Ordering number : ENA0851

SANYO Semiconductors

DATA SHEET

N-Channel Silicon MOSFET

ECH8653 — General-Purpose Switching Device Applications

Features

- Low ON-resistance.
- 4V drive.
- Best suited for LiB charging and discharging switch.
- Common-drain type.
- Halogen free compliance.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		20	V
Gate-to-Source Voltage	V_{GSS}		±10	V
Drain Current (DC)	I_D		7.5	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	40	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (900mm²×0.8mm) 1unit	1.4	W
Total Dissipation	P_T	Mounted on a ceramic board (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	20			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V, 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	1.0		2.4	V
Forward Transfer Admittance	$\|yfs\|$	V_{DS}=10V, I_D=4A	3.4	5.8		S

Marking : WY

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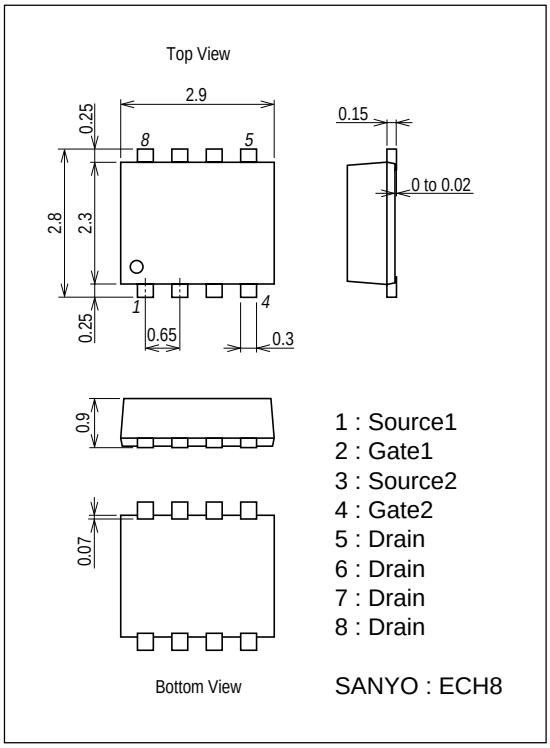
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Static Drain-to-Source On-State Resistance	$R_{DS}(on)1$	I_D=4A, V_{GS}=8V	9	14	20	mΩ
	$R_{DS}(on)2$	I_D=4A, V_{GS}=4V	11	18	25	mΩ
Input Capacitance	Ciss	V_{DS}=10V, f=1MHz		1280		pF
Output Capacitance	Coss	V_{DS}=10V, f=1MHz		170		pF
Reverse Transfer Capacitance	Crss	V_{DS}=10V, f=1MHz		105		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		13		ns
Rise Time	t_r	See specified Test Circuit.		48		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		94		ns
Fall Time	t_f	See specified Test Circuit.		36		ns
Total Gate Charge	Qg	V_{DS}=10V, V_{GS}=8V, I_D=7.5A		18.5		nC
Gate-to-Source Charge	Qgs	V_{DS}=10V, V_{GS}=8V, I_D=7.5A		2.7		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=10V, V_{GS}=8V, I_D=7.5A		3.1		nC
Diode Forward Voltage	V_{SD}	I_S=7.5A, V_{GS}=0V		0.82	1.2	V

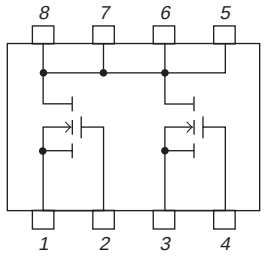
Package Dimensions

unit : mm (typ)

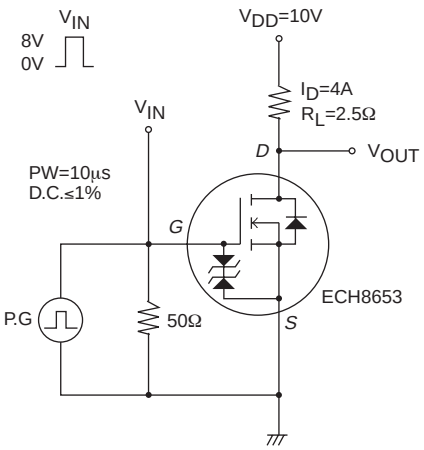
7011A-003

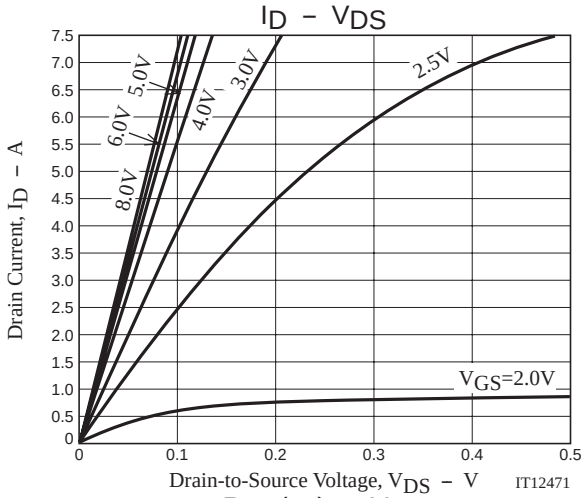


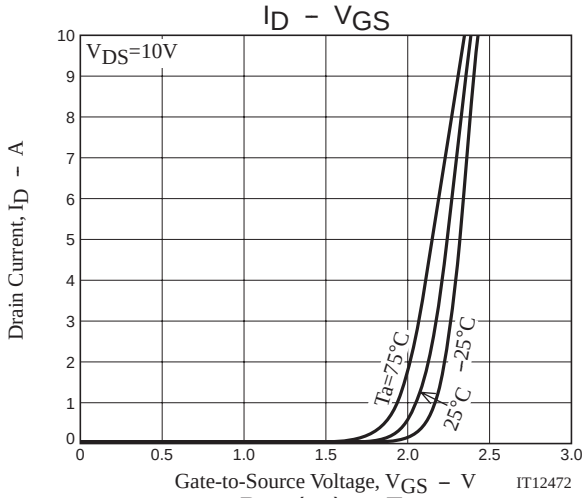
Electrical Connection

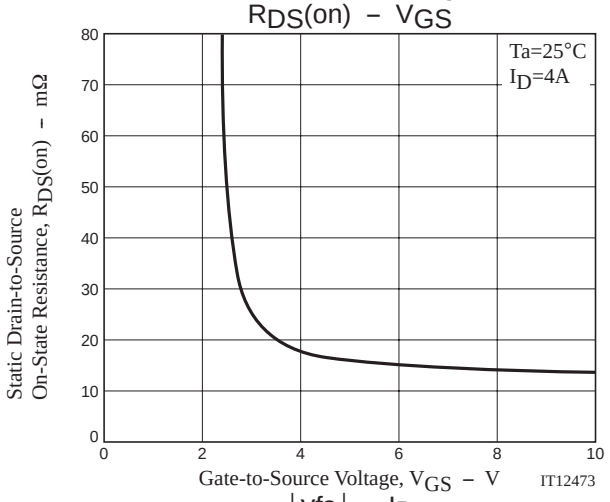


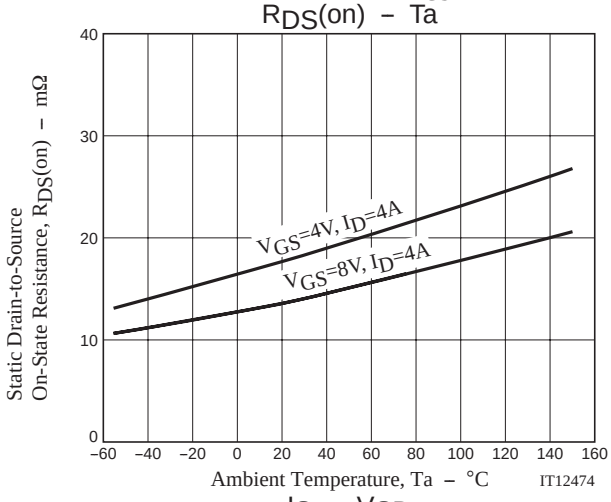
Switching Time Test Circuit

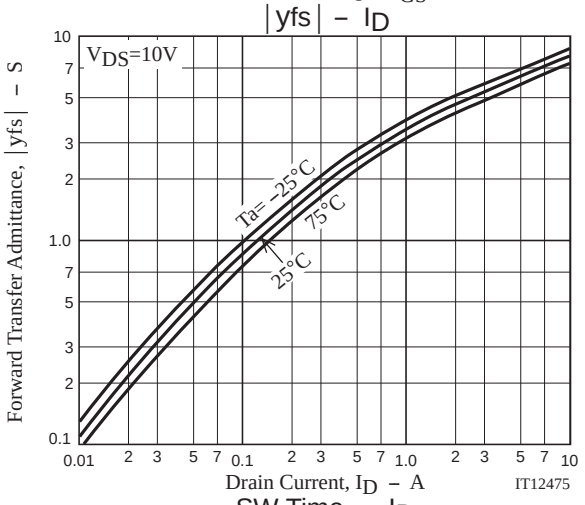


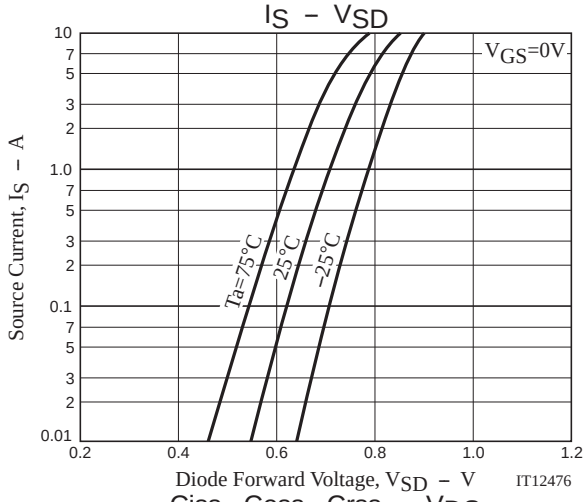


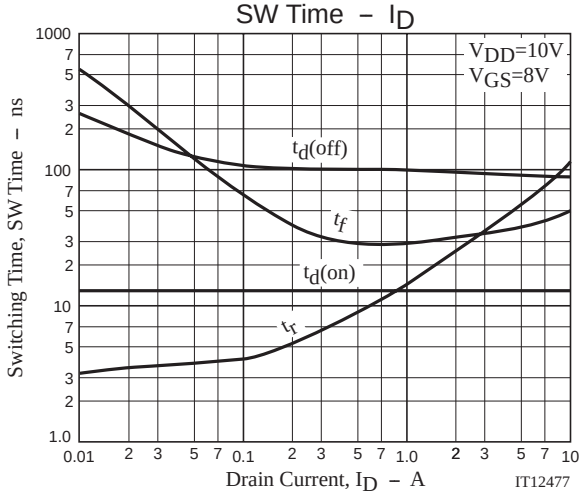


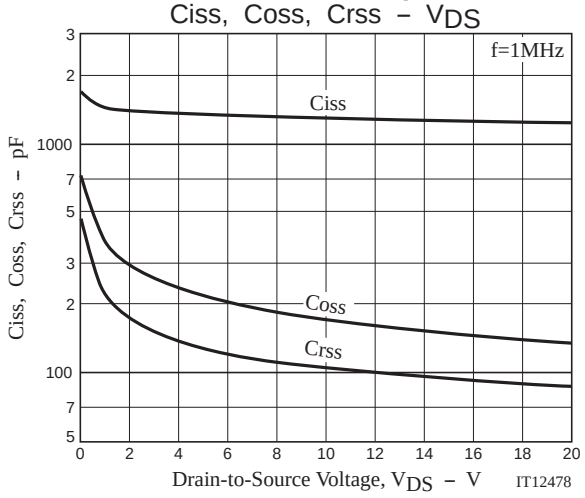


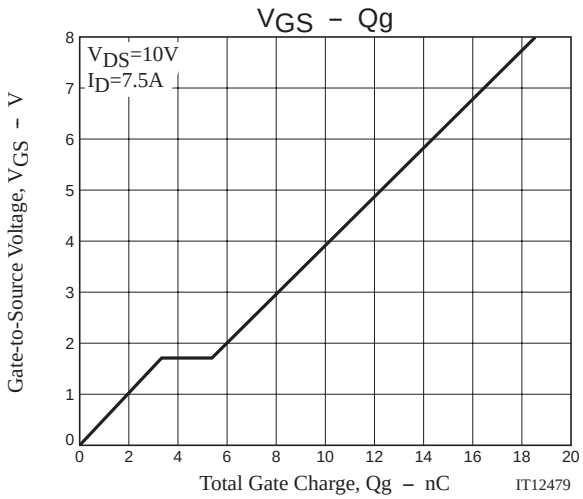


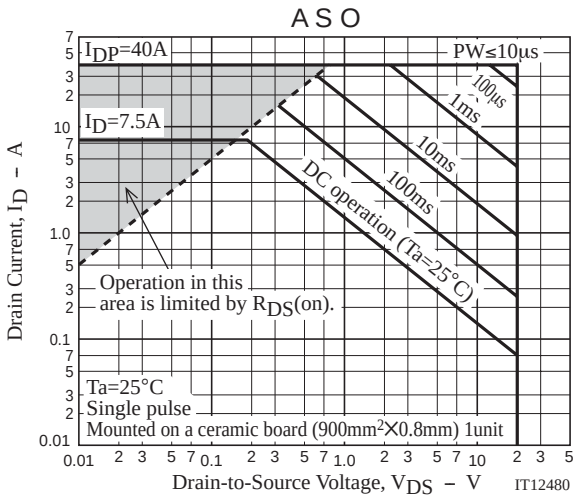


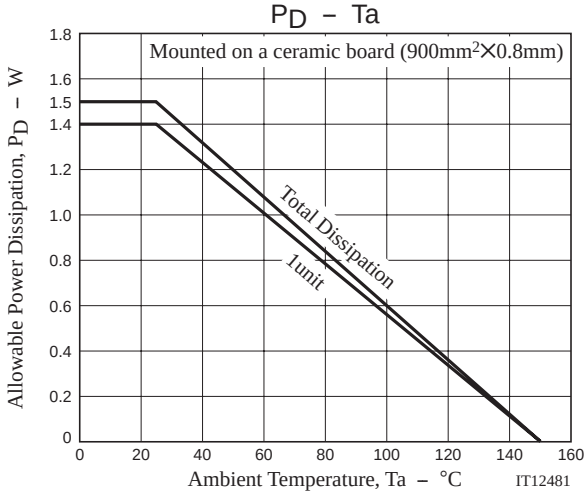












Note on usage : Since the ECH8653 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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