



SANYO Semiconductors

DATA SHEET

VEC2601

N-Channel and P-Channel Silicon MOSFETs

General-Purpose Switching Device Applications

Features

- A composite type of a low on-resistance P-channel MOSFET and a small signal N-channel MOSFET for driving P-channel MOSFET enables high-density mounting.
- Best suited for load switches.
- 2.5V drive.
- 0.75mm mount high.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	N-channel	P-channel	Unit
Drain-to-Source Voltage	V _{DSS}		30	-20	V
Gate-to-Source Voltage	V _{GSS}		±10	±10	V
Drain Current (DC)	I _D		0.15	-3	A
Drain Current (Pulse)	I _{DP}	PW≤10μs, duty cycle≤1%	0.6	-12	A
Allowable Power Dissipation	P _D	Mounted on a ceramic board (900mm²X0.8mm)1unit	0.9		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	30			V
Zero-Gate Voltage Drain Current	IDSS	VDS=30V, VGS=0V			1	μA
Gate-to-Source Leakage Current	IGSS	VGS=±8V, VDS=0V			±10	μA
Cutoff Voltage	VGS(off)	VDS=10V, ID=100μA	0.4		1.3	V
Forward Transfer Admittance	yfs	VDS=10V, ID=80mA	0.15	0.22		S

Marking : BD

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VEC2601

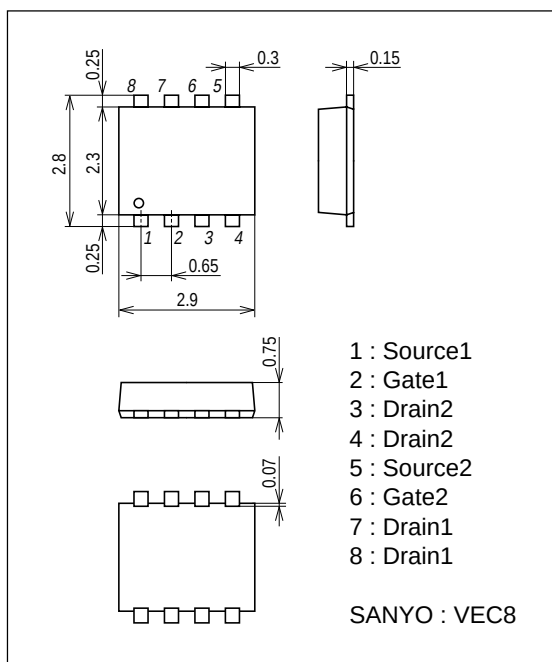
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=80mA, V_{GS}=4V$		2.9	3.7	Ω
	$R_{DS(on)2}$	$I_D=40mA, V_{GS}=2.5V$		3.7	5.2	Ω
	$R_{DS(on)3}$	$I_D=10mA, V_{GS}=1.5V$		6.4	12.8	Ω
Input Capacitance	C_{iss}	$V_{DS}=10V, f=1MHz$		7.0		pF
Output Capacitance	C_{oss}	$V_{DS}=10V, f=1MHz$		5.9		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS}=10V, f=1MHz$		2.3		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		19		ns
Rise Time	t_r	See specified Test Circuit.		65		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		155		ns
Fall Time	t_f	See specified Test Circuit.		120		ns
Total Gate Charge	Q_g	$V_{DS}=10V, V_{GS}=10V, I_D=150mA$		1.58		nC
Gate-to-Source Charge	Q_{gs}	$V_{DS}=10V, V_{GS}=10V, I_D=150mA$		0.26		nC
Gate-to-Drain "Miller" Charge	Q_{gd}	$V_{DS}=10V, V_{GS}=10V, I_D=150mA$		0.31		nC
Diode Forward Voltage	V_{SD}	$I_S=150mA, V_{GS}=0V$		0.87	1.2	V
[P-channel]						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=-1mA, V_{GS}=0V$	-20			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-20V, V_{GS}=0V$			-1	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 8V, V_{DS}=0V$			± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=-10V, I_D=-1mA$	-0.4		-1.3	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=-10V, I_D=-1.5A$	2.9	4.9		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=-2A, V_{GS}=-4.5V$		55	72	m Ω
	$R_{DS(on)2}$	$I_D=-1A, V_{GS}=-2.5V$		77	108	m Ω
	$R_{DS(on)3}$	$I_D=-0.3A, V_{GS}=-1.8V$		112	168	m Ω
Input Capacitance	C_{iss}	$V_{DS}=-10V, f=1MHz$		680		pF
Output Capacitance	C_{oss}	$V_{DS}=-10V, f=1MHz$		115		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS}=-10V, f=1MHz$		80		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		13		ns
Rise Time	t_r	See specified Test Circuit.		53		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		77		ns
Fall Time	t_f	See specified Test Circuit.		62		ns
Total Gate Charge	Q_g	$V_{DS}=-10V, V_{GS}=-4.5V, I_D=-3A$		8.2		nC
Gate-to-Source Charge	Q_{gs}	$V_{DS}=-10V, V_{GS}=-4.5V, I_D=-3A$		1.7		nC
Gate-to-Drain "Miller" Charge	Q_{gd}	$V_{DS}=-10V, V_{GS}=-4.5V, I_D=-3A$		2.1		nC
Diode Forward Voltage	V_{SD}	$I_S=-3A, V_{GS}=0V$		-0.88	-1.2	V

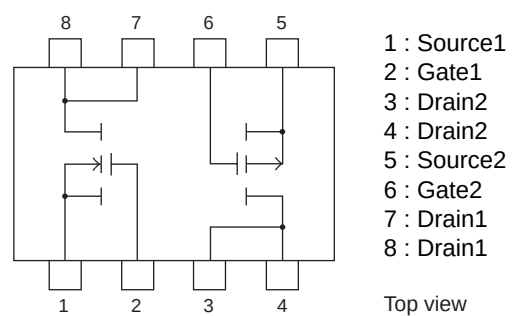
Package Dimensions

unit : mm (typ)

7012-009

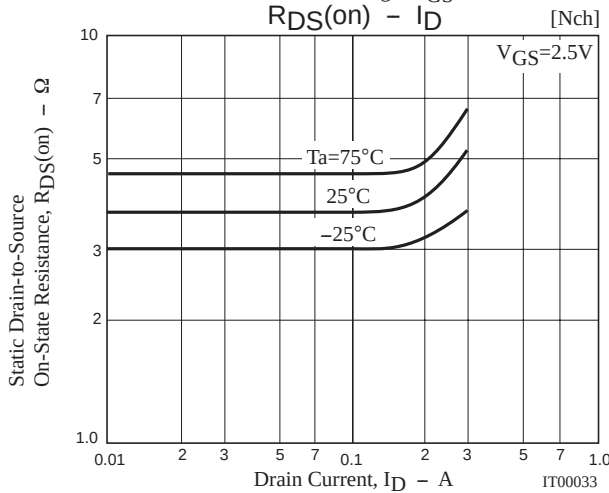
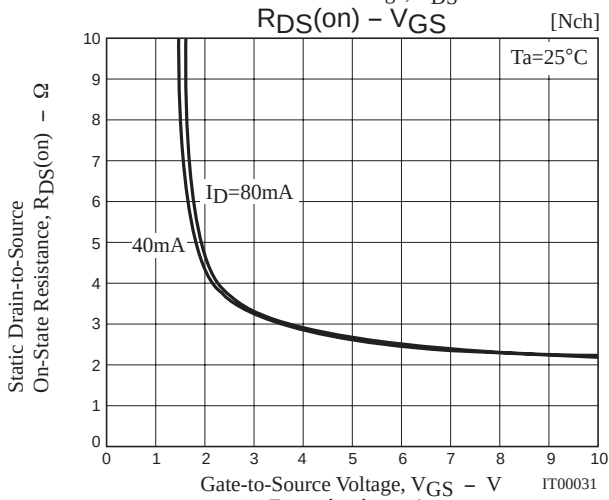
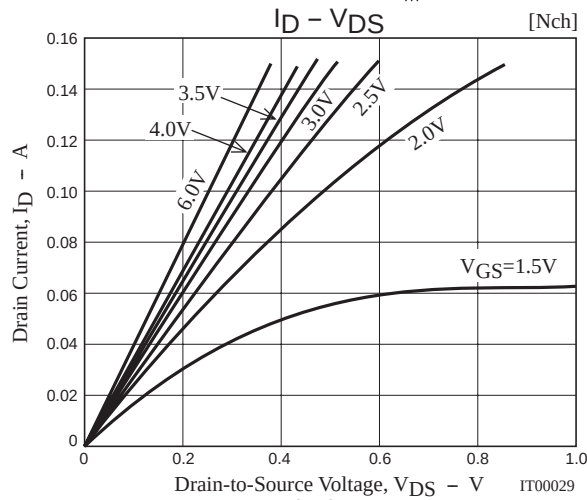
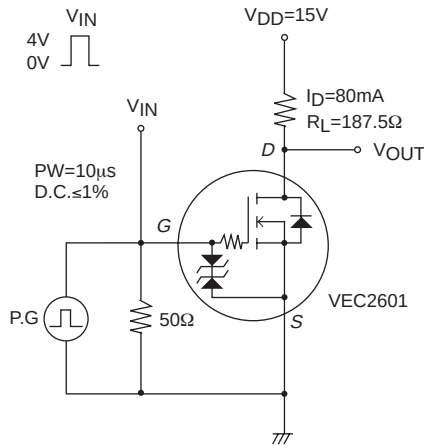


Electrical Connection

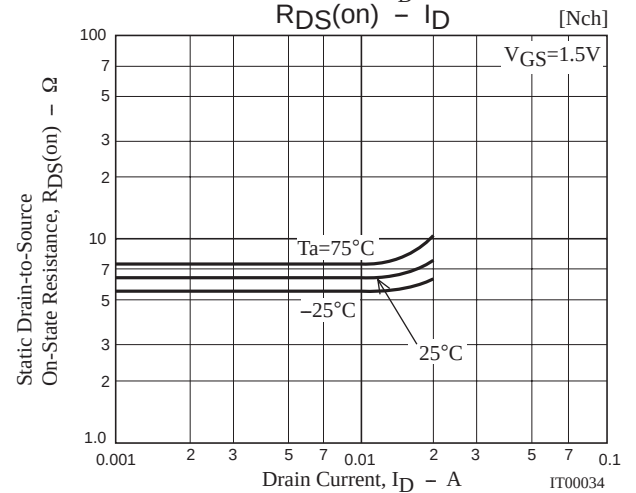
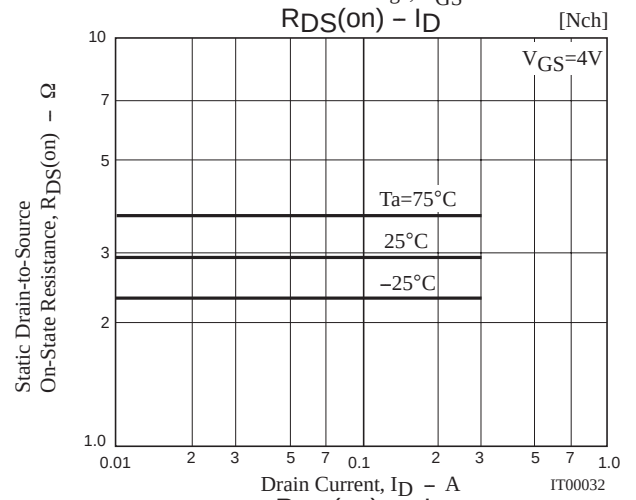
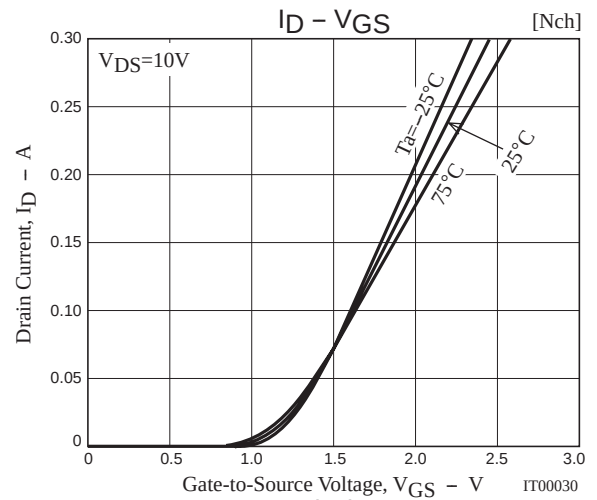
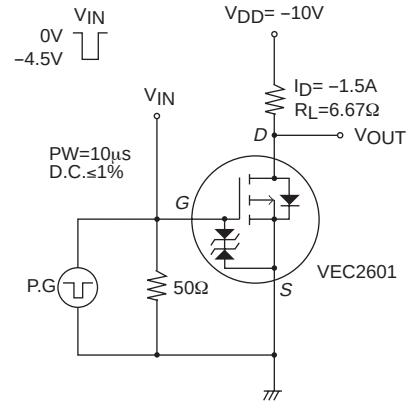


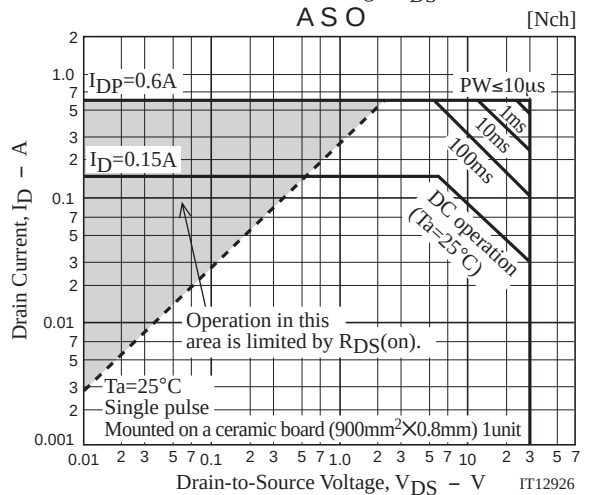
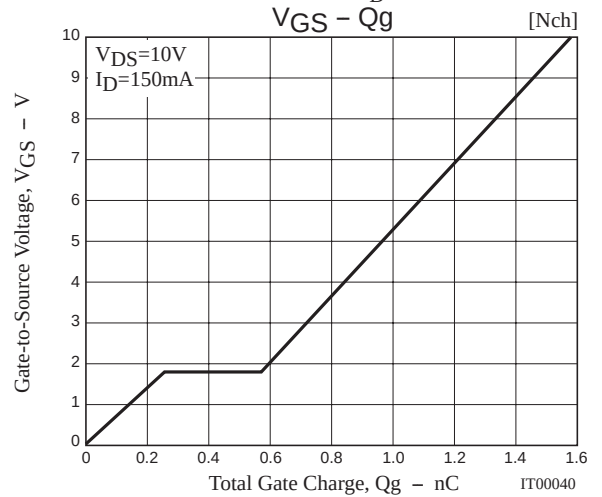
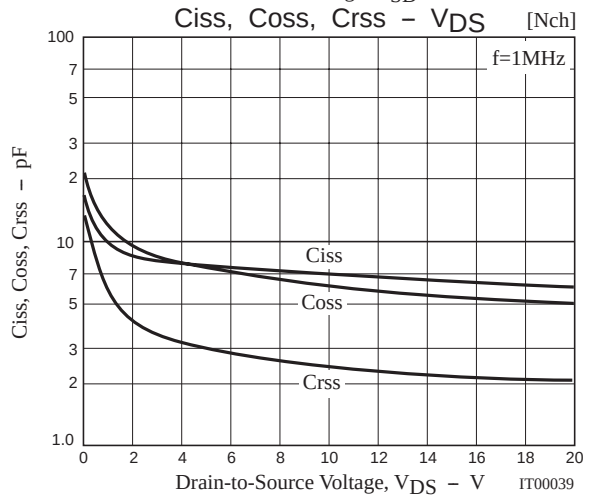
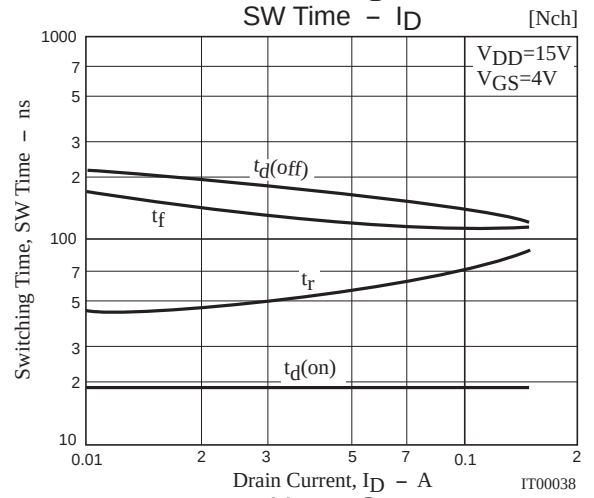
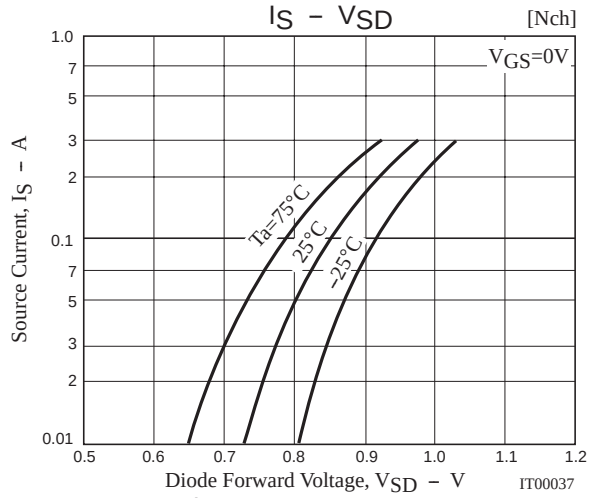
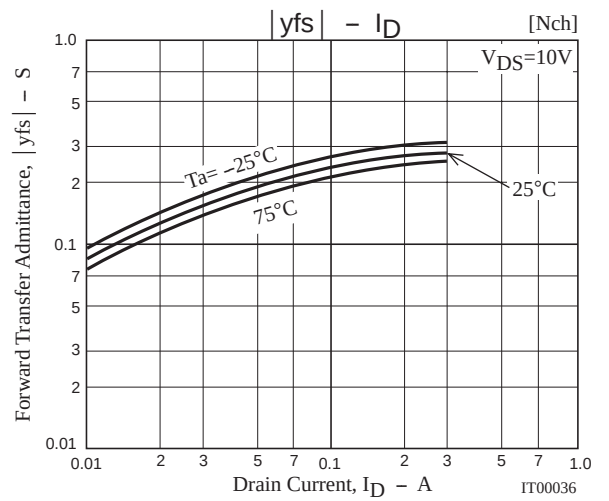
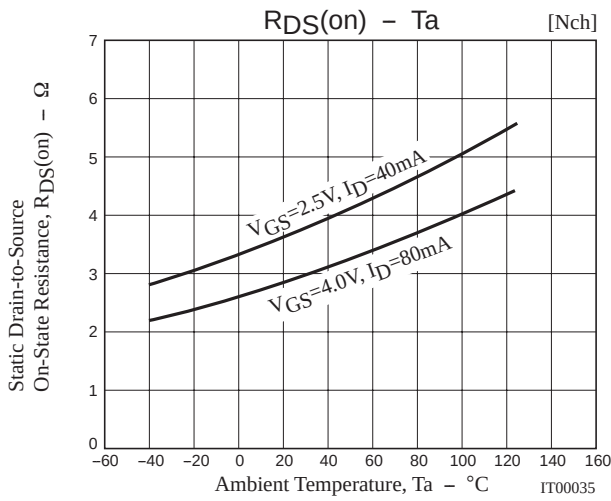
Switching Time Test Circuit

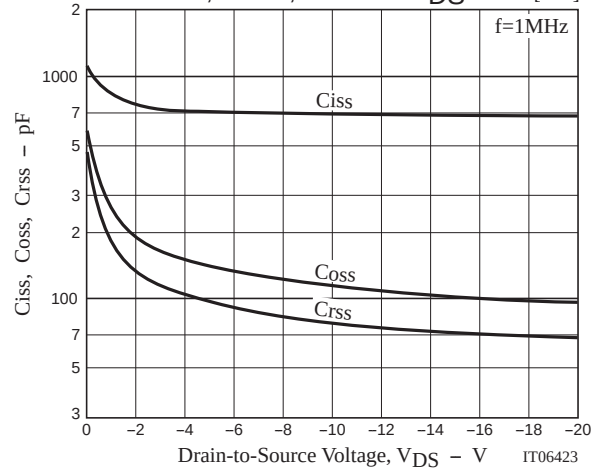
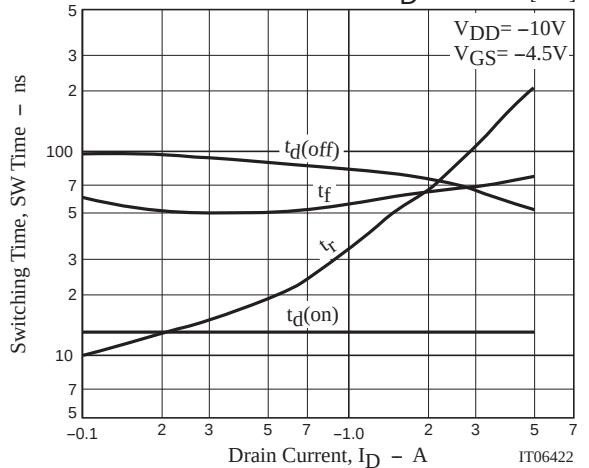
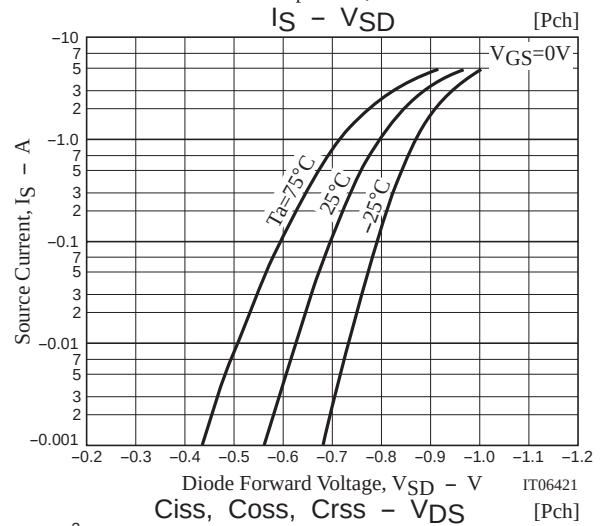
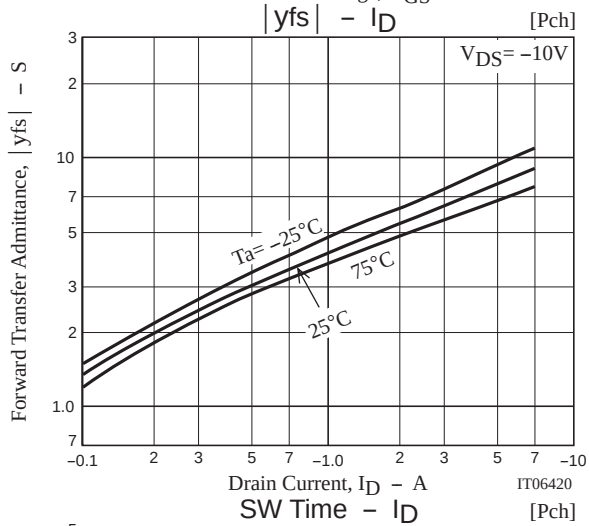
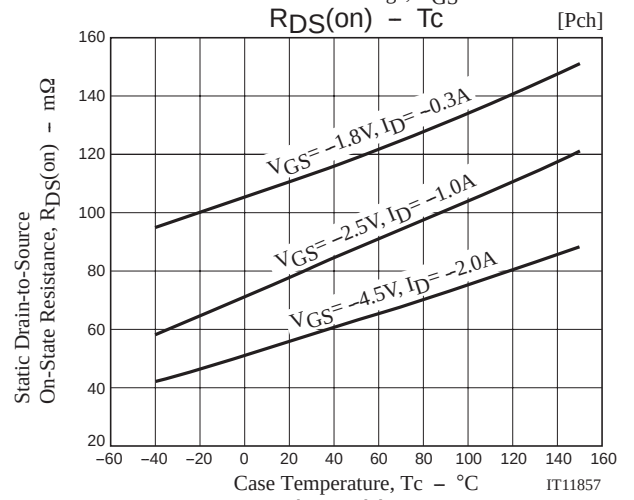
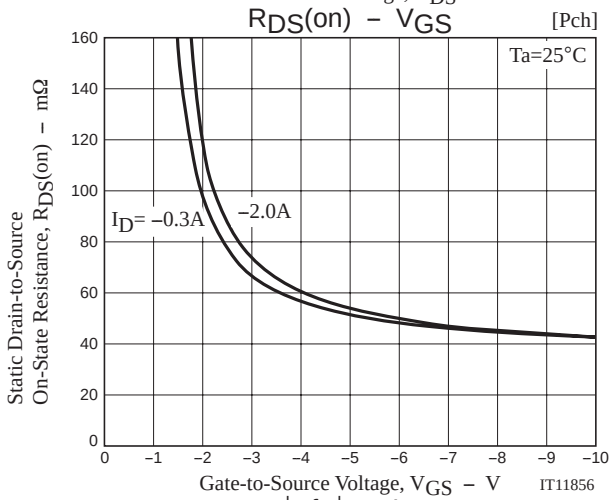
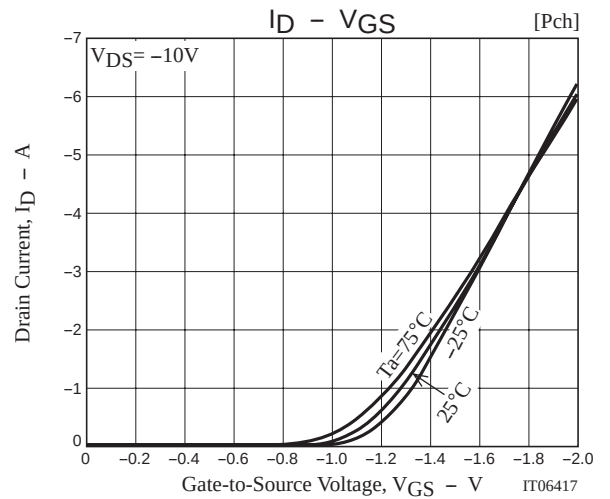
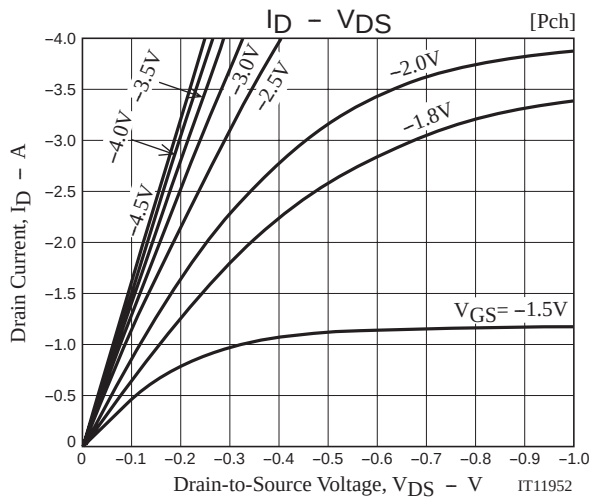
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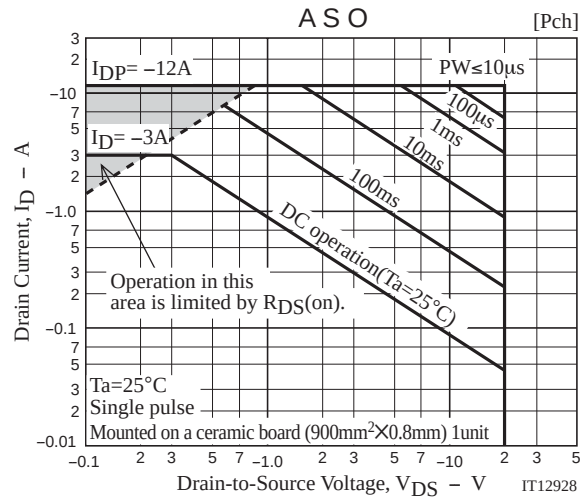
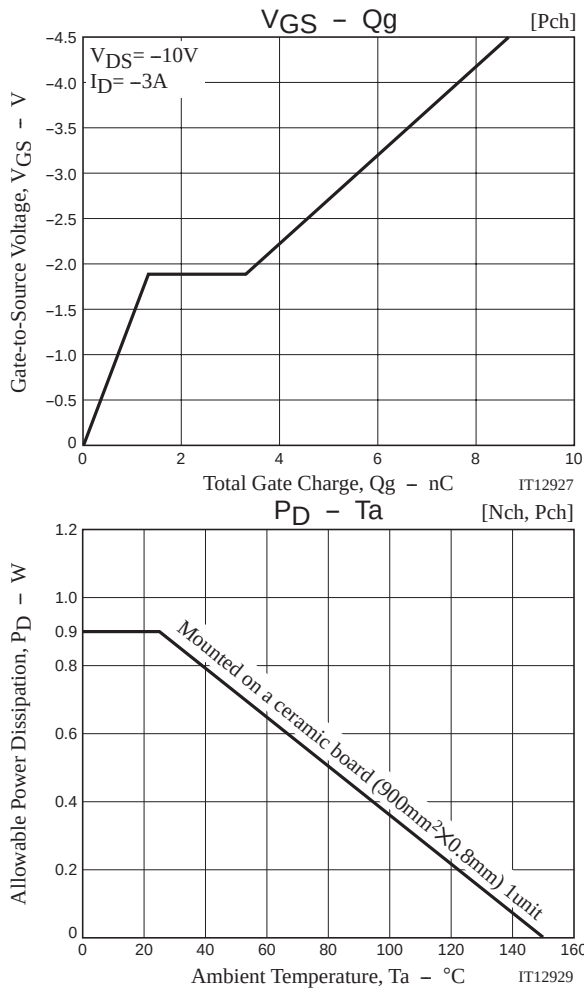


[P-channel]









Note on usage : Since the VEC2601 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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