Ordering number : ENA1259

SANYO Semiconductors
DATA SHEET

N-Channel Silicon MOSFET

ECH8662 — General-Purpose Switching Device Applications

Features

- Low ON-resistance.
- 2.5V drive.
- Halogen free compliance.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		40	V
Gate-to-Source Voltage	V_{GSS}		±10	V
Drain Current (DC)	I_D		6.5	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	40	A
Allowable Power Dissipation	P_D	When mounted on ceramic substrate (900mm²×0.8mm) 1unit	1.3	W
Total Dissipation	P_T	When mounted on ceramic substrate (900mm²×0.8mm)	1.5	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}=0V	40			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=40V, V_{GS}=0V			1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0V			±10	μA
Cutoff Voltage	$V_{GS(off)}$	V_{DS}=10V, I_D=1mA	0.4		1.3	V
Forward Transfer Admittance	$\|yfs\|$	V_{DS}=10V, I_D=3.5A	3.9	6.5		S

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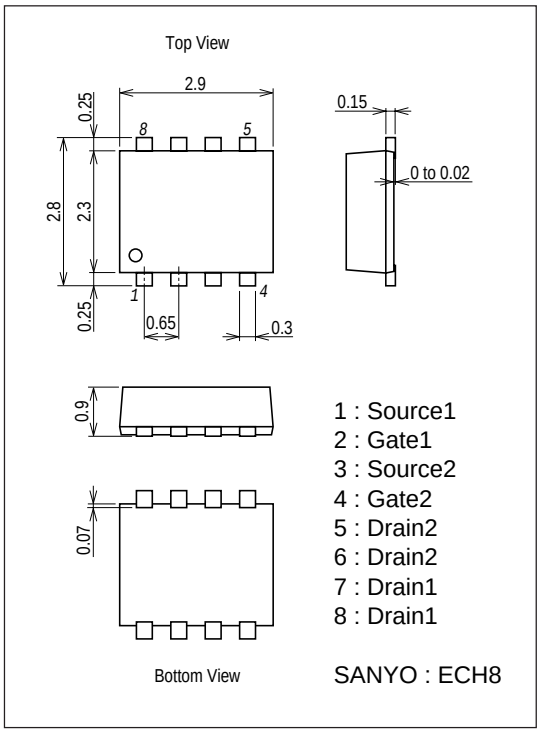
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Static Drain-to-Source On-State Resistance	$R_{DS}(on)1$	I_D=3.5A, V_{GS}=4.5V		23	30	mΩ
	$R_{DS}(on)2$	I_D=3.5A, V_{GS}=4V		25	33	mΩ
	$R_{DS}(on)3$	I_D=1.5A, V_{GS}=2.5V		30	42	mΩ
Input Capacitance	Ciss	V_{DS}=20V, f=1MHz		1130		pF
Output Capacitance	Coss	V_{DS}=20V, f=1MHz		77		pF
Reverse Transfer Capacitance	Crss	V_{DS}=20V, f=1MHz		60		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		14		ns
Rise Time	t_r	See specified Test Circuit.		34		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		93		ns
Fall Time	t_f	See specified Test Circuit.		55		ns
Total Gate Charge	Qg	V_{DS}=20V, V_{GS}=4.5V, I_D=6.5A		12		nC
Gate-to-Source Charge	Qgs	V_{DS}=20V, V_{GS}=4.5V, I_D=6.5A		2.2		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=20V, V_{GS}=4.5V, I_D=6.5A		3.4		nC
Diode Forward Voltage	V_{SD}	I_S=6.5A, V_{GS}=0V		0.85	1.2	V

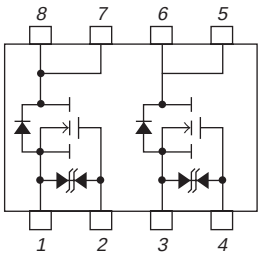
Package Dimensions

unit : mm (typ)

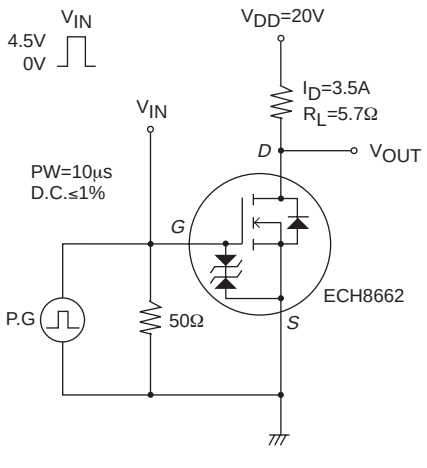
7011A-001

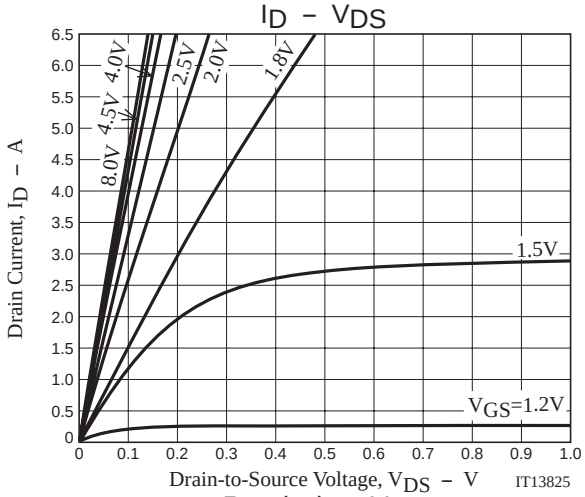


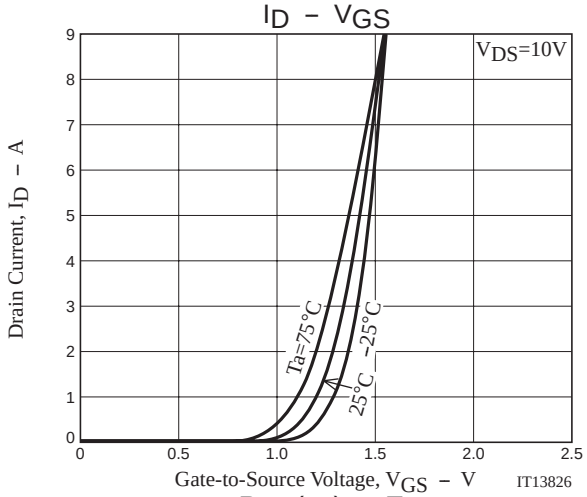
Electrical Connection

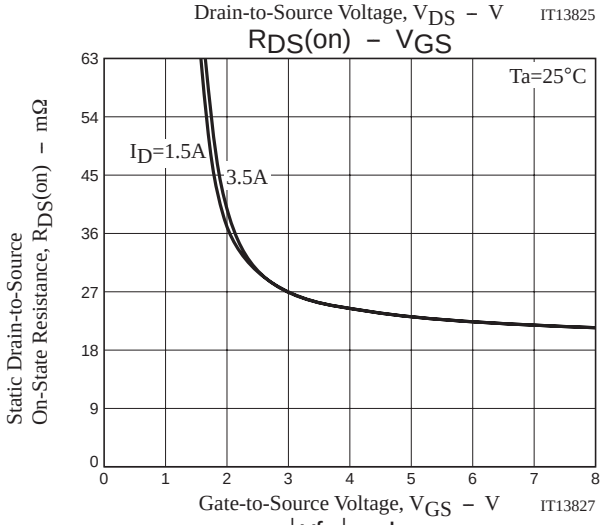


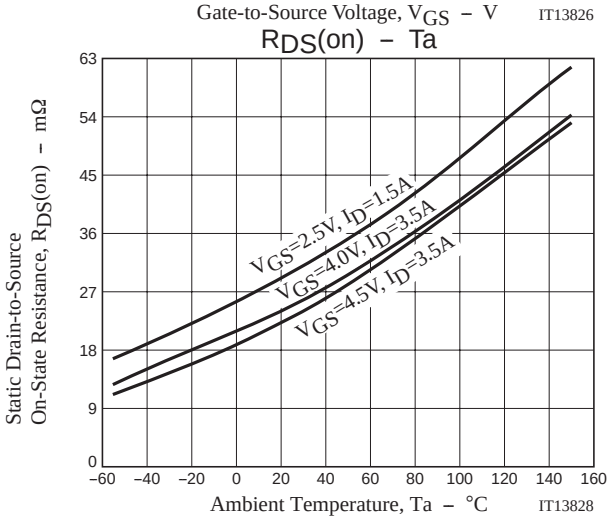
Switching Time Test Circuit

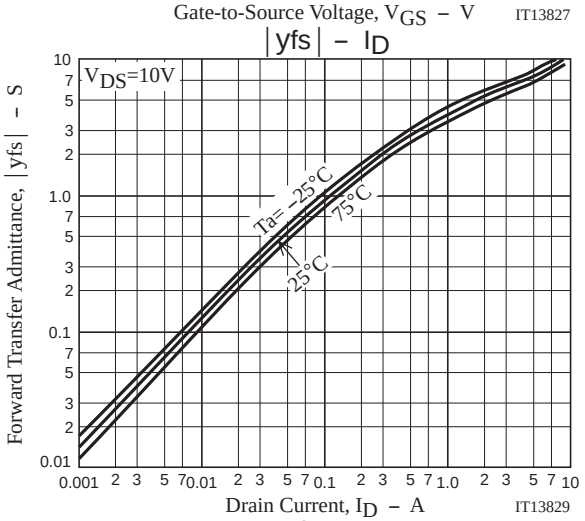


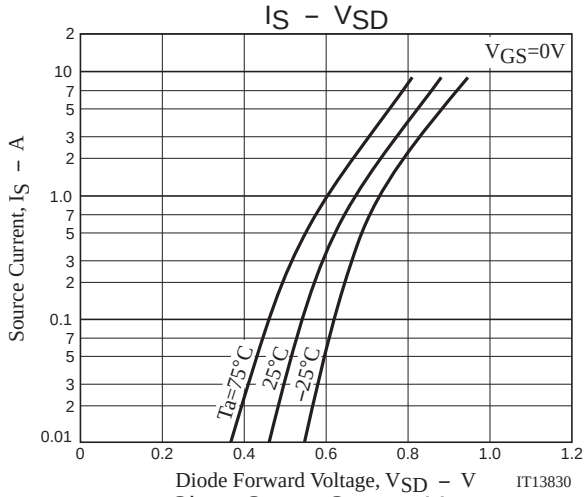

ID – VDS
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT13825
4.0V
4.5V
8.0V
2.5V
2.0V
1.8V
1.5V
VGS=1.2V

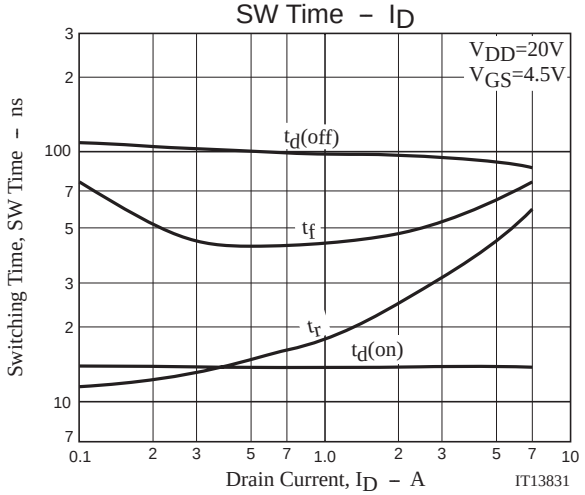

ID – VGS
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
IT13826
VDS=10V
Ta=75°C
25°C
–25°C

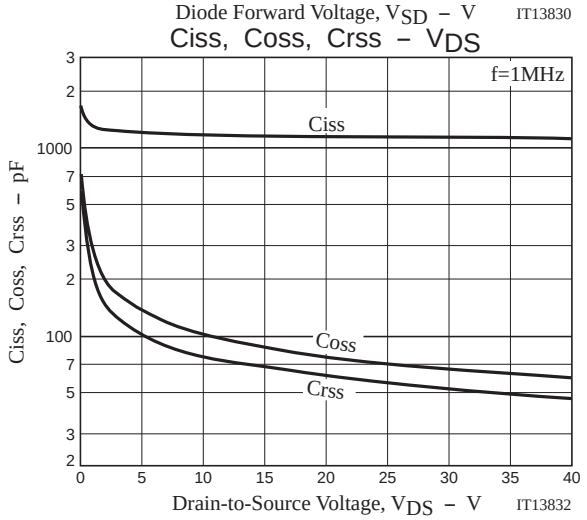

RDS(on) – VGS
Static Drain-to-Source
On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT13827
Ta=25°C
ID=1.5A
3.5A

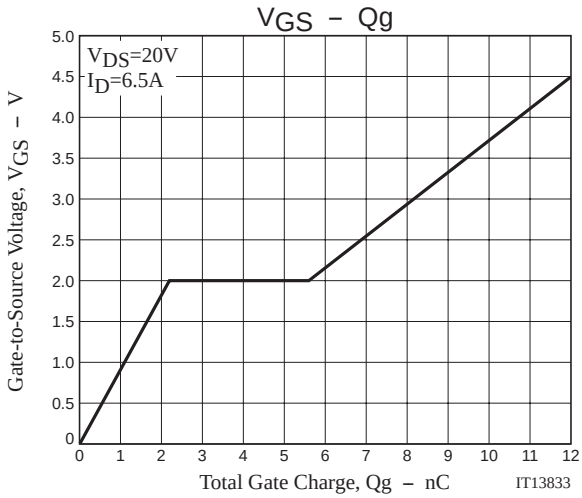

RDS(on) – Ta
Static Drain-to-Source
On-State Resistance, RDS(on) – mΩ
Ambient Temperature, Ta – °C
IT13828
VGS=2.5V, ID=1.5A
VGS=4.0V, ID=3.5A
VGS=4.5V, ID=3.5A

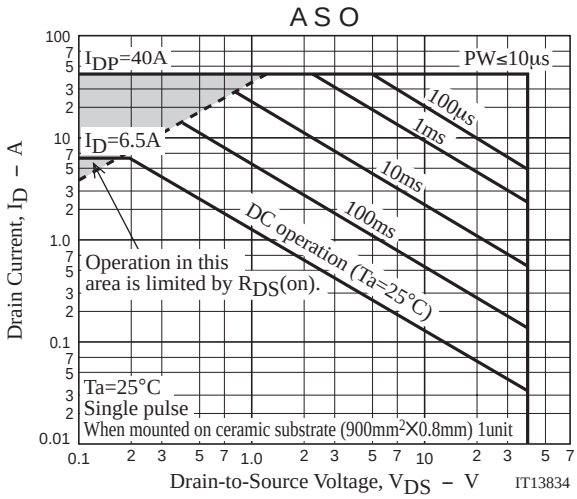

|yfs| – ID
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT13829
VDS=10V
Ta= –25°C
75°C
25°C

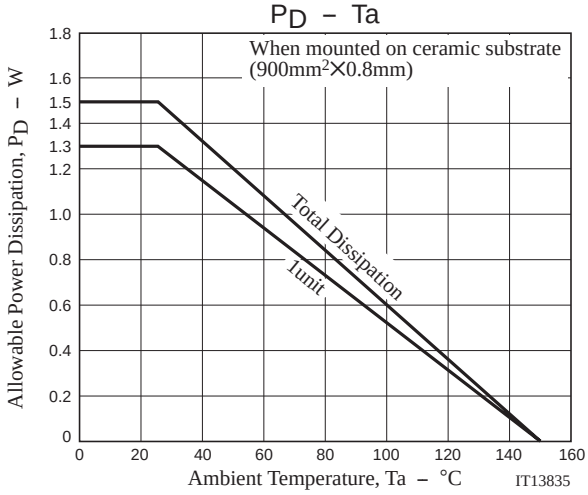

IS – VSD
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT13830
VGS=0V
Ta=75°C
25°C
–25°C


SW Time – ID
Switching Time, SW Time – ns
Drain Current, ID – A
IT13831
VDD=20V
VGS=4.5V
td(off)
tf
tr
td(on)


Ciss, Coss, Crss – VDS
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT13832
f=1MHz
Ciss
Coss
Crss







Note on usage : Since the ECH8662 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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