Ordering number : ENA0823

SANYO Semiconductors

DATA SHEET

N-Channel Silicon MOSFET

2SK4120LS — General-Purpose Switching Device Applications

Features

- Low ON-resistance, low input capacitance, ultrahigh-speed switching.
- Adoption of high reliability HVP process.
- Attachment workability is good by Mica-less package.
- Avalanche resistance guarantee.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		450	V
Gate-to-Source Voltage	V_{GSS}		±30	V
Drain Current (DC)	I_{Dc}*1	Limited only by maximum temperature	10	A
	I_{Dpack}*2	SANYO's ideal heat dissipation condition	7.9	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	34	A
Allowable Power Dissipation	P_D		2.0	W
		Tc=25°C (SANYO's ideal heat dissipation condition)	33	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−55 to +150	°C
Avalanche Energy (Single Pulse) *3	E_{AS}		318	mJ
Avalanche Current *4	I_{AV}		10	A

*1 Shows chip capability

*2 Package limited

*3 V_{DD}=99V, L=5mH, I_{AV}=10A

*4 L≤5mH, single pulse

Marking : K4120

SANYO Semiconductor Co., Ltd.

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

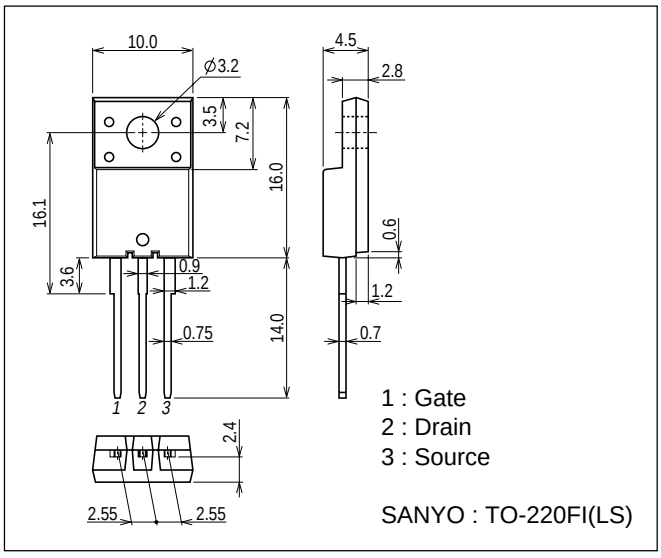
Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=10mA, V_{GS}=0V	450			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=360V, V_{GS}=0V			100	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±30V, V_{DS}=0V			±100	nA
Cutoff Voltage	$V_{GS}(off)$	V_{DS}=10V, I_D=1mA	3		5	V
Forward Transfer Admittance	$\|yfs\|$	V_{DS}=10V, I_D=5A	2.4	4.8		S
Static Drain-to-Source On-State Resistance	$R_{DS}(on)$	I_D=5A, V_{GS}=10V		0.52	0.68	Ω
Input Capacitance	Ciss	V_{DS}=30V, f=1MHz		630		pF
Output Capacitance	Coss	V_{DS}=30V, f=1MHz		140		pF
Reverse Transfer Capacitance	Crss	V_{DS}=30V, f=1MHz		32		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		18		ns
Rise Time	t_r	See specified Test Circuit.		54		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		73		ns
Fall Time	t_f	See specified Test Circuit.		32		ns
Total Gate Charge	Qg	V_{DS}=200V, V_{GS}=10V, I_D=10A		24		nC
Gate-to-Source Charge	Qgs	V_{DS}=200V, V_{GS}=10V, I_D=10A		4.5		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=200V, V_{GS}=10V, I_D=10A		15		nC
Diode Forward Voltage	V_{SD}	I_S=10A, V_{GS}=0V		0.9	1.2	V

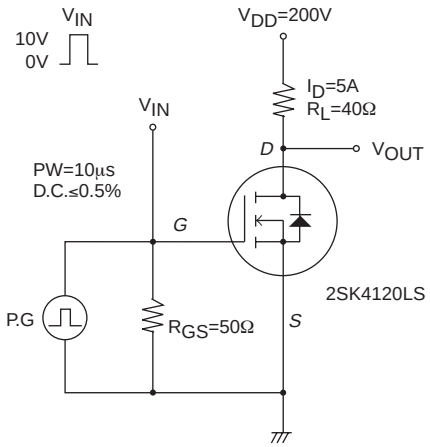
Package Dimensions

unit : mm (typ)

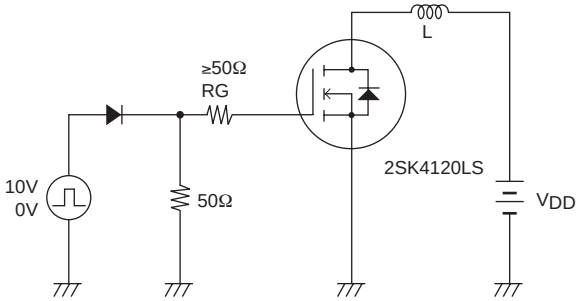
7509-002

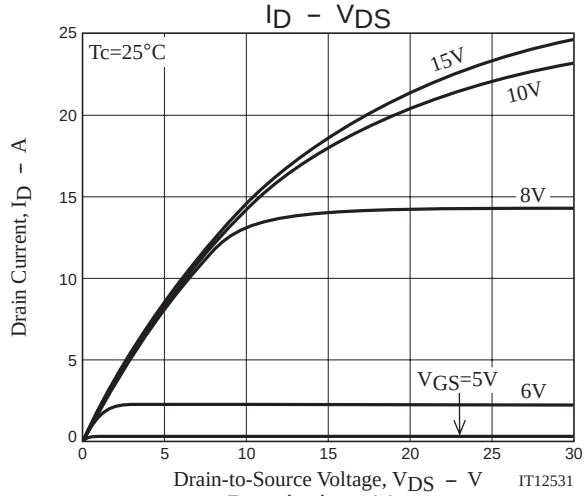


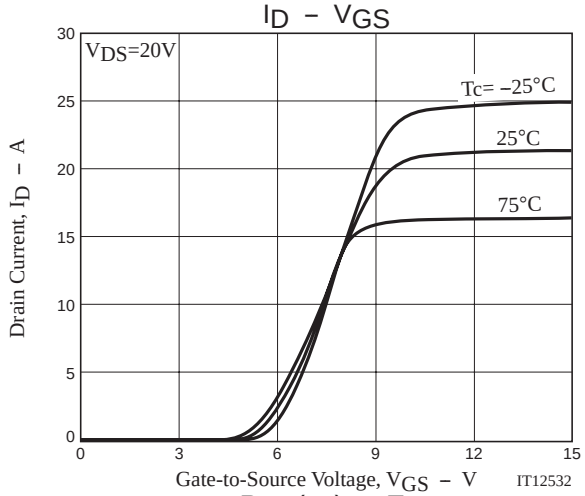
Switching Time Test Circuit

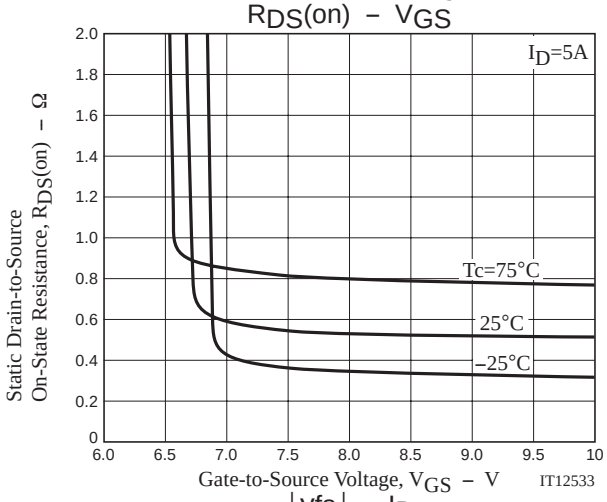


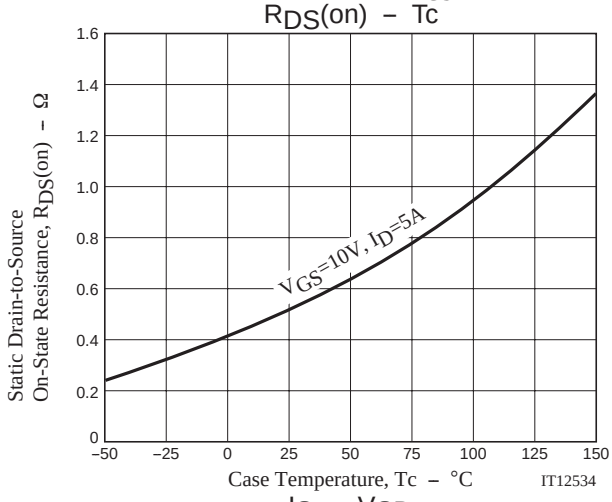
Avalanche Resistance Test Circuit

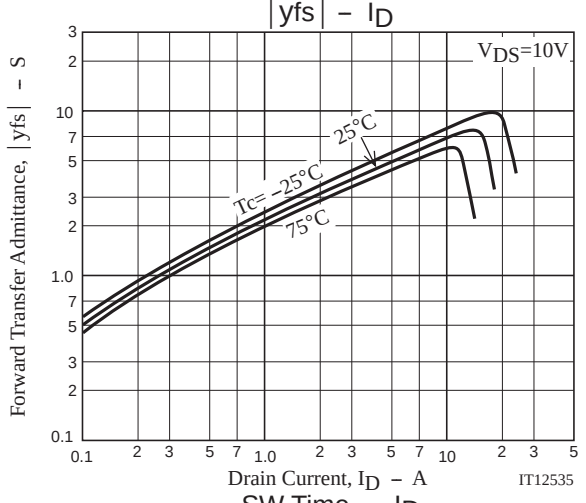


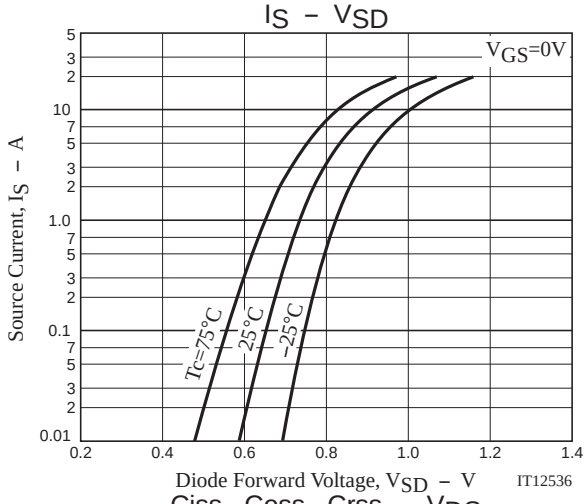

ID – VDS
Tc=25°C
15V
10V
8V
6V
VGS=5V
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT12531

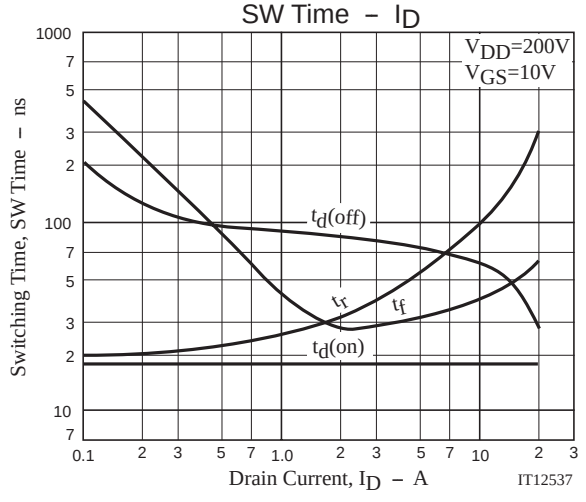

ID – VGS
VDS=20V
Tc= –25°C
25°C
75°C
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
IT12532

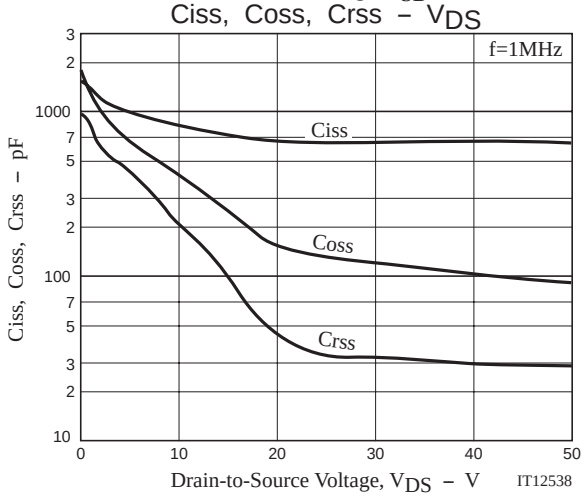

RDS(on) – VGS
ID=5A
Tc=75°C
25°C
–25°C
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Gate-to-Source Voltage, VGS – V
IT12533

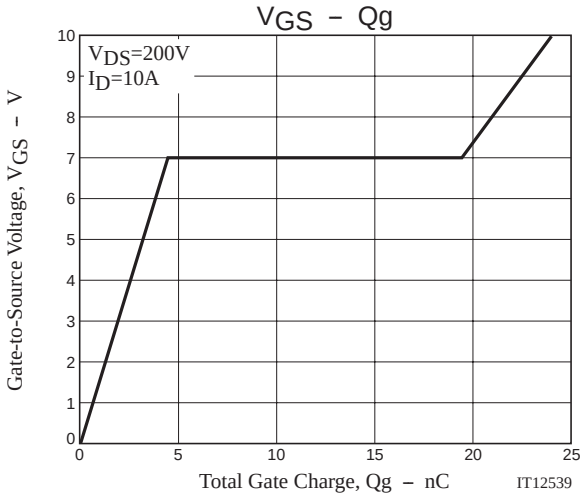

RDS(on) – Tc
VGS=10V, ID=5A
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Case Temperature, Tc – °C
IT12534

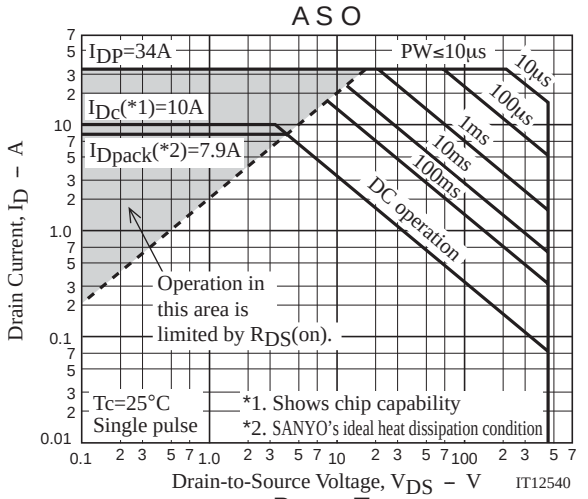

|yfs| – ID
VDS=10V
25°C
Tc= –25°C
75°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT12535

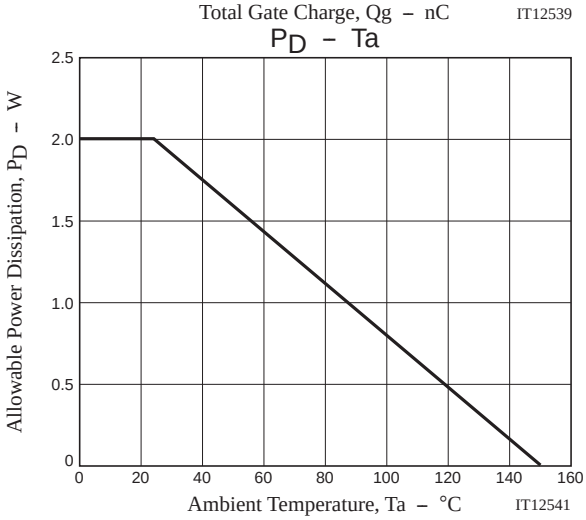

IS – VSD
VGS=0V
Tc=75°C
25°C
–25°C
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT12536

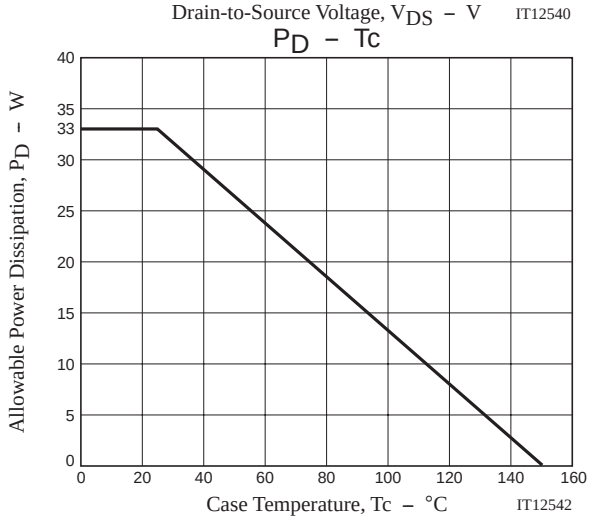

SW Time – ID
VDD=200V
VGS=10V
td(off)
tf
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT12537


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT12538









Note on usage : Since the 2SK4120LS is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

This catalog provides information as of July, 2007. Specifications and information herein are subject to change without notice.