



SANYO Semiconductors

DATA SHEET

N-Channel Silicon MOSFET

ECH8659 — General-Purpose Switching Device Applications

Features

- 4V 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}		30	V
Gate-to-Source Voltage	V _{GSS}		±20	V
Drain Current (DC)	I _D		7	A
Drain Current (Pulse)	I _{DP}	PW≤10μs, duty cycle≤1%	40	A
Allowable Power Dissipation	P _D	When mounted on ceramic substrate (900mm ² ×0.8mm) 1unit	1.3	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	30			V
Zero-Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			1	μA
Gate-to-Source Leakage Current	I _{GSS}	V _{GS} =±16V, V _{DS} =0V			±10	μA
Cutoff Voltage	V _{GS(off)}	V _{DS} =10V, I _D =1mA	1.2		2.6	V
Forward Transfer Admittance	y _{fs}	V _{DS} =10V, I _D =3.5A	2.2	3.7		S

Marking : TE

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SANYO Semiconductor Co., Ltd.

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ECH8659

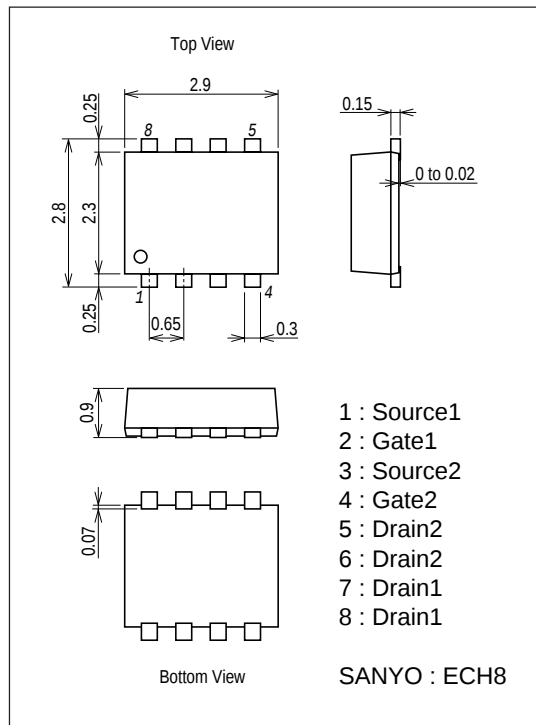
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=3.5A, V_{GS}=10V$		18	24	$m\Omega$
	$R_{DS(on)2}$	$I_D=2A, V_{GS}=4.5V$		29	41	$m\Omega$
	$R_{DS(on)3}$	$I_D=2A, V_{GS}=4V$		39	55	$m\Omega$
Input Capacitance	C_{iss}	$V_{DS}=10V, f=1MHz$		710		pF
Output Capacitance	C_{oss}	$V_{DS}=10V, f=1MHz$		120		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS}=10V, f=1MHz$		72		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		10		ns
Rise Time	t_r	See specified Test Circuit.		25		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		43		ns
Fall Time	t_f	See specified Test Circuit.		25		ns
Total Gate Charge	Q_g	$V_{DS}=15V, V_{GS}=10V, I_D=3.5A$		11.8		nC
Gate-to-Source Charge	Q_{gs}	$V_{DS}=15V, V_{GS}=10V, I_D=3.5A$		2.4		nC
Gate-to-Drain "Miller" Charge	Q_{gd}	$V_{DS}=15V, V_{GS}=10V, I_D=3.5A$		2.0		nC
Diode Forward Voltage	V_{SD}	$I_S=7A, V_{GS}=0V$		0.79	1.2	V

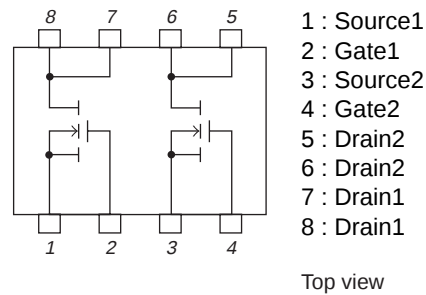
Package Dimensions

unit : mm (typ)

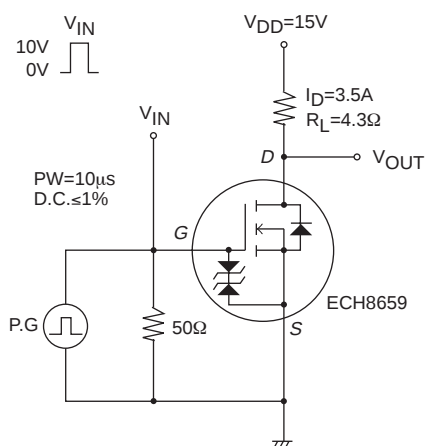
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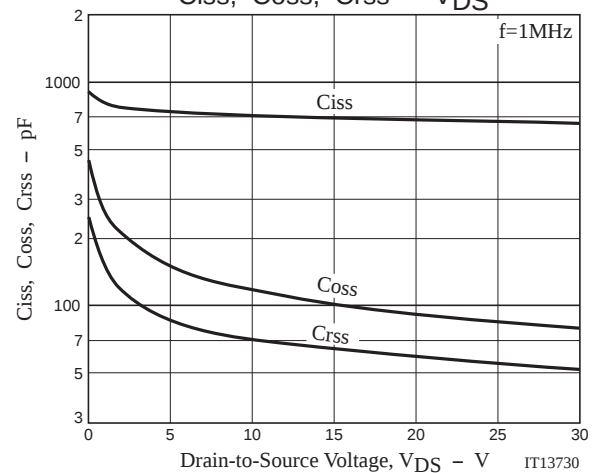
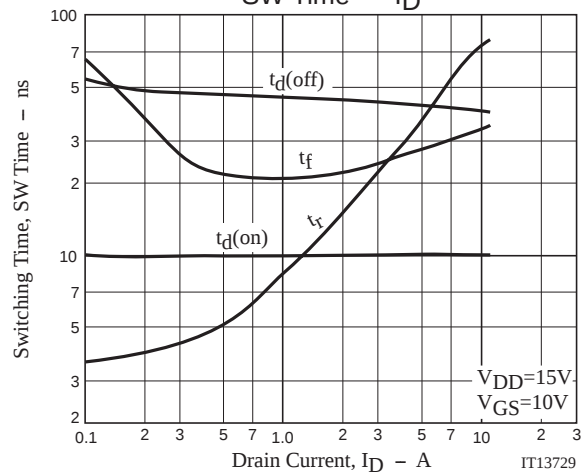
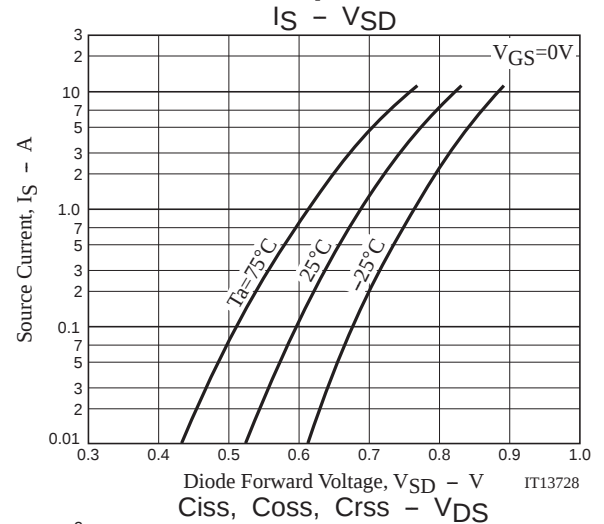
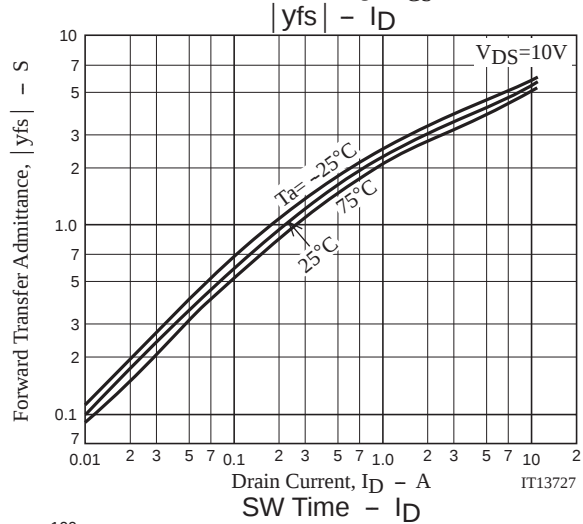
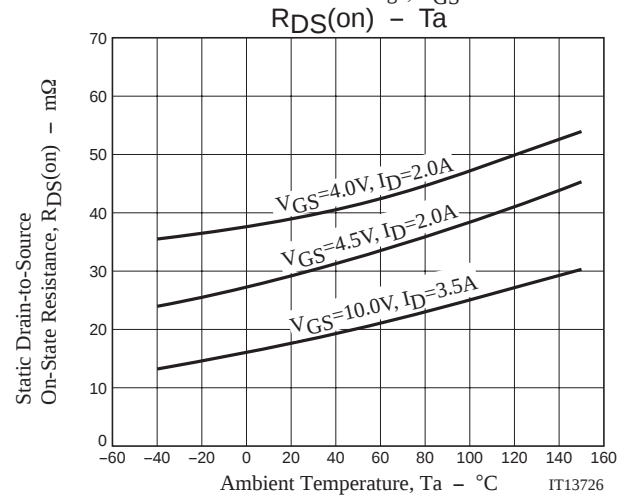
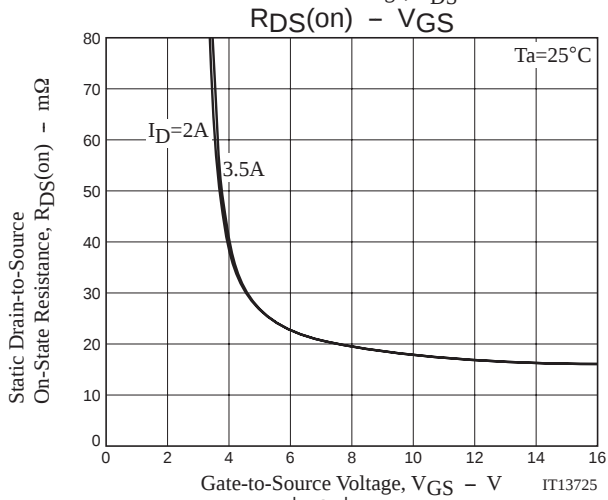
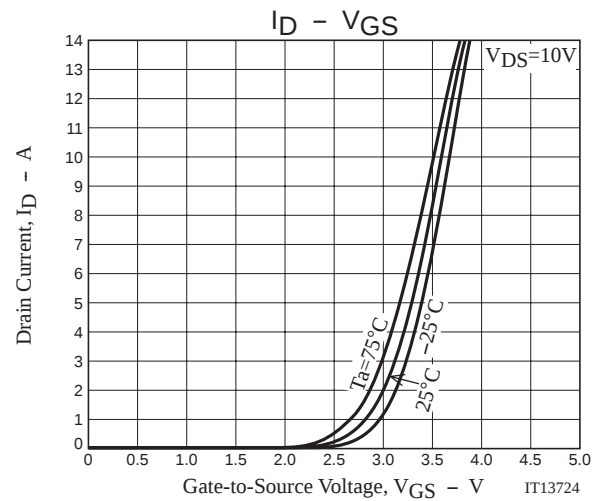
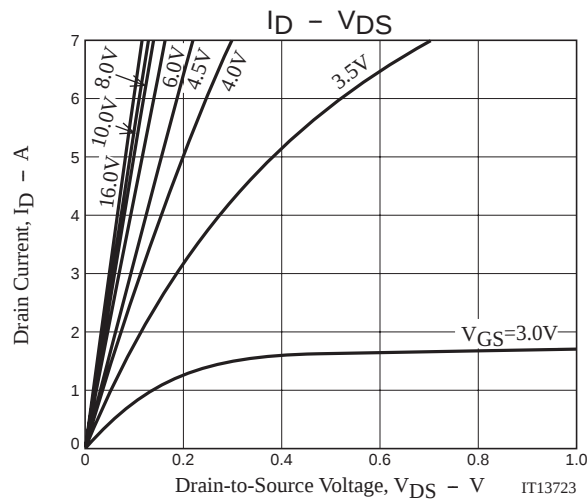


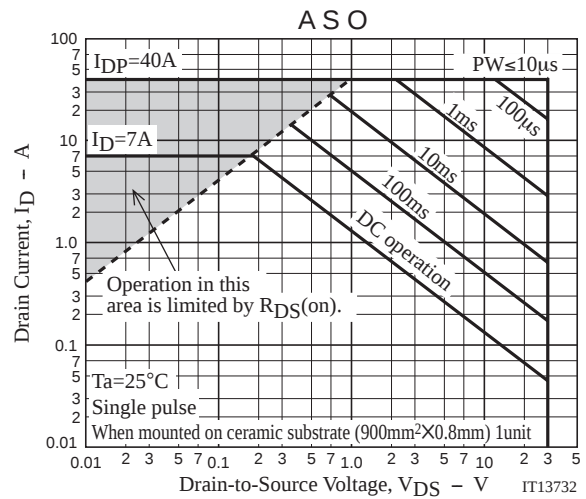
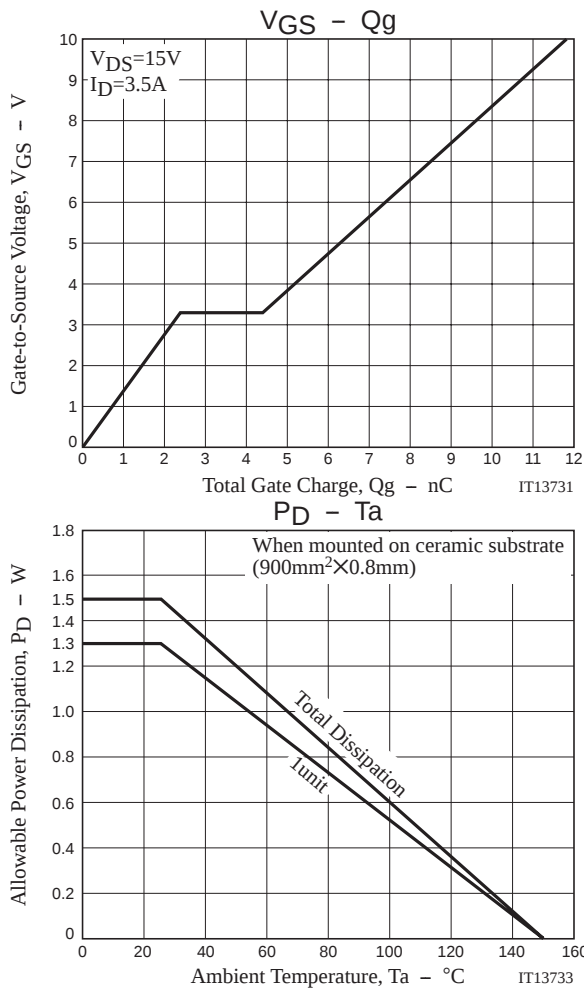
Electrical Connection



Switching Time Test Circuit







Note on usage : Since the ECH8659 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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