



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

N-Channel Silicon MOSFET

ECH8657 — General-Purpose Switching Device Applications

Features

- 4V drive
- Halogen free compliance

Specifications

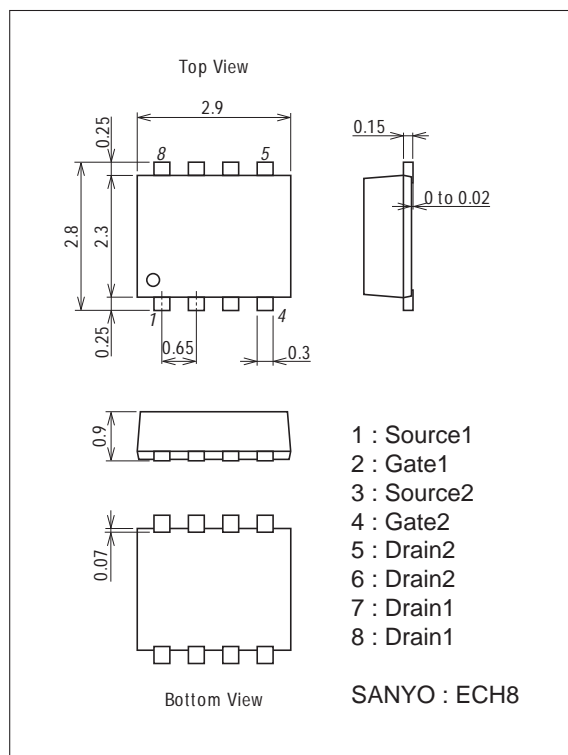
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DS}		35	V
Gate-to-Source Voltage	V_{GS}		± 20	V
Drain Current (DC)	I_D		4.5	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu s$, duty cycle $\leq 1\%$	30	A
Allowable Power Dissipation	P_D	When mounted on ceramic substrate (1200mm ² ×0.8mm) 1unit	1.3	W
Total Dissipation	P_T	When mounted on ceramic substrate (1200mm ² ×0.8mm)	1.5	W
Channel Temperature	T_{ch}		150	°C
Storage Temperature	T_{stg}		-55 to +150	°C

Package Dimensions

unit : mm (typ)

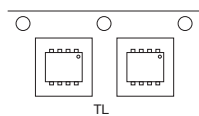
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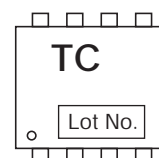
Product & Package Information

- Package : ECH8
- JEITA, JEDEC : -
- Minimum Packing Quantity : 3,000 pcs./reel

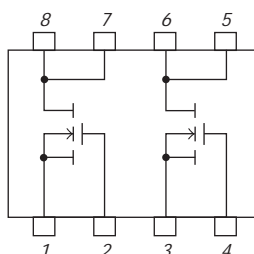
Packing Type : TL



Marking



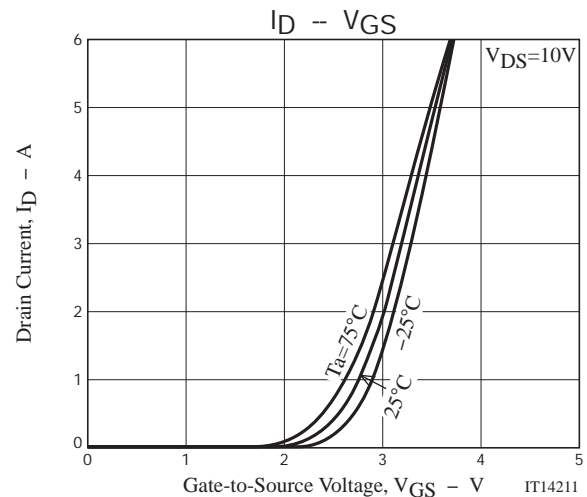
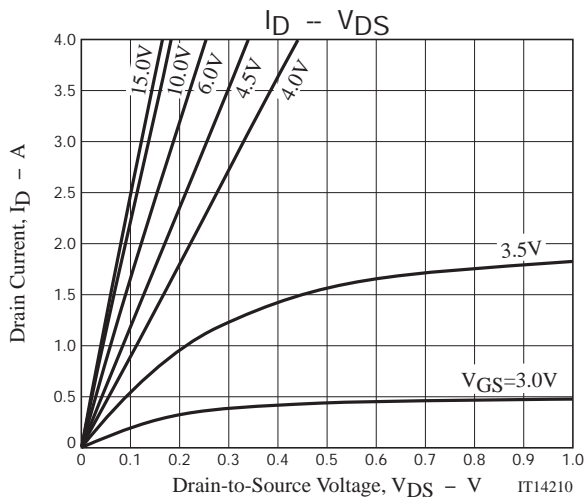
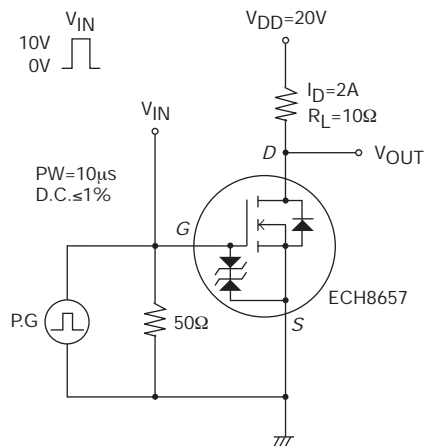
Electrical Connection

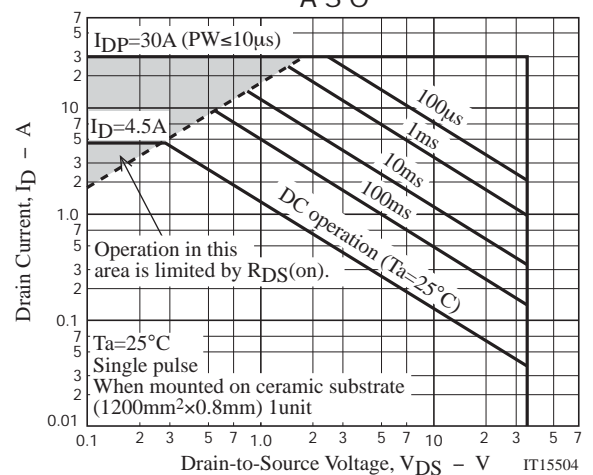
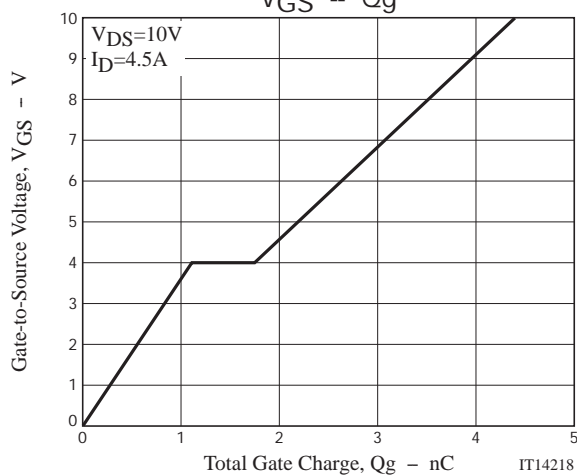
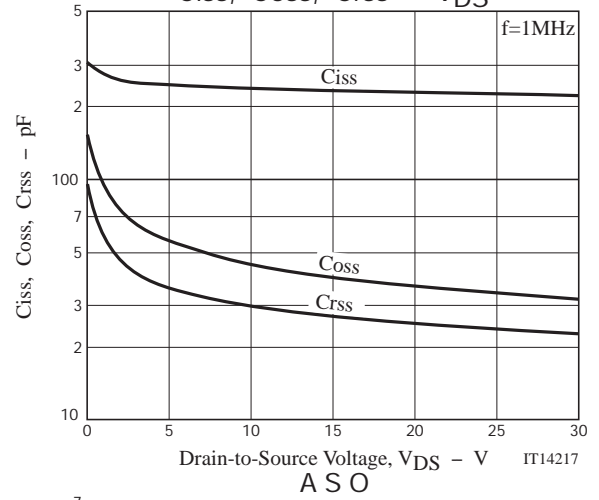
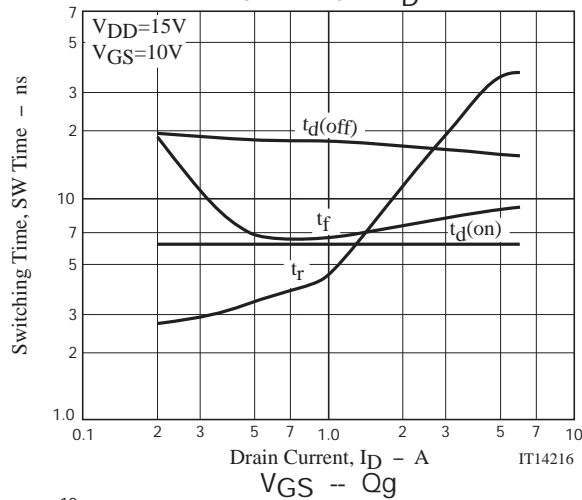
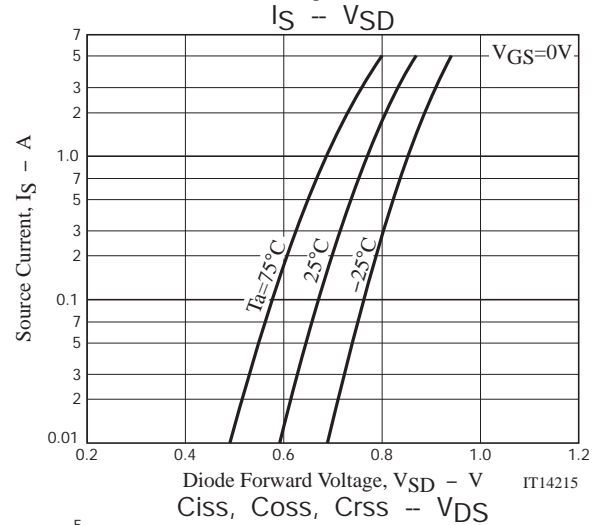
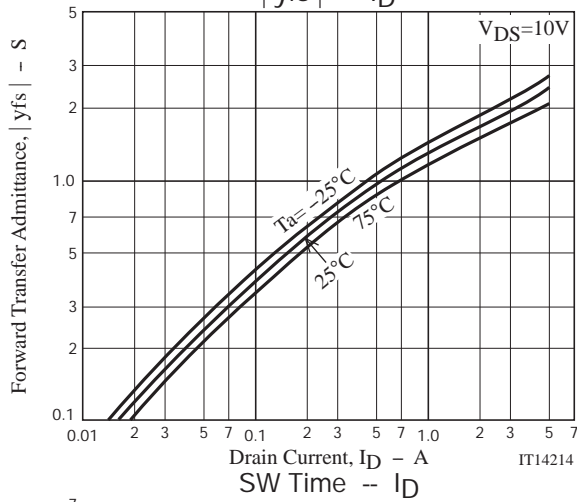
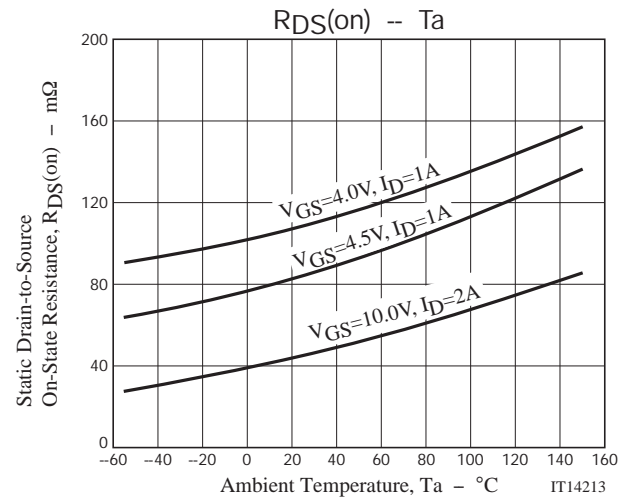
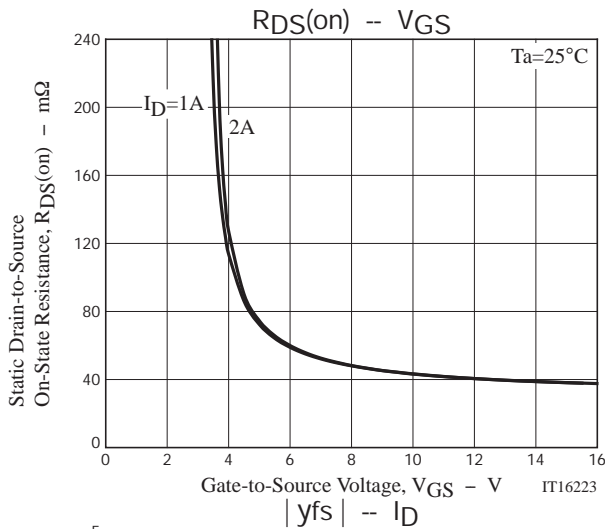


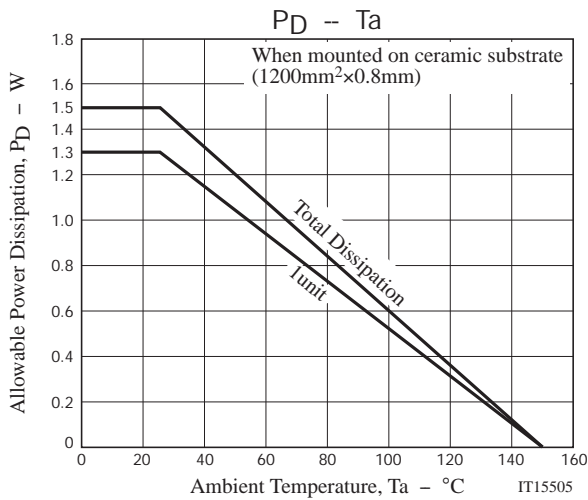
Electrical Characteristics at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1\text{mA}$, $V_{GS}=0\text{V}$	35			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=35\text{V}$, $V_{GS}=0\text{V}$			1	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 16\text{V}$, $V_{DS}=0\text{V}$			± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10\text{V}$, $I_D=1\text{mA}$	1.2		2.6	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10\text{V}$, $I_D=2\text{A}$		1.66		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=2\text{A}$, $V_{GS}=10\text{V}$		45	59	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D=1\text{A}$, $V_{GS}=4.5\text{V}$		85	119	$\text{m}\Omega$
	$R_{DS(on)3}$	$I_D=1\text{A}$, $V_{GS}=4\text{V}$		110	155	$\text{m}\Omega$
Input Capacitance	C_{iss}	$V_{DS}=20\text{V}$, $f=1\text{MHz}$		230		pF
Output Capacitance	C_{oss}	$V_{DS}=20\text{V}$, $f=1\text{MHz}$		37		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS}=20\text{V}$, $f=1\text{MHz}$		25		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		6		ns
Rise Time	t_r	See specified Test Circuit.		11		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		17		ns
Fall Time	t_f	See specified Test Circuit.		9		ns
Total Gate Charge	Q_g	$V_{DS}=20\text{V}$, $V_{GS}=10\text{V}$, $I_D=4.5\text{A}$		4.6		nC
Gate-to-Source Charge	Q_{gs}	$V_{DS}=20\text{V}$, $V_{GS}=10\text{V}$, $I_D=4.5\text{A}$		1.0		nC
Gate-to-Drain "Miller" Charge	Q_{gd}	$V_{DS}=20\text{V}$, $V_{GS}=10\text{V}$, $I_D=4.5\text{A}$		1.0		nC
Diode Forward Voltage	V_{SD}	$I_S=4.5\text{A}$, $V_{GS}=0\text{V}$		0.85	1.2	V

Switching Time Test Circuit







Note on usage : Since the ECH8657 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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