Ordering number : ENA1289

SANYO Semiconductors

DATA SHEET

N-Channel Silicon MOSFET

2SK4203LS — General-Purpose Switching Device Applications

Features

- 4V drive.
- Avalanche resistance guarantee.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		45	V
Gate-to-Source Voltage	V_{GSS}		±20	V
Drain Current (DC)	I_D		18	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	72	A
Allowable Power Dissipation	P_D		2.0	W
		Tc=25°C	22	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−55 to +150	°C
Avalanche Energy (Single Pulse) *1	E_{AS}		28	mJ
Avalanche Current *2	I_{AV}		18	A

Note :*1 V_{DD}=20V, L=100μH, I_{AV}=18A
*2 L≤100μH, Single pulse

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	45			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=45V, 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	1.2		2.6	V

Marking : K4203

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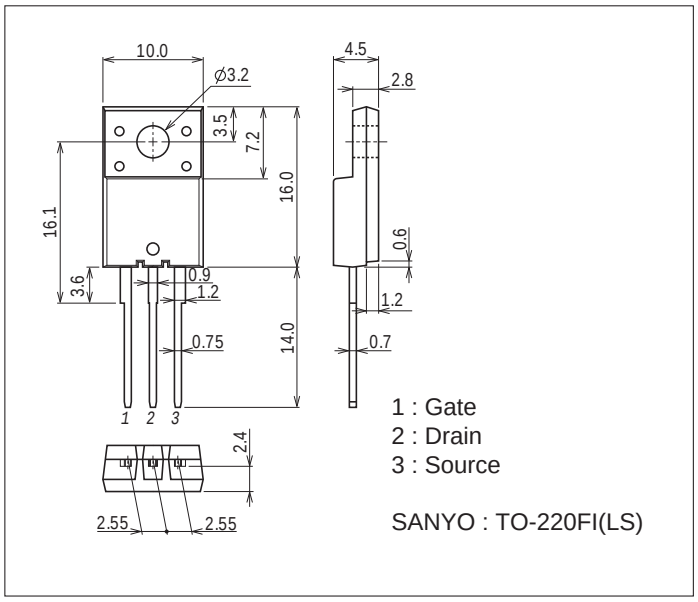
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Forward Transfer Admittance	| yfs |	V_{DS}=10V, I_D=9A	5.4	9.0		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=9A, V_{GS}=10V		26	34	mΩ
	R_{DS}(on)2	I_D=9A, V_{GS}=4V		46	64	mΩ
Input Capacitance	Ciss	V_{DS}=20V, f=1MHz		1020		pF
Output Capacitance	Coss	V_{DS}=20V, f=1MHz		140		pF
Reverse Transfer Capacitance	Crss	V_{DS}=20V, f=1MHz		100		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		12		ns
Rise Time	t_r	See specified Test Circuit.		71		ns
Turn-OFF Delay Time	t_d(off)	See specified Test Circuit.		76		ns
Fall Time	t_f	See specified Test Circuit.		59		ns
Total Gate Charge	Qg	V_{DS}=24V, V_{GS}=10V, I_D=18A		21		nC
Gate-to-Source Charge	Qgs	V_{DS}=24V, V_{GS}=10V, I_D=18A		4		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=24V, V_{GS}=10V, I_D=18A		5		nC
Diode Forward Voltage	V_{SD}	I_S=18A, V_{GS}=0V		1.0	1.2	V

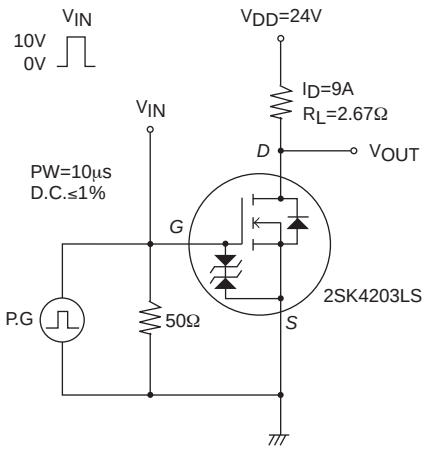
Package Dimensions

unit : mm (typ)

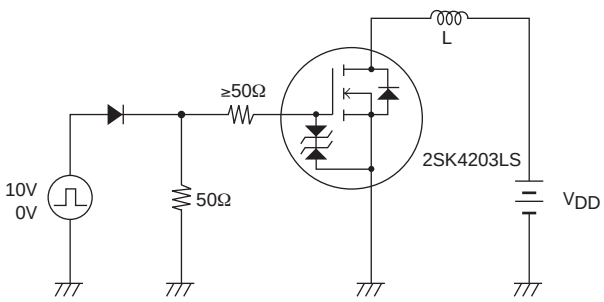
7509-002

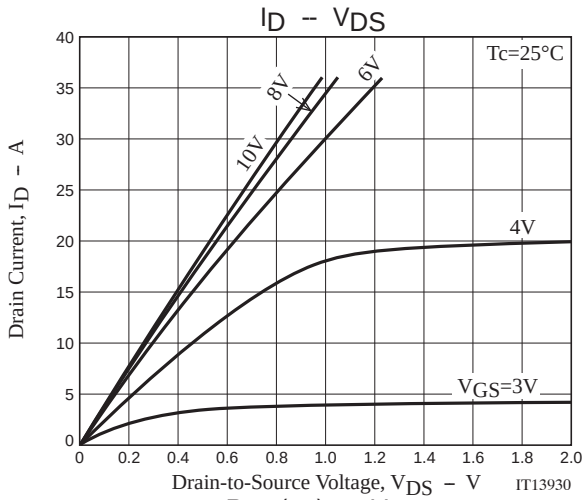


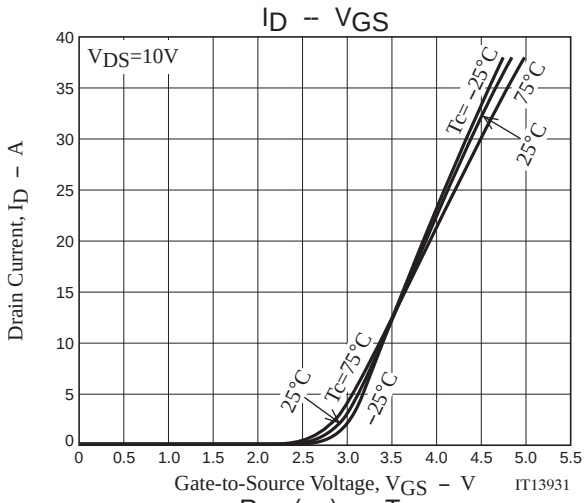
Switching Time Test Circuit

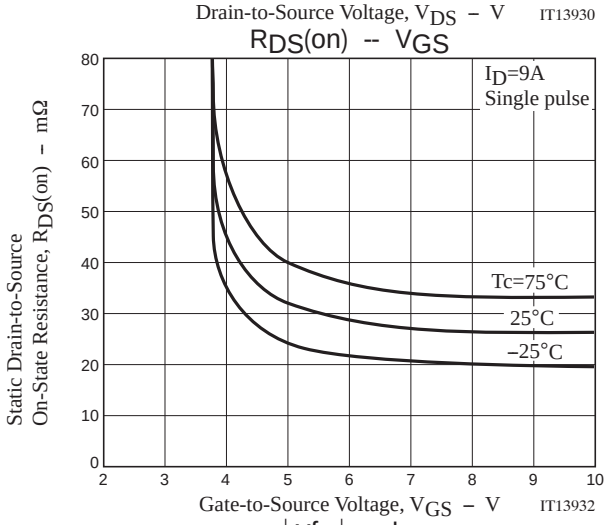


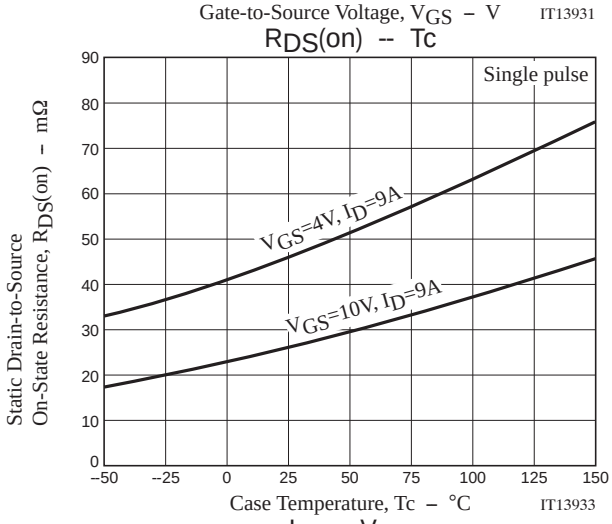
Avalanche Resistance Test Circuit

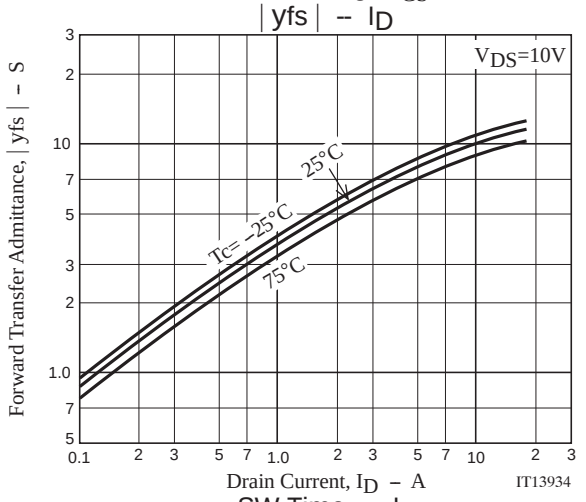


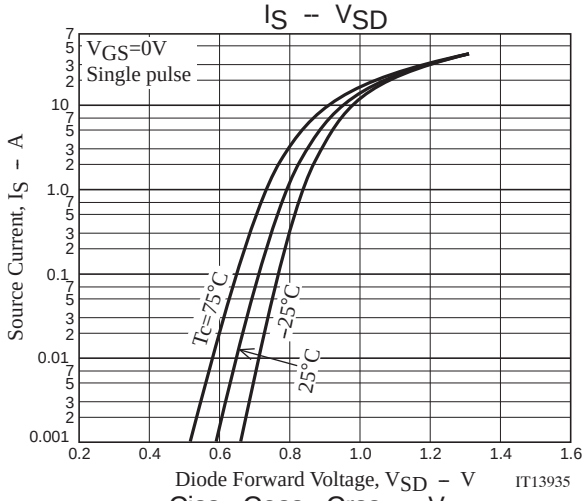

ID -- VDS
Tc=25°C
10V
8V
6V
4V
VGS=3V
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT13930

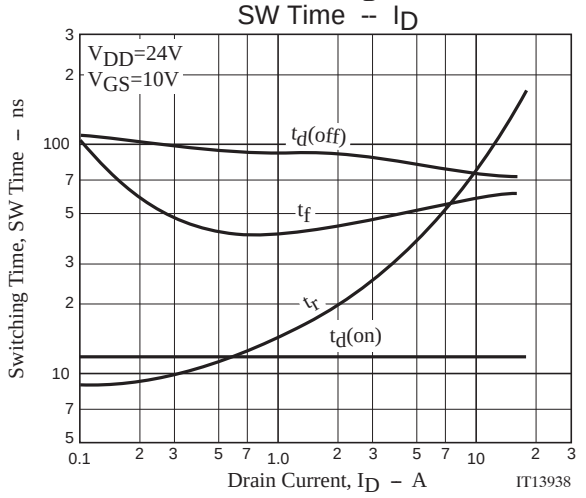

ID -- VGS
VDS=10V
Tc=–25°C
75°C
25°C
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
IT13931

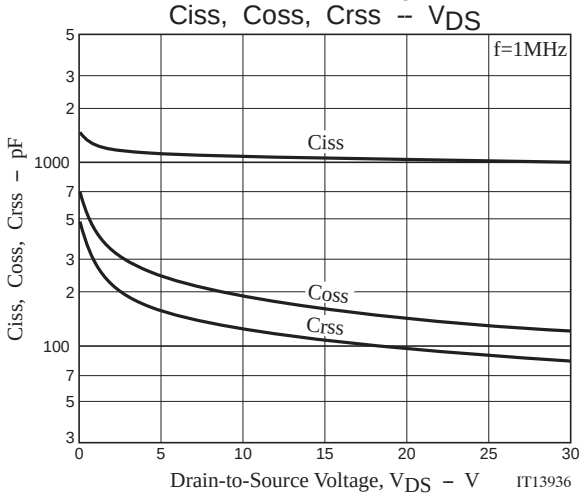

RDS(on) -- VGS
ID=9A
Single pulse
Tc=75°C
25°C
–25°C
Static Drain-to-Source
On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT13932

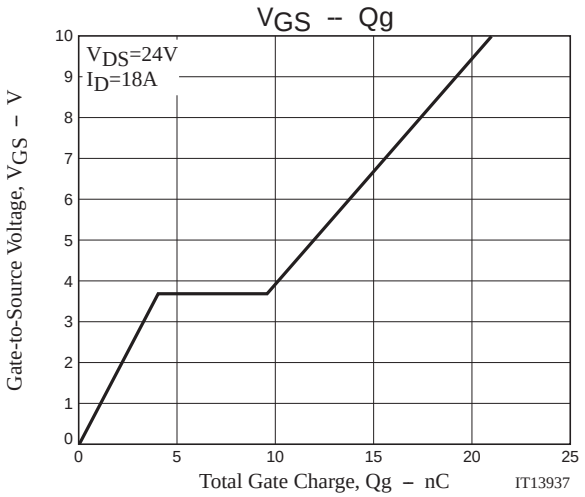

RDS(on) -- Tc
Single pulse
VGS=4V, ID=9A
VGS=10V, ID=9A
Static Drain-to-Source
On-State Resistance, RDS(on) – mΩ
Case Temperature, Tc – °C
IT13933

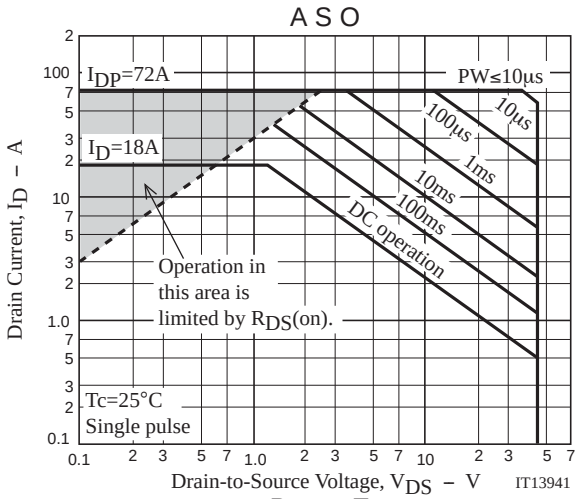

| yfs | -- ID
VDS=10V
25°C
Tc=–25°C
75°C
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
IT13934

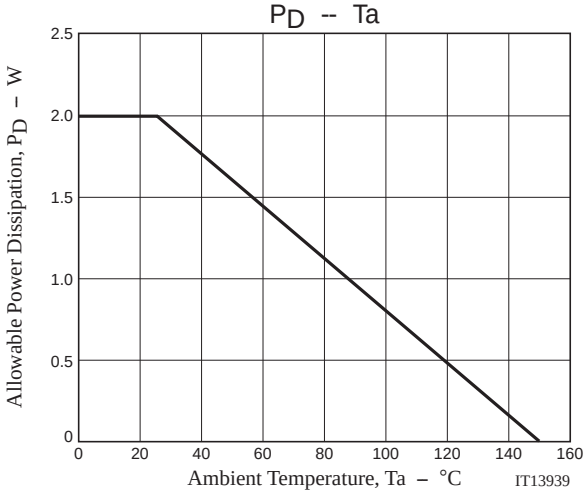

IS -- VSD
VGS=0V
Single pulse
Tc=75°C
–25°C
25°C
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT13935

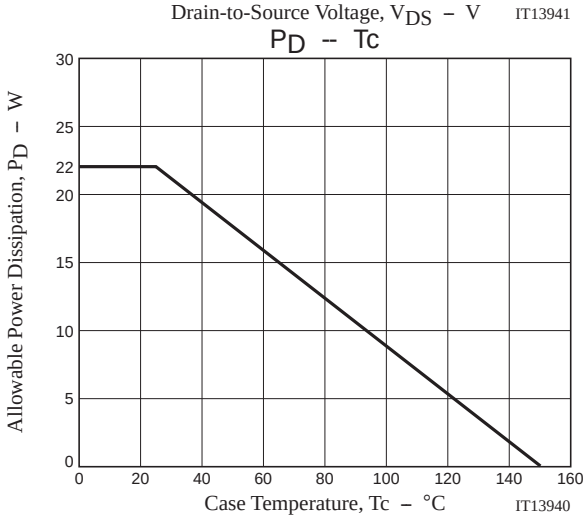

SW Time -- ID
VDD=24V
VGS=10V
td(off)
tf
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT13938

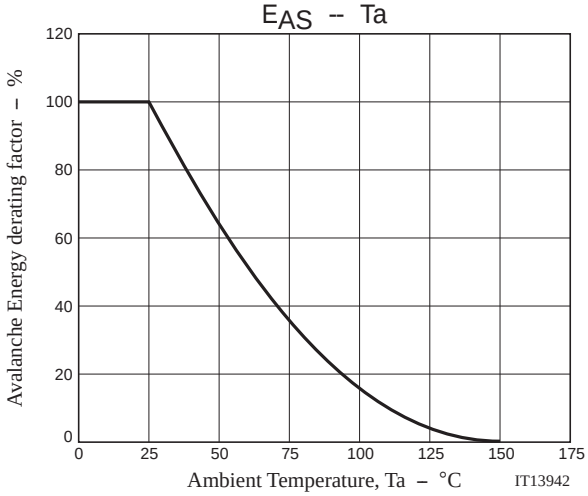

Ciss, Coss, Crss -- VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT13936


VGS – Qg
VDS=24V
ID=18A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT13937


A S O
IDP=72A
PW≤10μs
ID=18A
10μs
100μs
1ms
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
IT13941


PD -- Ta
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT13939


PD -- Tc
Allowable Power Dissipation, PD – W
Case Temperature, Tc – °C
IT13940


EAS -- Ta
Avalanche Energy derating factor – %
Ambient Temperature, Ta – °C
IT13942

Note on usage : Since the 2SK4203LS is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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