



SANYO Semiconductors

# DATA SHEET

## ECH8654 — P-Channel Silicon MOSFET General-Purpose Switching Device Applications

### Features

- Low ON-resistance.
- 1.8V drive.
- Halogen free compliance.

### Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V <sub>DSS</sub>		-20	V
Gate-to-Source Voltage	V <sub>GSS</sub>		±10	V
Drain Current (DC)	I <sub>D</sub>		-5	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	-40	A
Allowable Power Dissipation	P <sub>D</sub>	Mounted on a ceramic board (900mm²×0.8mm) 1unit	1.3	W
Total Power Dissipation	P <sub>T</sub>	Mounted on a ceramic board (900mm²×0.8mm)	1.5	W
Channel Temperature	T <sub>ch</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	I <sub>D</sub> =-1mA, V <sub>GS</sub> =0V	-20			V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-20V, V <sub>GS</sub> =0V			-1	μA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±8V, V <sub>DS</sub> =0V			±10	μA
Cutoff Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> =-10V, I <sub>D</sub> =-1mA	-0.4		-1.3	V
Forward Transfer Admittance	y <sub>fs</sub>	V <sub>DS</sub> =-10V, I <sub>D</sub> =-3A	4.9	8.3		S
Static Drain-to-Source On-State Resistance	R <sub>DS(on)1</sub>	I <sub>D</sub> =-3A, V <sub>GS</sub> =-4.5V		29	38	mΩ
	R <sub>DS(on)2</sub>	I <sub>D</sub> =-1.5A, V <sub>GS</sub> =-2.5V		41	58	mΩ
	R <sub>DS(on)3</sub>	I <sub>D</sub> =-0.5A, V <sub>GS</sub> =-1.8V		64	98	mΩ

Marking : WZ

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**SANYO Semiconductor Co., Ltd.**

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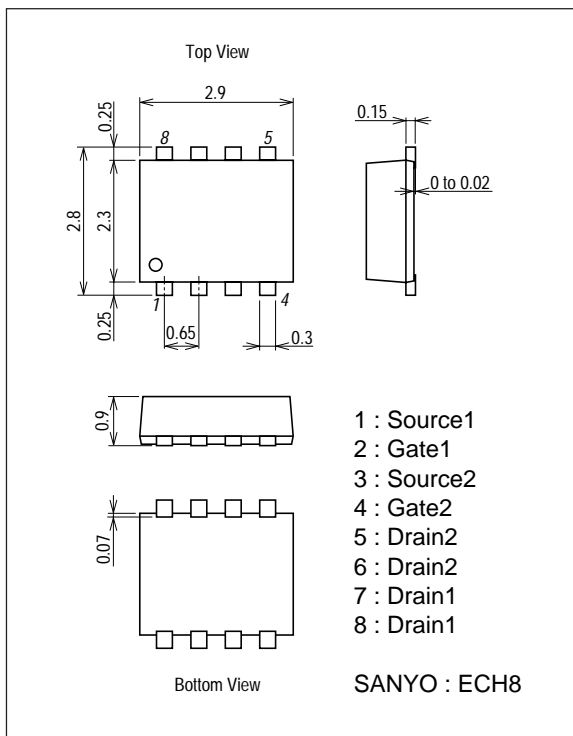
# ECH8654

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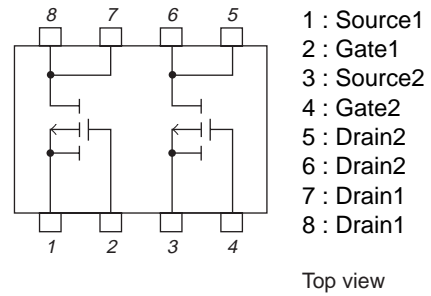
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	V <sub>DS</sub> =-10V, f=1MHz		960		pF
Output Capacitance	Coss	V <sub>DS</sub> =-10V, f=1MHz		180		pF
Reverse Transfer Capacitance	Crss	V <sub>DS</sub> =-10V, f=1MHz		140		pF
Turn-ON Delay Time	t <sub>d(on)</sub>	See specified Test Circuit.		14		ns
Rise Time	t <sub>r</sub>	See specified Test Circuit.		55		ns
Turn-OFF Delay Time	t <sub>d(off)</sub>	See specified Test Circuit.		92		ns
Fall Time	t <sub>f</sub>	See specified Test Circuit.		68		ns
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =-10V, V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-5A		11		nC
Gate-to-Source Charge	Q <sub>gs</sub>	V <sub>DS</sub> =-10V, V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-5A		2.0		nC
Gate-to-Drain "Miller" Charge	Q <sub>gd</sub>	V <sub>DS</sub> =-10V, V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-5A		2.8		nC
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-5A, V <sub>GS</sub> =0V		-0.82	-1.2	V

## Package Dimensions

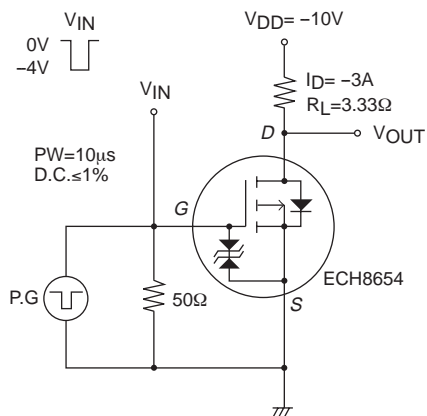
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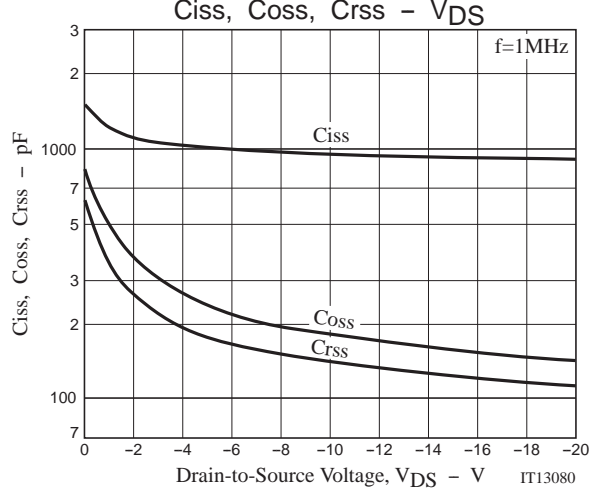
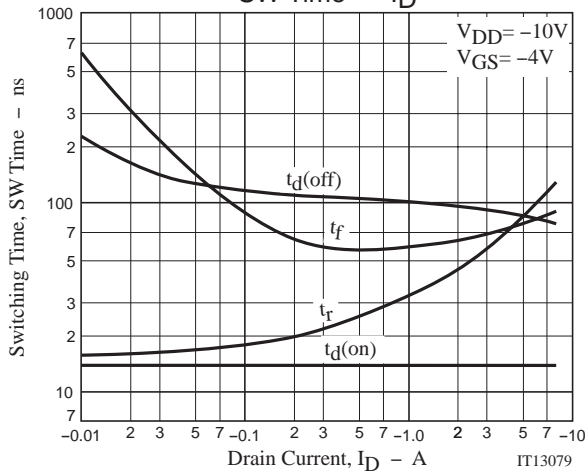
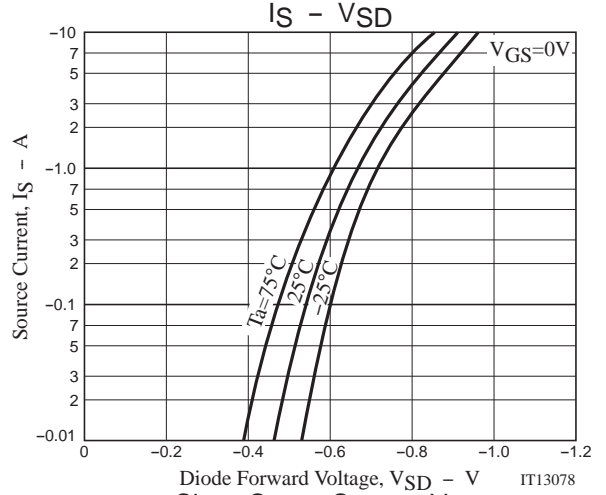
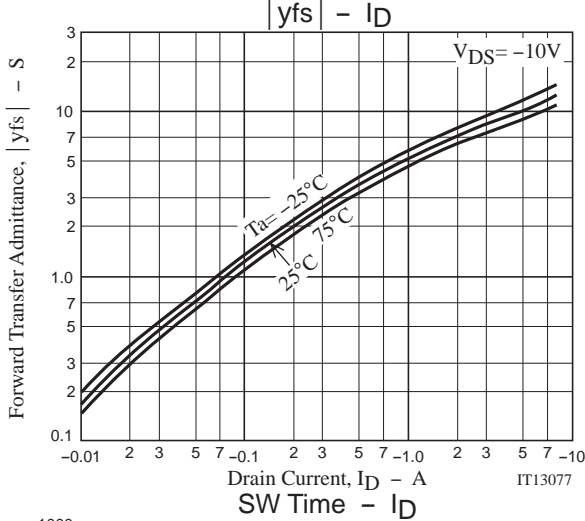
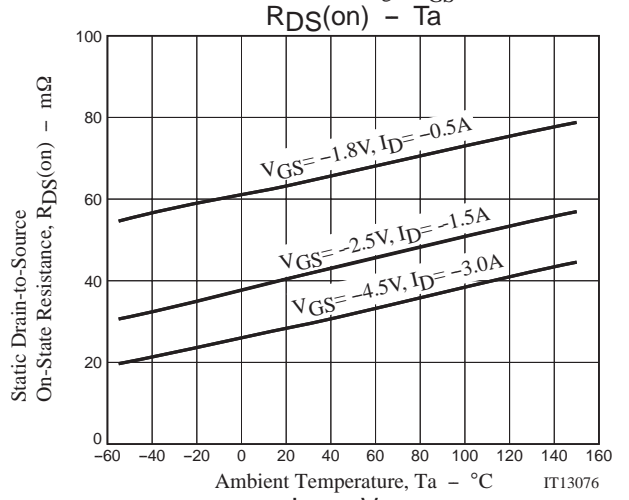
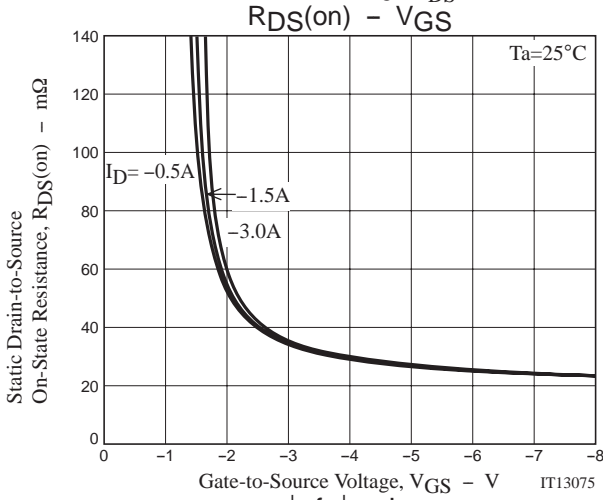
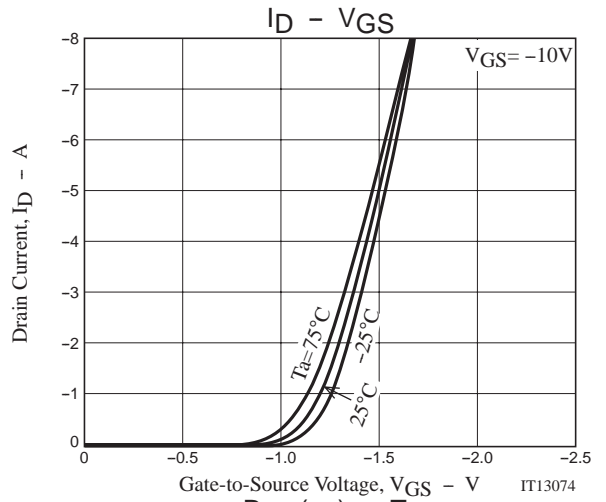
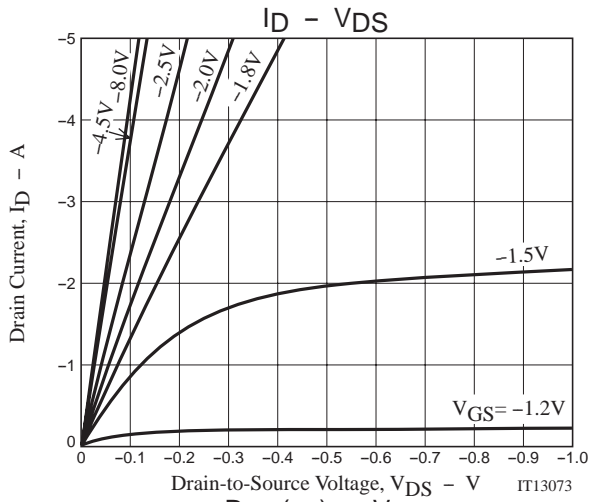


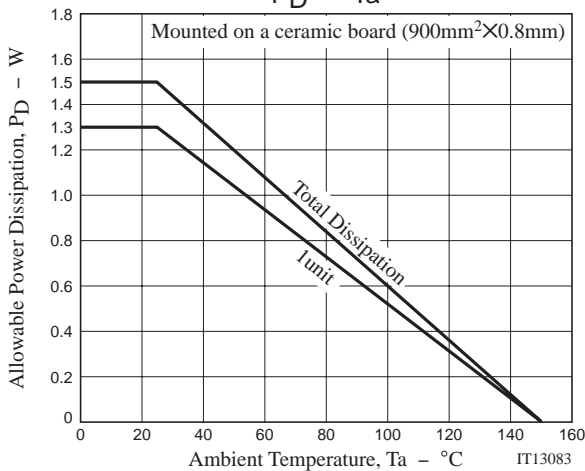
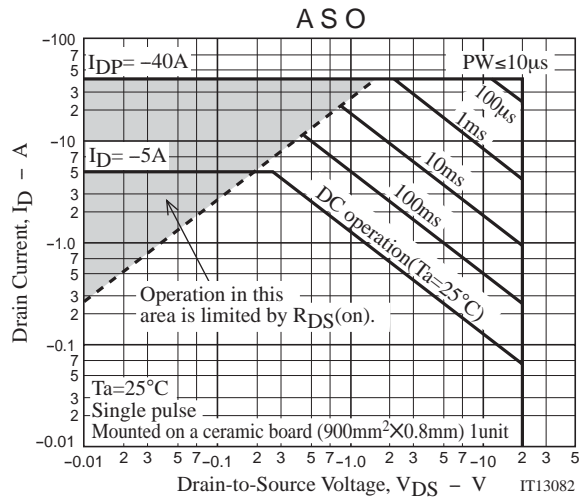
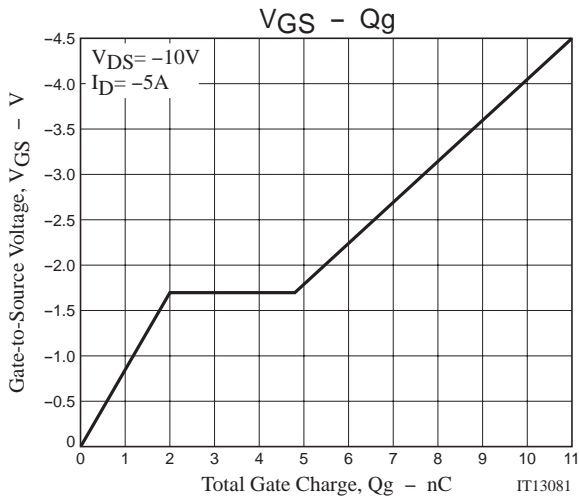
## Electrical Connection



## Switching Time Test Circuit







Note on usage : Since the ECH8654 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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