



# SANYO Semiconductors

## DATA SHEET

N-Channel Silicon MOSFET

# 2SK4177 — General-Purpose Switching Device Applications

### Features

- Low ON-resistance, low input capacitance, ultrahigh-speed switching.
- Adoption of high reliability HVP process.
- Avalanche resistance guarantee.

### Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V <sub>DSS</sub>		1500	V
Gate-to-Source Voltage	V <sub>GSS</sub>		±20	V
Drain Current (DC)	I <sub>D</sub>		2	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	4	A
Allowable Power Dissipation	P <sub>D</sub>		1.65	W
		T <sub>c</sub> =25°C	80	W
Channel Temperature	T <sub>ch</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C
Avalanche Energy (Single Pulse) *1	E <sub>AS</sub>		42	mJ
Avalanche Current *2	I <sub>AV</sub>		2	A

\*1 V<sub>DD</sub>=99V, L=20mH, I<sub>AV</sub>=2A

\*2 L≤20mH, single pulse

Marking : K4177

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SANYO Semiconductor Co., Ltd.

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## Electrical Characteristics at Ta=25°C

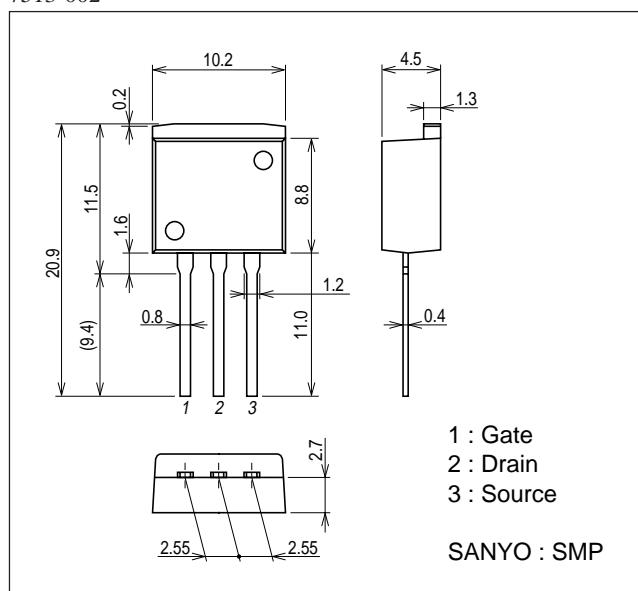
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	V(BR)DSS	$I_D=1\text{mA}$ , $V_{GS}=0\text{V}$	1500			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=1200\text{V}$ , $V_{GS}=0\text{V}$			100	$\mu\text{A}$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 16\text{V}$ , $V_{DS}=0\text{V}$			$\pm 10$	$\mu\text{A}$
Cutoff Voltage	$V_{GS(\text{off})}$	$V_{DS}=10\text{V}$ , $I_D=1\text{mA}$	2.5		3.5	V
Forward Transfer Admittance	$ Y_{fs} $	$V_{DS}=20\text{V}$ , $I_D=1\text{A}$	0.7	1.4		S
Static Drain-to-Source On-State Resistance	$R_{DS(\text{on})}$	$I_D=1\text{A}$ , $V_{GS}=10\text{V}$		10	13	$\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=30\text{V}$ , $f=1\text{MHz}$		380		pF
Output Capacitance	$C_{oss}$	$V_{DS}=30\text{V}$ , $f=1\text{MHz}$		70		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=30\text{V}$ , $f=1\text{MHz}$		40		pF
Turn-ON Delay Time	$t_d(\text{on})$	See specified Test Circuit.		12		ns
Rise Time	$t_r$	See specified Test Circuit.		37		ns
Turn-OFF Delay Time	$t_d(\text{off})$	See specified Test Circuit.		152		ns
Fall Time	$t_f$	See specified Test Circuit.		59		ns
Total Gate Charge	$Q_g$	$V_{DS}=200\text{V}$ , $V_{GS}=10\text{V}$ , $I_D=2\text{A}$		37.5		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=200\text{V}$ , $V_{GS}=10\text{V}$ , $I_D=2\text{A}$		2.7		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=200\text{V}$ , $V_{GS}=10\text{V}$ , $I_D=2\text{A}$		20		nC
Diode Forward Voltage	$V_{SD}$	$I_S=2\text{A}$ , $V_{GS}=0\text{V}$		0.88	1.2	V

Note) Although the protection diode is contained between gate and source, be careful of handling enough.

## Package Dimensions

unit : mm (typ)

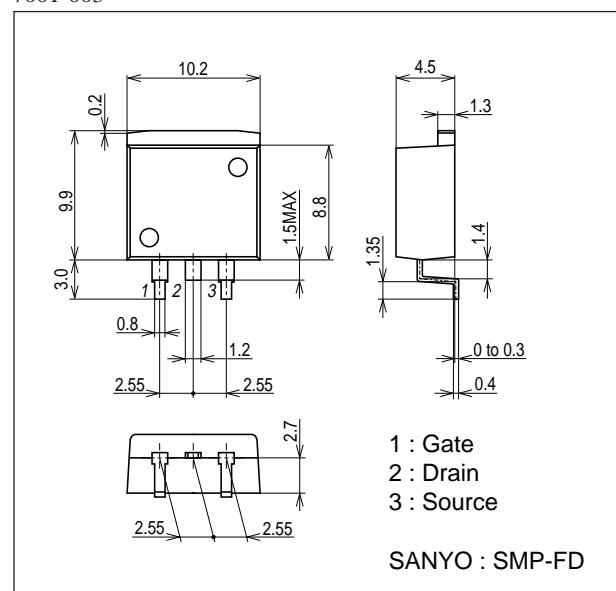
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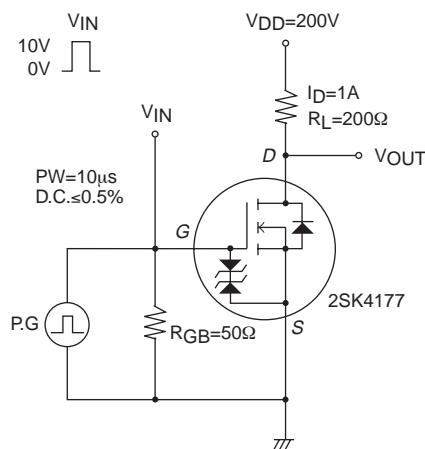
## Package Dimensions

unit : mm (typ)

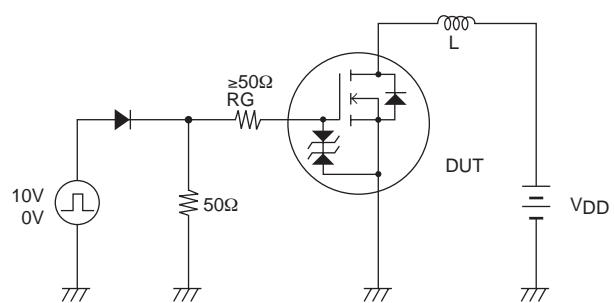
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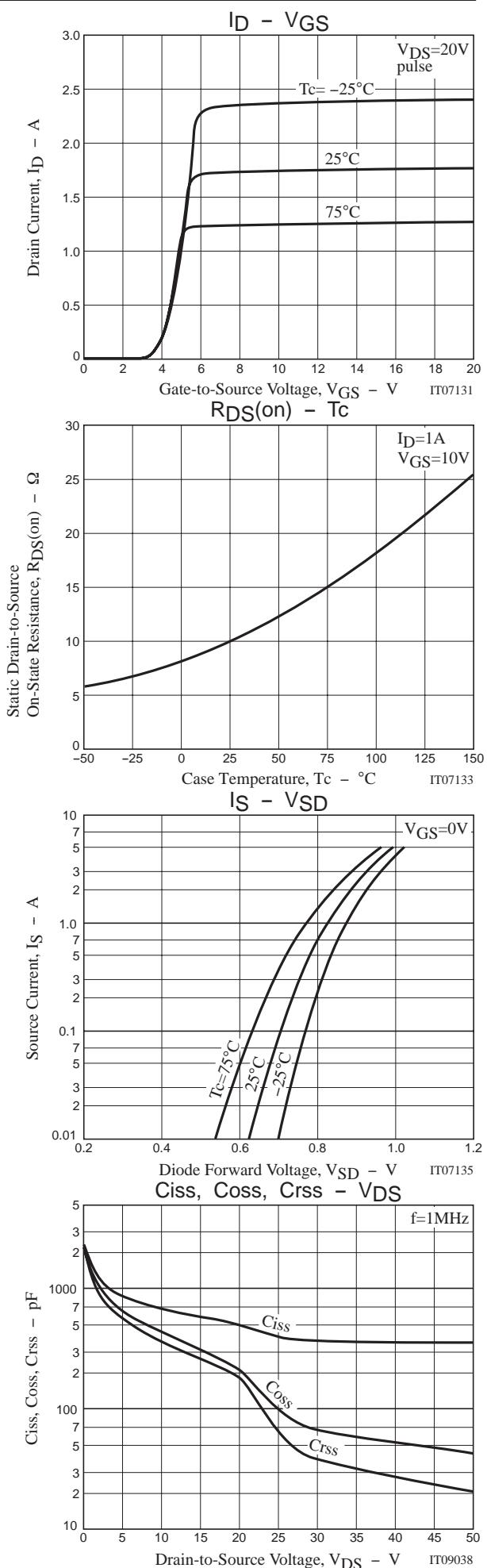
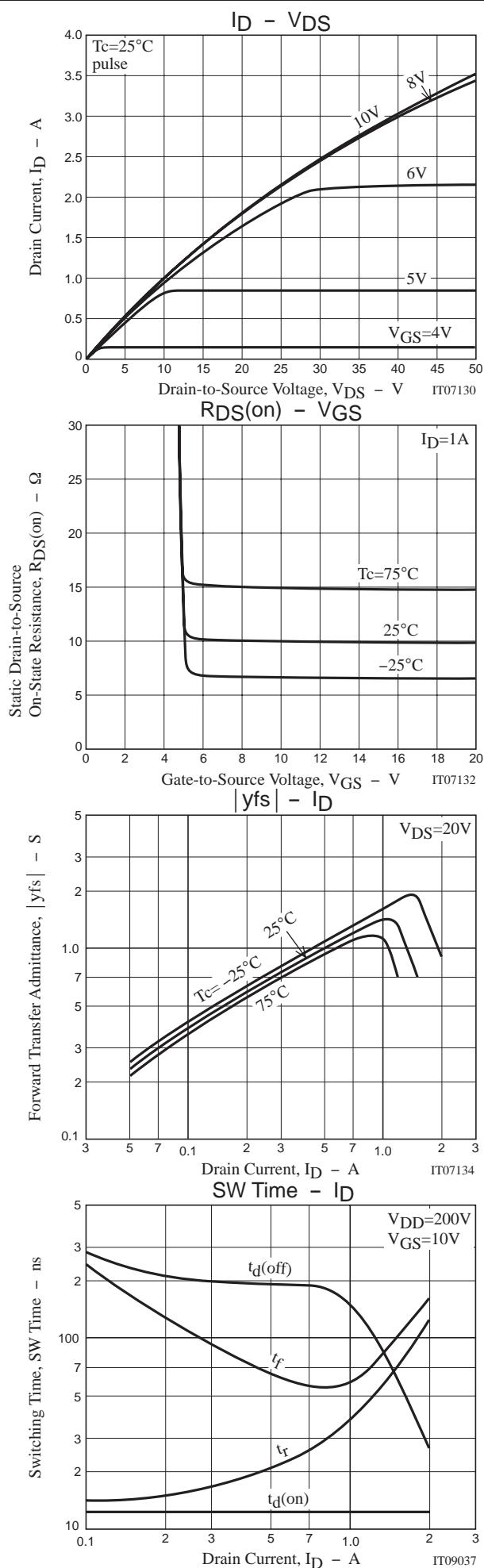


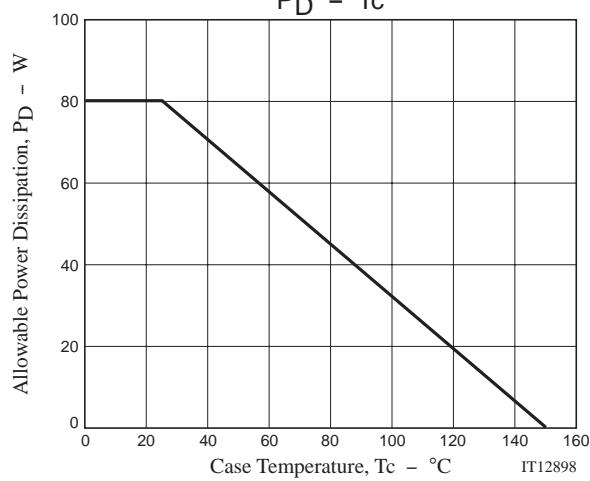
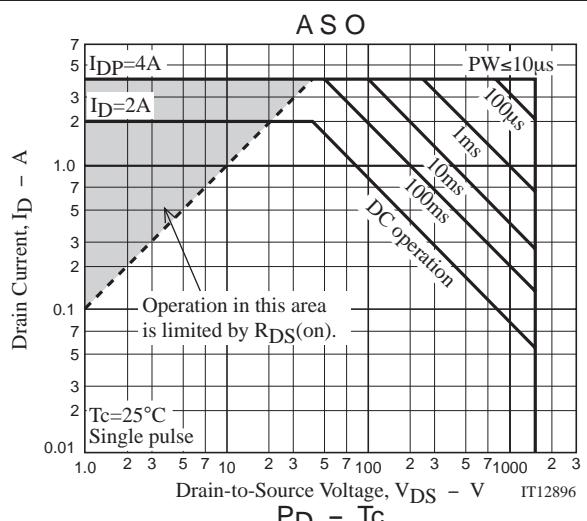
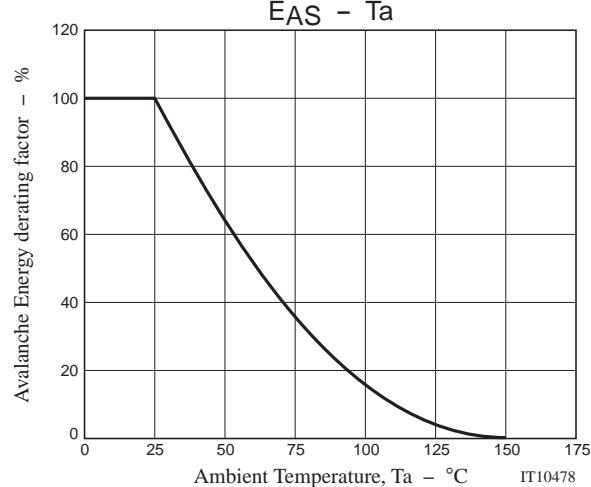
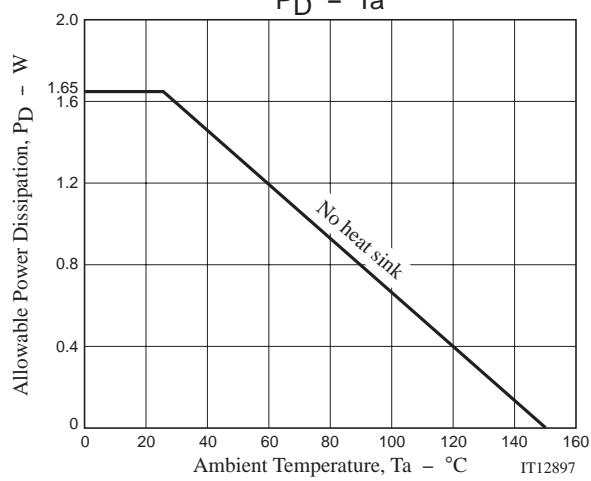
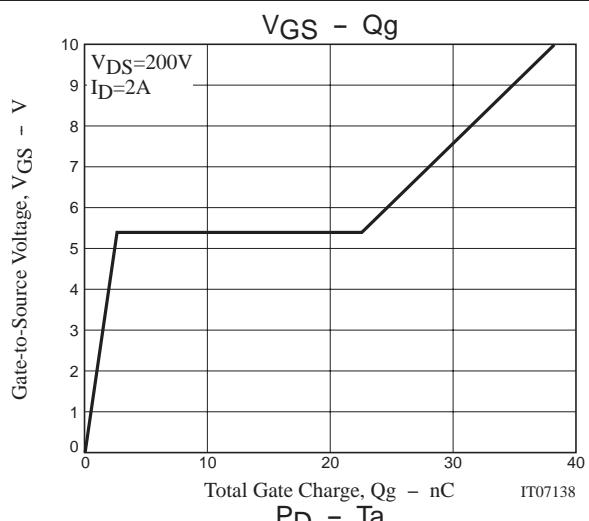
## Switching Time Test Circuit



## Avalanche Resistance Test Circuit







Note on usage : Since the 2SK4177 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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