Ordering number : ENA1203

SANYO Semiconductors

DATA SHEET

N-Channel Silicon MOSFET

2SK4074LS — General-Purpose Switching Device Applications

Features

- Ultralow ON-resistance.
- Motor drive.
- Avalanche resistance guarantee.

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		76	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	304	A
Allowable Power Dissipation	P_D		2.0	W
		Tc=25°C	40	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−55 to +150	°C
Avalanche Energy (Single Pulse) *1	E_{AS}		680	mJ
Avalanche Current *2	I_{AV}		65	A

Note : *1 V_{DD}=30V, L=200μH, I_{AV}=65A

*2 L≤200μH, Single pulse

Marking : K4074

SANYO Semiconductor Co., Ltd.

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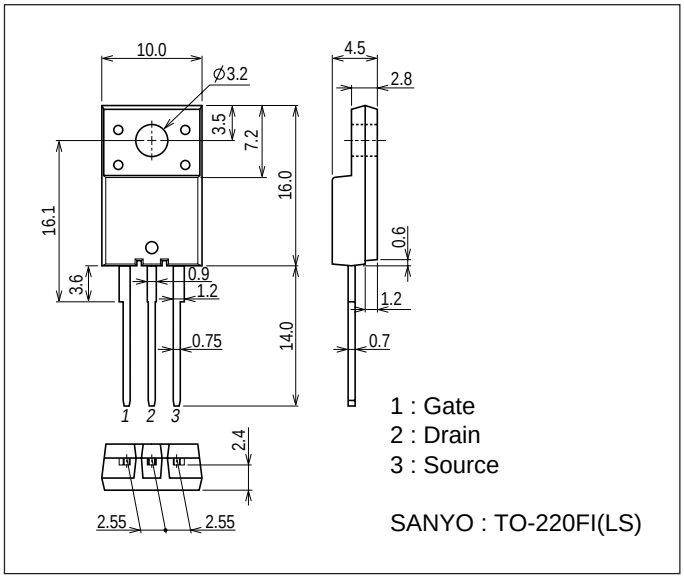
Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=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	1.2		2.6	V
Forward Transfer Admittance	|yfs|	V_{DS}=10V, I_D=38A	44	73		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=38A, V_{GS}=10V		5.2	6.8	mΩ
	R_{DS}(on)2	I_D=38A, V_{GS}=4V		6.2	8.7	mΩ
Input Capacitance	Ciss	V_{DS}=20V, f=1MHz		12200		pF
Output Capacitance	Coss	V_{DS}=20V, f=1MHz		950		pF
Reverse Transfer Capacitance	Crss	V_{DS}=20V, f=1MHz		730		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		80		ns
Rise Time	t_r	See specified Test Circuit.		450		ns
Turn-OFF Delay Time	t_d(off)	See specified Test Circuit.		900		ns
Fall Time	t_f	See specified Test Circuit.		600		ns
Total Gate Charge	Qg	V_{DS}=35V, V_{GS}=10V, I_D=76A		220		nC
Gate-to-Source Charge	Qgs	V_{DS}=35V, V_{GS}=10V, I_D=76A		40		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=35V, V_{GS}=10V, I_D=76A		50		nC
Diode Forward Voltage	V_{SD}	I_S=76A, V_{GS}=0V		0.9	1.2	V

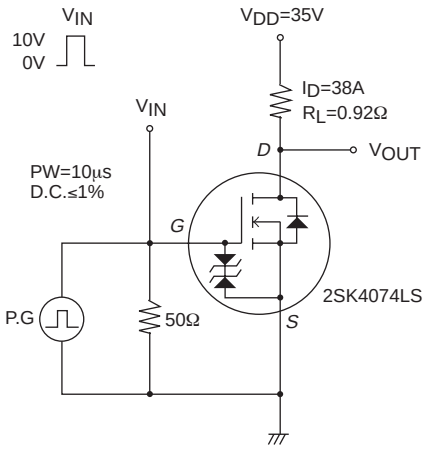
Package Dimensions

unit : mm (typ)

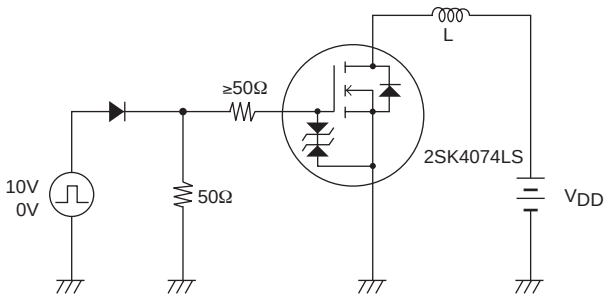
7509-002

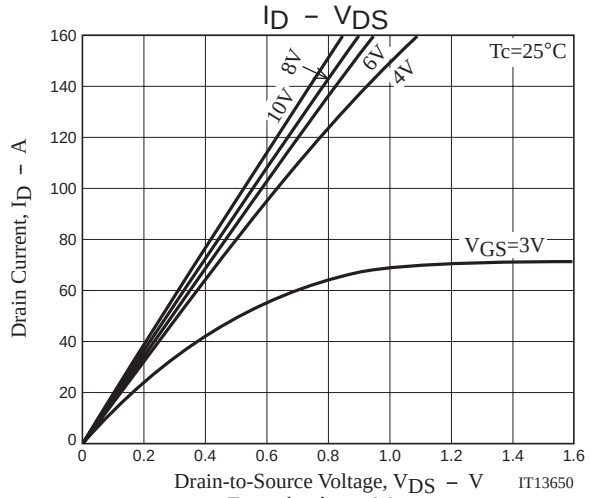


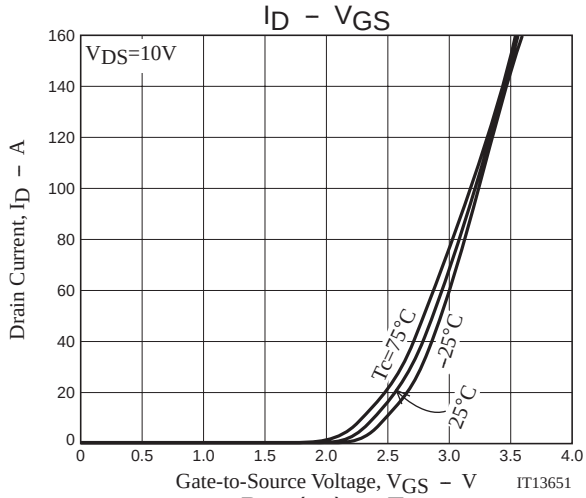
Switching Time Test Circuit

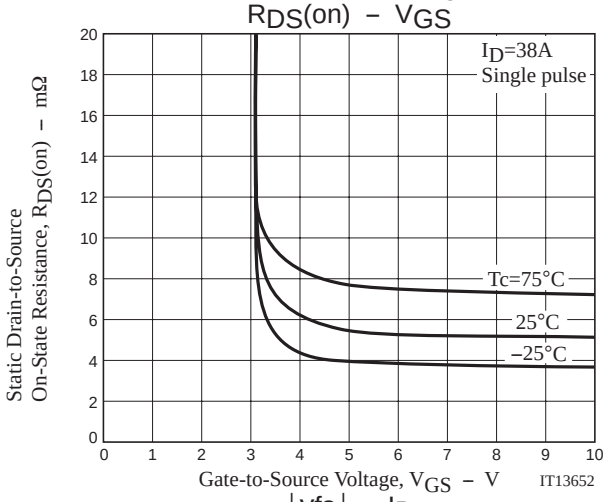


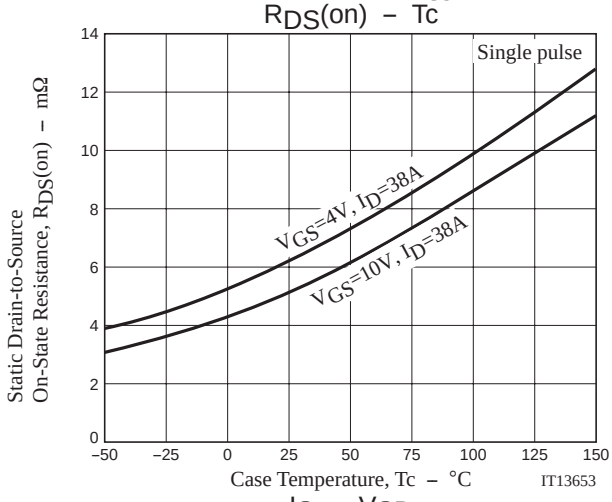
Avalanche Resistance Test Circuit

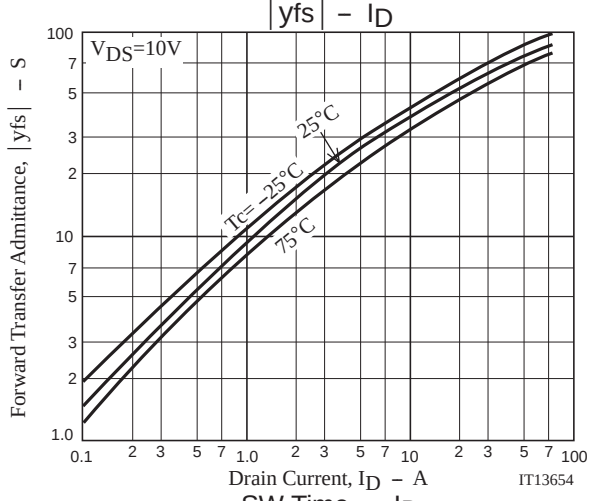


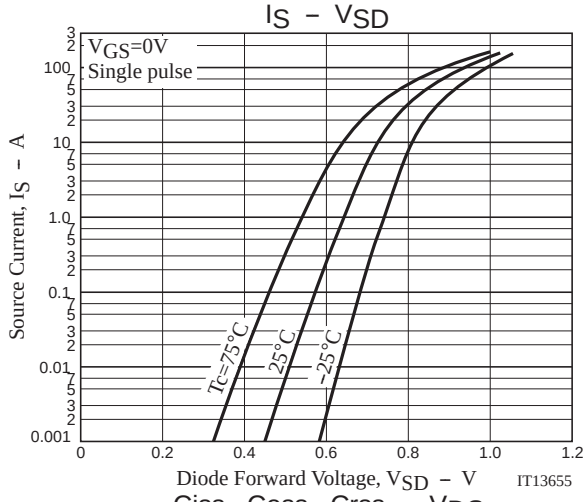

ID – VDS
Tc=25°C
10V
8V
6V
4V
VGS=3V
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT13650

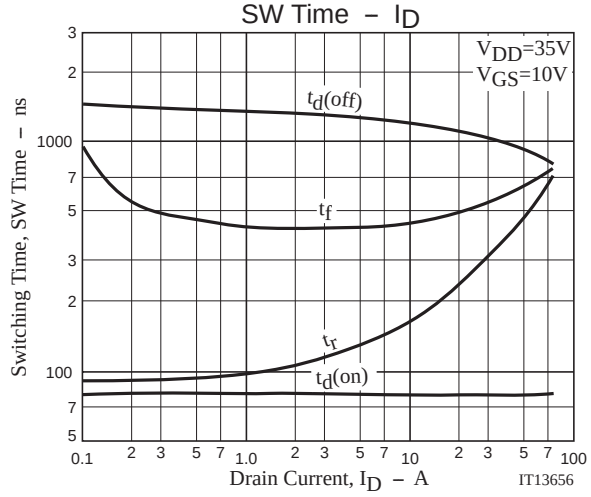

ID – VGS
VDS=10V
Tc=75°C
–25°C
25°C
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
IT13651

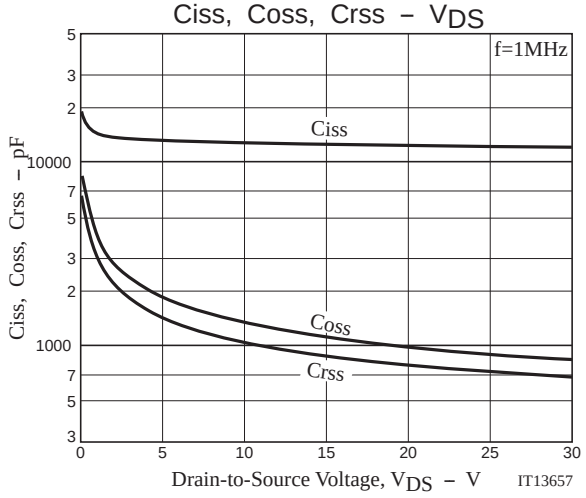

RDS(on) – VGS
ID=38A
Single pulse
Tc=75°C
25°C
–25°C
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT13652

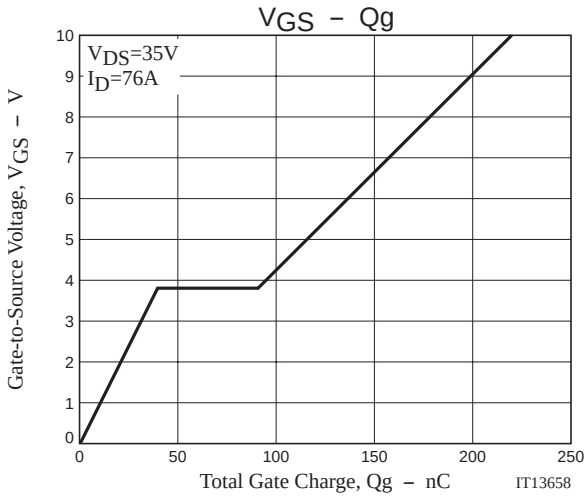

RDS(on) – Tc
Single pulse
VGS=4V, ID=38A
VGS=10V, ID=38A
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Case Temperature, Tc – °C
IT13653

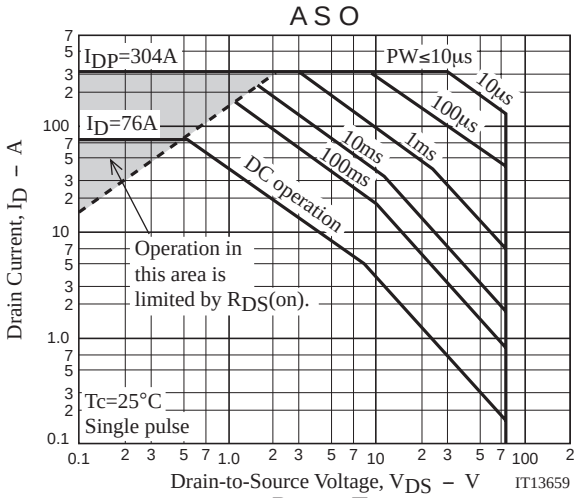

|yfs| – ID
VDS=10V
25°C
Tc=–25°C
75°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT13654

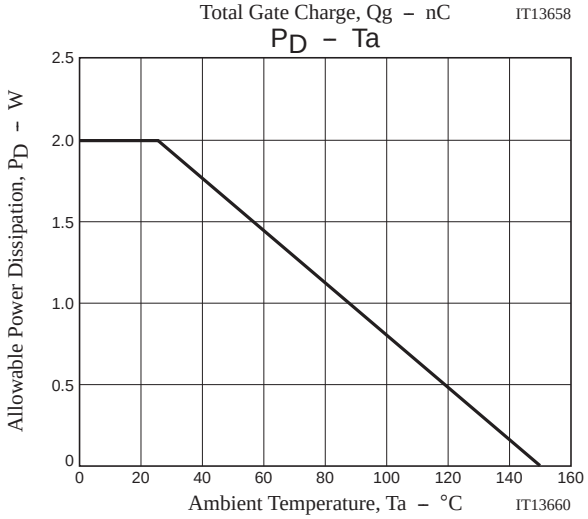

IS – VSD
VGS=0V
Single pulse
Tc=75°C
25°C
–25°C
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT13655

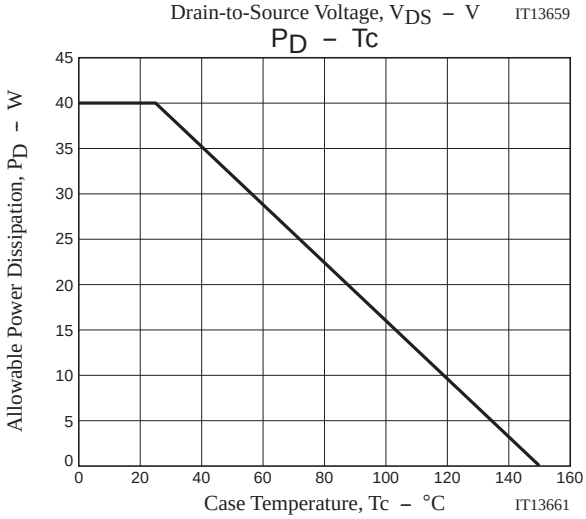

SW Time – ID
VDD=35V
VGS=10V
td(off)
tf
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT13656

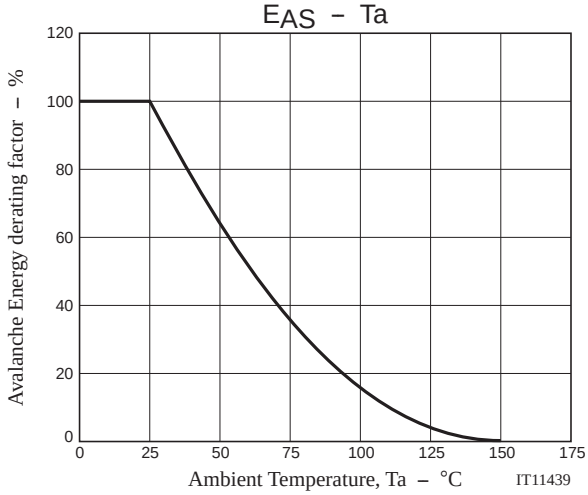

Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT13657


VGS – Qg
VDS=35V
ID=76A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT13658


A S O
IDP=304A
PW≤10μs
ID=76A
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
IT13659


PD – Ta
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT13660


PD – Tc
Allowable Power Dissipation, PD – W
Case Temperature, Tc – °C
IT13661


EAS – Ta
Avalanche Energy derating factor – %
Ambient Temperature, Ta – °C
IT11439

Note on usage : Since the 2SK4074LS is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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