Ordering number : ENA1456

SANYO Semiconductors

DATA SHEET

P-Channel Silicon MOSFET

ECH8671 — General-Purpose Switching Device Applications

Features

- 1.8V drive.
- Composite type, facilitating high-density mounting.
- Halogen free compliance.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		−12	V
Gate-to-Source Voltage	V_{GSS}		±10	V
Drain Current (DC)	I_D		−3.5	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	−30	A
Allowable Power Dissipation	P_D	When mounted on ceramic substrate (1200mm^2×0.8mm) 1unit	1.3	W
Total Power Dissipation	P_T	When mounted on ceramic substrate (1200mm^2×0.8mm)	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	−12			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=−12V, V_{GS}=0V			−10	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0V			±10	μA
Cutoff Voltage	V_{GS}(off)	V_{DS}=−6V, I_D=−1mA	−0.4		−1.3	V
Forward Transfer Admittance	| yfs |	V_{DS}=−6V, I_D=−1.5A	2.7	4.6		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=−1.5A, V_{GS}=−4.5V		59	77	mΩ
	R_{DS}(on)2	I_D=−1A, V_{GS}=−2.5V		90	126	mΩ
	R_{DS}(on)3	I_D=−0.5A, V_{GS}=−1.8V		145	215	mΩ

Marking : TS

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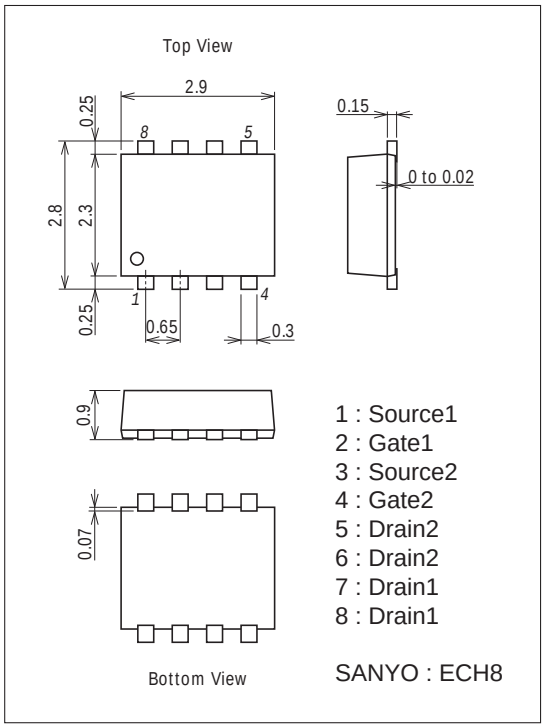
Parameter	Symbol	Conditions	Ratings			Unit
Input Capacitance	Ciss	V_{DS}=−6V, f=1MHz		330		pF
Output Capacitance	Coss	V_{DS}=−6V, f=1MHz		110		pF
Reverse Transfer Capacitance	Crss	V_{DS}=−6V, f=1MHz		88		pF
Turn-ON Delay Time	t_{d}(on)	See specified Test Circuit.		7.1		ns
Rise Time	t_{r}	See specified Test Circuit.		30		ns
Turn-OFF Delay Time	t_{d}(off)	See specified Test Circuit.		31		ns
Fall Time	t_{f}	See specified Test Circuit.		32		ns
Total Gate Charge	Qg	V_{DS}=−6V, V_{GS}=−4.5V, I_{D}=−3.5A		3.9		nC
Gate-to-Source Charge	Qgs	V_{DS}=−6V, V_{GS}=−4.5V, I_{D}=−3.5A		0.6		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=−6V, V_{GS}=−4.5V, I_{D}=−3.5A		1.1		nC
Diode Forward Voltage	V_{SD}	I_{S}=−3.5A, V_{GS}=0V		−0.85	−1.2	V

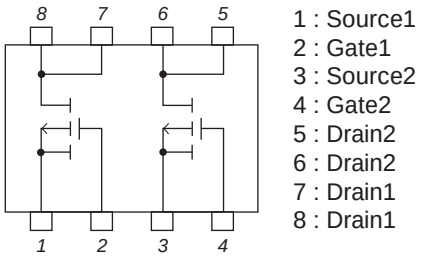
Package Dimensions

unit : mm (typ)

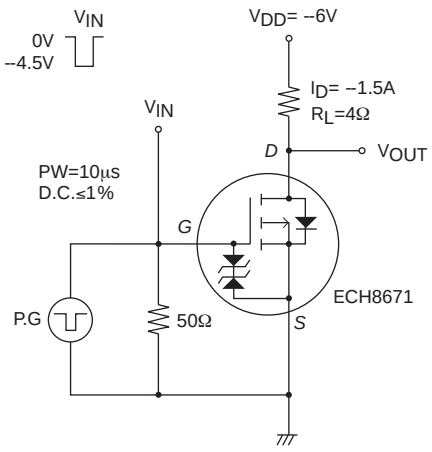
7011A-001

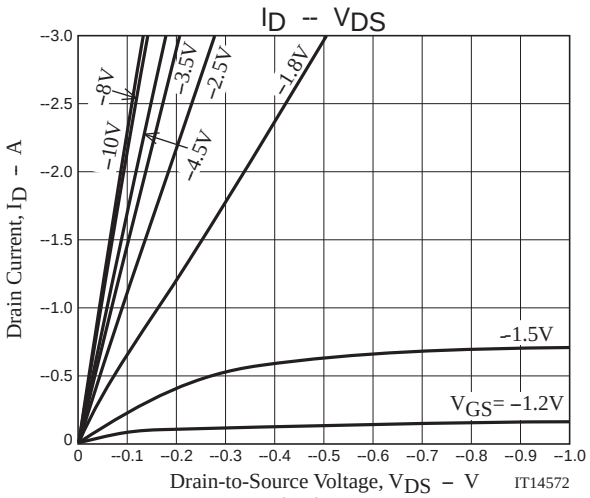


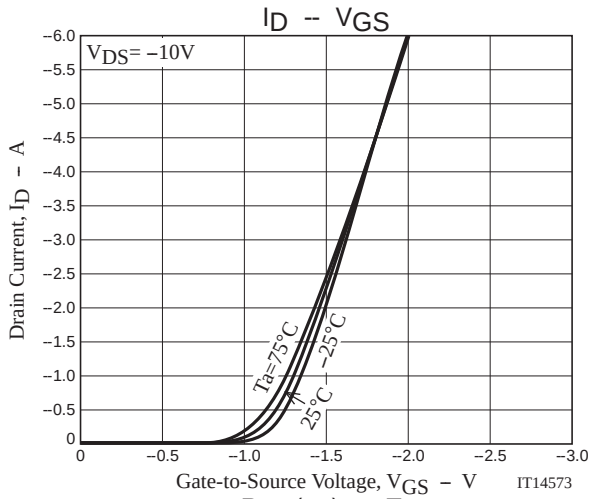
Electrical Connection

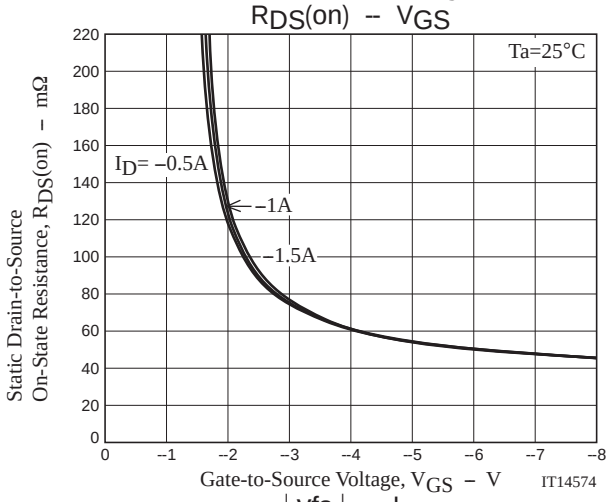


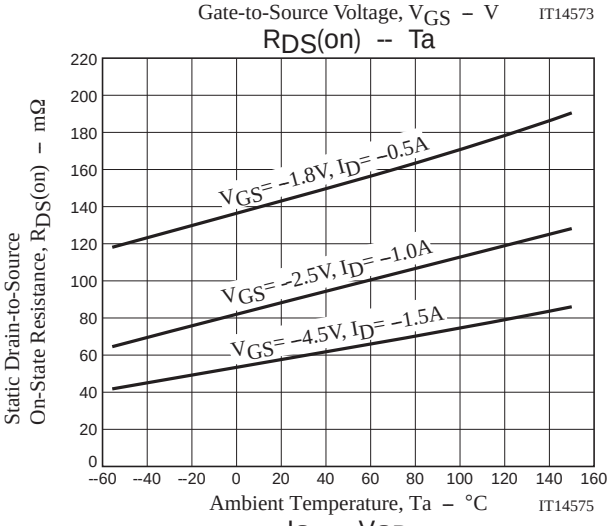
Switching Time Test Circuit

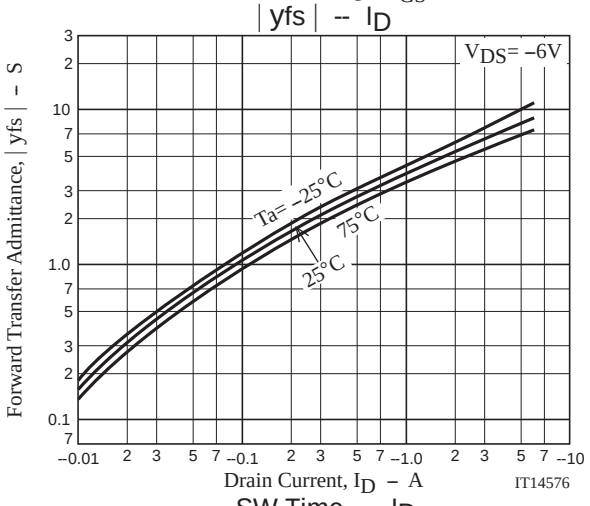


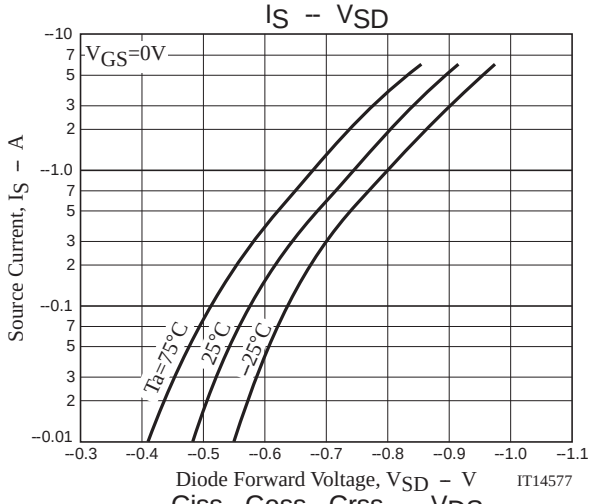

ID -- VDS
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT14572
–8V
–10V
–3.5V
–2.5V
–1.8V
–4.5V
–1.5V
VGS= –1.2V

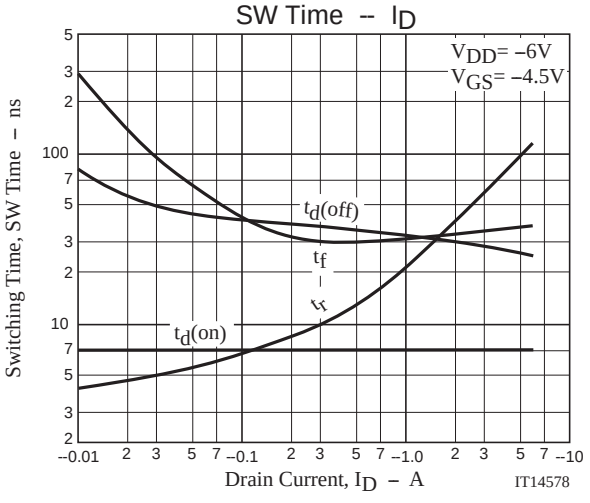

ID -- VGS
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
IT14573
VDS= –10V
Ta=75°C
25°C
–25°C

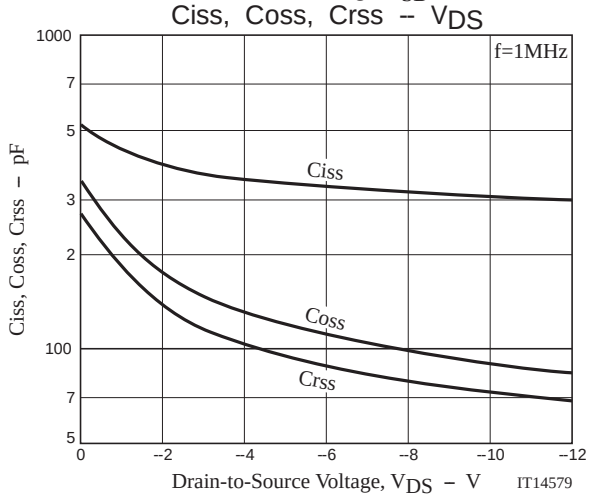

RDS(on) -- VGS
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT14574
Ta=25°C
ID= –0.5A
–1A
–1.5A

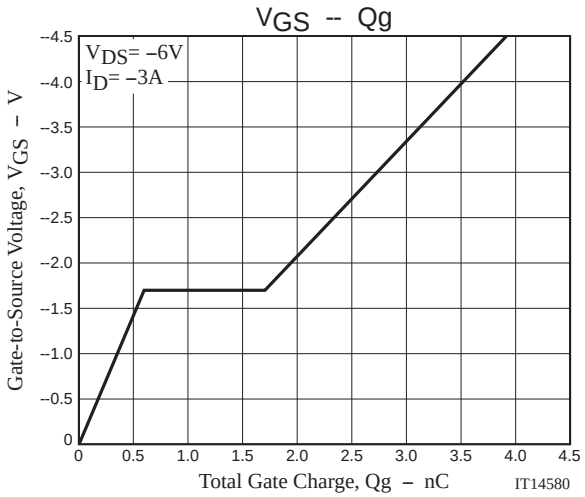

RDS(on) -- Ta
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Ambient Temperature, Ta – °C
IT14575
VGS= –1.8V, ID= –0.5A
VGS= –2.5V, ID= –1.0A
VGS= –4.5V, ID= –1.5A

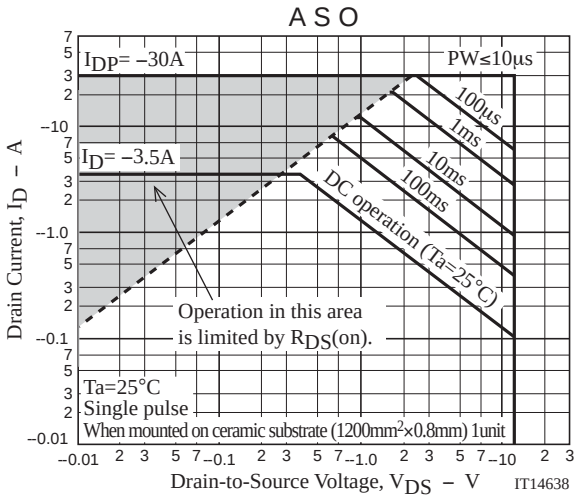

| yfs | -- ID
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
IT14576
VDS= –6V
Ta= –25°C
75°C
25°C

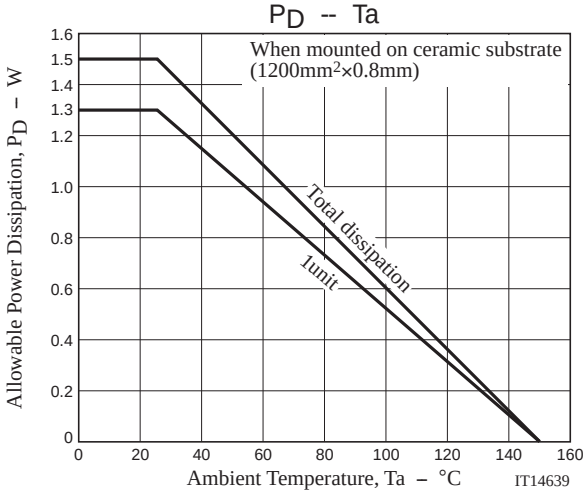

IS -- VSD
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT14577
VGS=0V
Ta=75°C
25°C
–25°C


SW Time -- ID
Switching Time, SW Time – ns
Drain Current, ID – A
IT14578
VDD= –6V
VGS= –4.5V
td(off)
tf
tr
td(on)


Ciss, Coss, Crss -- VDS
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT14579
f=1MHz
Ciss
Coss
Crss







Note on usage : Since the ECH8671 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

This catalog provides information as of April, 2009. Specifications and information herein are subject to change without notice.