



# SCH2601 — General-Purpose Switching Device Applications

N-Channel and P-Channel Silicon MOSFETs

## Features

- The SCH2601 incorporates two elements in the same package which are N-channel MOSFETs, thereby enabling high-density mounting.
- Low ON-resistance.
- High-speed switching.
- 2.5V drive.
- High resistance to damage from ESD (typ 300V) [with a protection diode connected between the gate and source].

## Specifications

### Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	N-channel	P-channel	Unit
Drain-to-Source Voltage	V <sub>DSS</sub>		30	-30	V
Gate-to-Source Voltage (*1)	V <sub>GSS</sub>		10	-10	V
Drain Current (DC)	I <sub>D</sub>		0.7	-0.4	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	2.8	-1.6	A
Allowable Power Dissipation	P <sub>D</sub>	Mounted on a ceramic board (900mm <sup>2</sup> ×0.8mm) 1unit	0.65		W
Channel Temperature	T <sub>ch</sub>		150		°C
Storage Temperature	T <sub>stg</sub>		-55 to +150		°C

(\*1) : Note, when designing a circuit using this product, that it has a gate (oxide film) protection diode connected only between its gate and source.

### Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[N-channel]						
Drain-to-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	I <sub>D</sub> =1mA, V <sub>GS</sub> =0V	30			V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V			1	μA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =8V, V <sub>DS</sub> =0V			1	μA
Cutoff Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =100μA	0.4		1.3	V
Forward Transfer Admittance	y <sub>fs</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =350mA	0.48	0.8		S
Static Drain-to-Source On-State Resistance	R <sub>DS(on)1</sub>	I <sub>D</sub> =350mA, V <sub>GS</sub> =4V		0.7	0.9	Ω
	R <sub>DS(on)2</sub>	I <sub>D</sub> =200mA, V <sub>GS</sub> =2.5V		0.8	1.15	Ω
	R <sub>DS(on)3</sub>	I <sub>D</sub> =10mA, V <sub>GS</sub> =1.5V		1.6	2.4	Ω

Marking : FA

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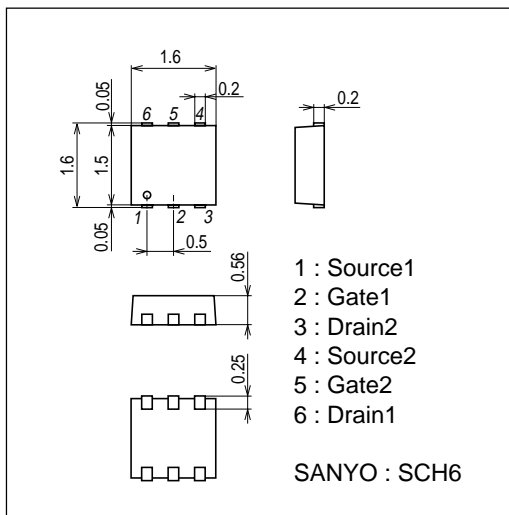
# SCH2601

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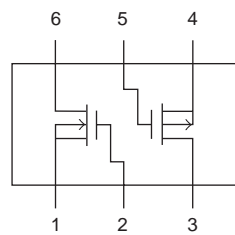
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	V <sub>DS</sub> =10V, f=1MHz		30		pF
Output Capacitance	Coss	V <sub>DS</sub> =10V, f=1MHz		7		pF
Reverse Transfer Capacitance	Crss	V <sub>DS</sub> =10V, f=1MHz		3.5		pF
Turn-ON Delay Time	t <sub>d(on)</sub>	See specified Test Circuit.		8		ns
Rise Time	t <sub>r</sub>	See specified Test Circuit.		6		ns
Turn-OFF Delay Time	t <sub>d(off)</sub>	See specified Test Circuit.		10		ns
Fall Time	t <sub>f</sub>	See specified Test Circuit.		8		ns
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =4V, I <sub>D</sub> =700mA		1		nC
Gate-to-Source Charge	Q <sub>gs</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =4V, I <sub>D</sub> =700mA		0.4		nC
Gate-to-Drain "Miller" Charge	Q <sub>gd</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =4V, I <sub>D</sub> =700mA		0.2		nC
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =700mA, V <sub>GS</sub> =0V		0.93	1.2	V
[P-channel]						
Drain-to-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	I <sub>D</sub> =-1mA, V <sub>GS</sub> =0V	-30			V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-30V, V <sub>GS</sub> =0V			-1	μA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =8V, V <sub>DS</sub> =0V			-1	μA
Cutoff Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> =-10V, I <sub>D</sub> =-100μA	-0.4		-1.4	V
Forward Transfer Admittance	y <sub>fs</sub>	V <sub>DS</sub> =-10V, I <sub>D</sub> =-0.2A	0.25	0.42		S
Static Drain-to-Source On-State Resistance	R <sub>DS(on)1</sub>	I <sub>D</sub> =-200mA, V <sub>GS</sub> =-4V		1.5	1.9	Ω
	R <sub>DS(on)2</sub>	I <sub>D</sub> =-100mA, V <sub>GS</sub> =-2.5V		2.0	2.8	Ω
	R <sub>DS(on)3</sub>	I <sub>D</sub> =-10mA, V <sub>GS</sub> =-1.5V		4.0	8.0	Ω
Input Capacitance	Ciss	V <sub>DS</sub> =-10V, f=1MHz		40		pF
Output Capacitance	Coss	V <sub>DS</sub> =-10V, f=1MHz		8		pF
Reverse Transfer Capacitance	Crss	V <sub>DS</sub> =-10V, f=1MHz		4.5		pF
Turn-ON Delay Time	t <sub>d(on)</sub>	See specified Test Circuit.		10		ns
Rise Time	t <sub>r</sub>	See specified Test Circuit.		5		ns
Turn-OFF Delay Time	t <sub>d(off)</sub>	See specified Test Circuit.		10		ns
Fall Time	t <sub>f</sub>	See specified Test Circuit.		5		ns
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =-10V, V <sub>GS</sub> =-4V, I <sub>D</sub> =-0.4A		0.83		nC
Gate-to-Source Charge	Q <sub>gs</sub>	V <sub>DS</sub> =-10V, V <sub>GS</sub> =-4V, I <sub>D</sub> =-0.4A		0.25		nC
Gate-to-Drain "Miller" Charge	Q <sub>gd</sub>	V <sub>DS</sub> =-10V, V <sub>GS</sub> =-4V, I <sub>D</sub> =-0.4A		0.17		nC
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-0.4A, V <sub>GS</sub> =0V		-1.0	-1.5	V

## Package Dimensions

unit : mm  
7028-006



## Electrical Connection

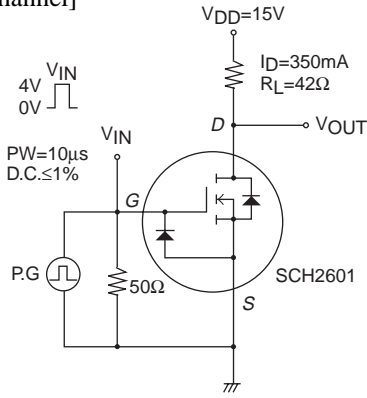


- 1 : Source1
- 2 : Gate1
- 3 : Drain2
- 4 : Source2
- 5 : Gate2
- 6 : Drain1

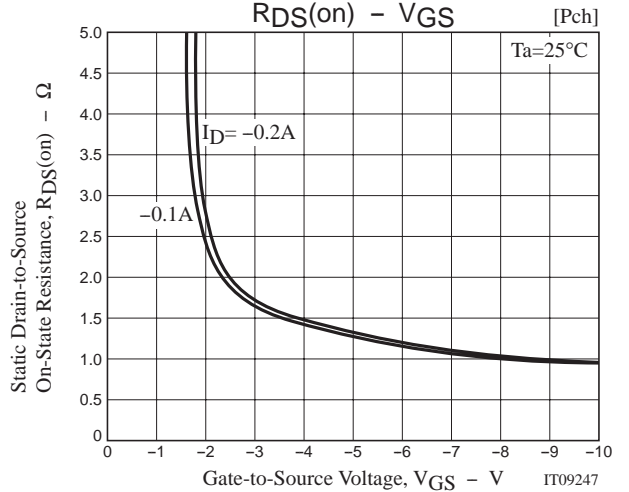
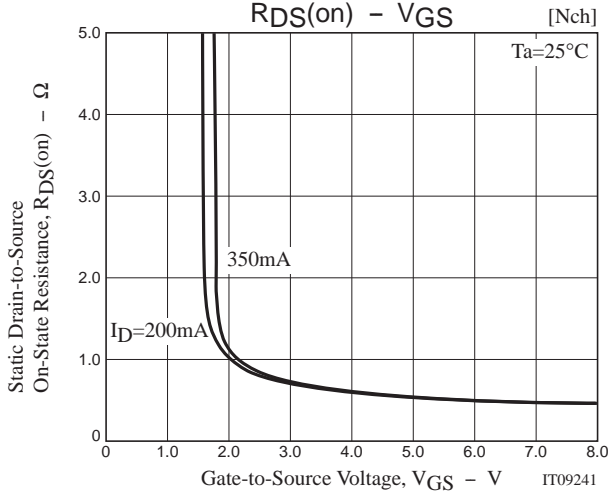
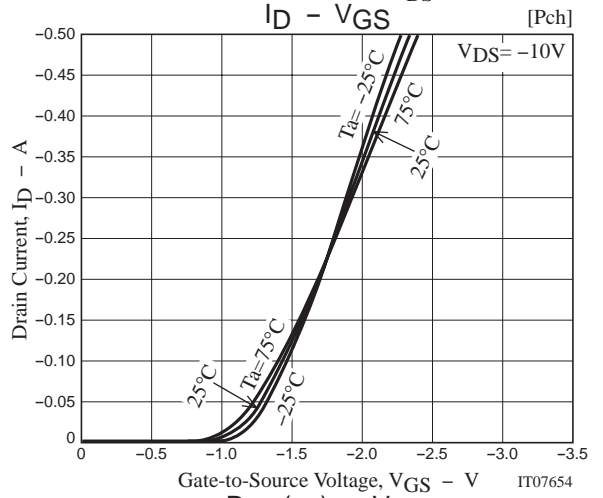
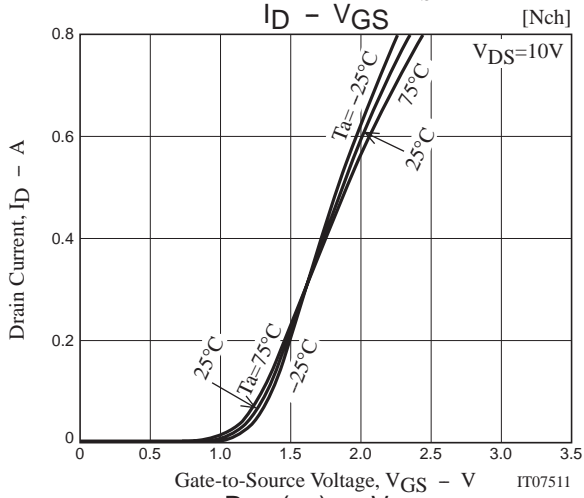
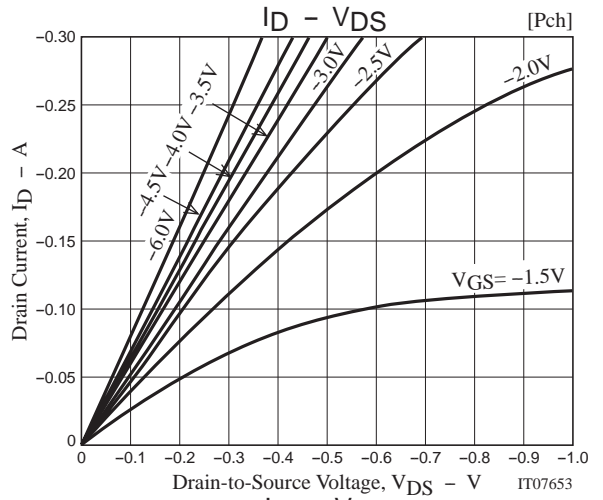
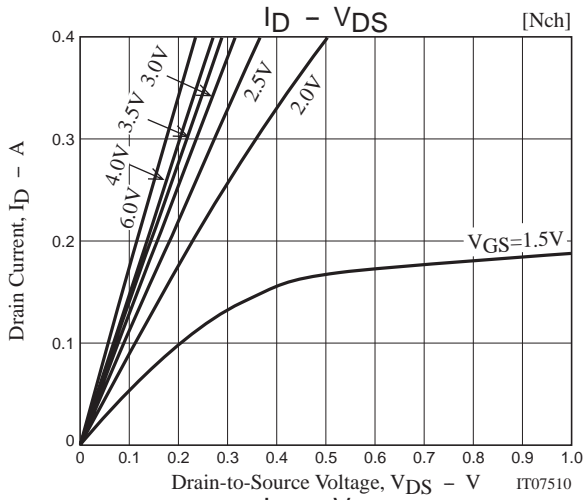
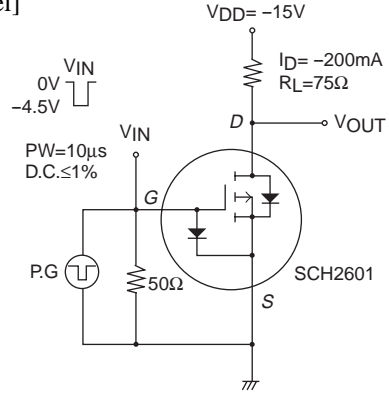
Top view

Switching Time Test Circuit

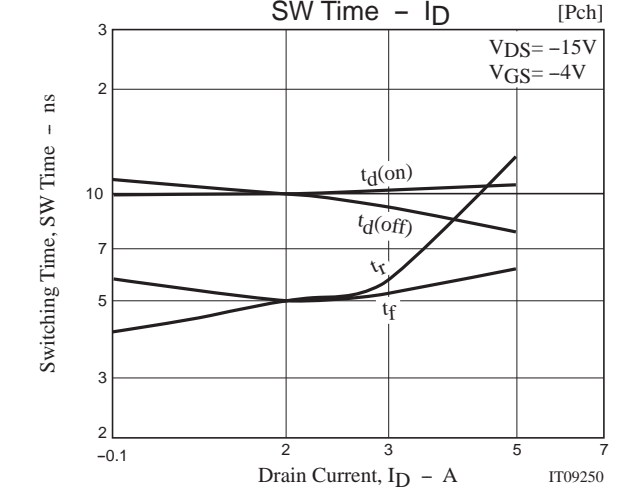
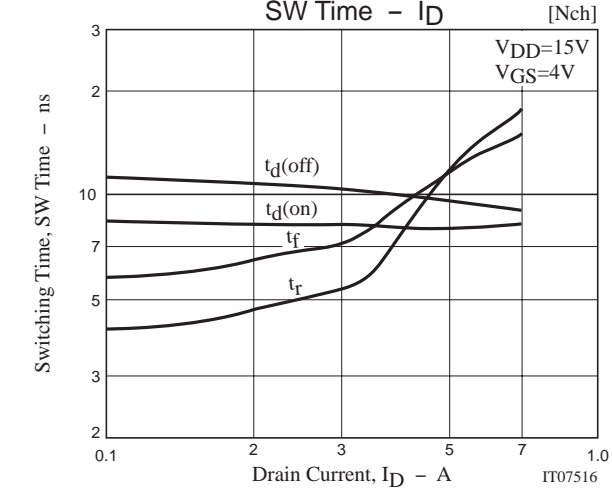
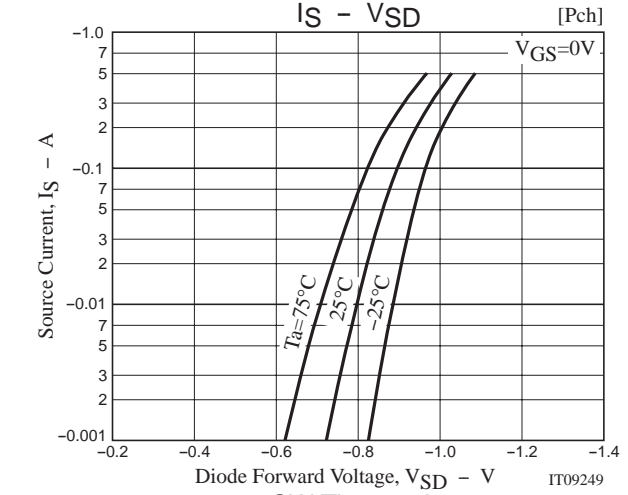
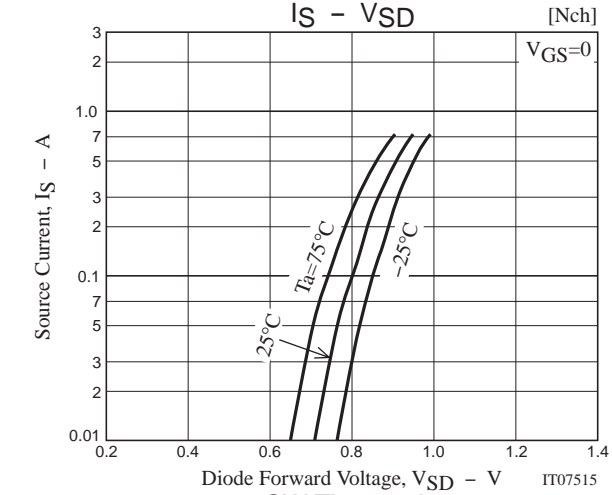
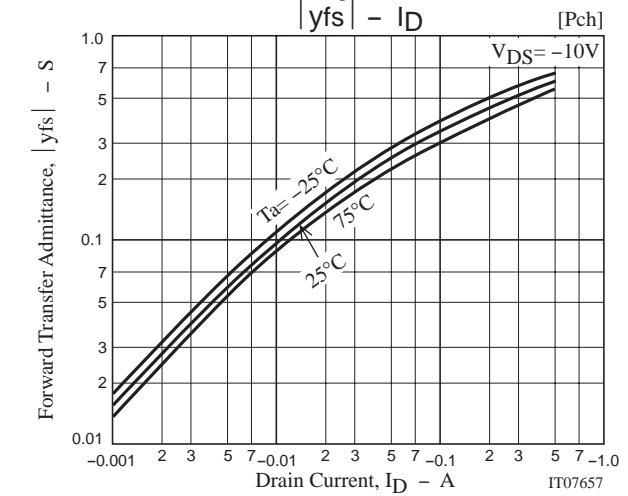
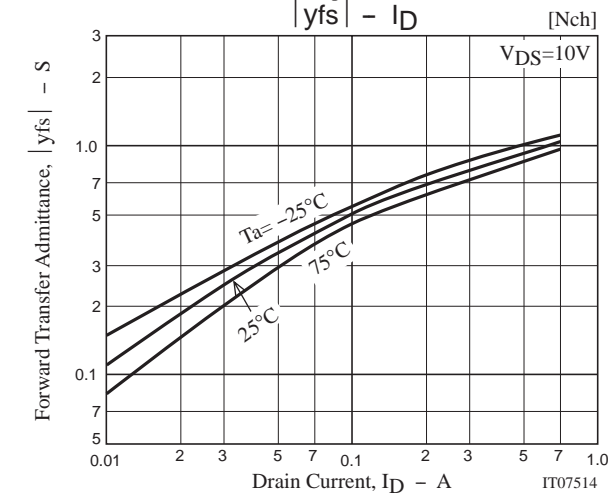
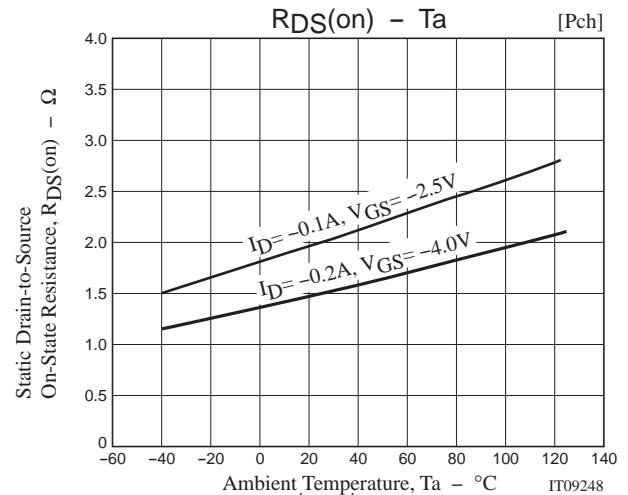
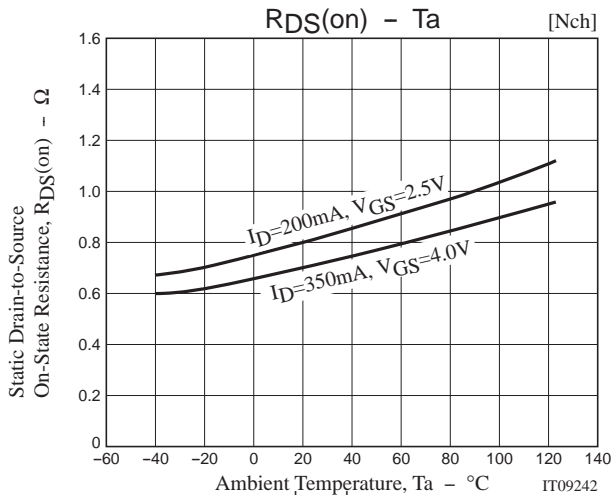
[N-channel]



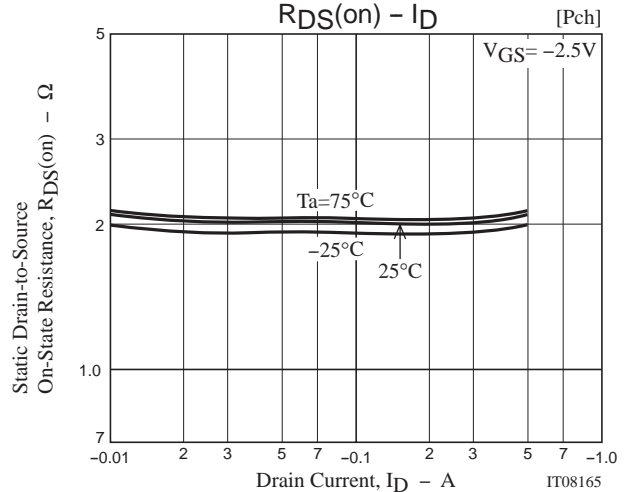
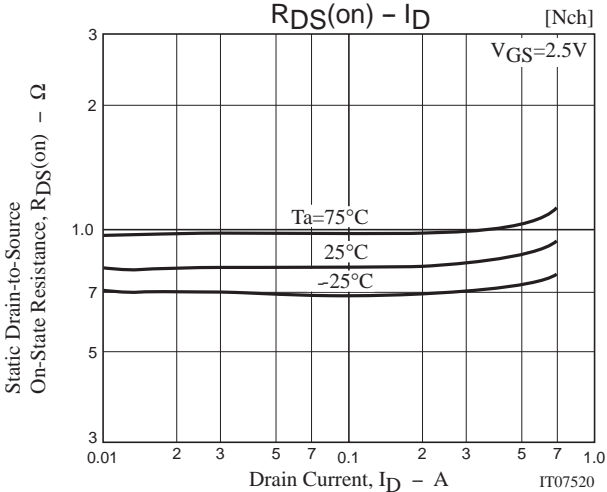
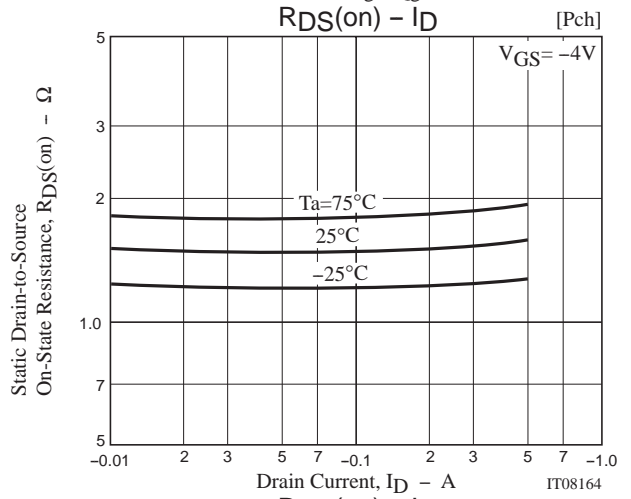
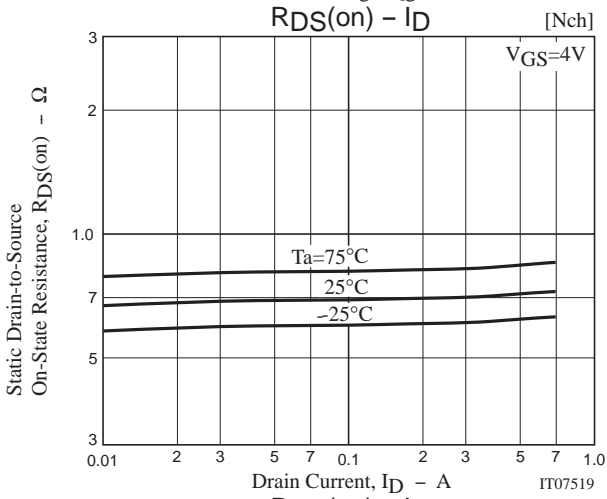
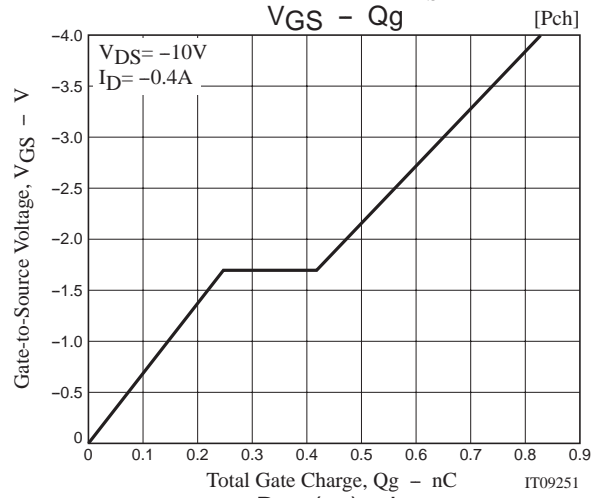
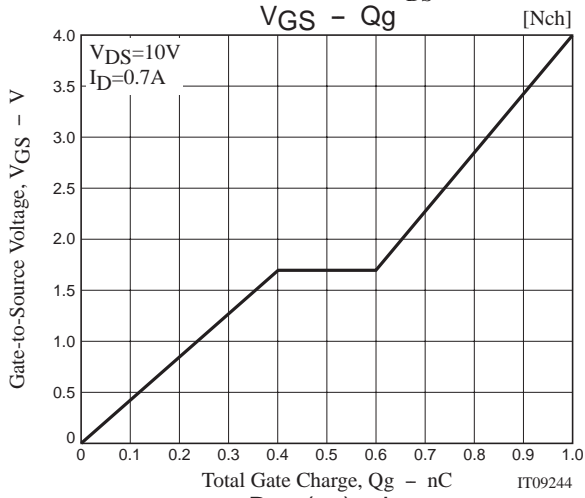
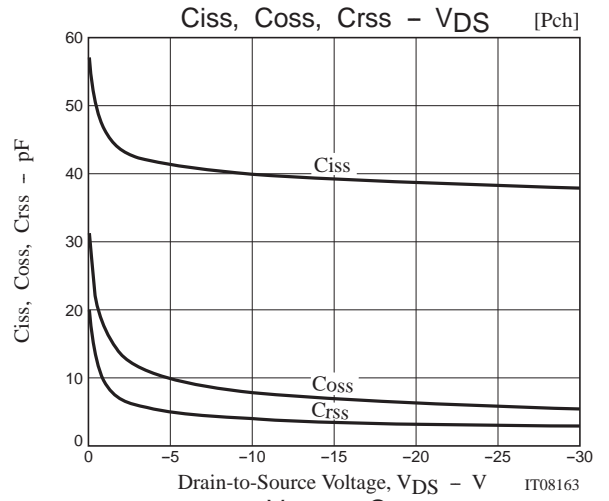
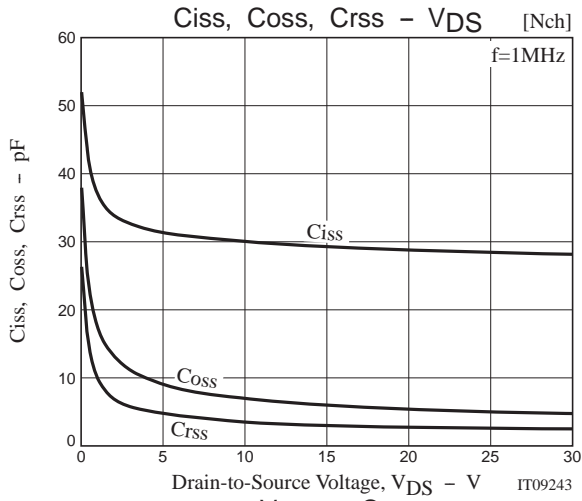
[P-channel]



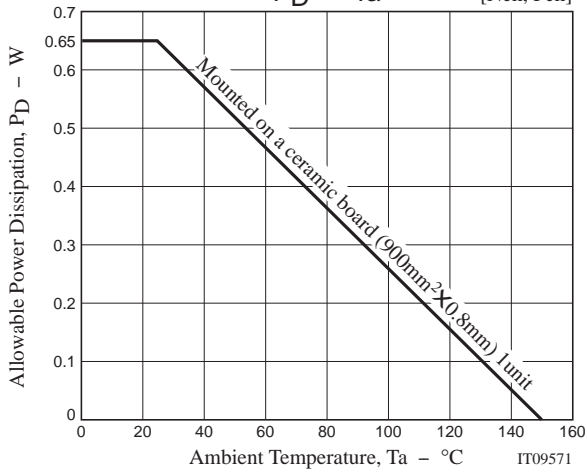
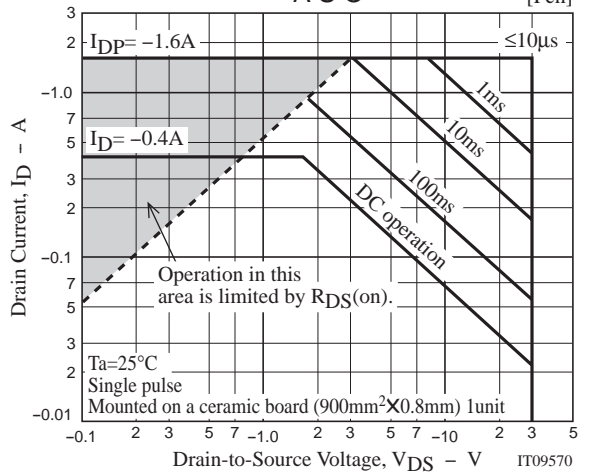
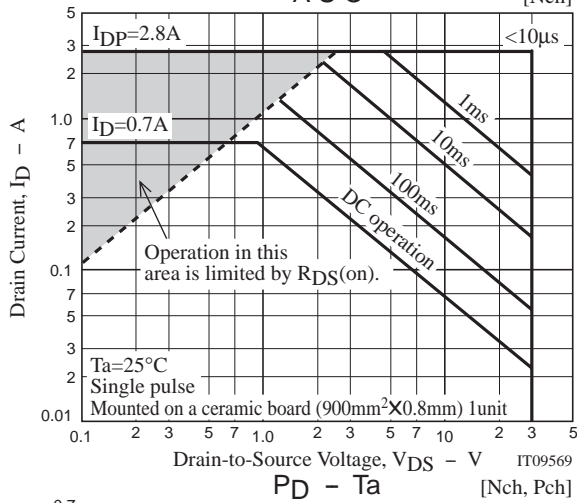
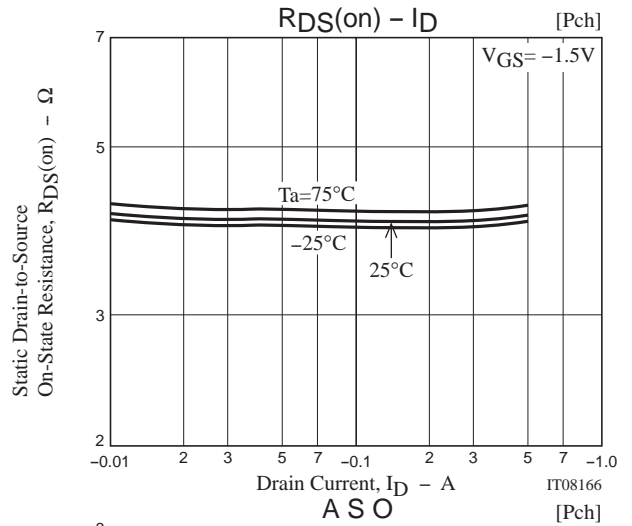
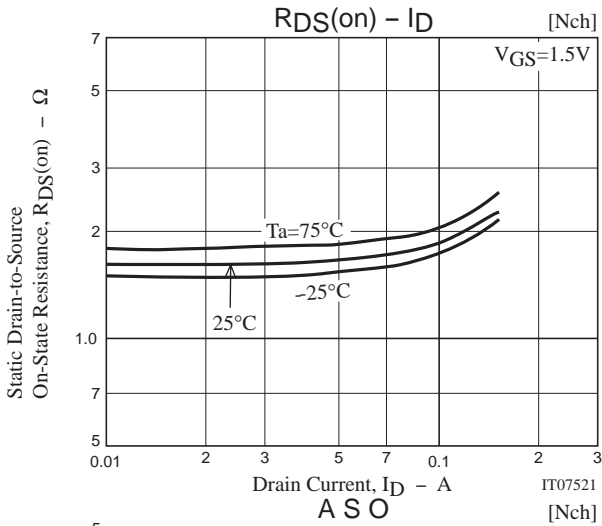
# SCH2601



# SCH2601



# SCH2601



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