



VEC2605 — P-Channel and N-Channel Silicon MOSFET

General-Purpose Switching Device Applications

Features

- Best suited for DC/DC converters.
- The VEC2605 incorporates a P-channel MOSFET and an N-channel MOSFET that feature low ON-resistance and ultrahigh-speed switching, thereby enabling high-density mounting.
- 2.5V drive.
- Mounting height 0.75mm.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	P-channel	N-channel	Unit
Drain-to-Source Voltage	V _{DSS}		-20	20	V
Gate-to-Source Voltage	V _{GSS}		±10	±10	V
Drain Current (DC)	I _D		-1	3	A
Drain Current (Pulse)	I _{DP}	PW≤10μs, duty cycle≤1%	-4	12	A
Allowable Power Dissipation	P _D	Mounted on a ceramic board (900mm×X0.8mm)1unit	0.8	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	
[P-channel]						
Drain-to-Source Breakdown Voltage	V(BR)DSS	I _D =-1mA, V _{GS} =0	-20			V
Zero-Gate Voltage Drain Current	I _{DSS}	V _D =-20V, V _{GS} =0			-1	μA
Gate-to-Source Leakage Current	I _{GSS}	V _{GS} =±8V, V _D =0			±10	μA
Cutoff Voltage	V _{GS(off)}	V _D =-10V, I _D =-1mA	-0.4		-1.4	V
Forward Transfer Admittance	y _{fs}	V _D =-10V, I _D =-500mA	0.72	1.2		S
Static Drain-to-Source On-State Resistance	R _{DS(on)1}	I _D =-500mA, V _{GS} =-4V		380	500	mΩ
	R _{DS(on)2}	I _D =-300mA, V _{GS} =-2.5V		540	760	mΩ
Input Capacitance	C _{iss}	V _D =-10V, f=1MHz		115		pF
Output Capacitance	C _{oss}	V _D =-10V, f=1MHz		23		pF
Reverse Transfer Capacitance	C _{rss}	V _D =-10V, f=1MHz		15		pF

Marking : BV

Continued on next page.

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VEC2605

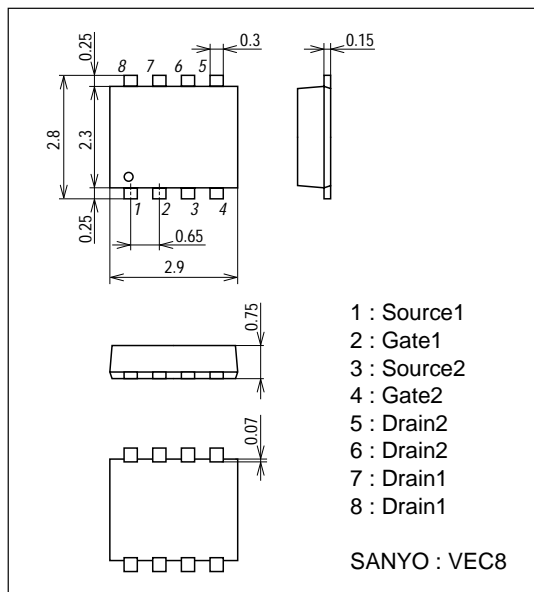
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		8		ns
Rise Time	t_r	See specified Test Circuit.		11		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		17		ns
Fall Time	t_f	See specified Test Circuit.		13		ns
Total Gate Charge	Qg	$V_{DS}=-10V, V_{GS}=-4V, I_D=-1A$		1.5		nC
Gate-to-Source Charge	Qgs	$V_{DS}=-10V, V_{GS}=-4V, I_D=-1A$		0.4		nC
Gate-to-Drain "Miller" Charge	Qgd	$V_{DS}=-10V, V_{GS}=-4V, I_D=-1A$		0.3		nC
Diode Forward Voltage	VSD	$I_S=-1A, V_{GS}=0$		-0.89	-1.2	V
[N-channel]						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1mA, V_{GS}=0$	20			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=20V, V_{GS}=0$			1	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 8V, V_{DS}=0$			± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10V, I_D=1mA$	0.5		1.3	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=1.5A$	3.2	5.4		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=2A, V_{GS}=4V$		44	58	m Ω
	$R_{DS(on)2}$	$I_D=1A, V_{GS}=2.5V$		51	73	m Ω
Input Capacitance	Ciss	$V_{DS}=10V, f=1MHz$		570		pF
Output Capacitance	Coss	$V_{DS}=10V, f=1MHz$		110		pF
Reverse Transfer Capacitance	Crss	$V_{DS}=10V, f=1MHz$		80		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		13.5		ns
Rise Time	t_r	See specified Test Circuit.		55		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		80		ns
Fall Time	t_f	See specified Test Circuit.		70		ns
Total Gate Charge	Qg	$V_{DS}=10V, V_{GS}=4V, I_D=3A$		7.6		nC
Gate-to-Source Charge	Qgs	$V_{DS}=10V, V_{GS}=4V, I_D=3A$		1.2		nC
Gate-to-Drain "Miller" Charge	Qgd	$V_{DS}=10V, V_{GS}=4V, I_D=3A$		2.1		nC
Diode Forward Voltage	VSD	$I_S=3A, V_{GS}=0$		0.85	1.2	V

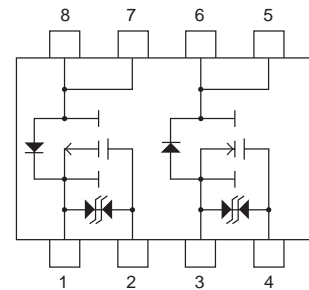
Package Dimensions

unit : mm

2227A



Electrical Connection

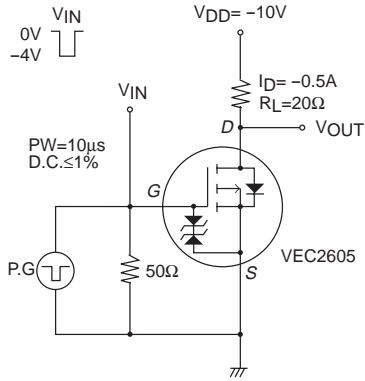


- 1 : Source1
- 2 : Gate1
- 3 : Source2
- 4 : Gate2
- 5 : Drain2
- 6 : Drain2
- 7 : Drain1
- 8 : Drain1

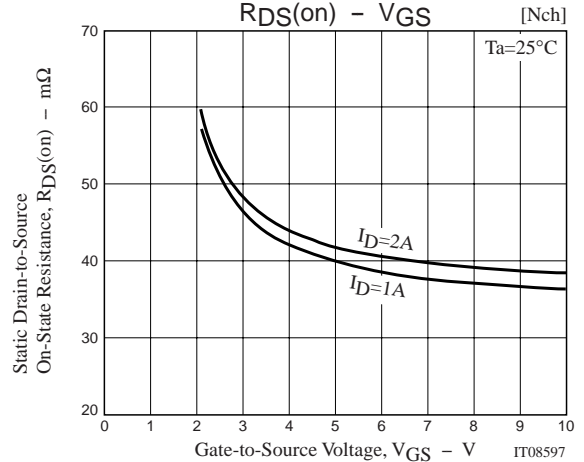
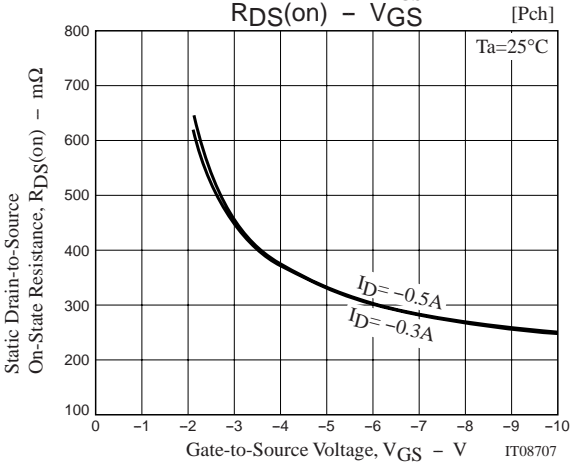
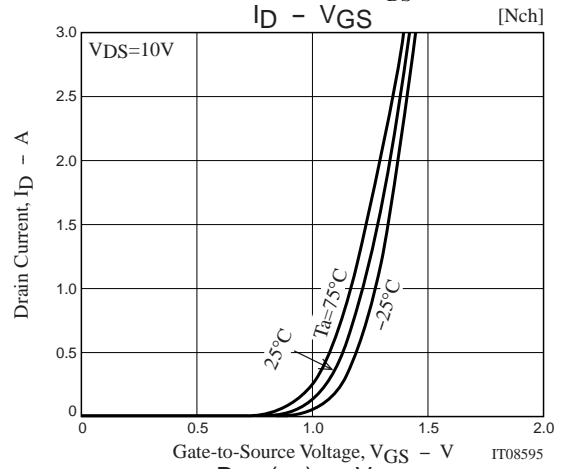
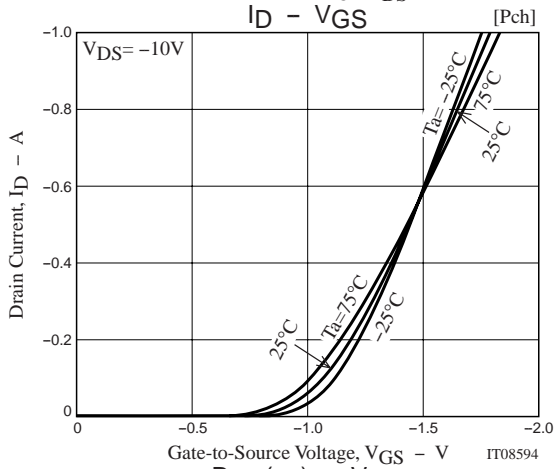
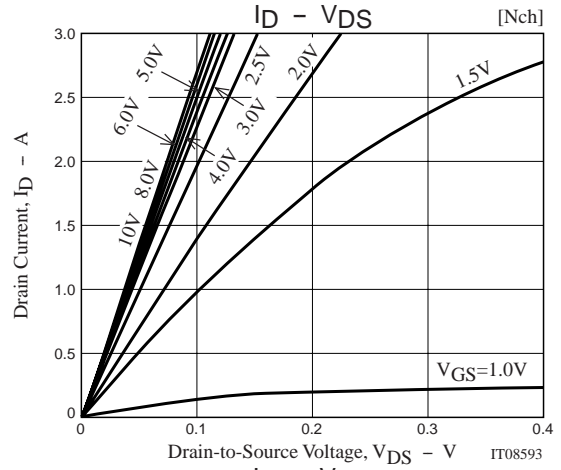
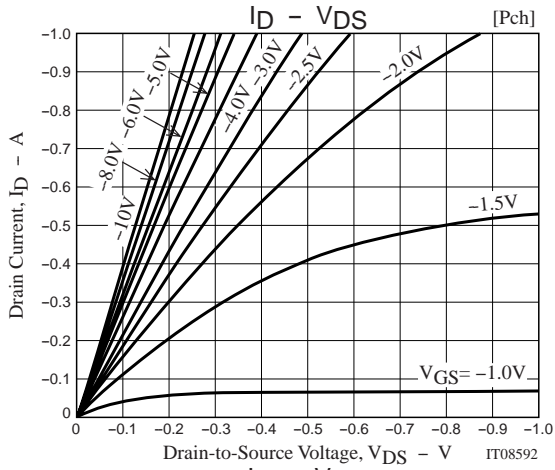
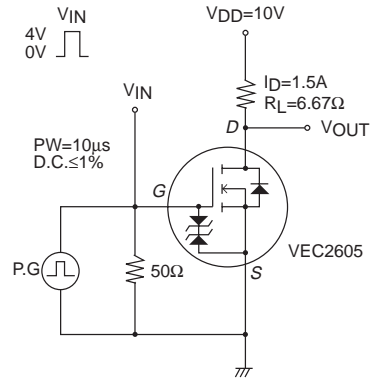
Top view

Switching Time Test Circuit

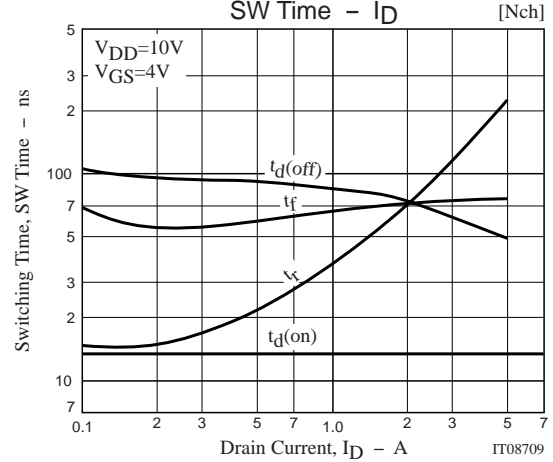
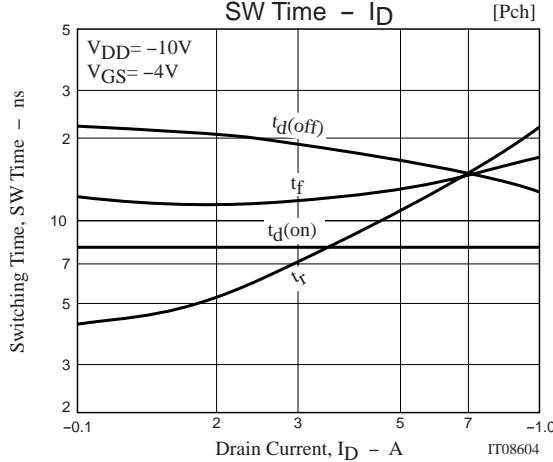
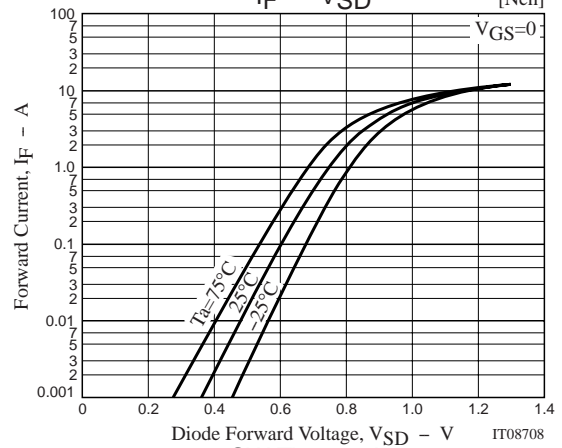
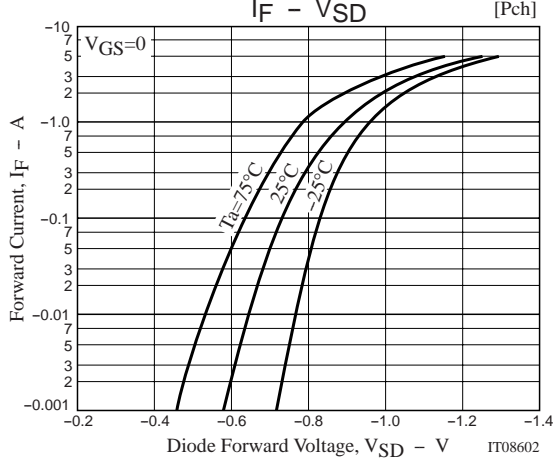
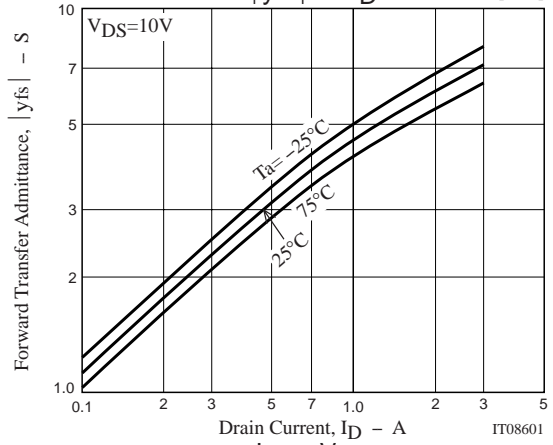
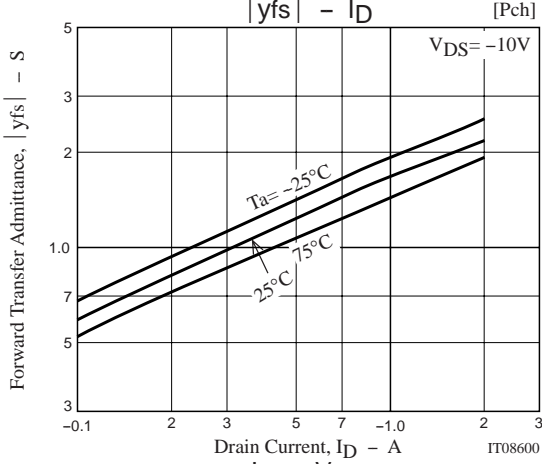
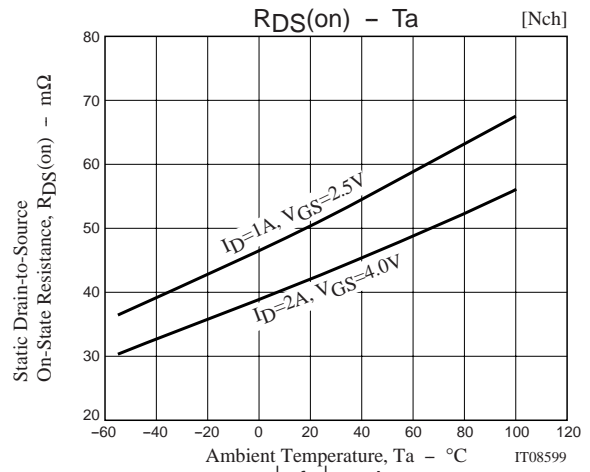
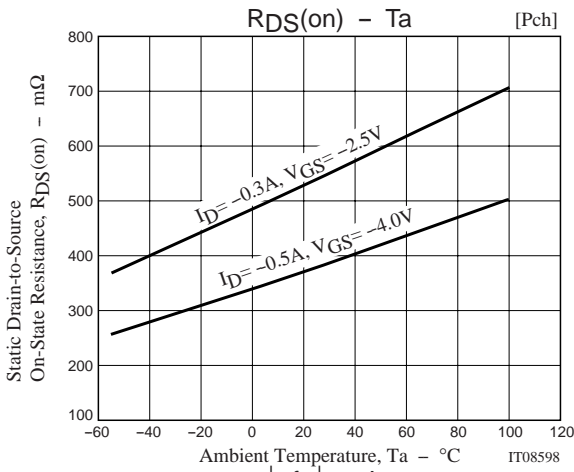
[P-channel]

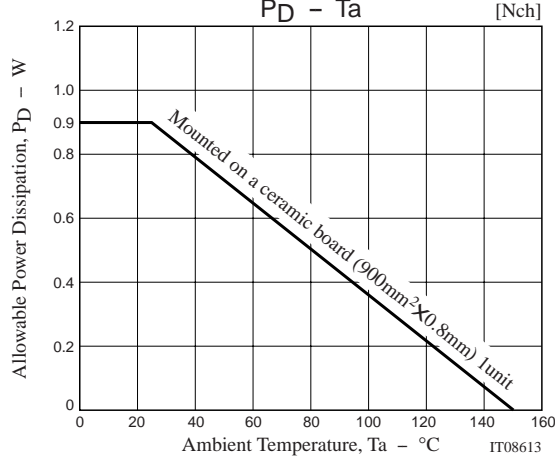
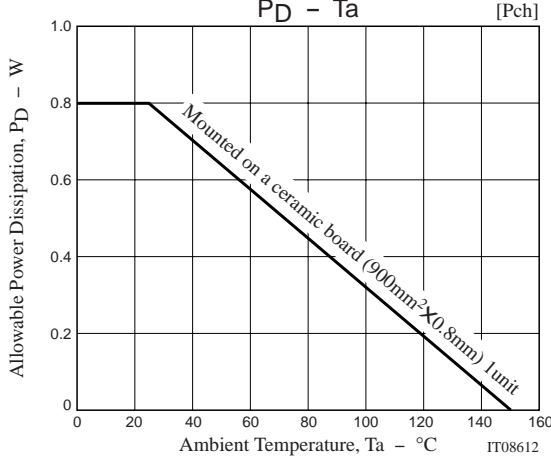
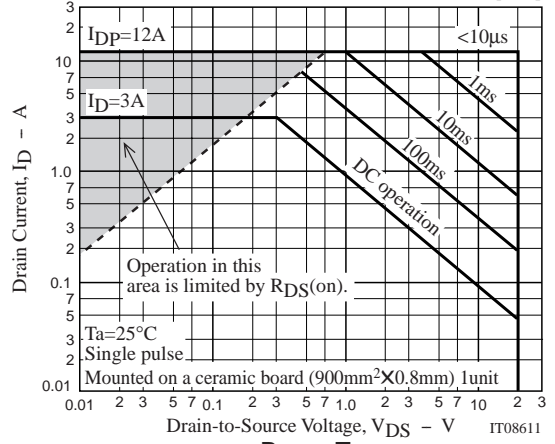
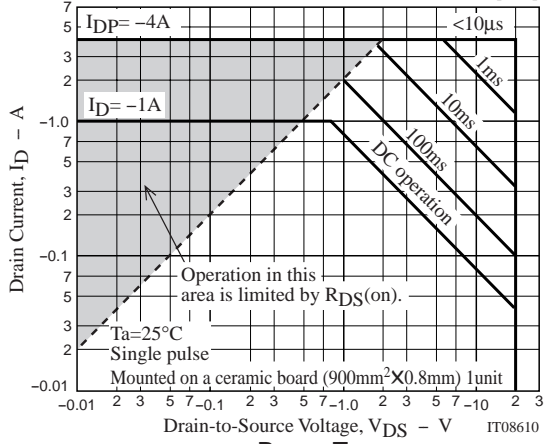
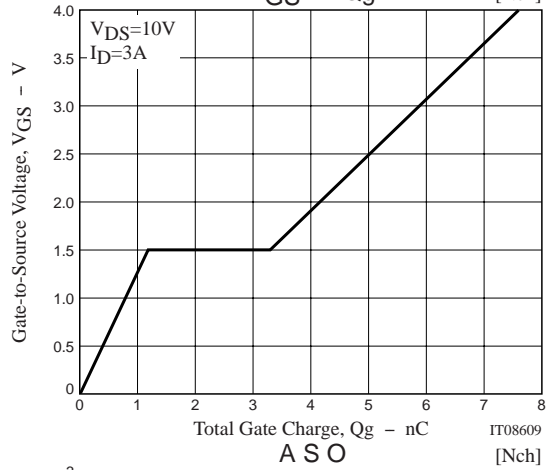
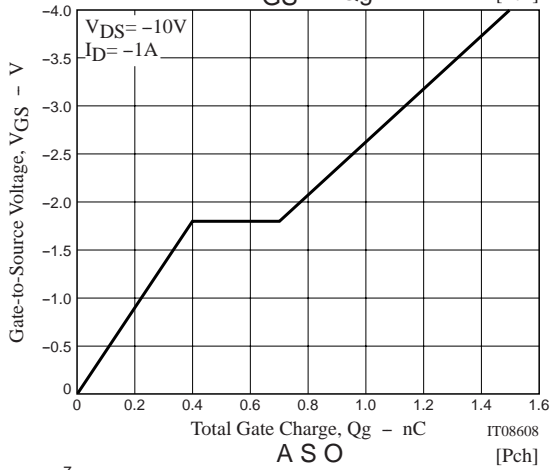
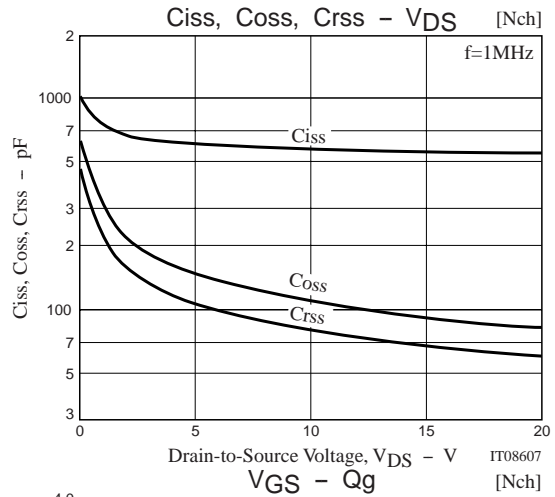
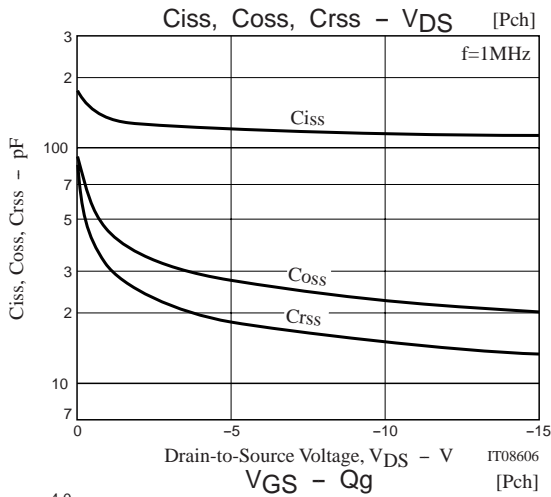


[N-channel]



VEC2605





Note on usage : Since the VEC2605 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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