Ordering number : ENN7422

ON Semiconductor®

ON Semiconductor

DATA SHEET

N-Channel Silicon MOSFET

2SK3614 — UltraHigh-Speed Switching Applications

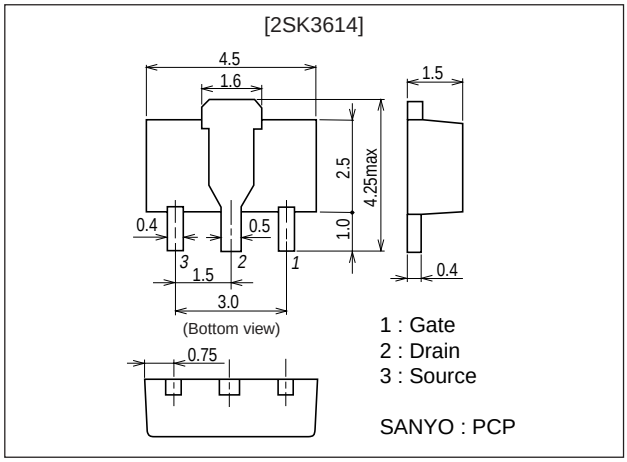
Features

- Low ON-resistance.
- Ultrahigh-speed switching.
- 4V drive.

Package Dimensions

unit : mm

2062A



Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		60	V
Gate-to-Source Voltage	V_{GSS}		±20	V
Drain Current (DC)	I_D		4	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	16	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (250mm²×0.8mm)	1.5	W
		Tc=25°C	3.5	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		–55 to +150	°C

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}=0	60			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V, V_{GS}=0			1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±16V, V_{DS}=0			±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=2A	2	3.6		S
Static Drain-to-Source On-State Resistance	$R_{DS}(on)1$	I_D=2A, V_{GS}=10V		110	145	mΩ
	$R_{DS}(on)2$	I_D=2A, V_{GS}=4V		150	215	mΩ

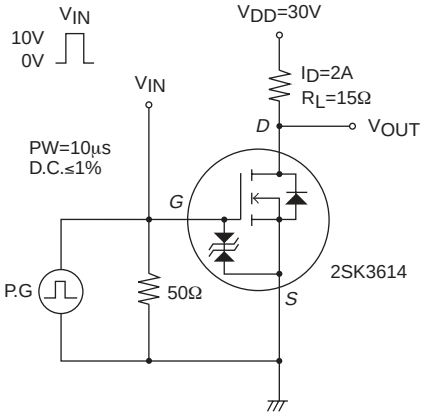
Marking : LK

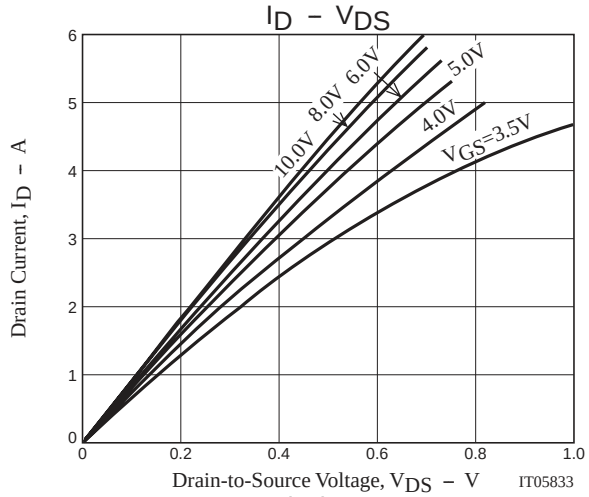
Continued on next page.

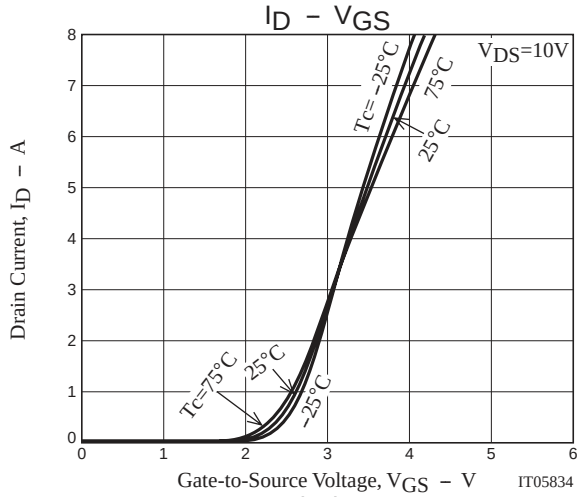
Continued from preceding page.

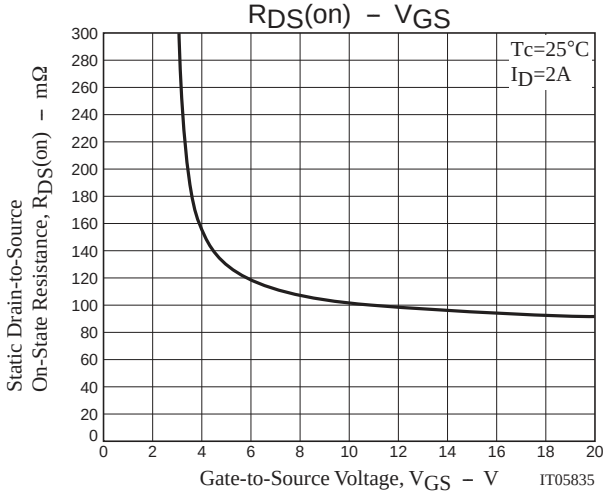
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	V_{DS}=20V, f=1MHz		300		pF
Output Capacitance	Coss	V_{DS}=20V, f=1MHz		54		pF
Reverse Transfer Capacitance	Crss	V_{DS}=20V, f=1MHz		34		pF
Turn-ON Delay Time	t_{d}(on)	See specified Test Circuit.		8		ns
Rise Time	t_{r}	See specified Test Circuit.		16		ns
Turn-OFF Delay Time	t_{d}(off)	See specified Test Circuit.		32		ns
Fall Time	t_{f}	See specified Test Circuit.		34		ns
Total Gate Charge	Qg	V_{DS}=30V, V_{GS}=10V, I_{D}=4A		7.8		nC
Gate-to-Source Charge	Qgs	V_{DS}=30V, V_{GS}=10V, I_{D}=4A		2.4		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=30V, V_{GS}=10V, I_{D}=4A		1.7		nC
Diode Forward Voltage	V_{SD}	I_{S}=4A, V_{GS}=0		0.86	1.2	V

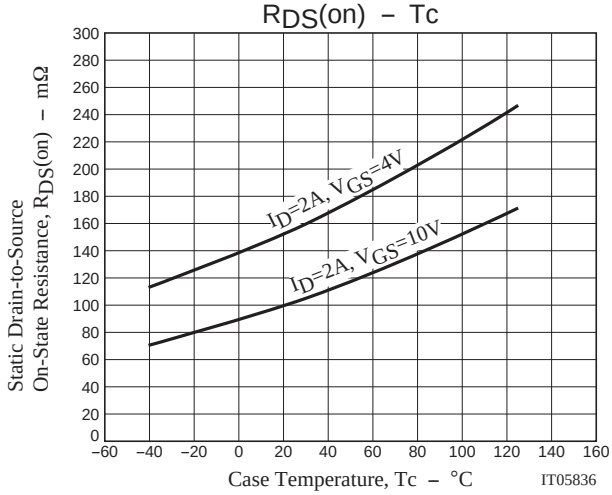
Switching Time Test Circuit

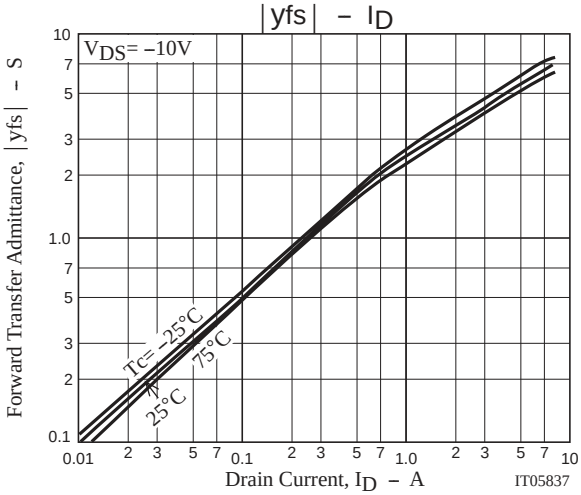


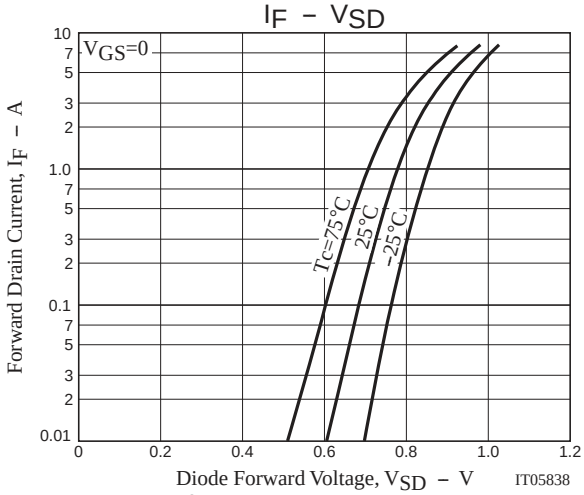


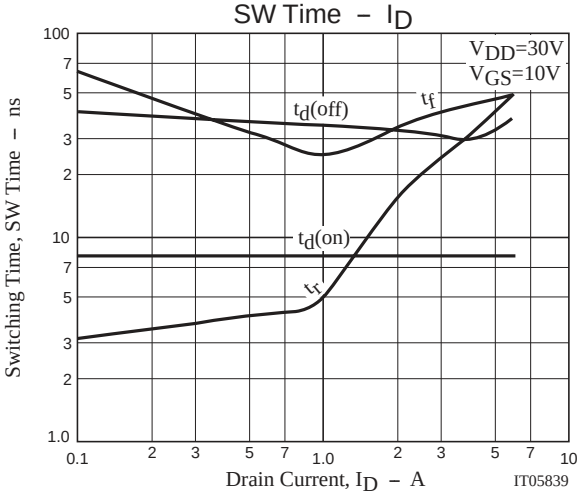


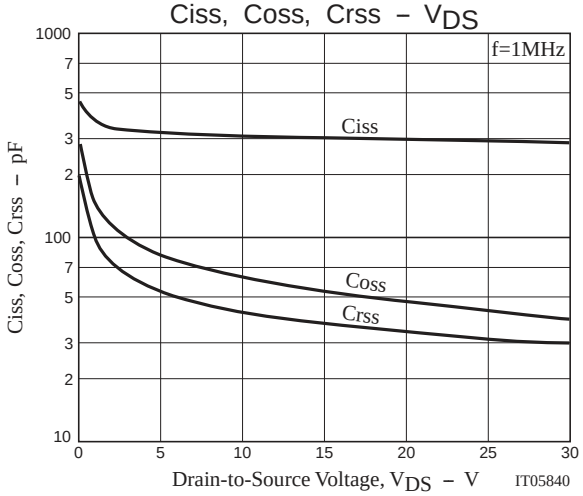


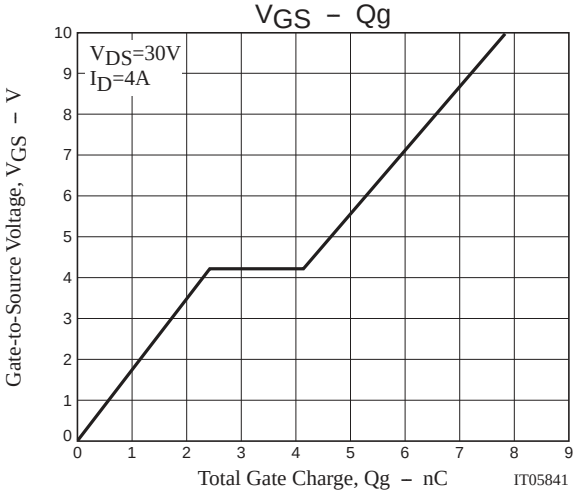


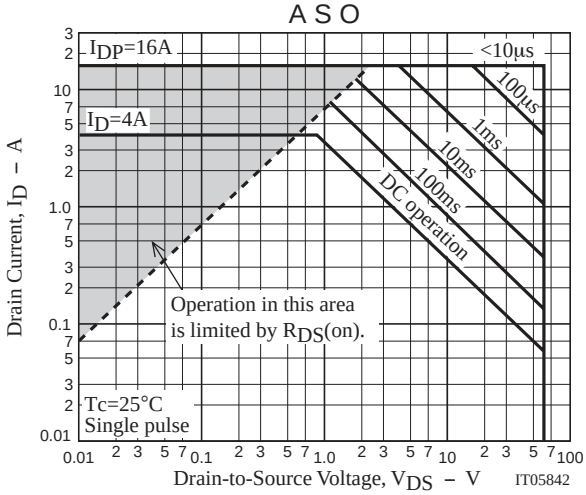

|yfs| – ID
VDS= –10V
Tc= –25°C
75°C
25°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT05837

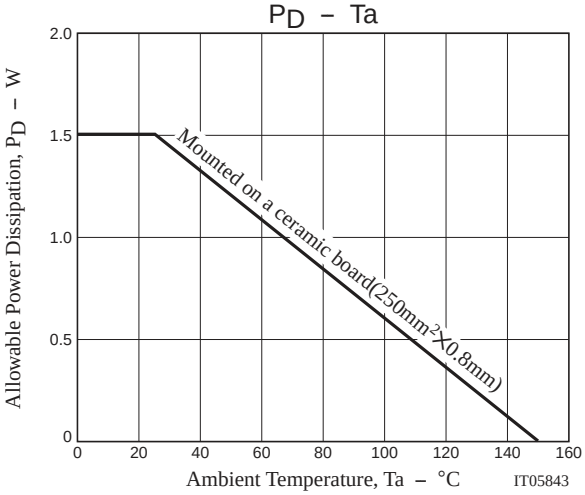

IF – VSD
VGS=0
Tc=75°C
25°C
–25°C
Forward Drain Current, IF – A
Diode Forward Voltage, VSD – V
IT05838

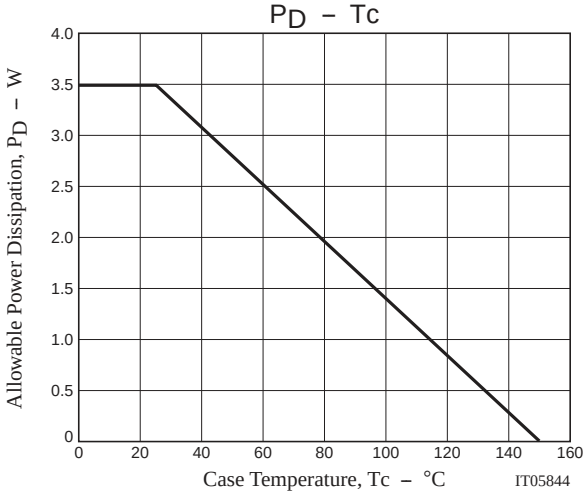

SW Time – ID
VDD=30V
VGS=10V
td(off)
tf
td(on)
tr
Switching Time, SW Time – ns
Drain Current, ID – A
IT05839


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT05840


VGS – Qg
VDS=30V
ID=4A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT05841


A S O
IDP=16A
ID=4A
<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
IT05842


PD – Ta
Mounted on a ceramic board(250mm2X0.8mm)
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT05843


PD – Tc
Allowable Power Dissipation, PD – W
Case Temperature, Tc – °C
IT05844

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free USA/Canada.
Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910
Japan Customer Focus Center
Phone: 81-3-5773-3850

ON Semiconductor Website:www.onsemi.com

Order Literature: http://www.onsemi.com/orderlit

For additional information, please contact your local Sales Representative