



N-Channel and P-Channel Silicon MOSFETs

ECH8661 — General-Purpose Switching Device Applications

Features

- ON-resistance Nch: $R_{DS(on)1}=18m\Omega(\text{typ.})$, Pch: ON-resistance $R_{DS(on)1}=30m\Omega(\text{typ.})$
- The ECH8660 incorporates an N-channel MOSFET and a P-channel MOSFET that feature low ON-resistance and high-speed switching , thereby enabling high-density mounting
- 4V drive
- Halogen free compliance

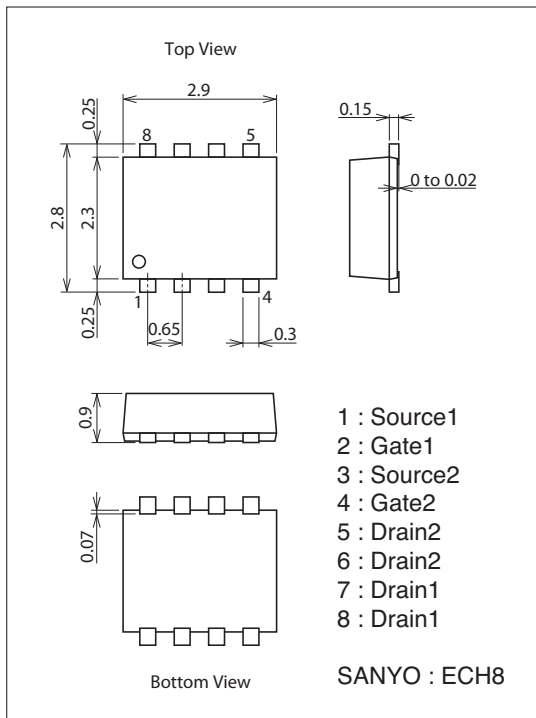
Specifications

Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	N-channel	P-channel	Unit
Drain-to-Source Voltage	V_{DSS}		30	-30	V
Gate-to-Source Voltage	V_{GSS}		± 20	± 20	V
Drain Current (DC)	I_D		7	-5.5	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	40	-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

Package Dimensions

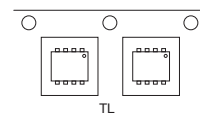
unit : mm (typ)
7011A-001



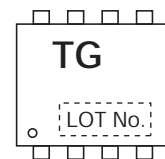
Product & Package Information

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

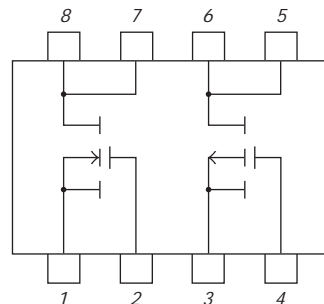
Packing Type : TL



Marking



Electrical Connection



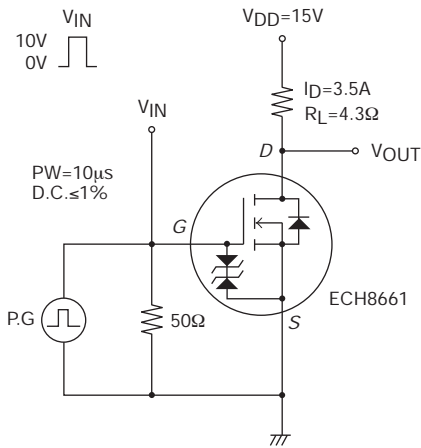
ECH8661

Electrical Characteristics at Ta=25°C

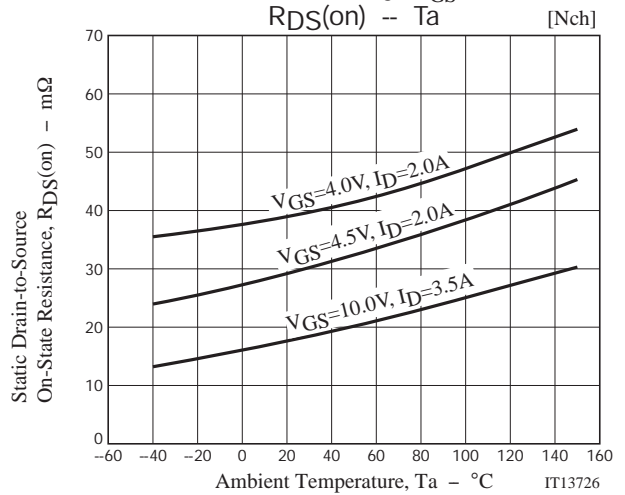
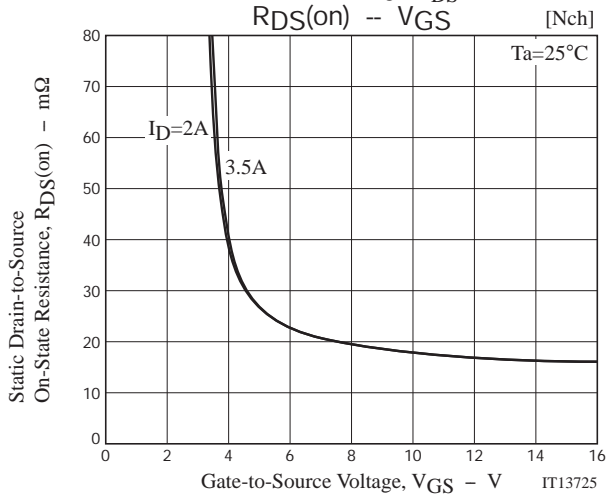
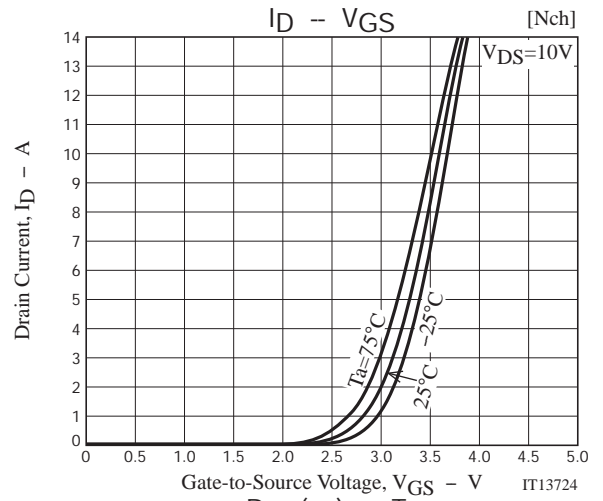
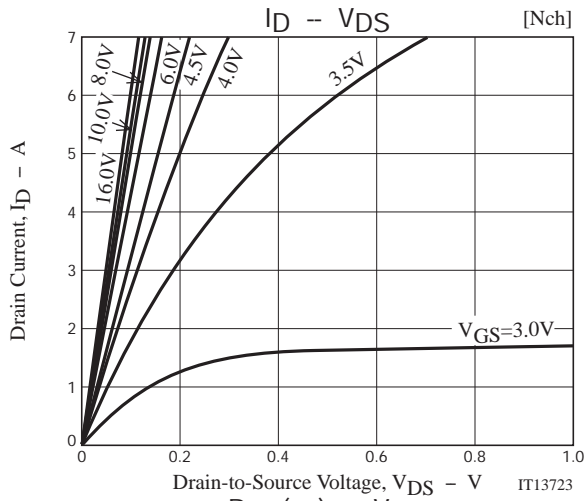
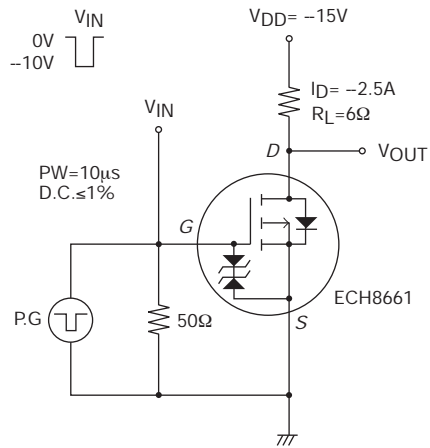
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[N-channel]						
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=1mA, VGS=0V	30			V
Zero-Gate Voltage Drain Current	IDSS	VDS=30V, VGS=0V			1	μA
Gate-to-Source Leakage Current	IGSS	VGS=±16V, VDS=0V			±10	μA
Cutoff Voltage	VGS(off)	VDS=10V, ID=1mA	1.2		2.6	V
Forward Transfer Admittance	yfs	VDS=10V, ID=3.5A		3.7		S
Static Drain-to-Source On-State Resistance	RDS(on)1	ID=3.5A, VGS=10V		18	24	mΩ
	RDS(on)2	ID=2A, VGS=4.5V		29	41	mΩ
	RDS(on)3	ID=2A, VGS=4V		39	55	mΩ
Input Capacitance	Ciss	VDS=10V, f=1MHz		710		pF
Output Capacitance	Coss	VDS=10V, f=1MHz		120		pF
Reverse Transfer Capacitance	Crss	VDS=10V, f=1MHz		72		pF
Turn-ON Delay Time	td(on)	See specified Test Circuit.		10		ns
Rise Time	tr	See specified Test Circuit.		25		ns
Turn-OFF Delay Time	td(off)	See specified Test Circuit.		43		ns
Fall Time	tf	See specified Test Circuit.		25		ns
Total Gate Charge	Qg	VDS=15V, VGS=10V, ID=7A		11.8		nC
Gate-to-Source Charge	Qgs	VDS=15V, VGS=10V, ID=7A		2.4		nC
Gate-to-Drain "Miller" Charge	Qgd	VDS=15V, VGS=10V, ID=7A		2.0		nC
Diode Forward Voltage	VSD	IS=7A, VGS=0V		0.79	1.2	V
[P-channel]						
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=-1mA, VGS=0V	-30			V
Zero-Gate Voltage Drain Current	IDSS	VDS=-30V, 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=-2.5A		5.2		S
Static Drain-to-Source On-State Resistance	RDS(on)1	ID=-2.5A, VGS=-10V		30	39	mΩ
	RDS(on)2	ID=-1.5A, VGS=-4.5V		55	77	mΩ
	RDS(on)3	ID=-1.5A, VGS=-4V		58	82	mΩ
Input Capacitance	Ciss	VDS=-10V, f=1MHz		600		pF
Output Capacitance	Coss	VDS=-10V, f=1MHz		145		pF
Reverse Transfer Capacitance	Crss	VDS=-10V, f=1MHz		110		pF
Turn-ON Delay Time	td(on)	See specified Test Circuit.		7.2		ns
Rise Time	tr	See specified Test Circuit.		23		ns
Turn-OFF Delay Time	td(off)	See specified Test Circuit.		63		ns
Fall Time	tf	See specified Test Circuit.		42		ns
Total Gate Charge	Qg	VDS=-15V, VGS=-10V, ID=-5.5A		13		nC
Gate-to-Source Charge	Qgs	VDS=-15V, VGS=-10V, ID=-5.5A		1.8		nC
Gate-to-Drain "Miller" Charge	Qgd	VDS=-15V, VGS=-10V, ID=-5.5A		3.2		nC
Diode Forward Voltage	VSD	IS=-5.5A, VGS=0V		-0.82	-1.2	V

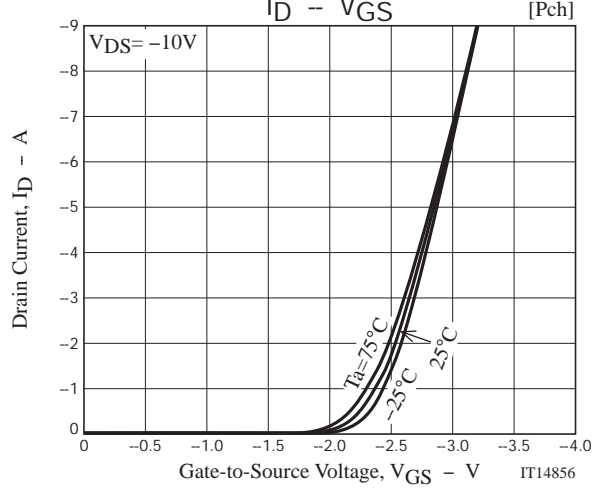
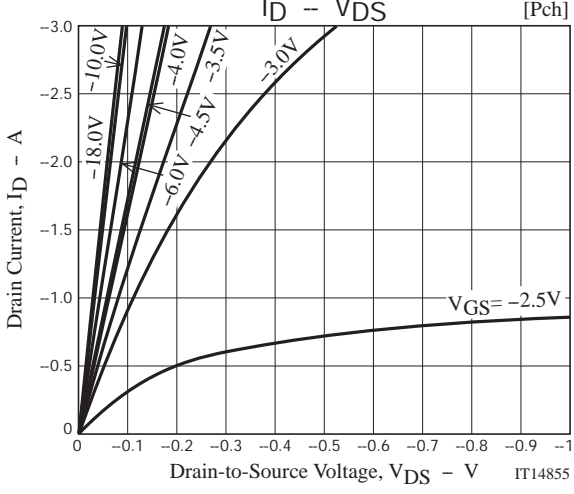
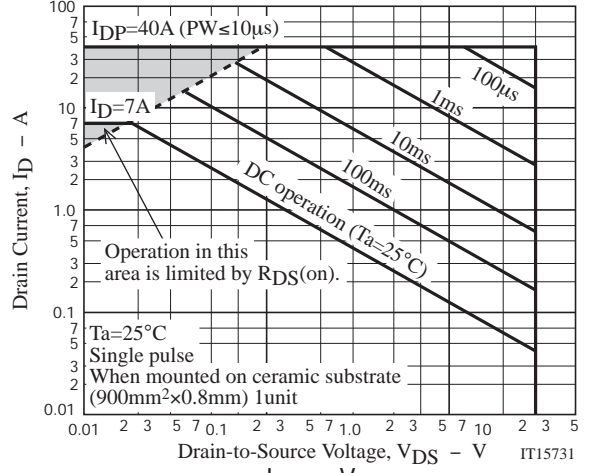
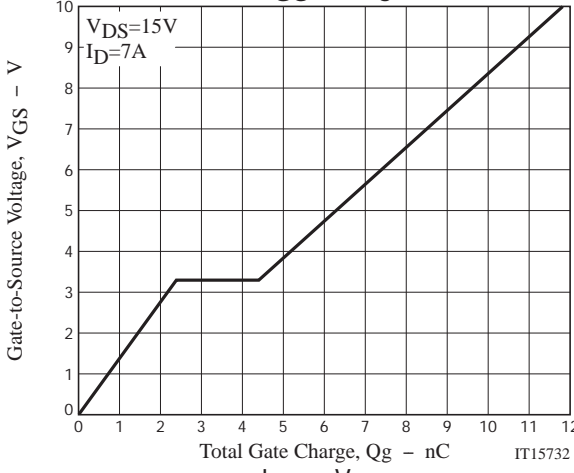
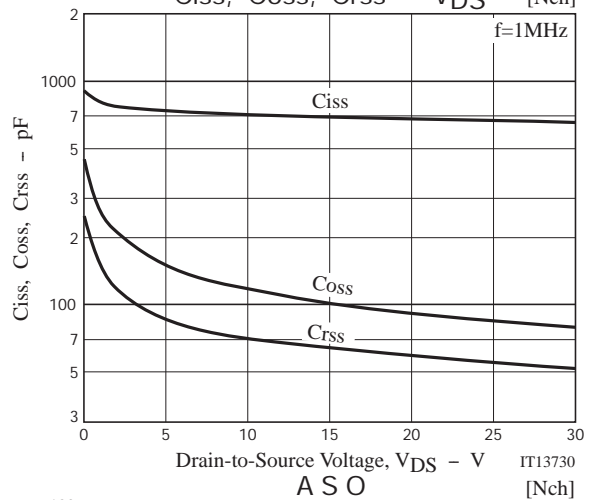
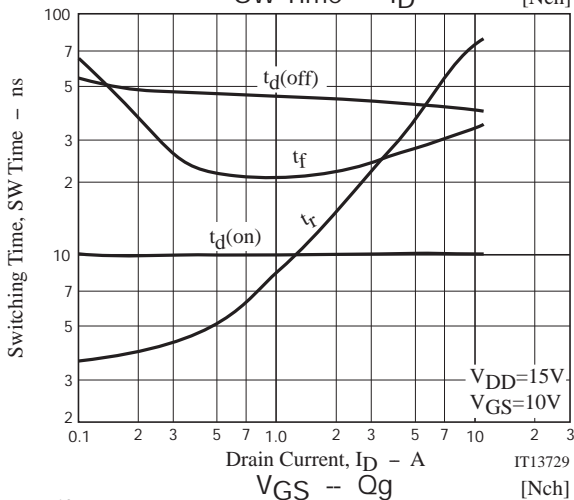
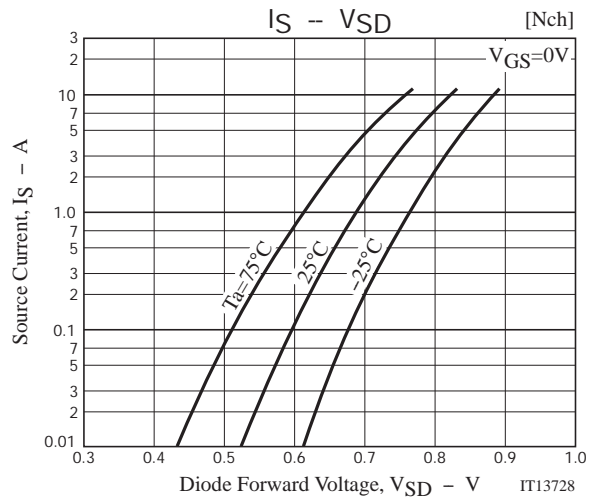
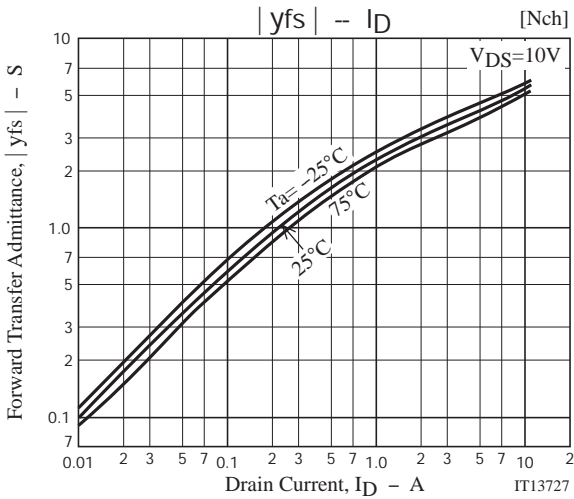
Switching Time Test Circuit

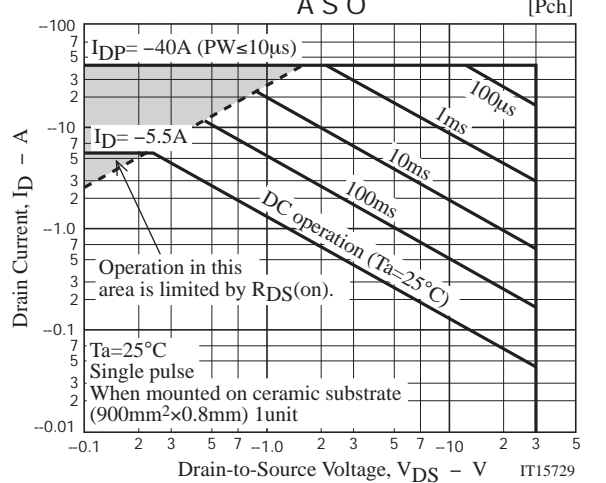
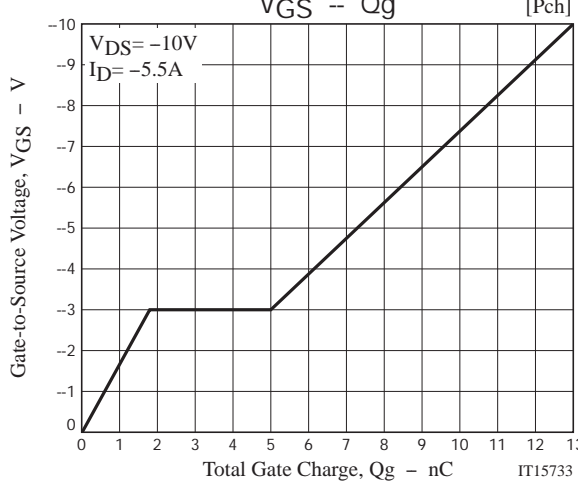
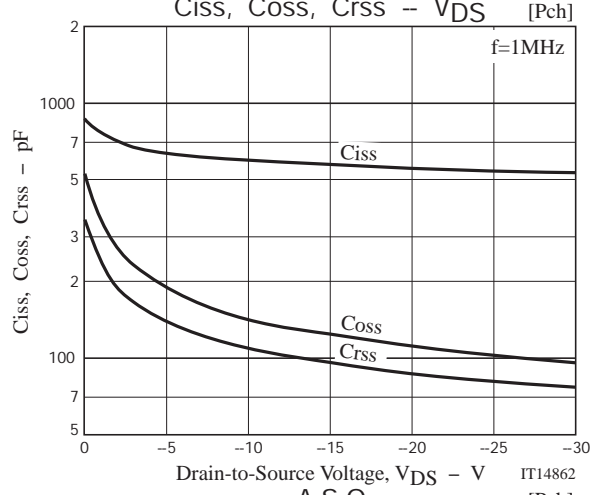
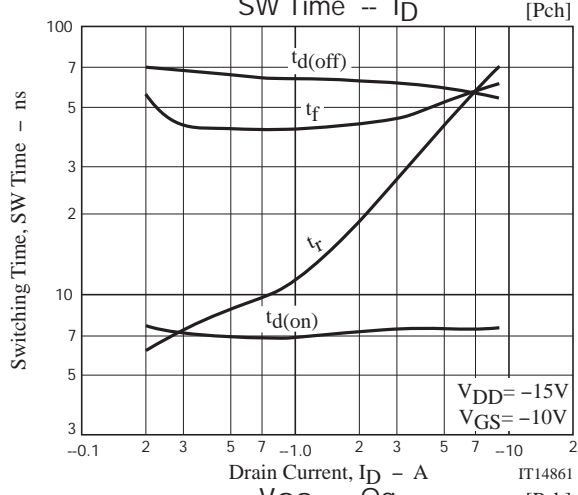
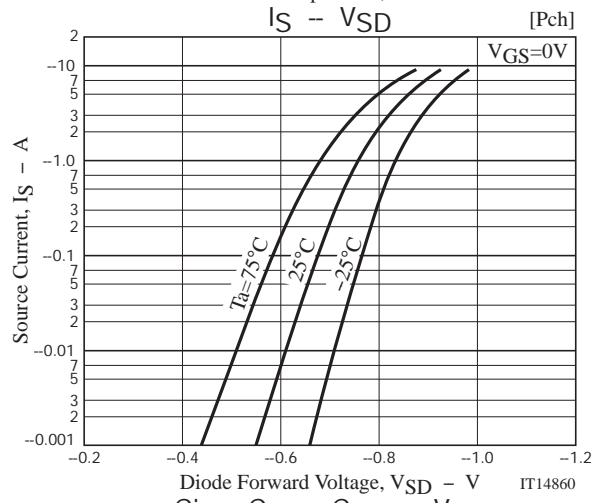
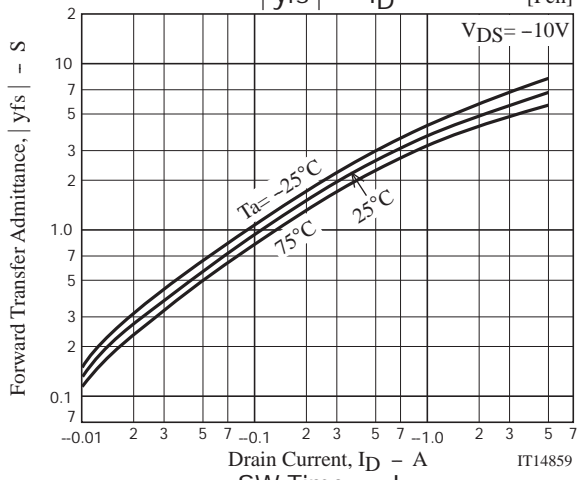
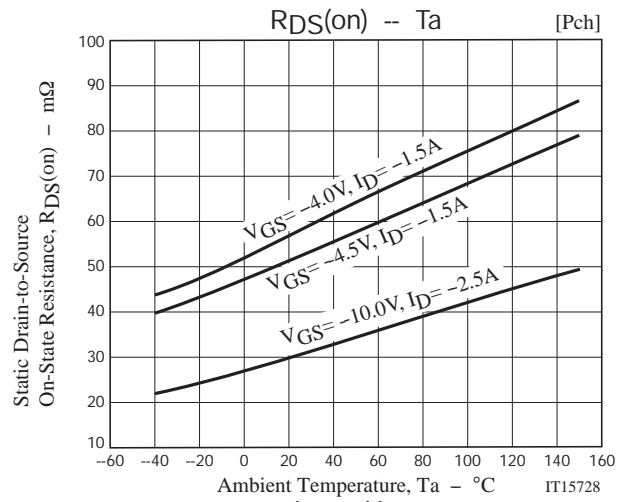
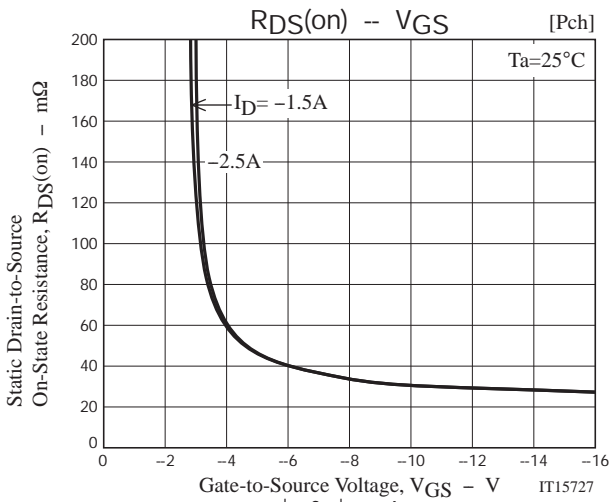
[N-channel]

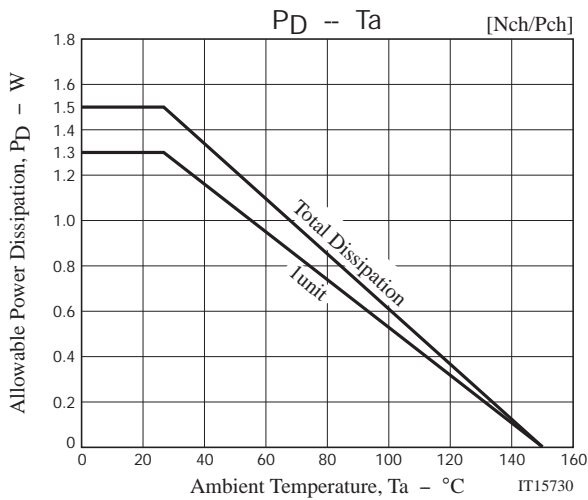


[P-channel]









Note on usage : Since the ECH8661 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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