cutoff Voltage	Vgs(off)	V <sub>DS</sub> =10V, I <sub>D</sub> =1mA	0.4		1.3	V
Forward Transfer Admittance	yfs	V <sub>DS</sub> =10V, I <sub>D</sub> =0.5A	0.9	1.5		S
Static Drain-to-Source On-State Resistance	RDS(on)1	ID=0.5A, VGS=4V		635	830	mΩ
	R <sub>DS</sub> (on)2	I <sub>D</sub> =0.3A, V <sub>G</sub> S=2.5V		705	990	mΩ
	R <sub>DS</sub> (on)3	I <sub>D</sub> =0.1A, V <sub>GS</sub> =1.8V		850	1310	mΩ
Input Capacitance	Ciss	V <sub>DS</sub> =20V, f=1MHz		100		pF
Output Capacitance	Coss	V <sub>DS</sub> =20V, f=1MHz		9.5		pF
Reverse Transfer Capacitance	Crss	V <sub>DS</sub> =20V, f=1MHz		6.7		pF
Turn-ON Delay Time	td(on)	See specified Test Circuit.		8.8		ns
Rise Time	t <sub>r</sub>	See specified Test Circuit.		10.5		ns
Turn-OFF Delay Time	t <sub>d</sub> (off)	See specified Test Circuit.		21.5		ns
Fall Time	tf	See specified Test Circuit.		15.8		ns

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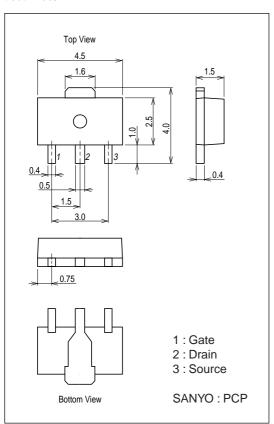
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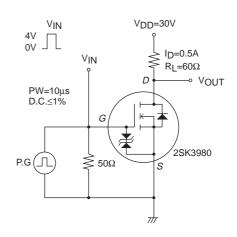
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	Oill
Total Gate Charge	Qg	V <sub>DS</sub> =30V, V <sub>GS</sub> =4V, I <sub>D</sub> =0.9A		2.1		nC
Gate-to-Source Charge	Qgs	V <sub>DS</sub> =30V, V <sub>GS</sub> =4V, I <sub>D</sub> =0.9A		0.39		nC
Gate-to-Drain "Miller" Charge	Qgd	V <sub>DS</sub> =30V, V <sub>GS</sub> =4V, I <sub>D</sub> =0.9A		0.28		nC
Diode Forward Voltage	VSD	IS=0.9A, VGS=0V		0.91	1.2	V

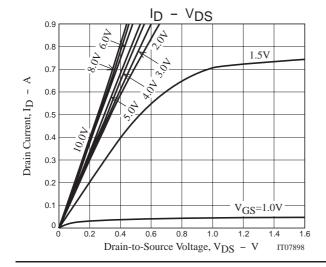
# **Package Dimensions**

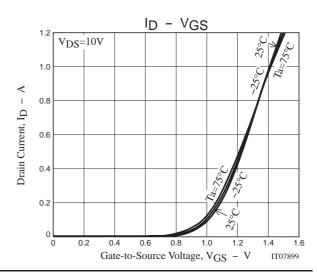
unit : mm (typ) 7007A-003

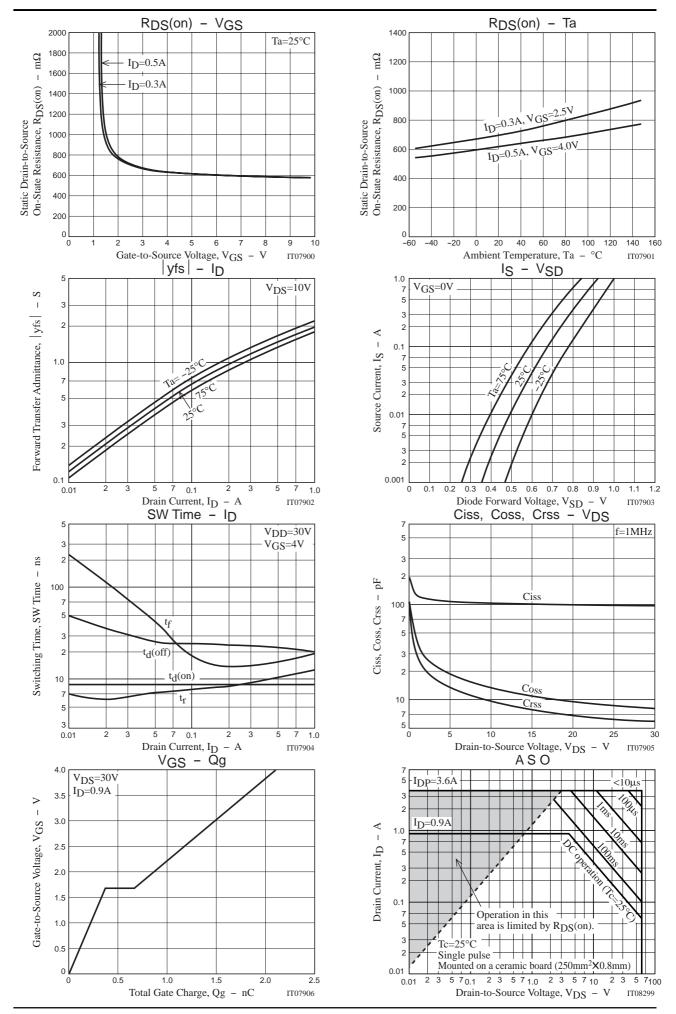


# **Switching Time Test Circuit**

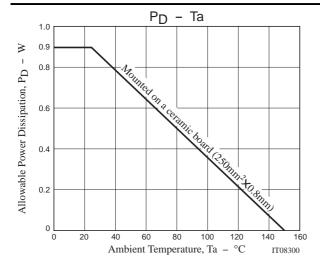


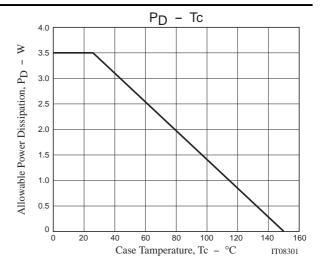






#### 2SK3980





Note on usage: Since the 2SK3980 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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