



# SCH2602 — General-Purpose Switching Device Applications

N-Channel and P-Channel Silicon MOSFETs

## Features

- The SCH2602 incorporates a N-channel MOSFET and a P-channel MOSFET that feature low ON-resistance and high-speed switching, thereby enabling high-density mounting.
- Low ON-resistance.
- 2.5V drive (N-ch), 1.8V drive (P-ch).

## 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	-12	V
Gate-to-Source Voltage	V <sub>GSS</sub>		±10	±10	V
Drain Current (DC)	I <sub>D</sub>		0.35	-1.5	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	1.4	-6	A
Allowable Power Dissipation	P <sub>D</sub>	Mounted on a ceramic board (900mm <sup>2</sup> X0.8mm) 1unit	0.6		W
Channel Temperature	T <sub>ch</sub>		150		°C
Storage Temperature	T <sub>stg</sub>		-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 <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			10	μA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±8V, V <sub>DS</sub> =0V			±10	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> =80mA	130	220		mS
Static Drain-to-Source On-State Resistance	R <sub>DS(on)1</sub>	I <sub>D</sub> =80mA, V <sub>GS</sub> =4V		2.9	3.7	Ω
	R <sub>DS(on)2</sub>	I <sub>D</sub> =40mA, V <sub>GS</sub> =2.5V		3.7	5.2	Ω
	R <sub>DS(on)3</sub>	I <sub>D</sub> =10mA, V <sub>GS</sub> =1.5V		6.4	12.8	Ω

Marking : FB

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# SCH2602

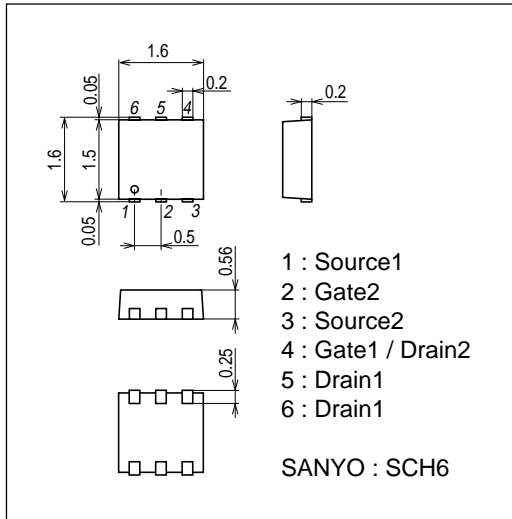
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	V <sub>DS</sub> =10V, f=1MHz		7.0		pF
Output Capacitance	Coss	V <sub>DS</sub> =10V, f=1MHz		5.9		pF
Reverse Transfer Capacitance	Crss	V <sub>DS</sub> =10V, f=1MHz		2.3		pF
Turn-ON Delay Time	t <sub>d(on)</sub>	See specified Test Circuit.		19		ns
Rise Time	t <sub>r</sub>	See specified Test Circuit.		65		ns
Turn-OFF Delay Time	t <sub>d(off)</sub>	See specified Test Circuit.		155		ns
Fall Time	t <sub>f</sub>	See specified Test Circuit.		120		ns
Total Gate Charge	Qg	V <sub>DS</sub> =10V, V <sub>GS</sub> =4V, I <sub>D</sub> =150mA		1.58		nC
Gate-to-Source Charge	Qgs	V <sub>DS</sub> =10V, V <sub>GS</sub> =4V, I <sub>D</sub> =150mA		0.26		nC
Gate-to-Drain "Miller" Charge	Qgd	V <sub>DS</sub> =10V, V <sub>GS</sub> =4V, I <sub>D</sub> =150mA		0.31		nC
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =150mA, V <sub>GS</sub> =0V		0.87	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	-12			V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-12V, V <sub>GS</sub> =0V			-10	μA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±8V, V <sub>DS</sub> =0V			±10	μA
Cutoff Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> =-6V, I <sub>D</sub> =-1mA	-0.3		-1.0	V
Forward Transfer Admittance	y <sub>fs</sub>	V <sub>DS</sub> =-6V, I <sub>D</sub> =-0.8A	1.1	1.8		S
Static Drain-to-Source On-State Resistance	R <sub>DS(on)1</sub>	I <sub>D</sub> =-0.8A, V <sub>GS</sub> =-4.5V		235	310	mΩ
	R <sub>DS(on)2</sub>	I <sub>D</sub> =-0.4A, V <sub>GS</sub> =-2.5V		335	470	mΩ
	R <sub>DS(on)3</sub>	I <sub>D</sub> =-0.1A, V <sub>GS</sub> =-1.8V		445	670	mΩ
	R <sub>DS(on)4</sub>	I <sub>D</sub> =-50mA, V <sub>GS</sub> =-1.5V		750	1250	mΩ
Input Capacitance	Ciss	V <sub>DS</sub> =-6V, f=1MHz		160		pF
Output Capacitance	Coss	V <sub>DS</sub> =-6V, f=1MHz		45		pF
Reverse Transfer Capacitance	Crss	V <sub>DS</sub> =-6V, f=1MHz		35		pF
Turn-ON Delay Time	t <sub>d(on)</sub>	See specified Test Circuit.		11		ns
Rise Time	t <sub>r</sub>	See specified Test Circuit.		45		ns
Turn-OFF Delay Time	t <sub>d(off)</sub>	See specified Test Circuit.		29		ns
Fall Time	t <sub>f</sub>	See specified Test Circuit.		30		ns
Total Gate Charge	Qg	V <sub>DS</sub> =-6V, V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-1.5A		2.6		nC
Gate-to-Source Charge	Qgs	V <sub>DS</sub> =-6V, V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-1.5A		0.25		nC
Gate-to-Drain "Miller" Charge	Qgd	V <sub>DS</sub> =-6V, V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-1.5A		0.65		nC
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-1.5A, V <sub>GS</sub> =0V		-0.92	-1.5	V

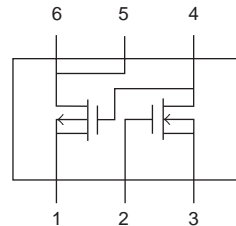
## Package Dimensions

unit : mm

7028-007



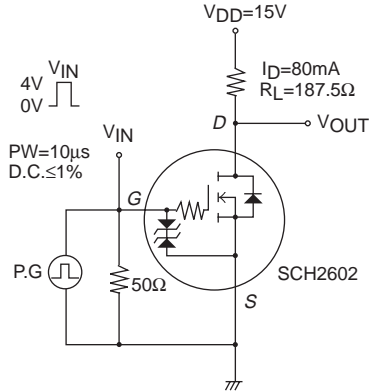
## Electrical Connection



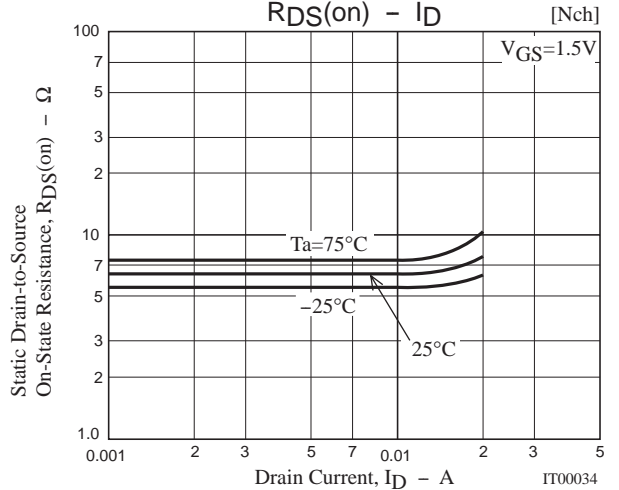
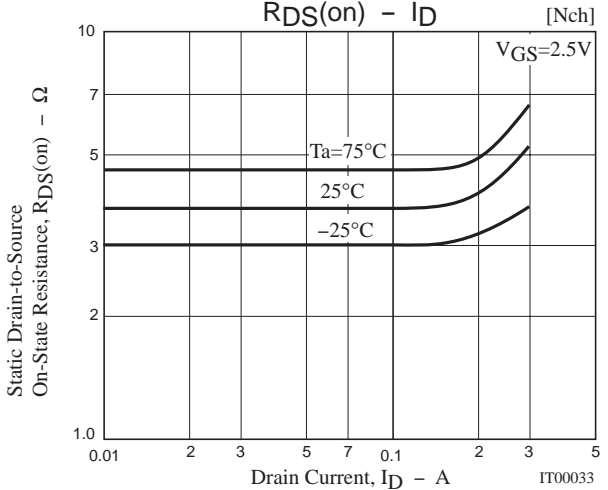
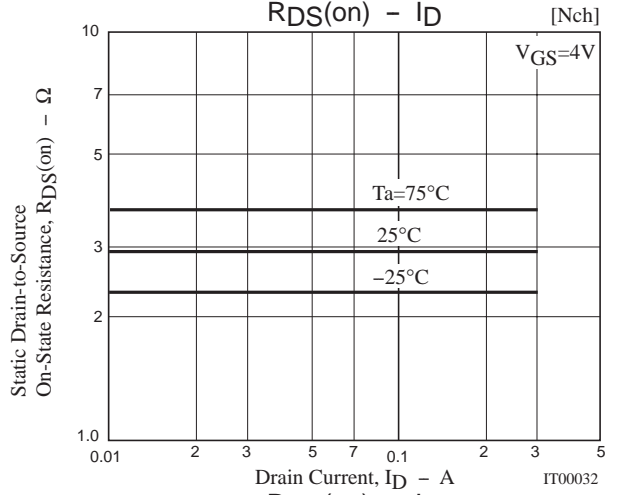
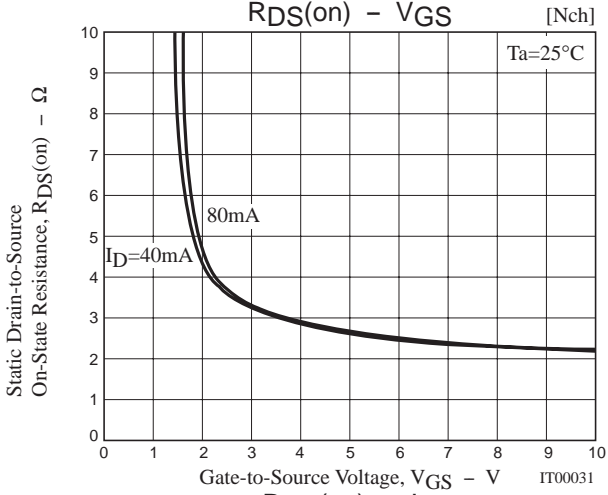
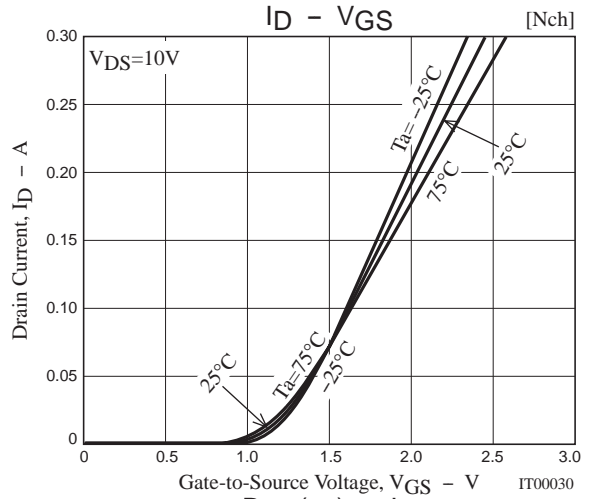
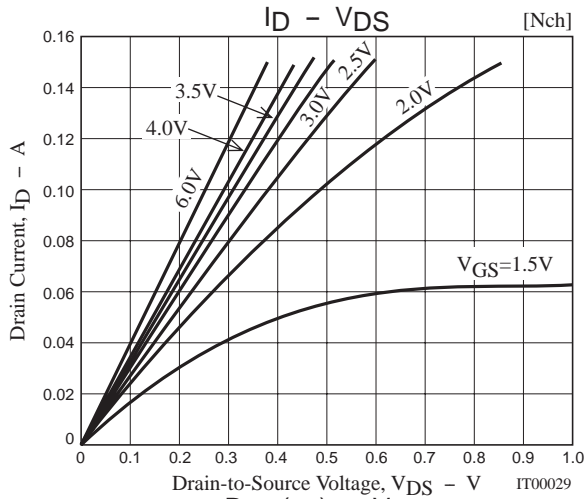
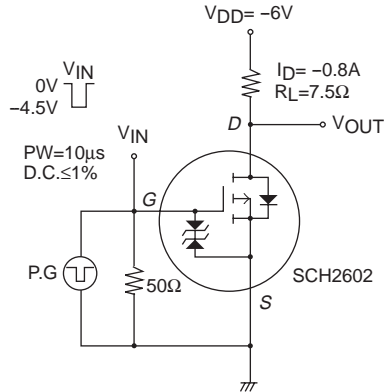
- 1 : Source1
  - 2 : Gate2
  - 3 : Source2
  - 4 : Gate1 / Drain2
  - 5 : Drain1
  - 6 : Drain1
- Top view

Switching Time Test Circuit

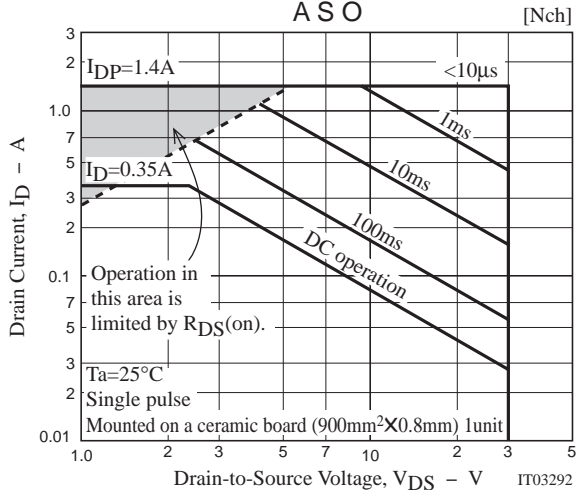
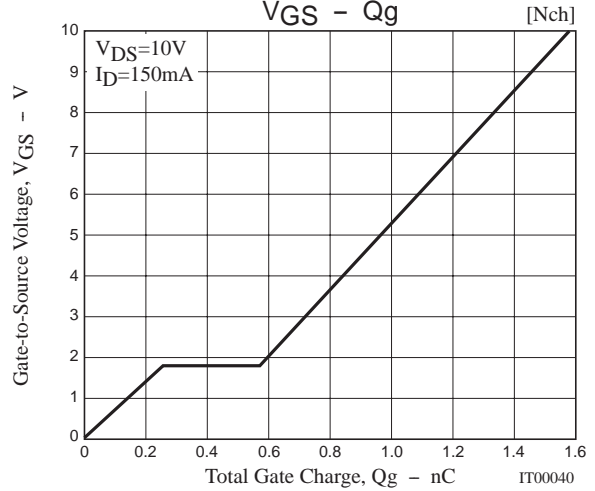
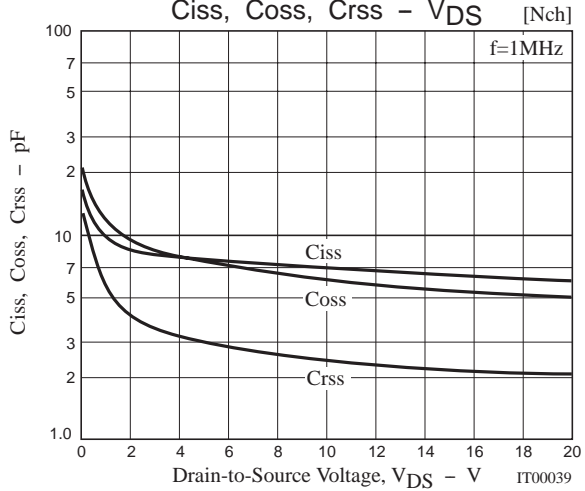
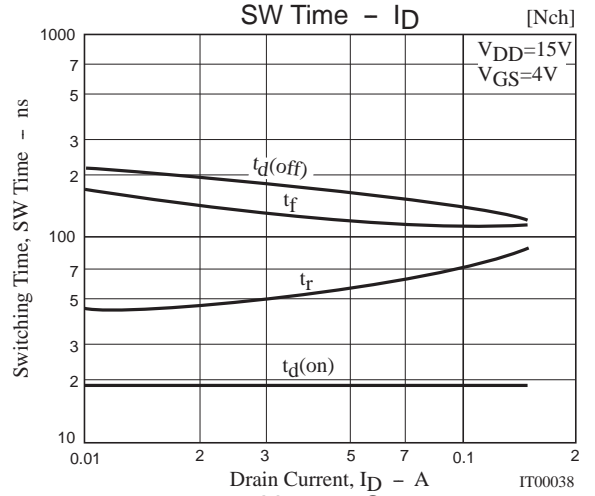
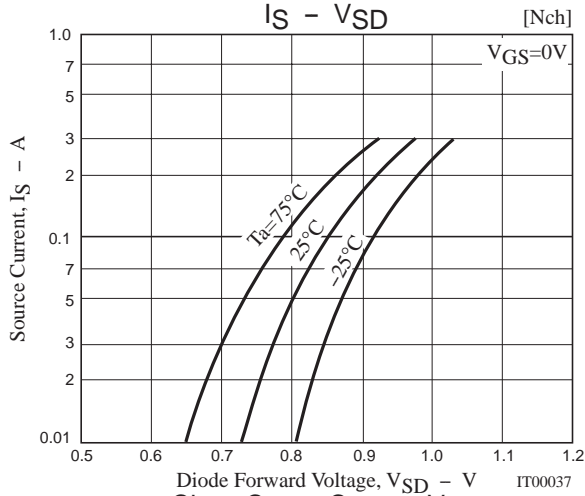
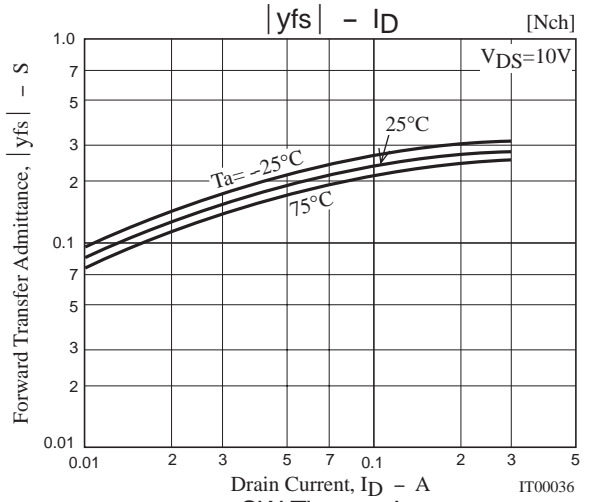
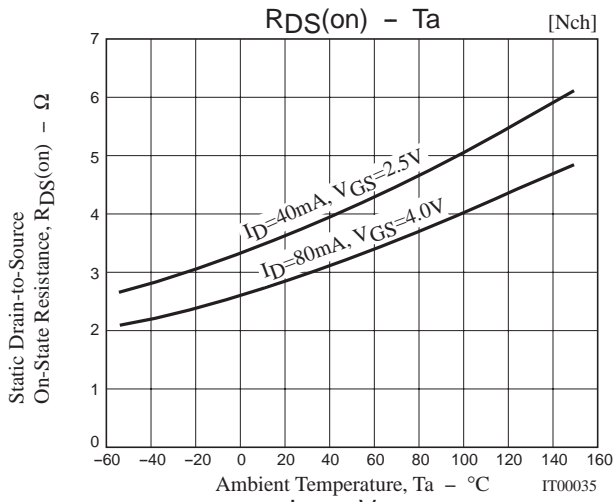
[N-channel]



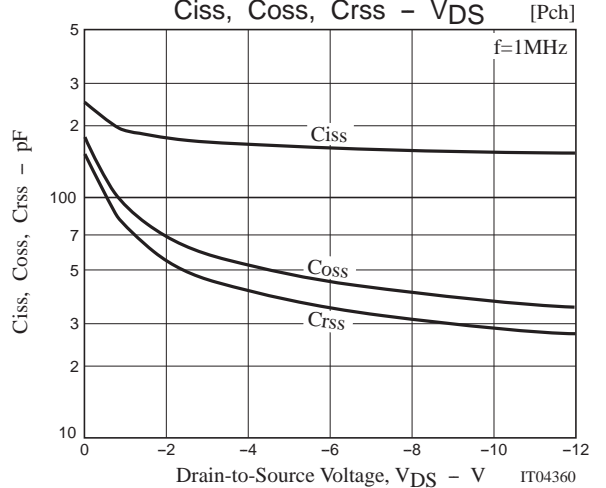
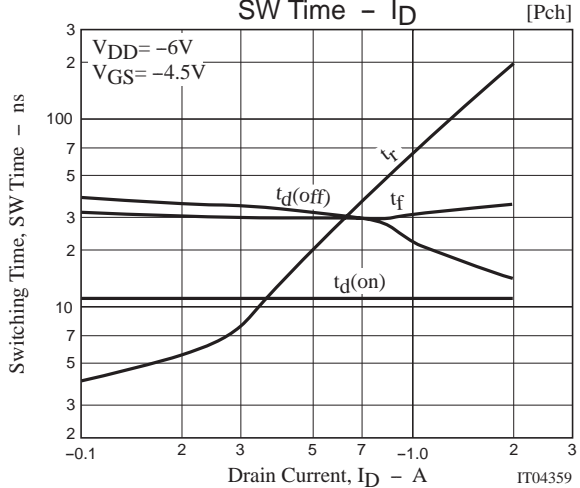
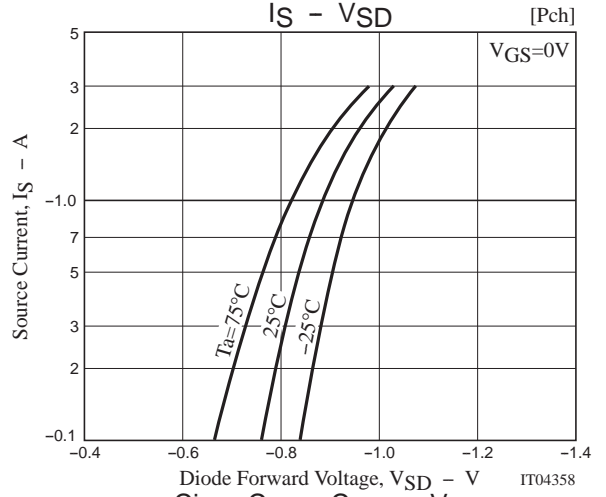
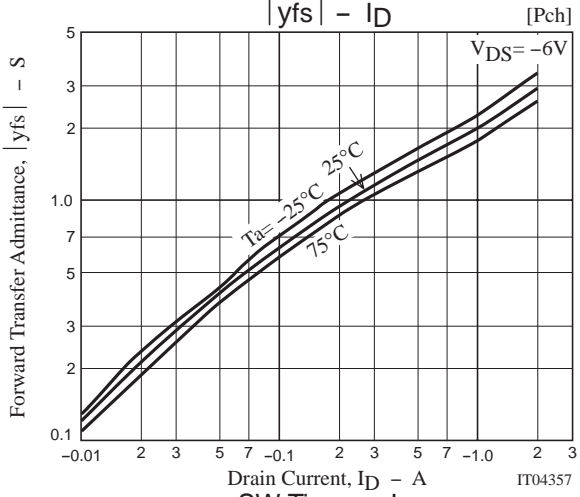
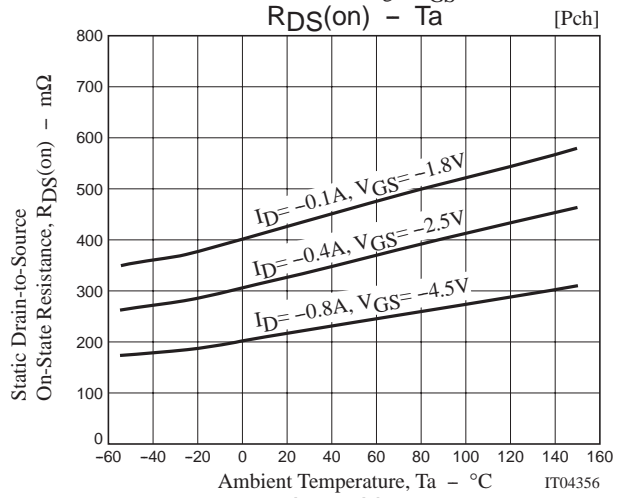
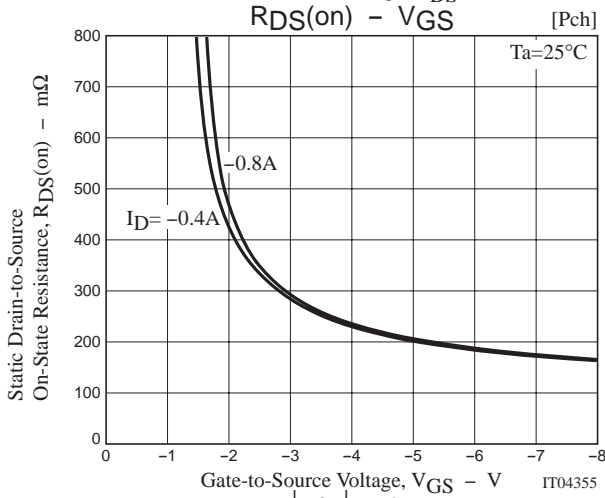
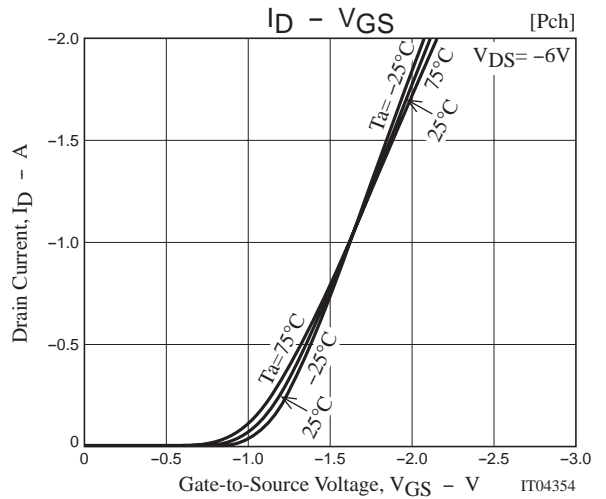
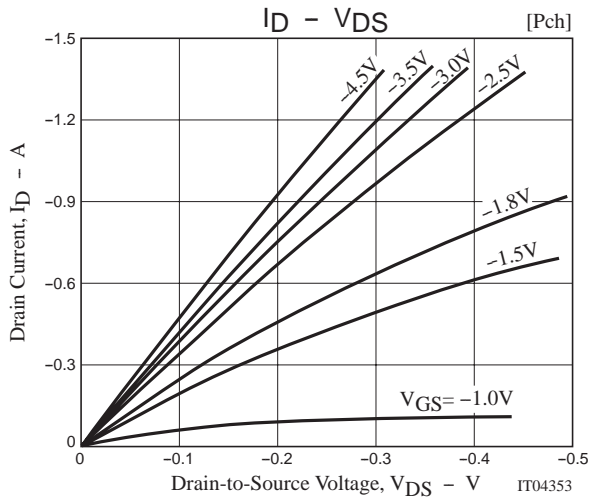
[P-channel]



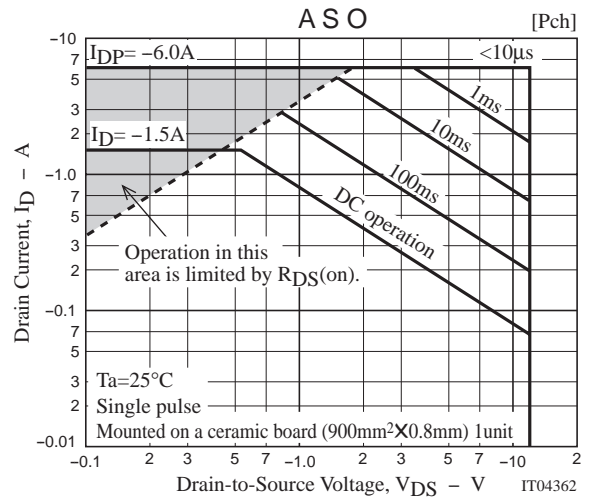
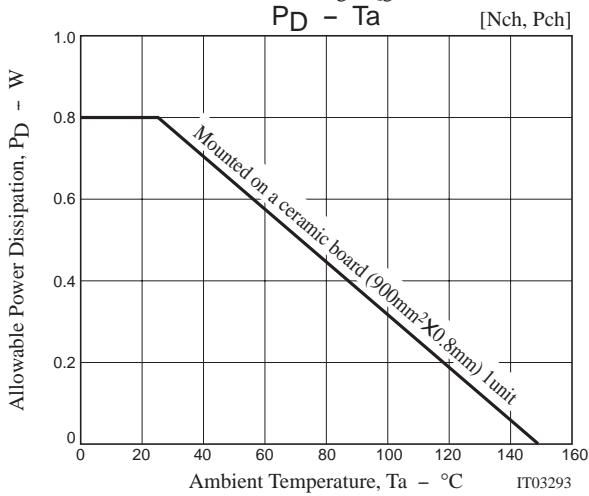
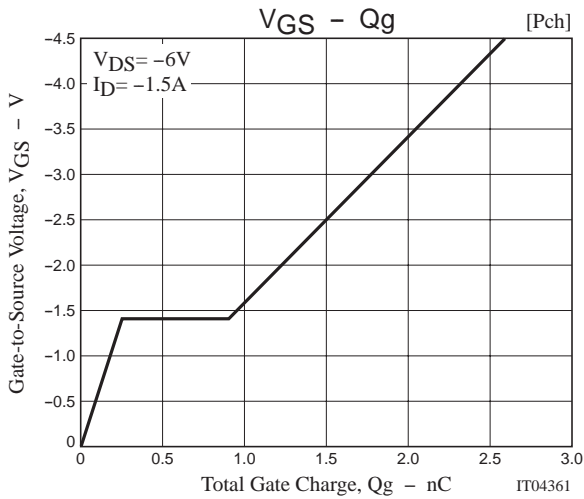
# SCH2602



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