Ordering number : ENA0869

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_{DSS}		1500	V
Gate-to-Source Voltage	V_{GSS}		±20	V
Drain Current (DC)	I_D		2	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	4	A
Allowable Power Dissipation	P_D		1.65	W
		Tc=25°C	80	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−55 to +150	°C
Avalanche Energy (Single Pulse) *1	E_{AS}		42	mJ
Avalanche Current *2	I_{AV}		2	A

*1 V_{DD}=99V, L=20mH, I_{AV}=2A

*2 L≤20mH, single pulse

Marking : K4177

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Electrical Characteristics at Ta=25°C

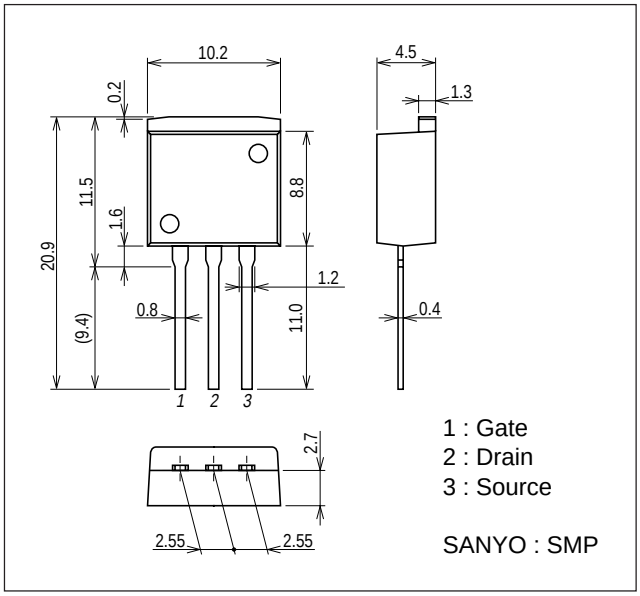
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=1mA, V_{GS}=0V	1500			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=1200V, V_{GS}=0V			100	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±16V, V_{DS}=0V			±10	μA
Cutoff Voltage	V_{GS}(off)	V_{DS}=10V, I_D=1mA	2.5		3.5	V
Forward Transfer Admittance	|yfs|	V_{DS}=20V, I_D=1A	0.7	1.4		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)	I_D=1A, V_{GS}=10V		10	13	Ω
Input Capacitance	Ciss	V_{DS}=30V, f=1MHz		380		pF
Output Capacitance	Coss	V_{DS}=30V, f=1MHz		70		pF
Reverse Transfer Capacitance	Crss	V_{DS}=30V, f=1MHz		40		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		12		ns
Rise Time	t_r	See specified Test Circuit.		37		ns
Turn-OFF Delay Time	t_d(off)	See specified Test Circuit.		152		ns
Fall Time	t_f	See specified Test Circuit.		59		ns
Total Gate Charge	Qg	V_{DS}=200V, V_{GS}=10V, I_D=2A		37.5		nC
Gate-to-Source Charge	Qgs	V_{DS}=200V, V_{GS}=10V, I_D=2A		2.7		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=200V, V_{GS}=10V, I_D=2A		20		nC
Diode Forward Voltage	V_{SD}	I_S=2A, V_{GS}=0V		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)

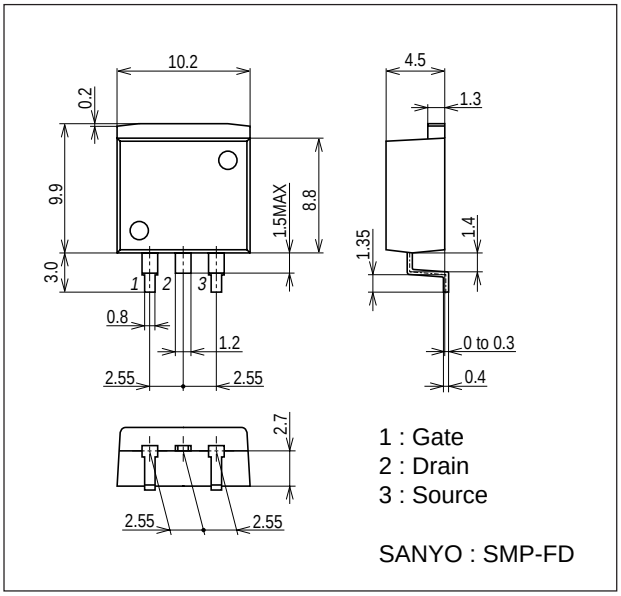
7513-002



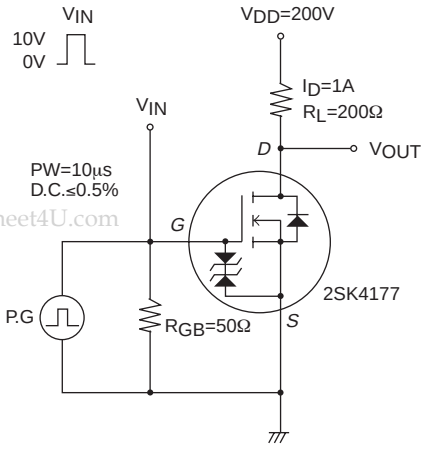
Package Dimensions

unit : mm (typ)

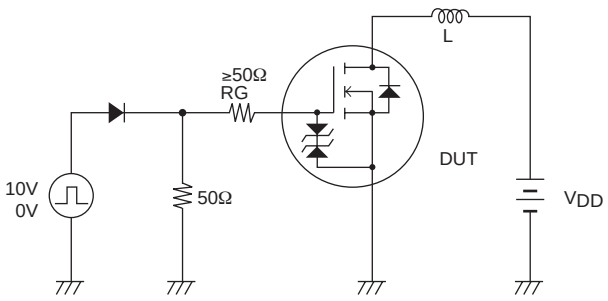
7001-003

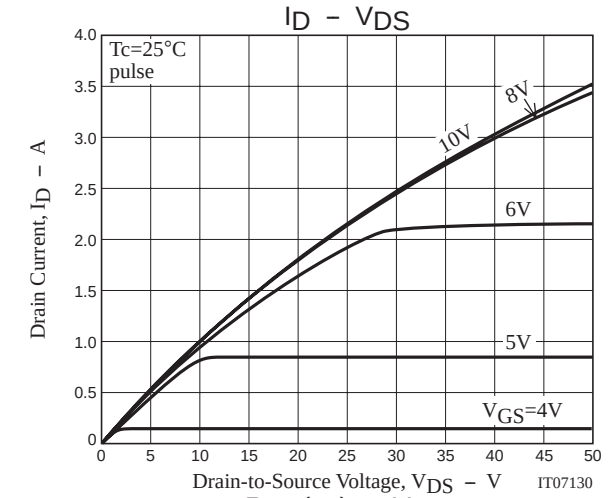


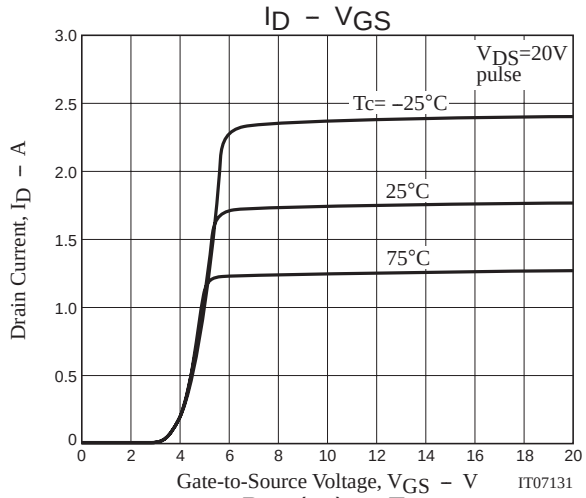
Switching Time Test Circuit

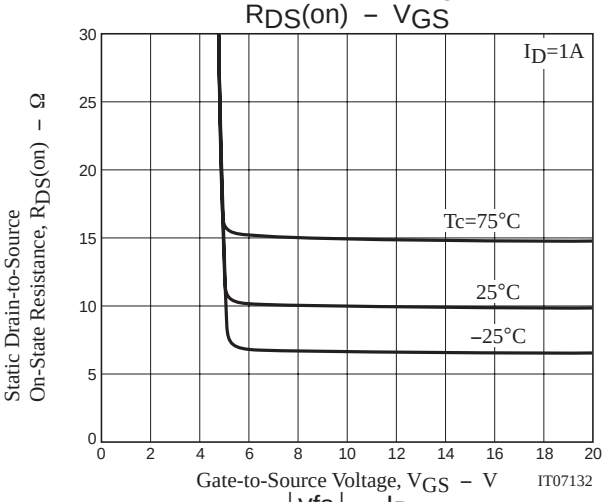


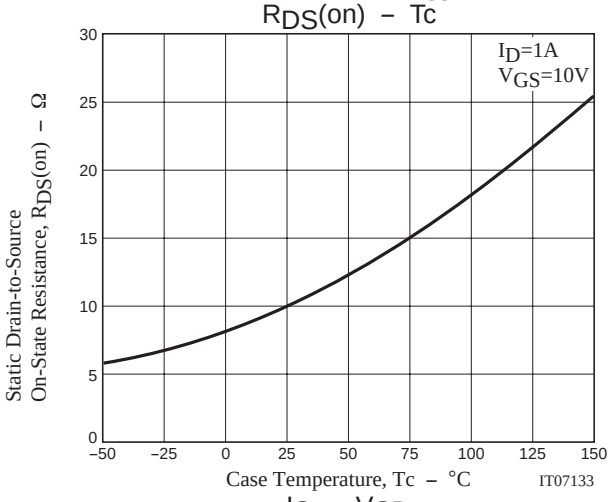
Avalanche Resistance Test Circuit

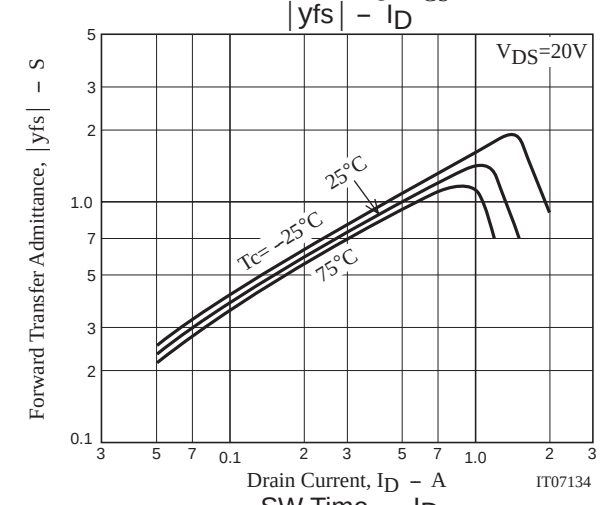


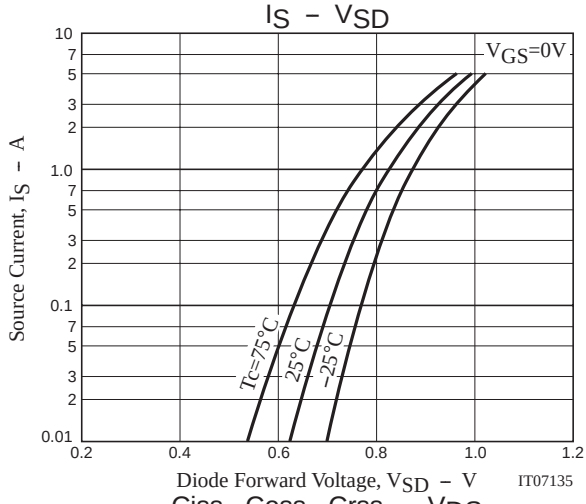


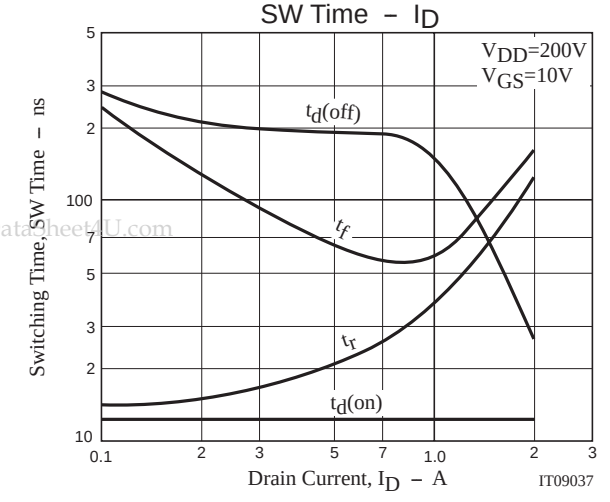


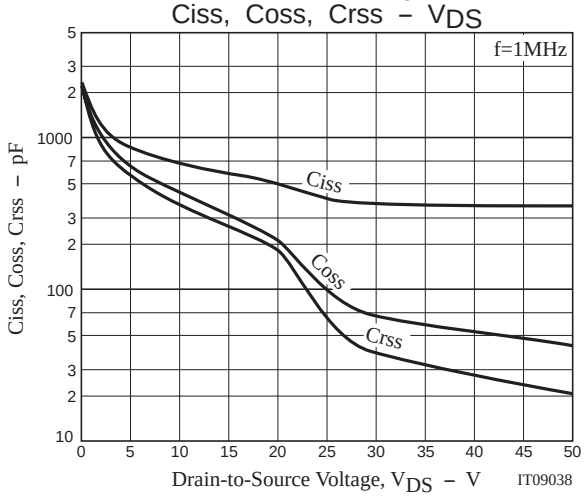


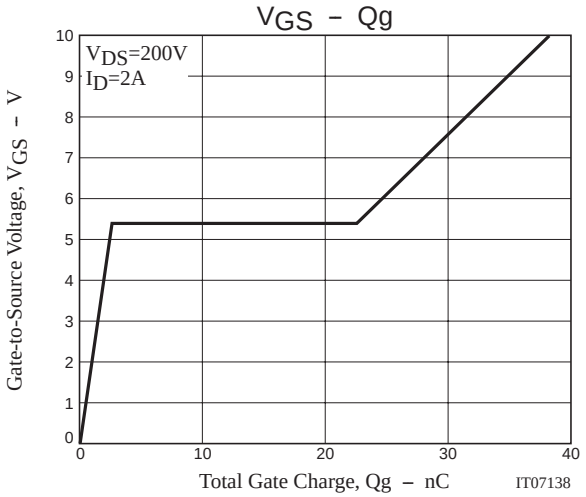


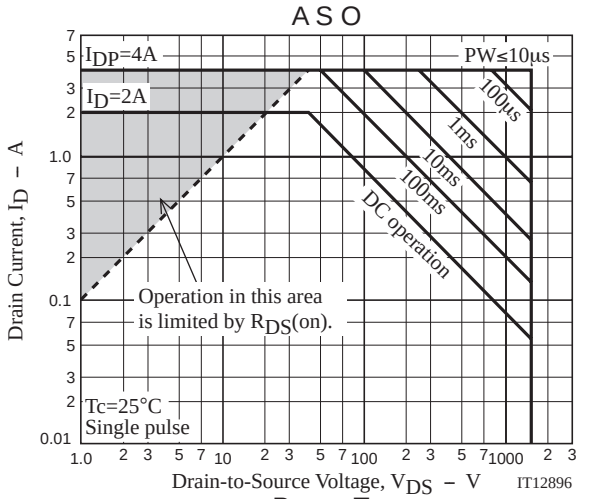


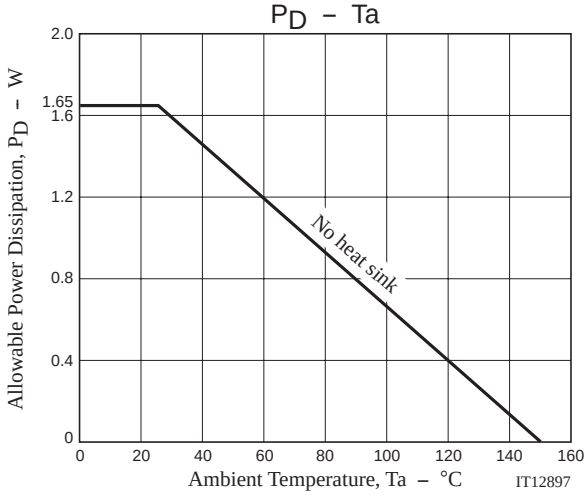


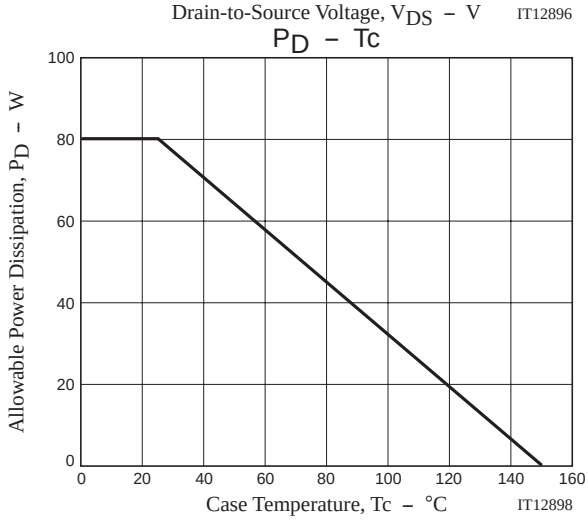


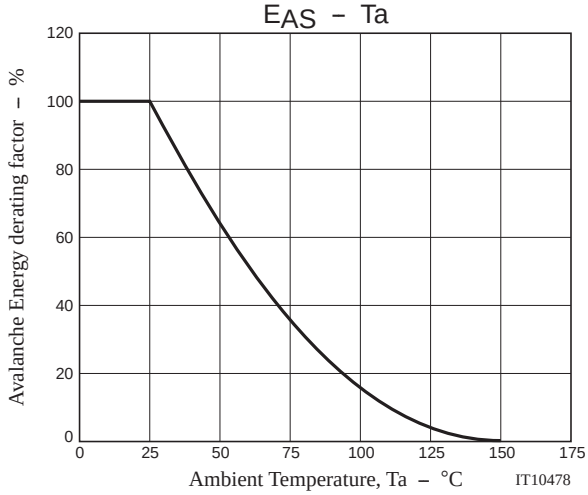












Note on usage : Since the 2SK4177 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

This catalog provides information as of March, 2008. Specifications and information herein are subject to change without notice.