



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

N-Channel Silicon MOSFET

ECH8651R — General-Purpose Switching Device Applications

Features

- Low ON-resistance.
- Built-in gate protection resistor.
- 2.5V 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}		24	V
Gate-to-Source Voltage	V _{GSS}		±12	V
Drain Current (DC)	I _D		10	A
Drain Current (Pulse)	I _{DP}	PW≤10μs, duty cycle≤1%	60	A
Allowable Power Dissipation	P _D	When mounted on ceramic substrate (900mm ² ×0.8mm) 1unit	1.4	W
Total Dissipation	P _T	When mounted on ceramic substrate (900mm ² ×0.8mm)	1.5	W
Channel Temperature	T _{ch}		150	°C
Storage Temperature	T _{stg}		-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	24			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	0.5		1.3	V
Forward Transfer Admittance	y _{fs}	V _{DS} =10V, I _D =5A	5.5	9.5		S

Marking : WV

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ECH8651R

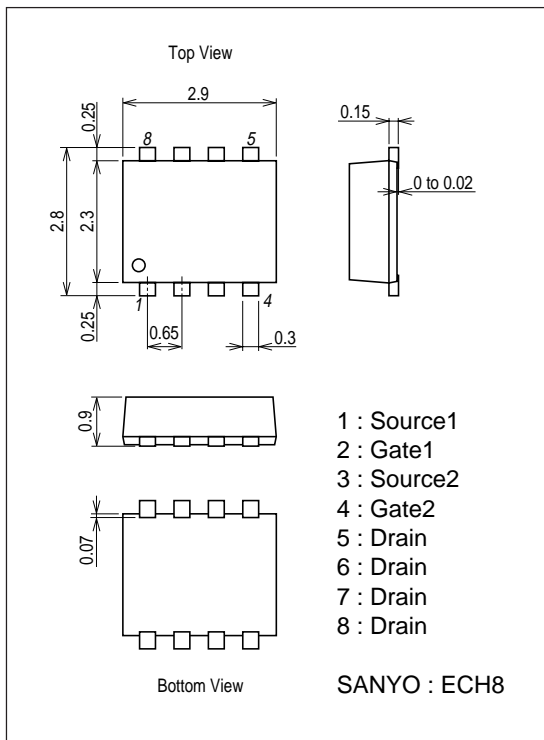
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Static Drain-to-Source On-State Resistance	R _{DS(on)1}	I _D =5A, V _{GS} =4.5V	7	10.5	14	mΩ
	R _{DS(on)2}	I _D =5A, V _{GS} =4.0V	7.2	11	15	mΩ
	R _{DS(on)3}	I _D =5A, V _{GS} =3.1V	7.5	12.5	17.5	mΩ
	R _{DS(on)4}	I _D =2.5A, V _{GS} =2.5V	9	15	21	mΩ
Turn-ON Delay Time	t _{d(on)}	See specified Test Circuit.		300		ns
Rise Time	t _r	See specified Test Circuit.		1000		ns
Turn-OFF Delay Time	t _{d(off)}	See specified Test Circuit.		4000		ns
Fall Time	t _f	See specified Test Circuit.		2500		ns
Total Gate Charge	Q _g	V _{DS} =10V, V _{GS} =10V, I _D =10A		24		nC
Gate-to-Source Charge	Q _{gs}	V _{DS} =10V, V _{GS} =10V, I _D =10A		2		nC
Gate-to-Drain "Miller" Charge	Q _{gd}	V _{DS} =10V, V _{GS} =10V, I _D =10A		4.5		nC
Diode Forward Voltage	V _{SD}	I _S =10A, V _{GS} =0V		0.77	1.2	V

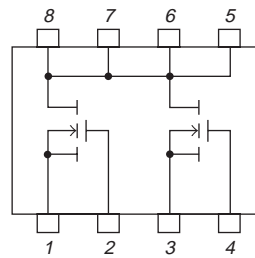
Package Dimensions

unit : mm (typ)

7011A-003



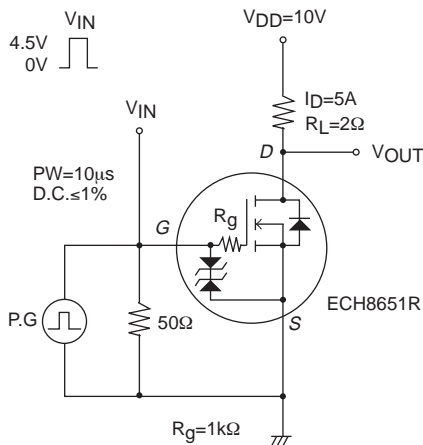
Electrical Connection



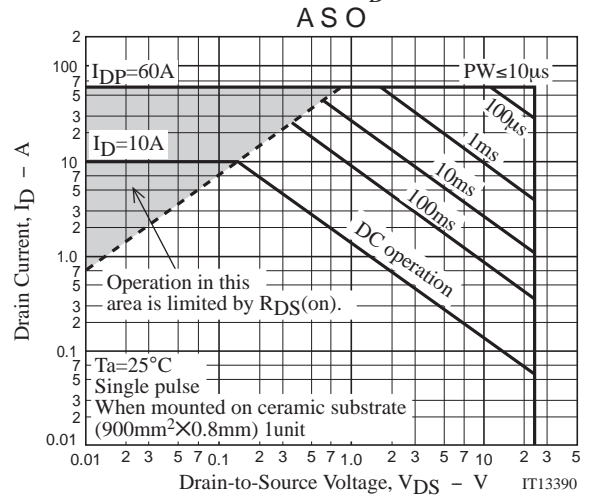
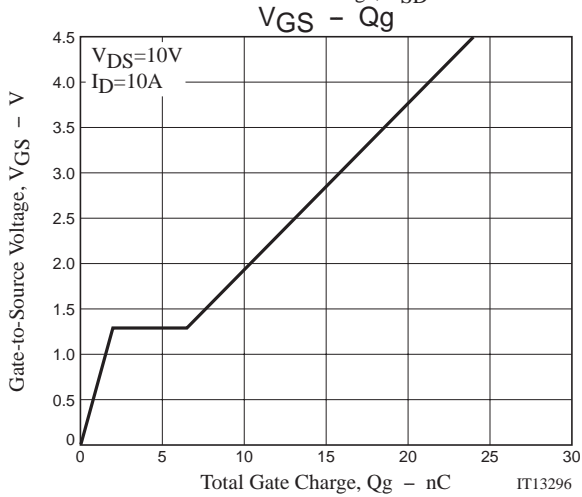
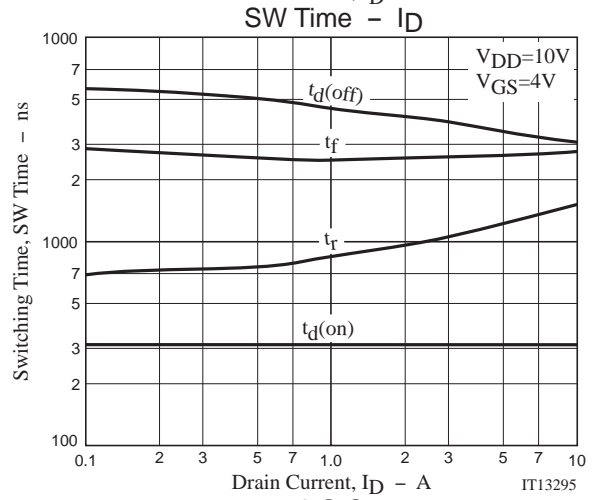
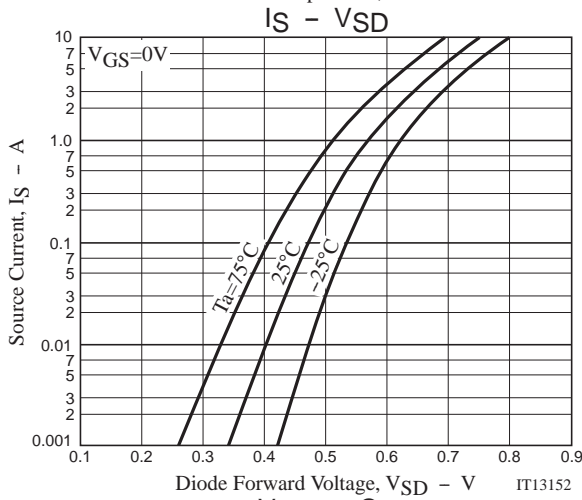
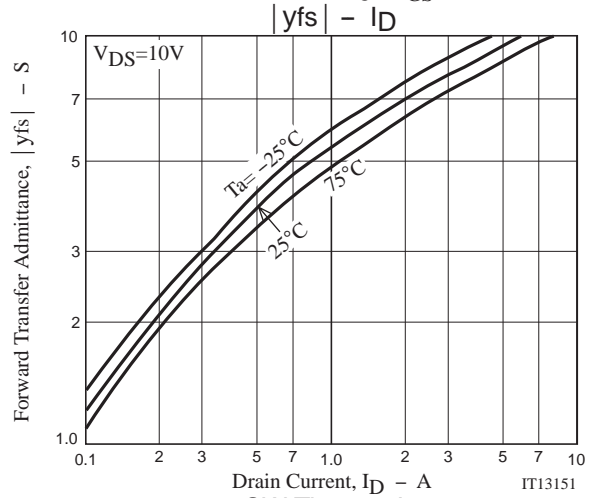
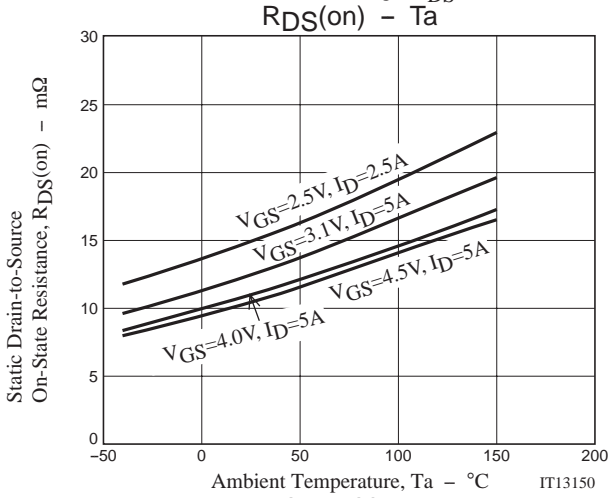
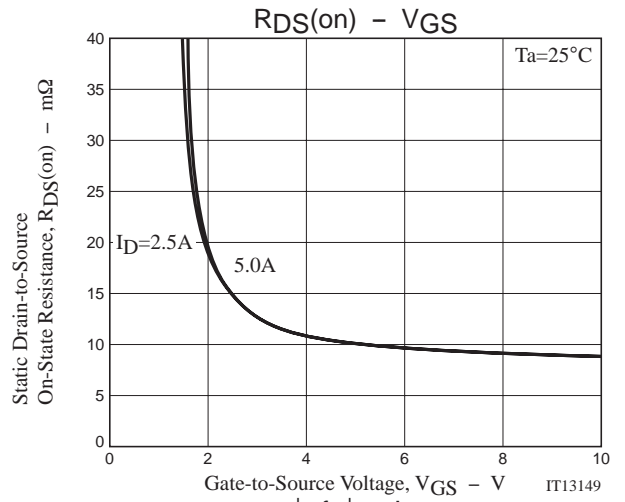
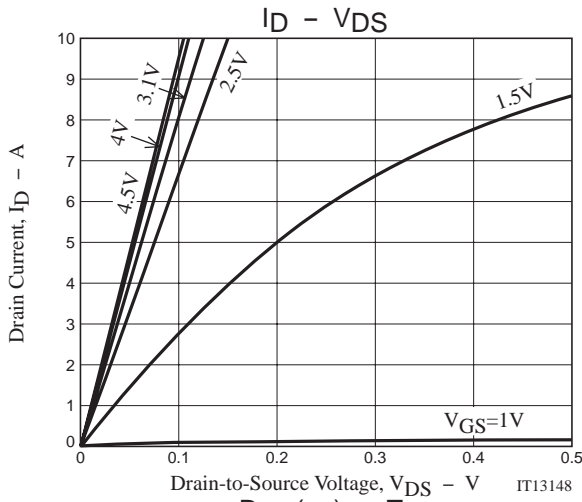
- 1 : Source1
- 2 : Gate1
- 3 : Source2
- 4 : Gate2
- 5 : Drain
- 6 : Drain
- 7 : Drain
- 8 : Drain

Top view

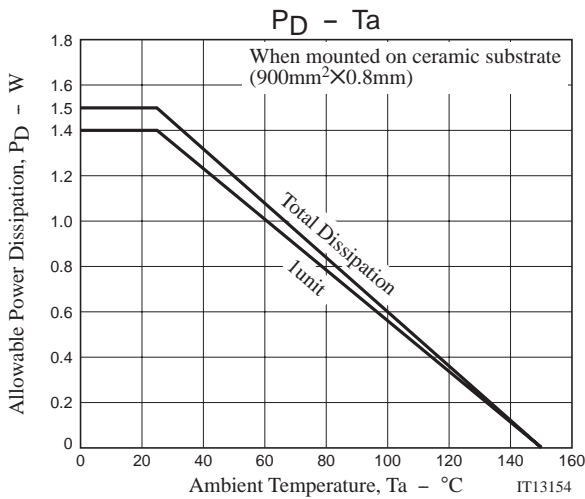
Switching Time Test Circuit



ECH8651R



ECH8651R



Note on usage : Since the ECH8651R is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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