



VEC2610 — General-Purpose Switching Device Applications

N-Channel and P-Channel Silicon MOSFETs

Features

- The best suited for inverter applications.
- The VEC2610 incorporates an N-channel MOSFET and a P-channel MOSFET that feature low ON-resistance, thereby enabling high-density mounting.
- Mounting height 0.75mm.
- 1.8V drive.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	N-channel	P-channel	Unit
Drain-to-Source Voltage	V_{DS}		20	-20	V
Gate-to-Source Voltage	V_{GS}		± 10	± 10	V
Drain Current (DC)	I_D		4.5	-3	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu s$, duty cycle $\leq 1\%$	18	-12	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (900mm ² X0.8mm)1unit	0.9		W
Total Dissipation	P_T	Mounted on a ceramic board (900mm ² X0.8mm)	1.0		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	20			V
Zero-Gate Voltage Drain Current	IDSS	VDS=20V, VGS=0V			1	μA
Gate-to-Source Leakage Current	IGSS	VGS=±8V, VDS=0V			±10	μA
Cutoff Voltage	VGS(off)	VDS=10V, ID=1mA	0.5		1.3	V
Forward Transfer Admittance	yfs	VDS=10V, ID=2.5A	4.5	7.5		S
Static Drain-to-Source On-State Resistance	RDS(on)1	ID=2A, VGS=4V		32	42	mΩ
	RDS(on)2	ID=1A, VGS=2.5V		40	57	mΩ
	RDS(on)3	ID=0.3A, VGS=1.8V		55	80	mΩ
Input Capacitance	Ciss	VDS=10V, f=1MHz		570		pF
Output Capacitance	Coss	VDS=10V, f=1MHz		110		pF
Reverse Transfer Capacitance	Crss	VDS=10V, f=1MHz		80		pF

Marking : CG

Continued on next page.

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VEC2610

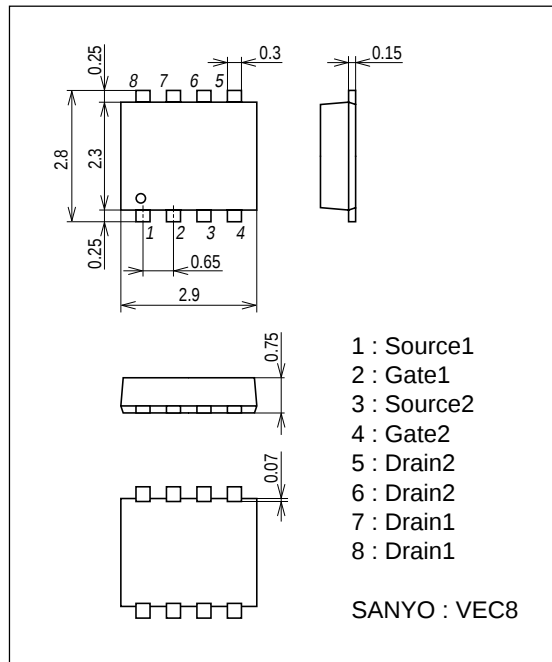
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		15		ns
Rise Time	t_r	See specified Test Circuit.		105		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		50		ns
Fall Time	t_f	See specified Test Circuit.		52		ns
Total Gate Charge	Q_g	$V_{DS}=10V, V_{GS}=4V, I_D=4.5A$		7.6		nC
Gate-to-Source Charge	Q_{gs}	$V_{DS}=10V, V_{GS}=4V, I_D=4.5A$		1.2		nC
Gate-to-Drain "Miller" Charge	Q_{gd}	$V_{DS}=10V, V_{GS}=4V, I_D=4.5A$		2.1		nC
Diode Forward Voltage	V_{SD}	$I_S=4.5A, V_{GS}=0V$		0.85	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	$R_{DS(on)1}$	$I_D=-2A, V_{GS}=-4.5V$		62	81	m Ω
	$R_{DS(on)2}$	$I_D=-1A, V_{GS}=-2.5V$		87	120	m Ω
	$R_{DS(on)3}$	$I_D=-0.3A, V_{GS}=-1.8V$		145	205	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

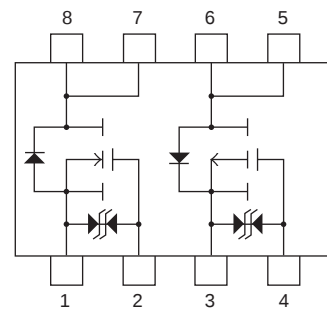
Package Dimensions

unit : mm

7012-002



Electrical Connection

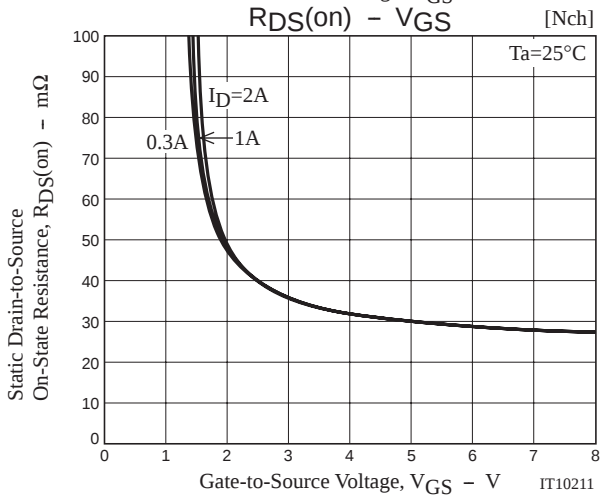
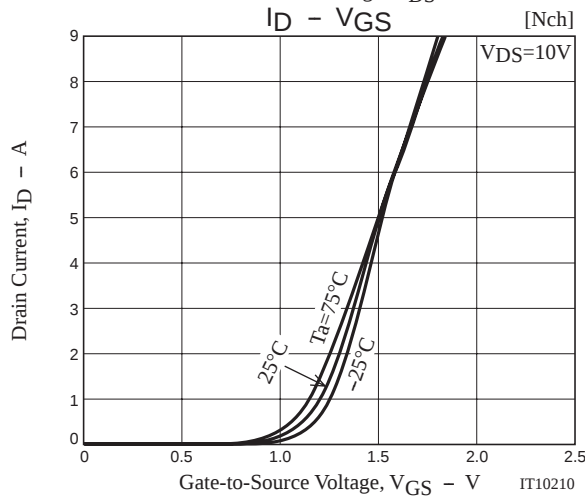
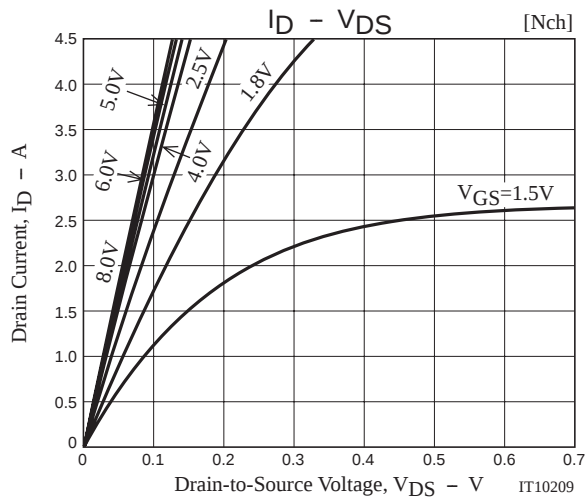
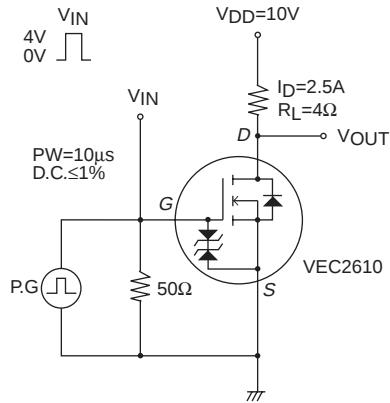


- 1 : Source1
- 2 : Gate1
- 3 : Source2
- 4 : Gate2
- 5 : Drain2
- 6 : Drain2
- 7 : Drain1
- 8 : Drain1

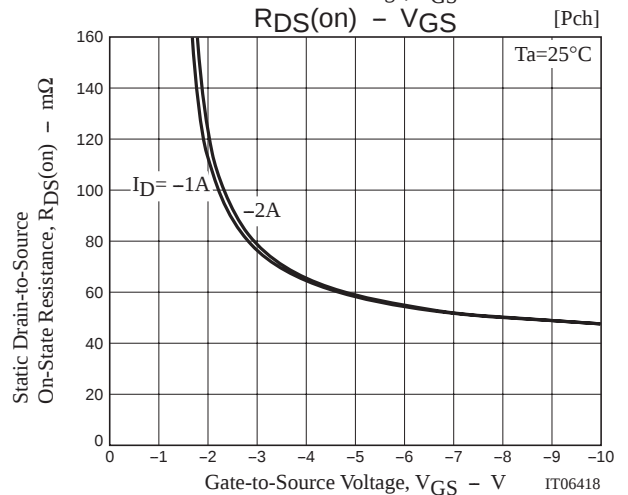
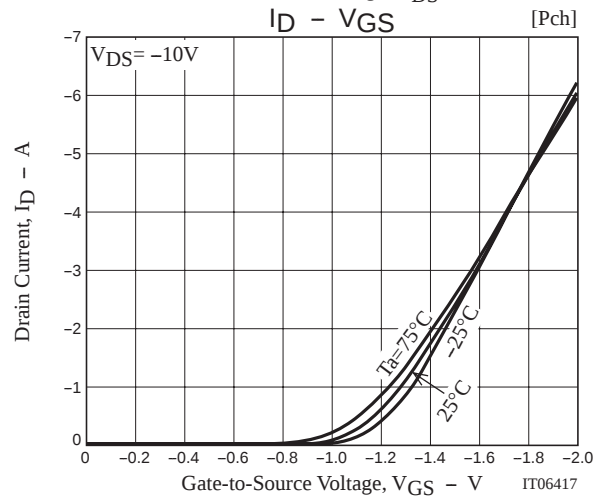
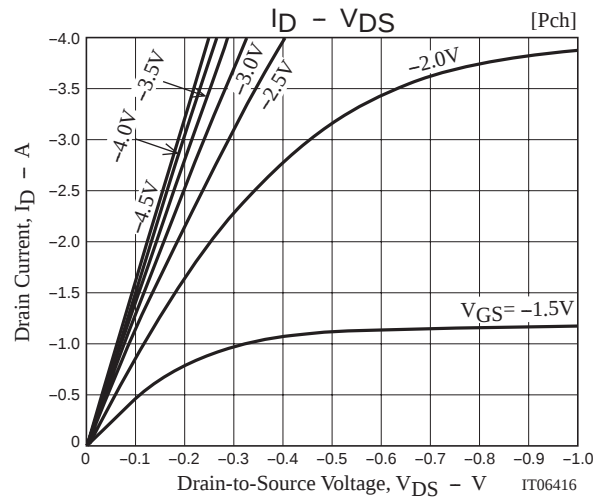
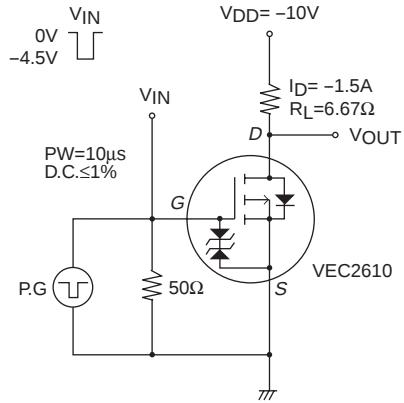
Top view

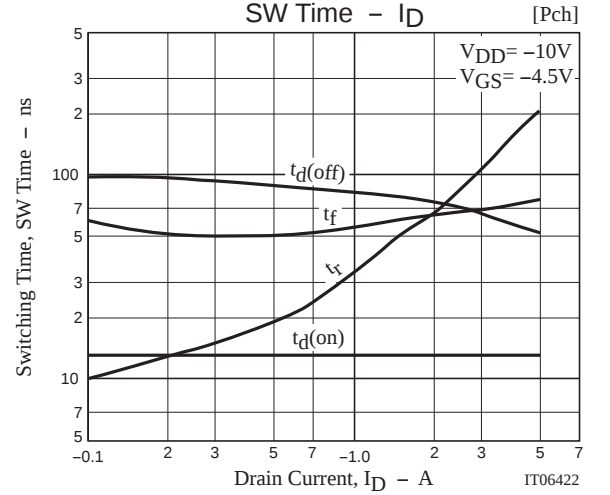
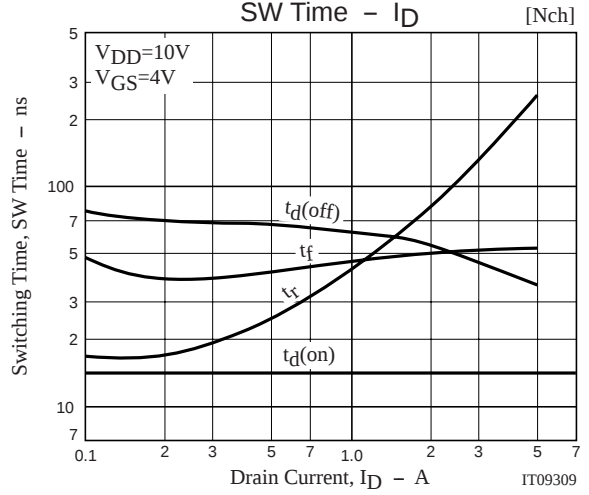
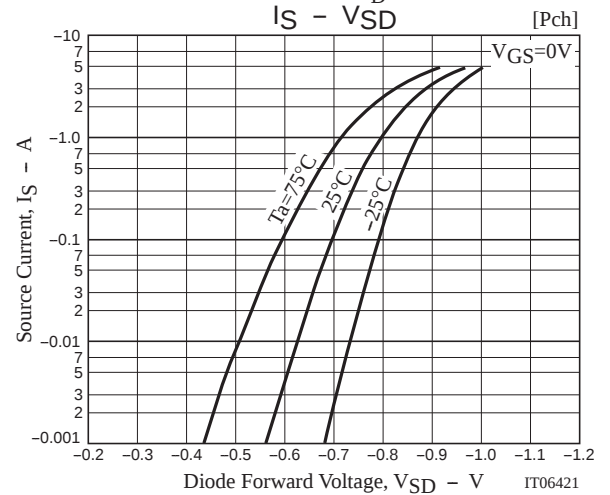
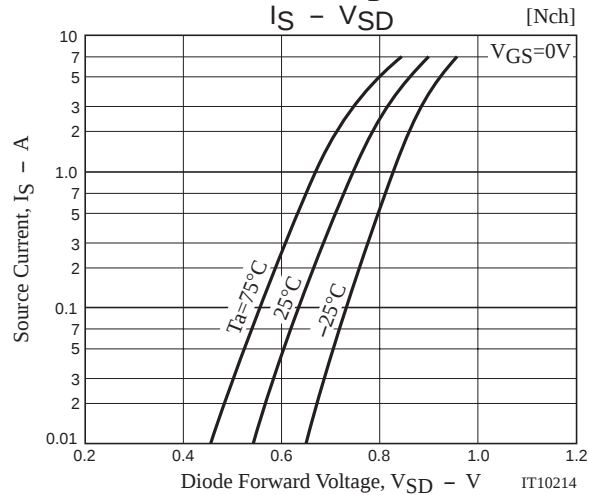
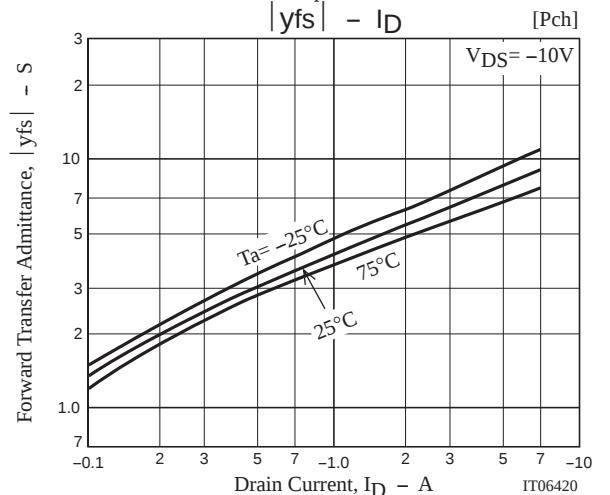
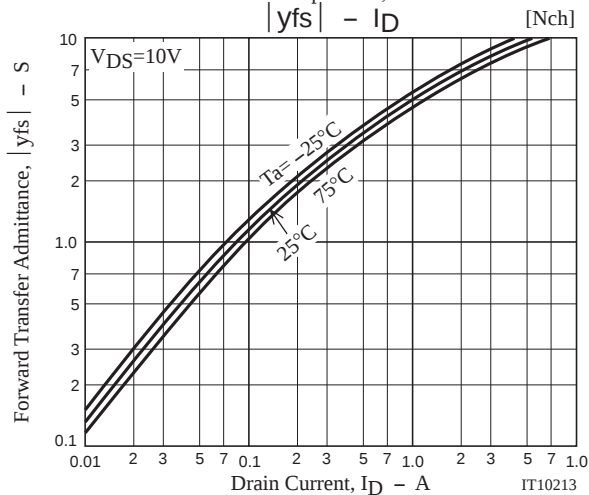
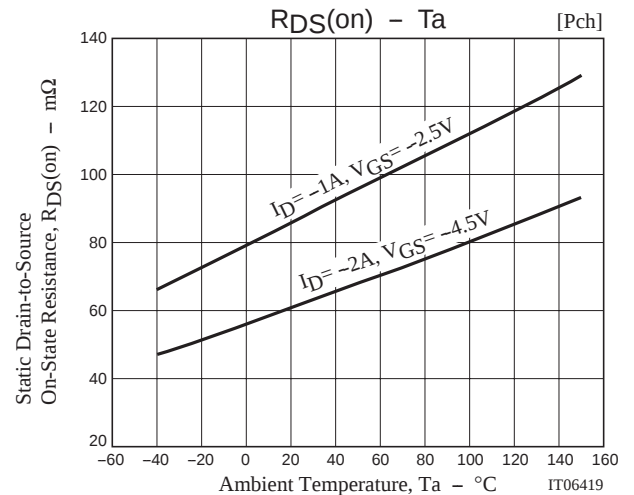
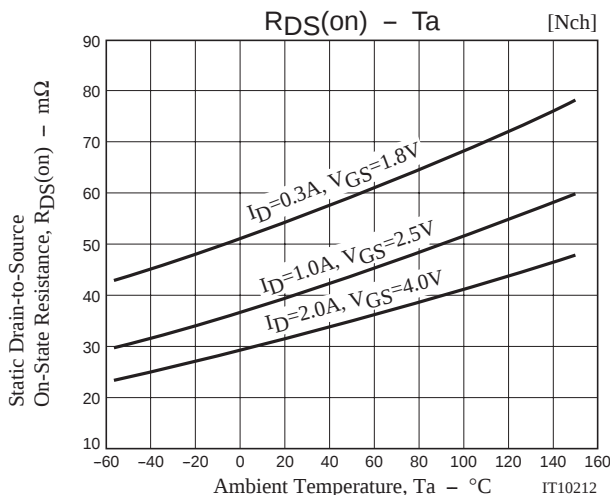
Switching Time Test Circuit

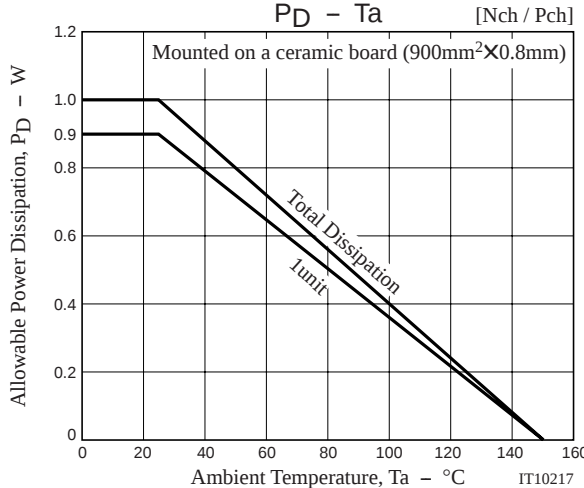
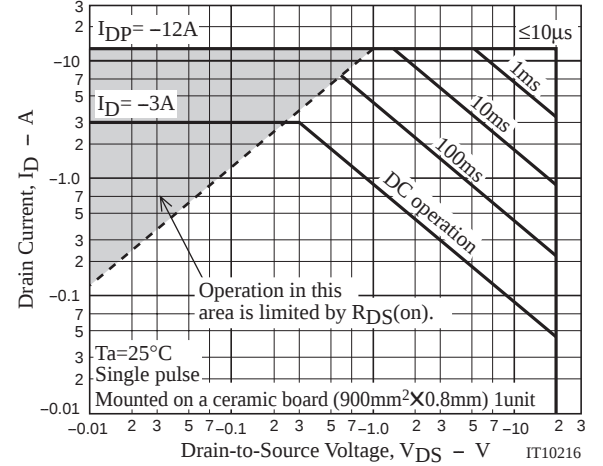
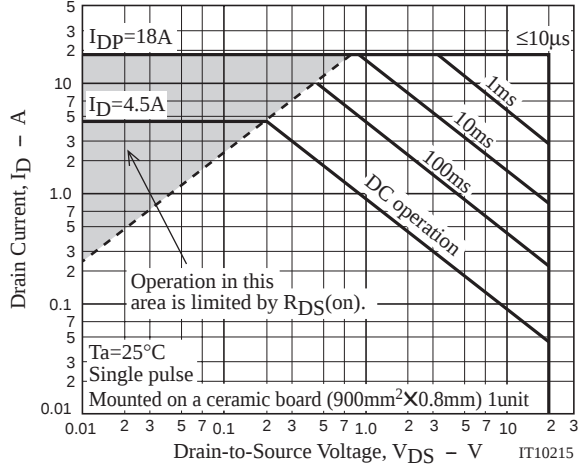
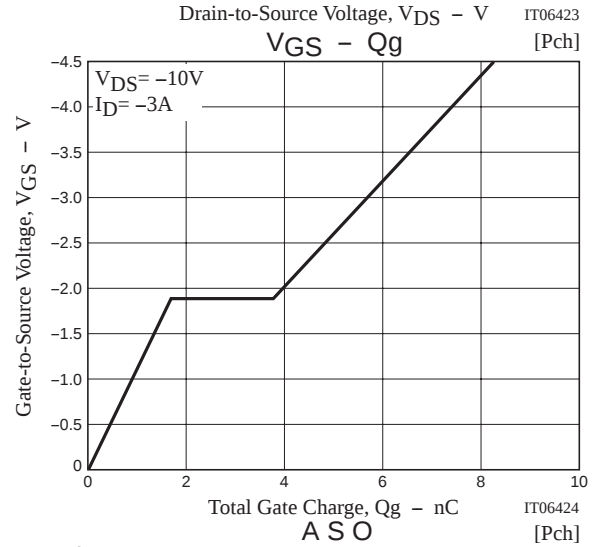
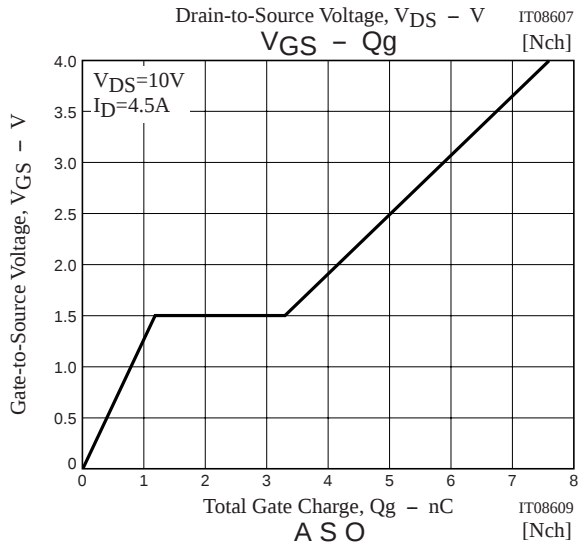
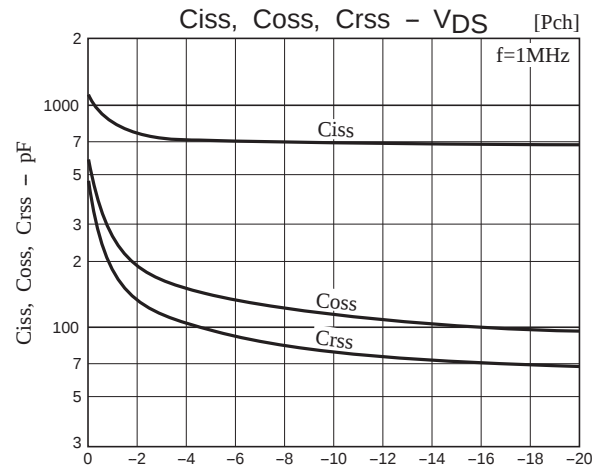
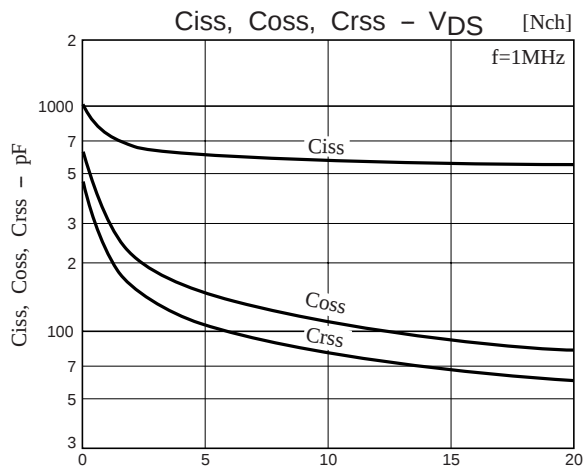
[N-channel]



[P-channel]







Note on usage : Since the VEC2610 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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