Ordering number : ENA1269

SANYO Semiconductors
DATA SHEET

N-Channel Silicon MOSFET

2SK4179 — General-Purpose Switching Device Applications

Features

- Low ON-resistance.
- Motor drive.
- Avalanche resistance guarantee.
- 10V drive.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		75	V
Gate-to-Source Voltage	V_{GSS}		±20	V
Drain Current (DC)	I_D		80	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	320	A
Allowable Power Dissipation	P_D		1.75	W
		Tc=25°C	70	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		-55 to +150	°C
Avalanche Energy (Single pulse) *1	E_{AS}		100	mJ
Avalanche Current *2	I_{AV}		48	A

Note : *1 V_{DD}=30V, L=50μH, I_{AV}=48A
*2 L≤50μH, Single pulse

Marking : K4179

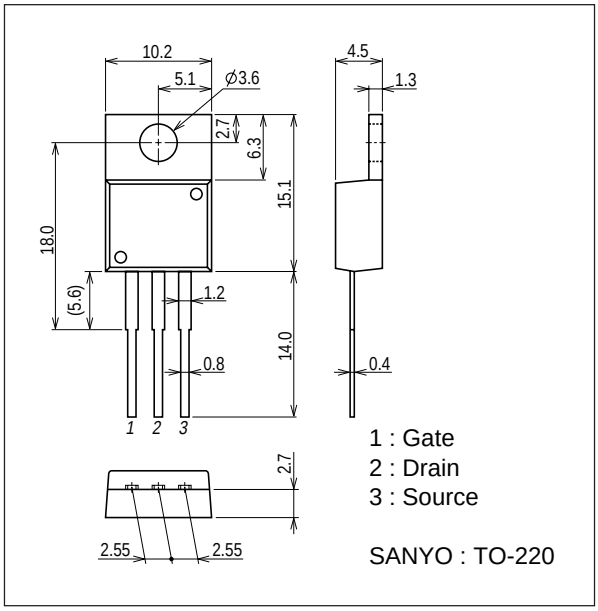
Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=1mA, V_{GS}=0V	75			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=75V, V_{GS}=0V			1	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		4	V
Forward Transfer Admittance	|yfs|	V_{DS}=10V, I_D=40A	21	35		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)	I_D=40A, V_{GS}=10V		10.5	13.7	mΩ
Input Capacitance	Ciss	V_{DS}=20V, f=1MHz		5400		pF
Output Capacitance	Coss	V_{DS}=20V, f=1MHz		480		pF
Reverse Transfer Capacitance	Crss	V_{DS}=20V, f=1MHz		350		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		62		ns
Rise Time	t_r	See specified Test Circuit.		335		ns
Turn-OFF Delay Time	t_d(off)	See specified Test Circuit.		220		ns
Fall Time	t_f	See specified Test Circuit.		160		ns
Total Gate Charge	Qg	V_{DS}=30V, V_{GS}=10V, I_D=80A		100		nC
Gate-to-Source Charge	Qgs	V_{DS}=30V, V_{GS}=10V, I_D=80A		30		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=30V, V_{GS}=10V, I_D=80A		28		nC
Diode Forward Voltage	V_{SD}	I_S=80A, V_{GS}=0V		1.07	1.5	V

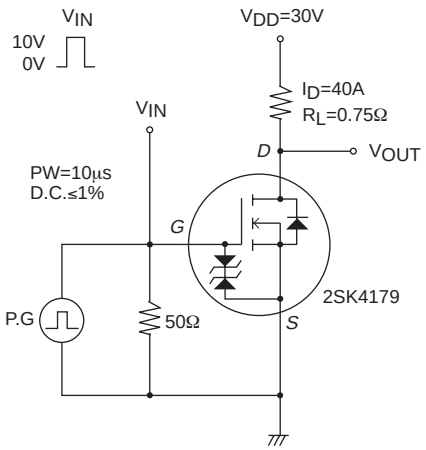
Package Dimensions

unit : mm (typ)

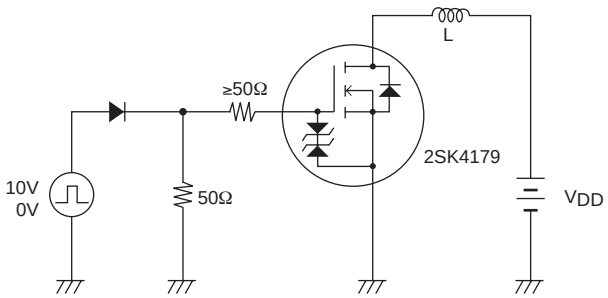
7507-002

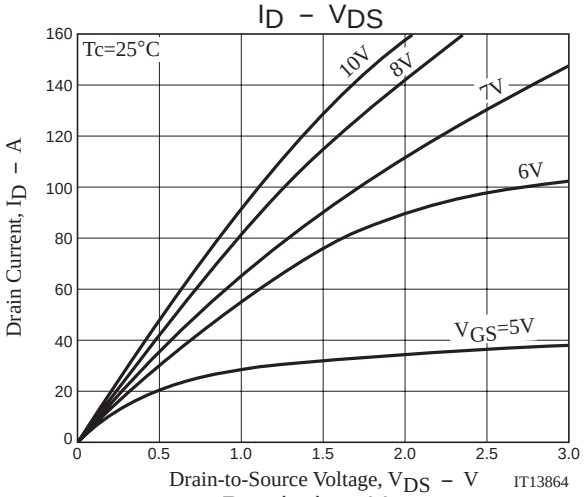


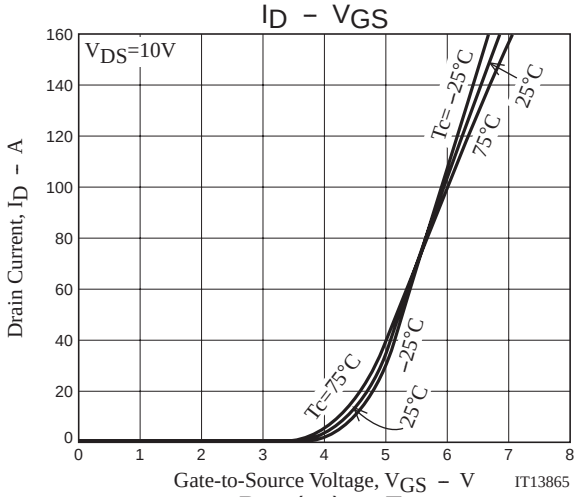
Switching Time Test Circuit

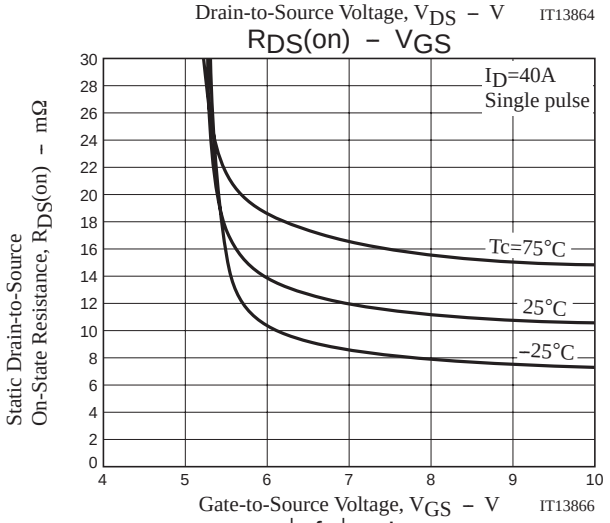


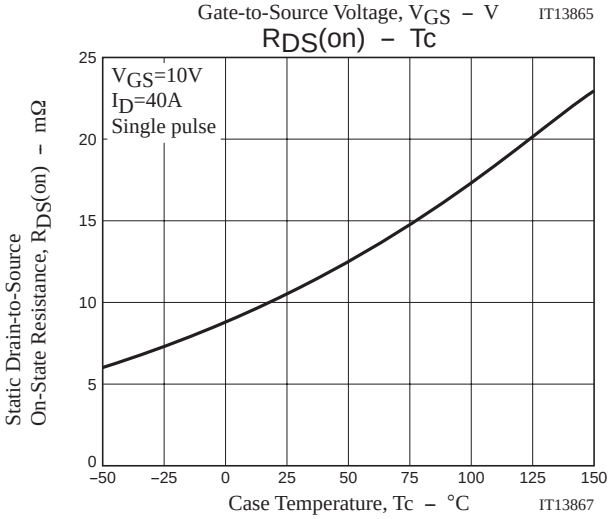
Avalanche Resistance Test Circuit

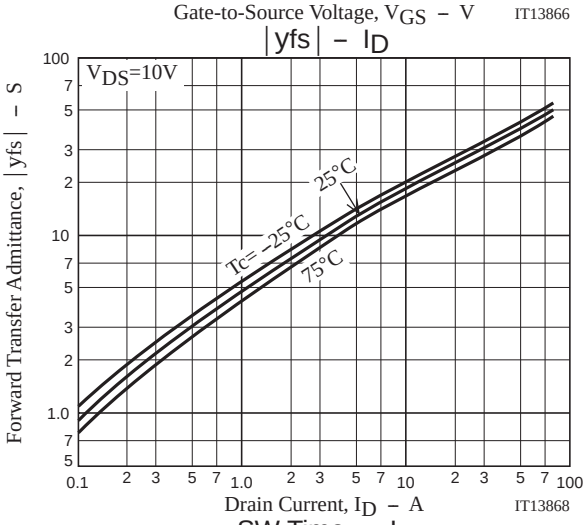


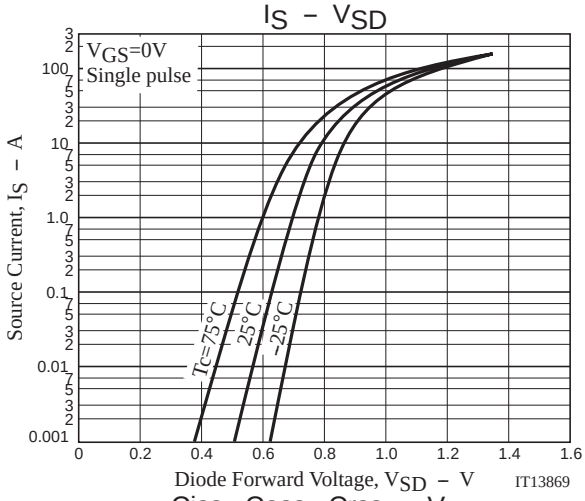

ID – VDS
Tc=25°C
10V
8V
7V
6V
VGS=5V
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT13864

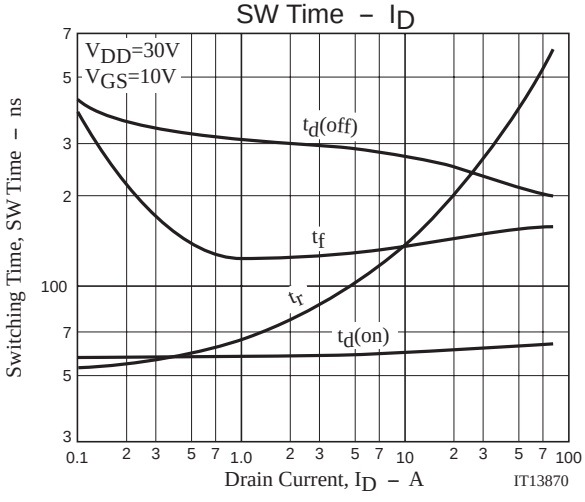

ID – VGS
VDS=10V
Tc=–25°C
25°C
75°C
Tc=75°C
–25°C
25°C
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
IT13865

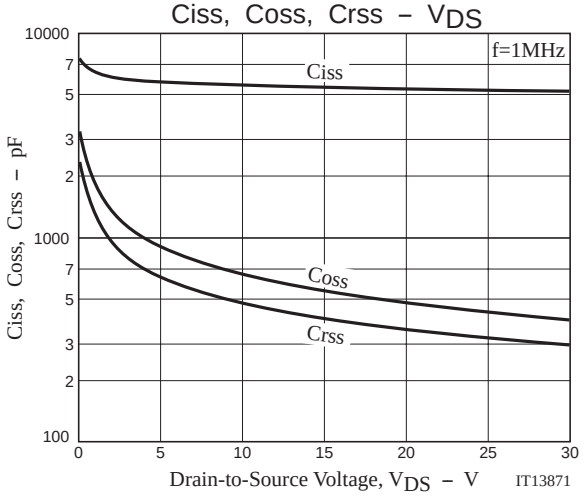

RDS(on) – VGS
ID=40A
Single pulse
Tc=75°C
25°C
–25°C
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT13866

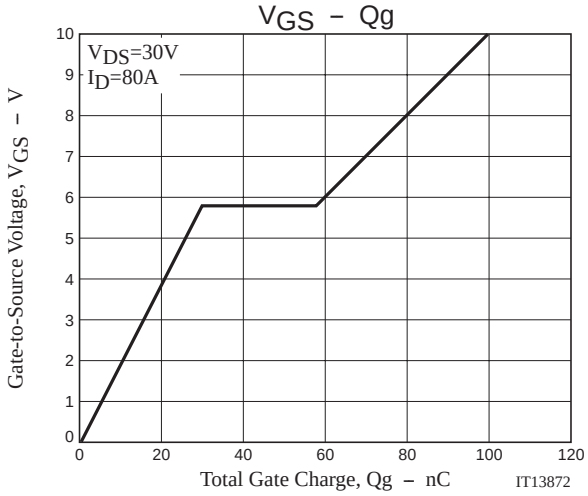

RDS(on) – Tc
VGS=10V
ID=40A
Single pulse
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Case Temperature, Tc – °C
IT13867

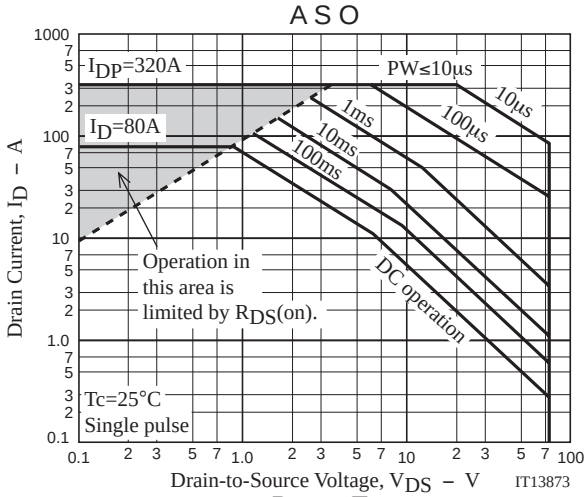

|yfs| – ID
VDS=10V
25°C
Tc=–25°C
75°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT13868

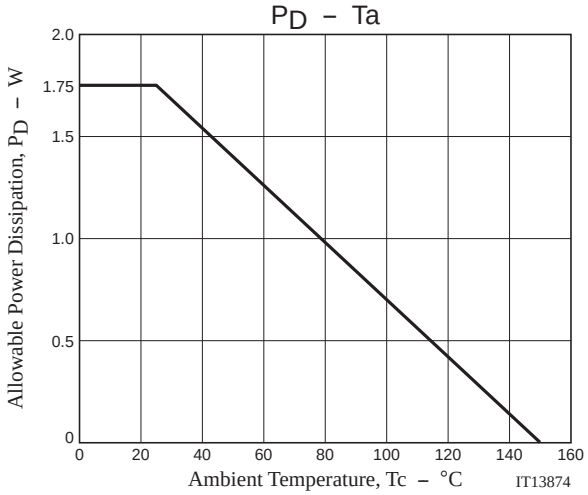

IS – VSD
VGS=0V
Single pulse
Tc=75°C
25°C
–25°C
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT13869

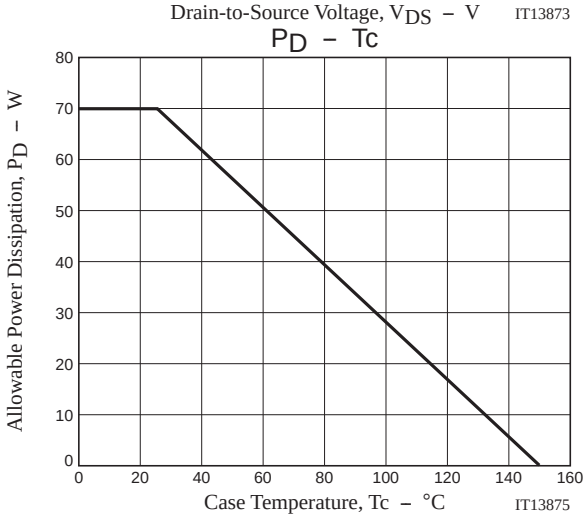

SW Time – ID
VDD=30V
VGS=10V
td(off)
tf
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT13870

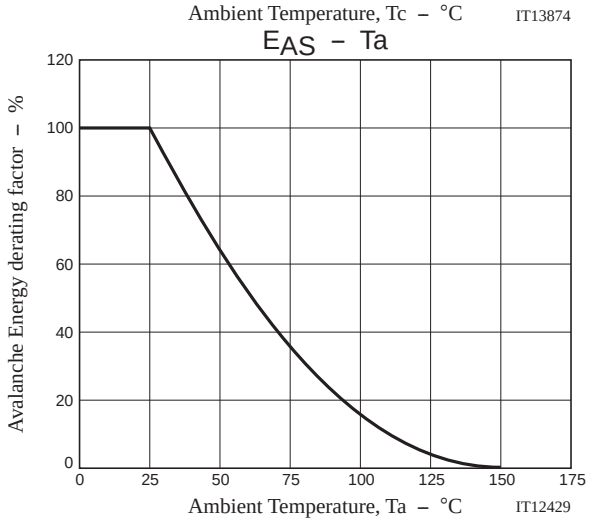

Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT13871


VGS – Qg
VDS=30V
ID=80A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT13872


A S O
IDP=320A
PW≤10μs
ID=80A
1ms
10μs
100μs
10ms
100ms
DC operation
Operation in this area is limited by RDS(on).
Tc=25°C
Single pulse
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT13873


PD – Ta
Allowable Power Dissipation, PD – W
Ambient Temperature, Tc – °C
IT13874


PD – Tc
Allowable Power Dissipation, PD – W
Case Temperature, Tc – °C
IT13875


EAS – Ta
Avalanche Energy derating factor – %
Ambient Temperature, Ta – °C
IT12429

Note on usage : Since the 2SK4179 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.