



SANYO Semiconductors

DATA SHEET

N-Channel and P-Channel Silicon MOSFETs

ECH8619 — General-Purpose Switching Device Applications

Features

- The ECH8619 incorporates an N-channel MOSFET and a P-channel MOSFET that feature low ON-resistance and ultrahigh-speed switching, thereby enabling high-density mounting.
- 4V drive.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	N-channel	P-channel	Unit
Drain-to-Source Voltage	V _{DSS}		60	-60	V
Gate-to-Source Voltage	V _{GSS}		±20	±20	V
Drain Current (DC)	I _D		3	-2	A
Drain Current (Pulse)	I _{DP}	PW≤10μs, duty cycle≤1%	20	-20	A
Allowable Power Dissipation	P _D	Mounted on a ceramic board (900mm ² ×0.8mm) 1unit	1.3		W
Total Dissipation	P _T	Mounted on a ceramic board (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	
[N-channel]						
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=1mA, VGS=0V	60			V
Zero-Gate Voltage Drain Current	IDSS	VDS=60V, VGS=0V			1	μA
Gate-to-Source Leakage Current	IGSS	VGS=±16V, VDS=0V			±10	μA
Cutoff Voltage	VGS(off)	VDS=10V, ID=1mA	1.2		2.6	V
Forward Transfer Admittance	yfs	VDS=10V, ID=1.5A	2.2	3.8		S
Static Drain-to-Source On-State Resistance	RDS(on)1	ID=1.5A, VGS=10V		70	93	mΩ
	RDS(on)2	ID=0.5A, VGS=4V		92	133	mΩ

Marking : FM

Continued on next page.

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ECH8619

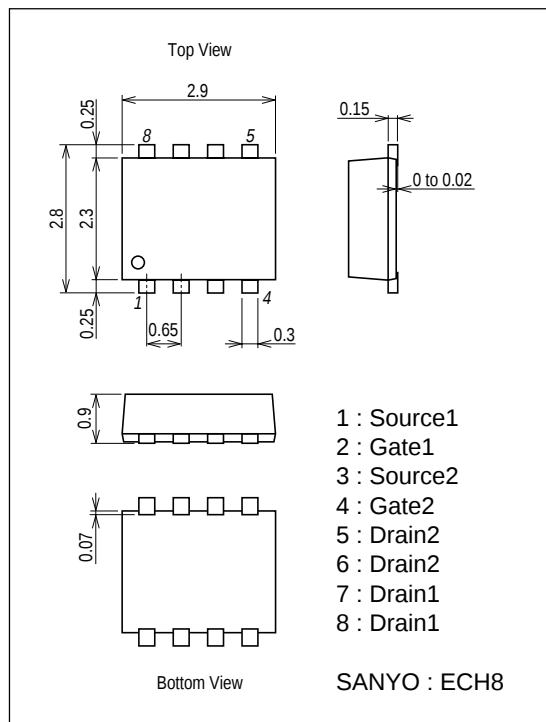
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	$V_{DS}=20V, f=1MHz$		560		pF
Output Capacitance	Coss	$V_{DS}=20V, f=1MHz$		60		pF
Reverse Transfer Capacitance	Crss	$V_{DS}=20V, f=1MHz$		41		pF
Turn-ON Delay Time	$t_d(on)$	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
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	VSD	$I_S=3A, V_{GS}=0V$		0.81	1.2	V
[P-channel]						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=-1mA, V_{GS}=0V$	-60			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-60V, V_{GS}=0V$			-1	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 16V, V_{DS}=0V$			± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=-10V, I_D=-1mA$	-1.2		-2.6	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=-10V, I_D=-1A$	2.1	3.5		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=-1A, V_{GS}=-10V$		160	210	m Ω
	$R_{DS(on)2}$	$I_D=-0.5A, V_{GS}=-4V$		210	295	m Ω
Input Capacitance	Ciss	$V_{DS}=-20V, f=1MHz$		660		pF
Output Capacitance	Coss	$V_{DS}=-20V, f=1MHz$		54		pF
Reverse Transfer Capacitance	Crss	$V_{DS}=-20V, f=1MHz$		42		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		10.5		ns
Rise Time	t_r	See specified Test Circuit.		7.0		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		93		ns
Fall Time	t_f	See specified Test Circuit.		30		ns
Total Gate Charge	Qg	$V_{DS}=-30V, V_{GS}=-10V, I_D=-2A$		15		nC
Gate-to-Source Charge	Qgs	$V_{DS}=-30V, V_{GS}=-10V, I_D=-2A$		2.1		nC
Gate-to-Drain "Miller" Charge	Qgd	$V_{DS}=-30V, V_{GS}=-10V, I_D=-2A$		2.7		nC
Diode Forward Voltage	VSD	$I_S=-2A, V_{GS}=0V$		-0.82	-1.2	V

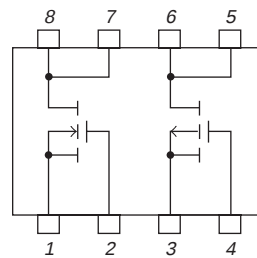
Package Dimensions

unit : mm (typ)

7011A-001



Electrical Connection

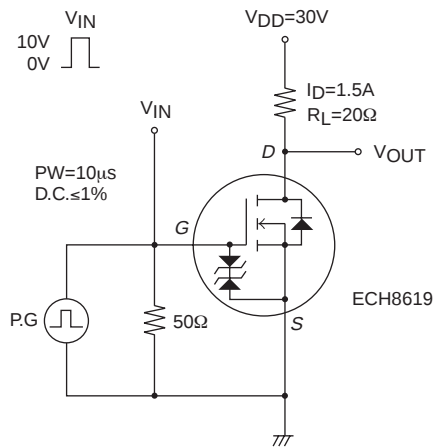


- 1 : Source1
- 2 : Gate1
- 3 : Source2
- 4 : Gate2
- 5 : Drain2
- 6 : Drain2
- 7 : Drain1
- 8 : Drain1

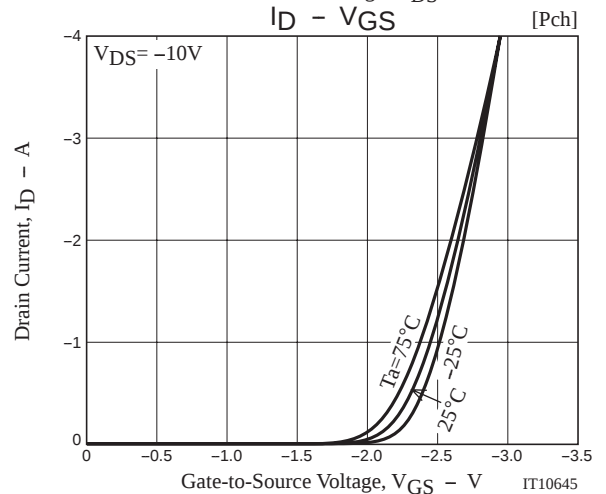
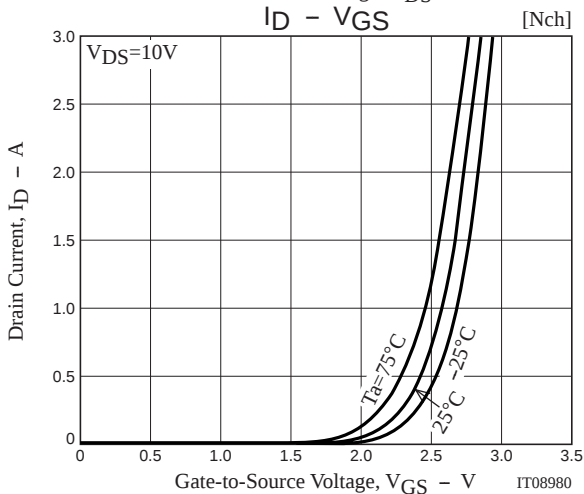
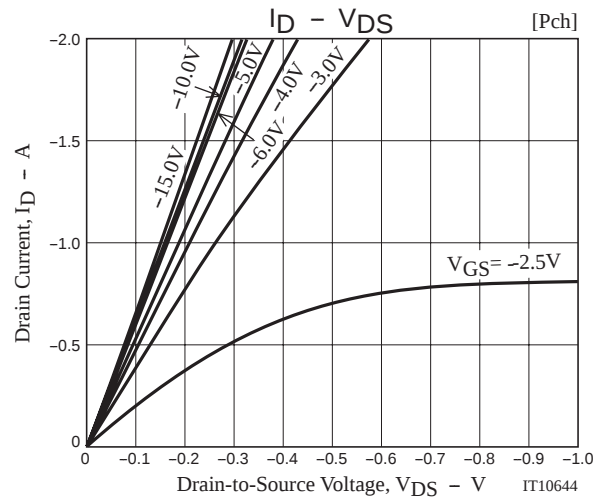
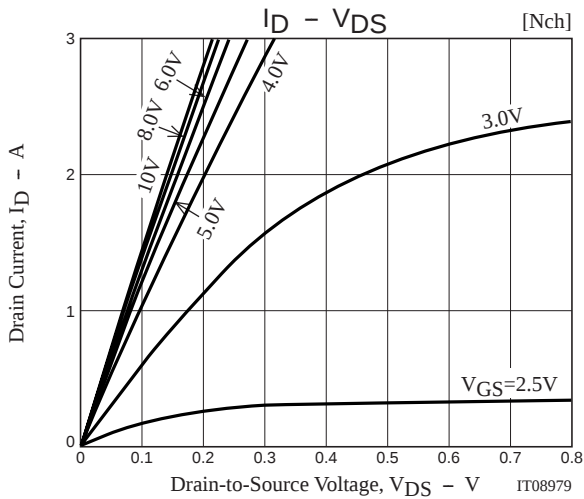
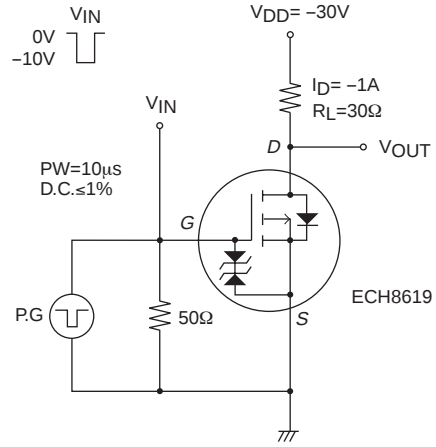
Top view

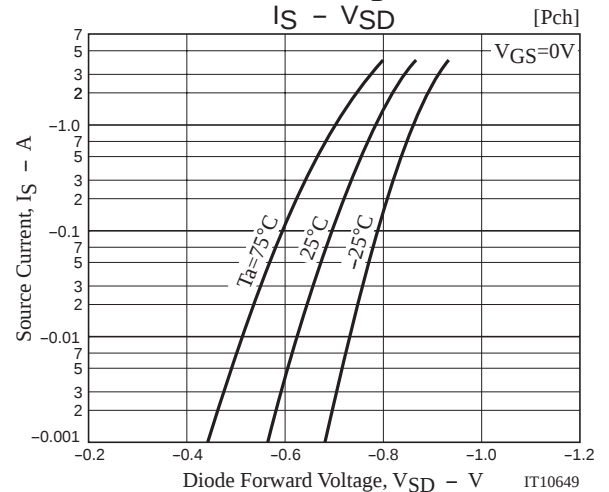
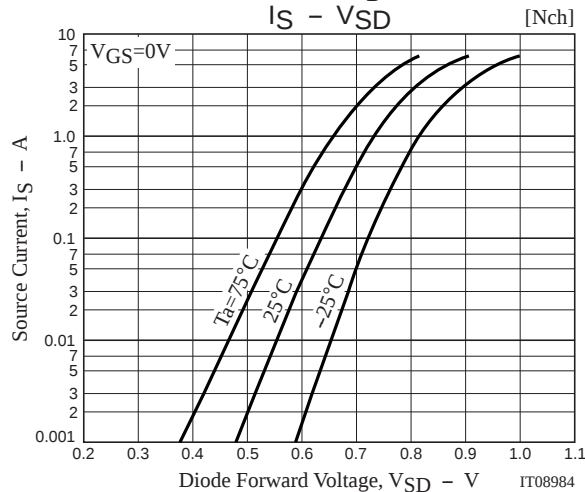
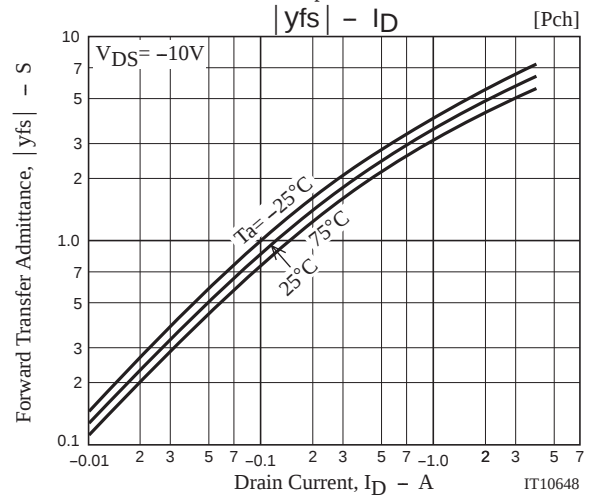
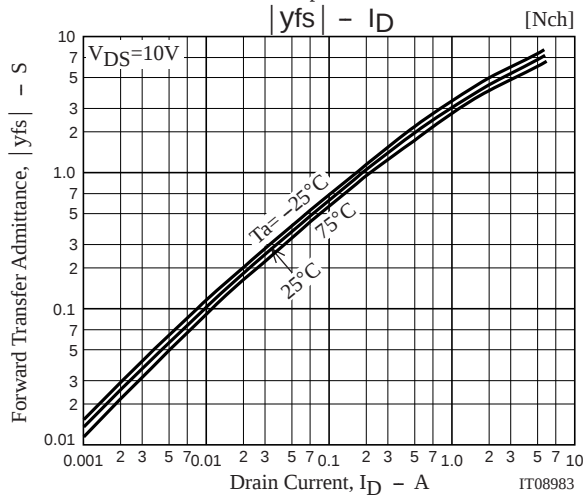
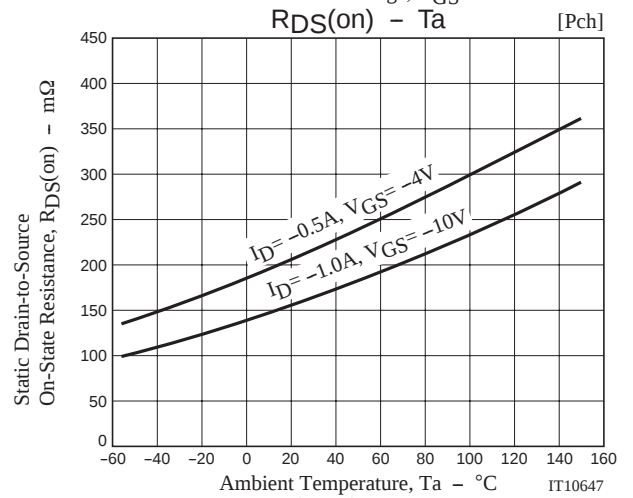
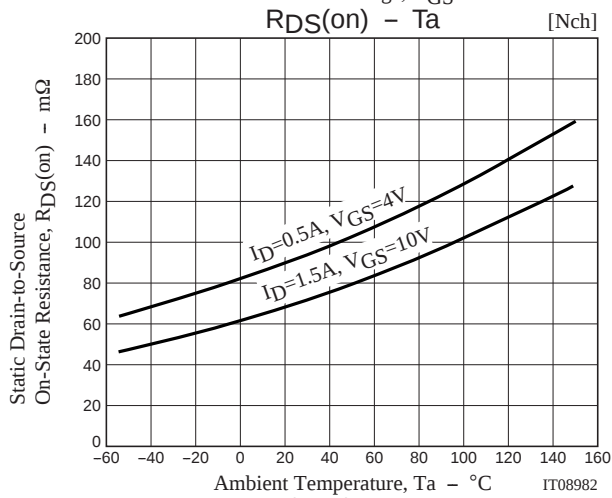
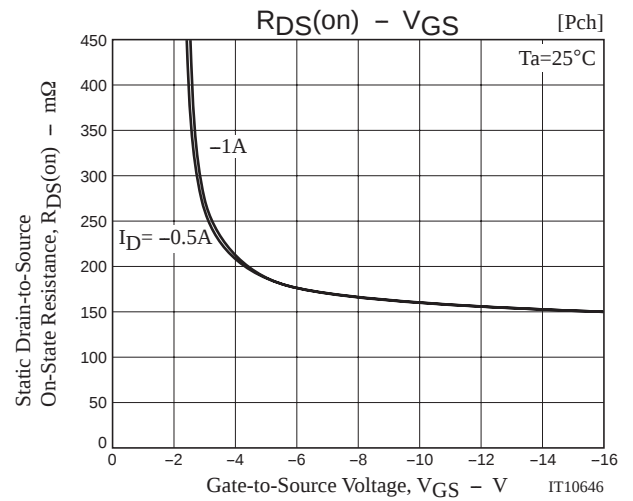
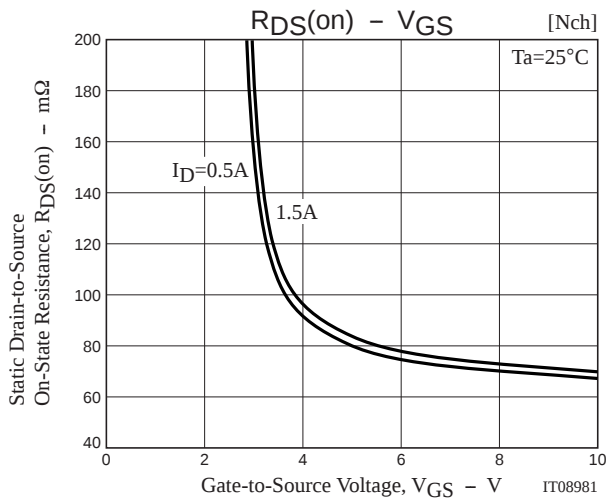
Switching Time Test Circuit

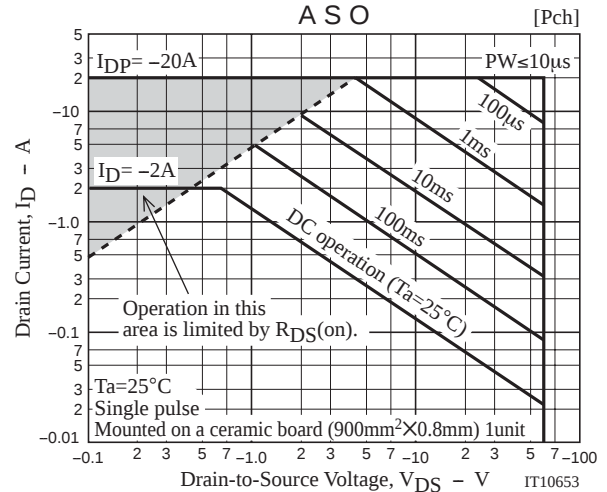
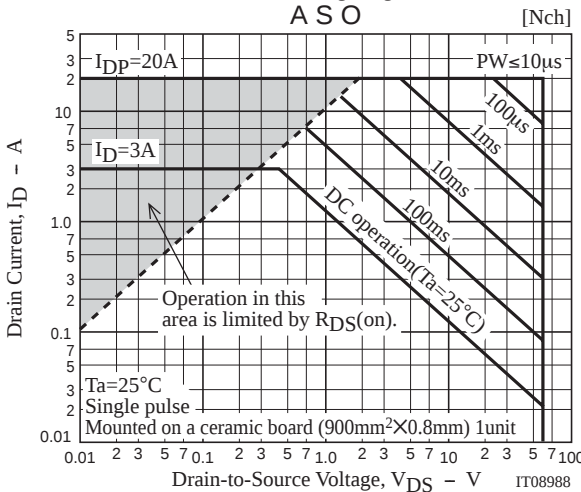
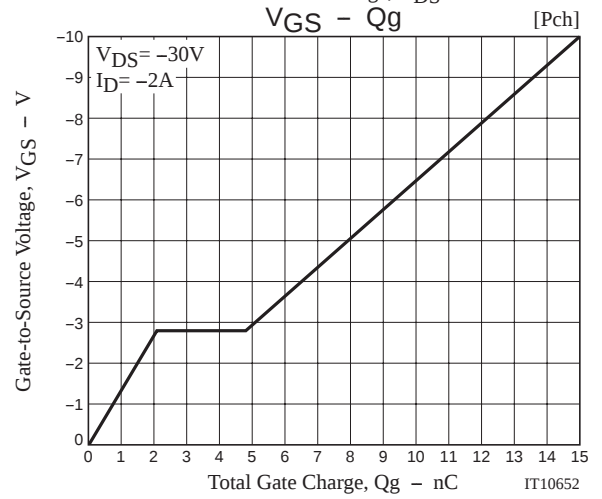
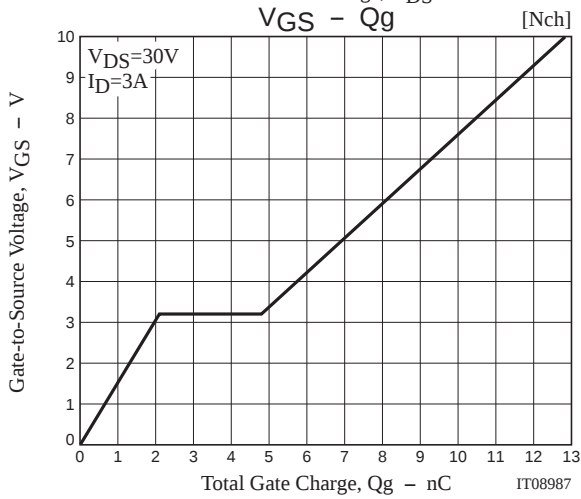
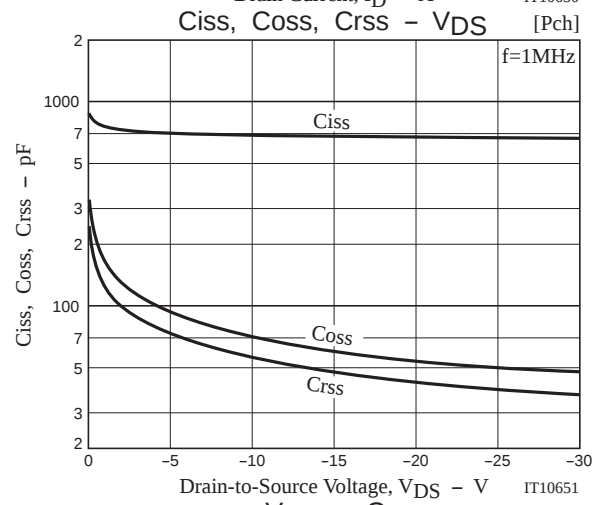
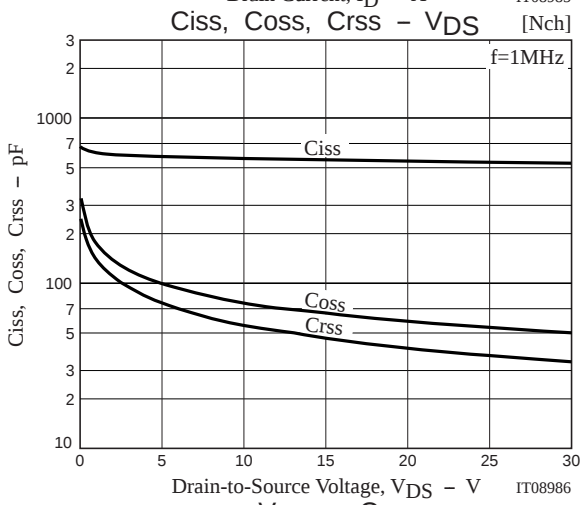
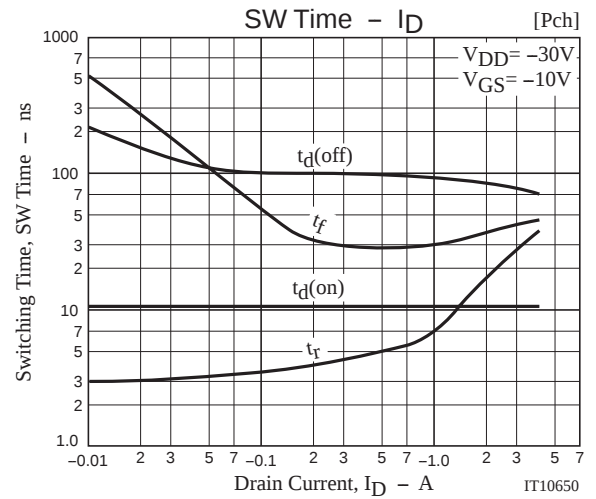
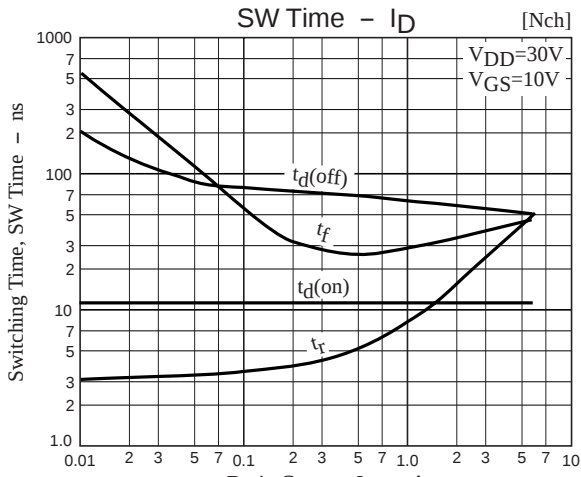
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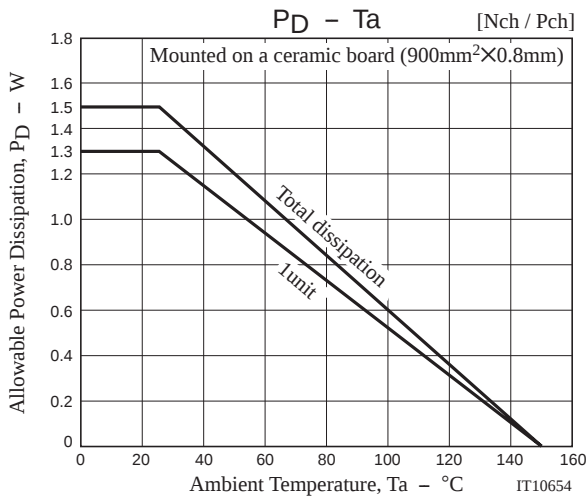


[P-channel]









Note on usage : Since the ECH8619 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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