Ordering number : ENN8191

SANYO Semiconductors
DATA SHEET

N-Channel Silicon MOSFET

ECH8616 — General-Purpose Switching Device Applications

Features

- Ultrahigh-speed switching.
- 4V drive.
- Composite type, facilitating high-density mounting.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		60	V
Gate-to-Source Voltage	V_{GSS}		±20	V
Drain Current (DC)	I_D		3	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	20	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (900mm²×0.8mm) 1unit	1.3	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}=0	60			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V, V_{GS}=0			1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±16V, V_{DS}=0			±10	μA
Cutoff Voltage	$V_{GS}(off)$	V_{DS}=10V, I_D=1mA	1.2		2.6	V
Forward Transfer Admittance	$\|yfs\|$	V_{DS}=10V, I_D=1.5A	2.2	3.8		S
Static Drain-to-Source On-State Resistance	$R_{DS}(on)1$	I_D=1.5A, V_{GS}=10V		70	93	mΩ
	$R_{DS}(on)2$	I_D=0.5A, V_{GS}=4V		92	133	mΩ
Input Capacitance	Ciss	V_{DS}=20V, f=1MHz		560		pF
Output Capacitance	Coss	V_{DS}=20V, f=1MHz		60		pF
Reverse Transfer Capacitance	Crss	V_{DS}=20V, f=1MHz		41		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		11		ns
Rise Time	t_r	See specified Test Circuit.		11		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		61		ns
Fall Time	t_f	See specified Test Circuit.		32		ns

Marking : FJ

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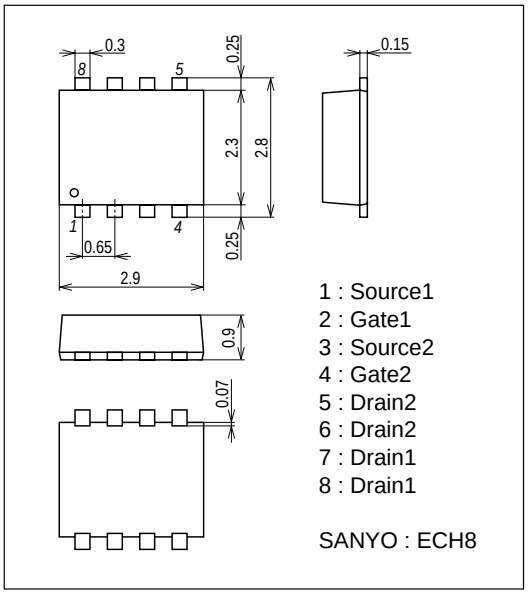
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Total Gate Charge	Qg	V_{DS}=30V, V_{GS}=10V, I_D=3A		12.8		nC
Gate-to-Source Charge	Qgs	V_{DS}=30V, V_{GS}=10V, I_D=3A		2.1		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=30V, V_{GS}=10V, I_D=3A		2.7		nC
Diode Forward Voltage	V_{SD}	I_S=3A, V_{GS}=0		0.81	1.2	V

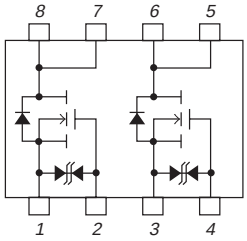
Package Dimensions

unit : mm

2206B

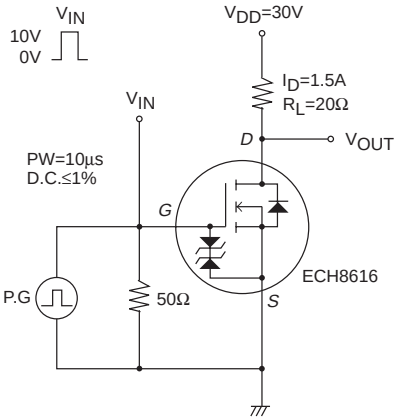


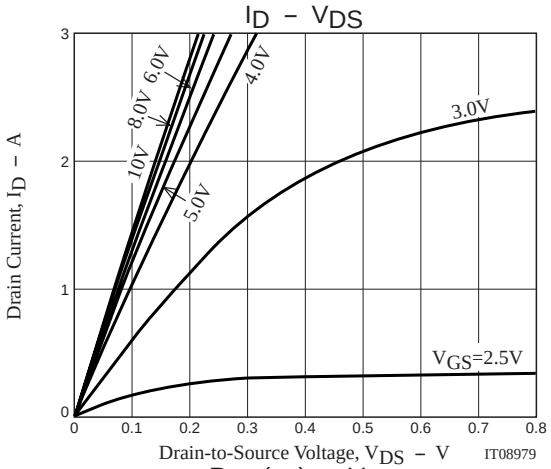
Electrical Connection

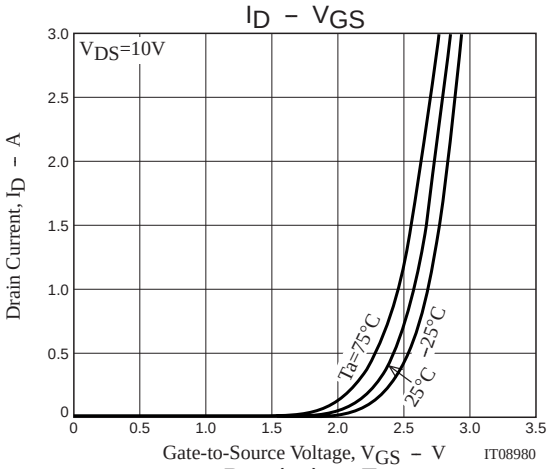


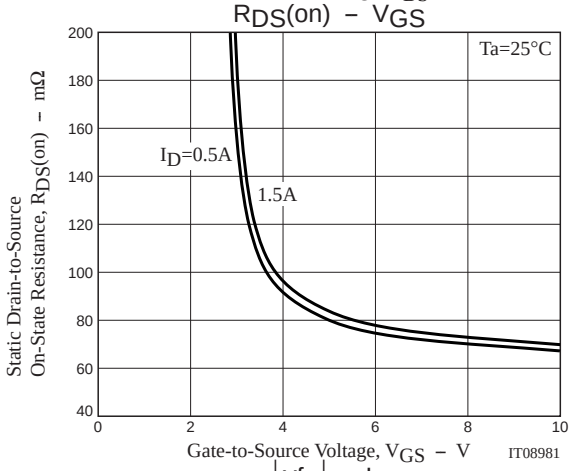
Top view

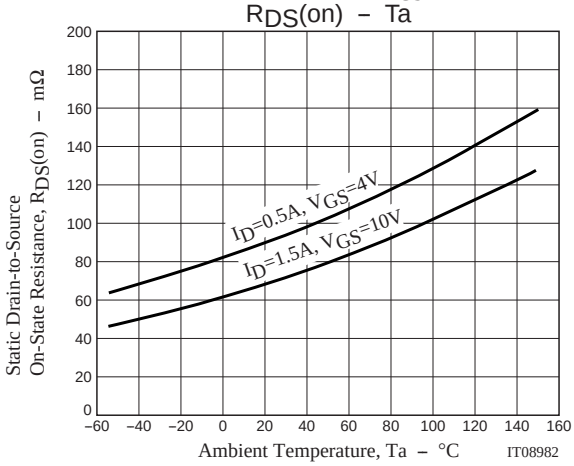
Switching Time Test Circuit

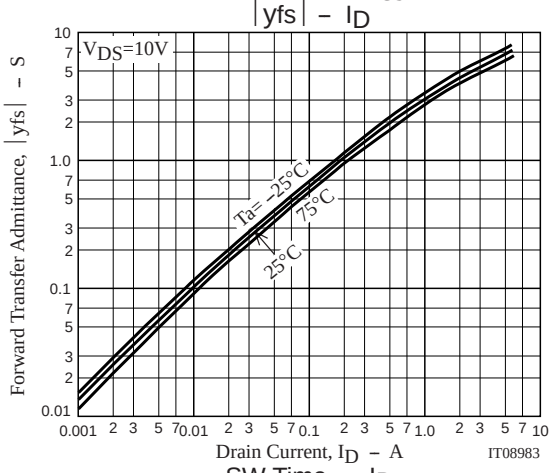


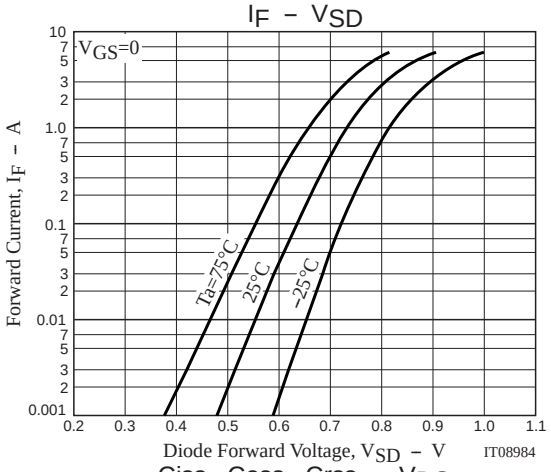


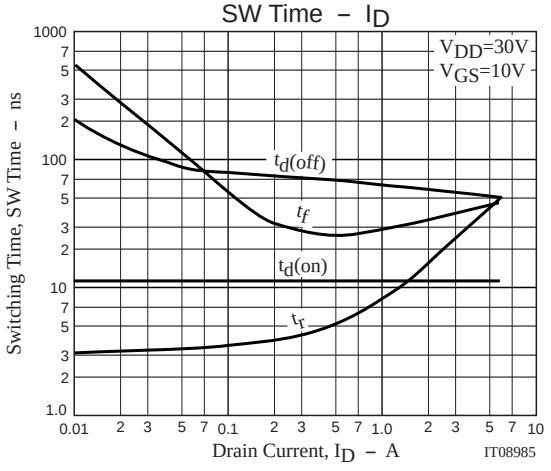


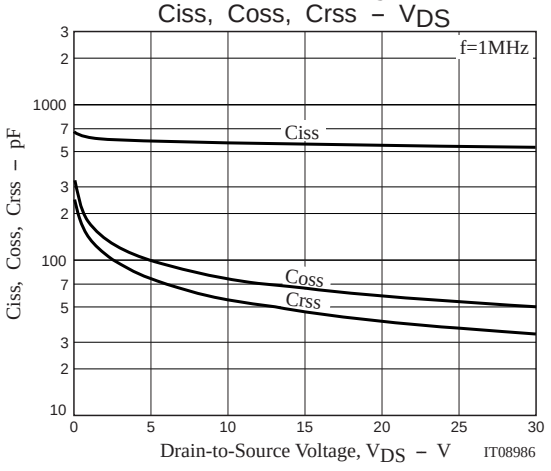


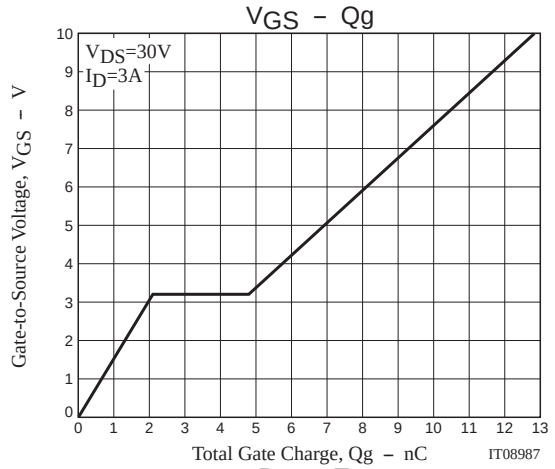


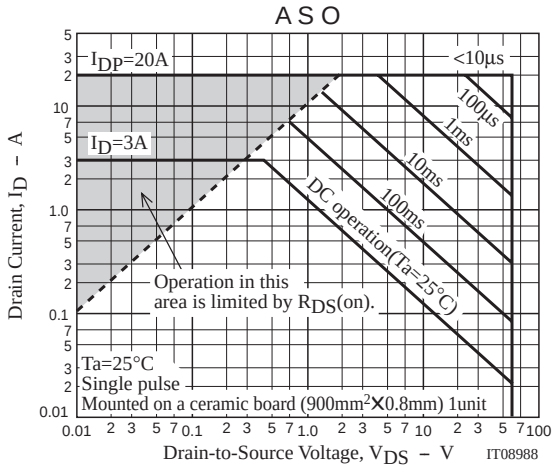


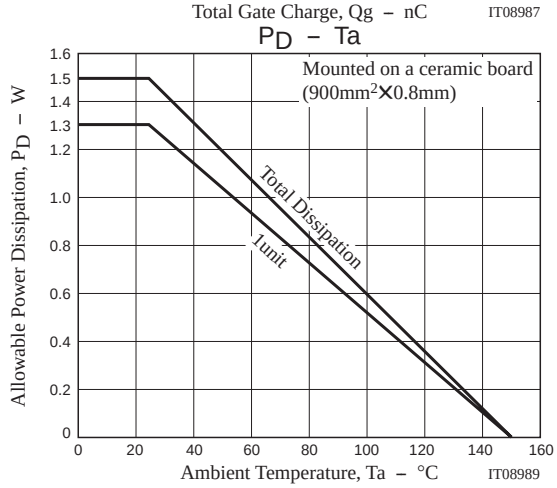












Note on usage : Since the ECH8616 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.