Ordering number : ENA0856

SANYO Semiconductors
DATA SHEET

N-Channel and P-Channel Silicon MOSFETs

VEC2606 — General-Purpose Switching Device Applications

Features

- Best suited for inverter applications.
- Low ON-resistance.
- The VEC2606 incorporates an N-channel MOSFET and a P-channel MOSFET thereby enabling high-density mounting.
- 4V drive.
- Mounting height 0.75mm.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	N-channel	P-channel	Unit
Drain-to-Source Voltage	V_{DSS}		60	−60	V
Gate-to-Source Voltage	V_{GSS}		±20	±20	V
Drain Current (DC)	I_D		2	−1.5	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	8	−6	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (900mm²X0.8mm)1unit	0.9		W
Total Dissipation	P_T	Mounted on a ceramic board (900mm²X0.8mm)	1.0		W
Channel Temperature	Tch		150		°C
Storage Temperature	Tstg		−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	$V_{(BR)DSS}$	I_D=1mA, V_{GS}=0V	60			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V			1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±16V, V_{DS}=0V			±10	μA
Cutoff Voltage	$V_{GS(off)}$	V_{DS}=10V, I_D=1mA	1.2		2.6	V
Forward Transfer Admittance	$\|yfs\|$	V_{DS}=10V, I_D=1A	1.44	2.4		S

Marking : BX

Continued on next page.

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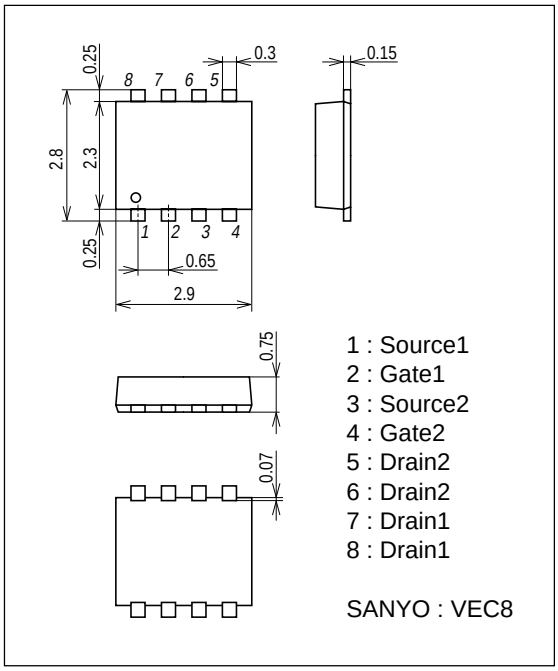
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Static Drain-to-Source On-State Resistance	$R_{DS}(on)1$	I_D=1A, V_{GS}=10V		80	104	mΩ
	$R_{DS}(on)2$	I_D=1A, V_{GS}=4V		108	151	mΩ
Input Capacitance	Ciss	V_{DS}=20V, f=1MHz		490		pF
Output Capacitance	Coss	V_{DS}=20V, f=1MHz		60		pF
Reverse Transfer Capacitance	Crss	V_{DS}=20V, f=1MHz		40		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		8.8		ns
Rise Time	t_r	See specified Test Circuit.		10		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		44		ns
Fall Time	t_f	See specified Test Circuit.		26		ns
Total Gate Charge	Qg	V_{DS}=30V, V_{GS}=10V, I_D=2A		10		nC
Gate-to-Source Charge	Qgs	V_{DS}=30V, V_{GS}=10V, I_D=2A		1.2		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=30V, V_{GS}=10V, I_D=2A		2.3		nC
Diode Forward Voltage	V_{SD}	I_S=2A, V_{GS}=0V		0.8	1.2	V
[P-channel]						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=-1mA, V_{GS}=0V	-60			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=-60V, V_{GS}=0V			-1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±16V, V_{DS}=0V			±10	μA
Cutoff Voltage	$V_{GS}(off)$	V_{DS}=-10V, I_D=-1mA	-1.2		-2.6	V
Forward Transfer Admittance	$\|yfs\|$	V_{DS}=-10V, I_D=-0.75A	1.5	2.5		S
Static Drain-to-Source On-State Resistance	$R_{DS}(on)1$	I_D=-0.75A, V_{GS}=-10V		185	240	mΩ
	$R_{DS}(on)2$	I_D=-0.75A, V_{GS}=-4V		240	336	mΩ
Input Capacitance	Ciss	V_{DS}=-20V, f=1MHz		550		pF
Output Capacitance	Coss	V_{DS}=-20V, f=1MHz		50		pF
Reverse Transfer Capacitance	Crss	V_{DS}=-20V, f=1MHz		30		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		8.4		ns
Rise Time	t_r	See specified Test Circuit.		7.4		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		59		ns
Fall Time	t_f	See specified Test Circuit.		27		ns
Total Gate Charge	Qg	V_{DS}=-30V, V_{GS}=-10V, I_D=-1.5A		10		nC
Gate-to-Source Charge	Qgs	V_{DS}=-30V, V_{GS}=-10V, I_D=-1.5A		1.2		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=-30V, V_{GS}=-10V, I_D=-1.5A		2.5		nC
Diode Forward Voltage	V_{SD}	I_S=-1.5A, V_{GS}=0V		-0.8	-1.2	V

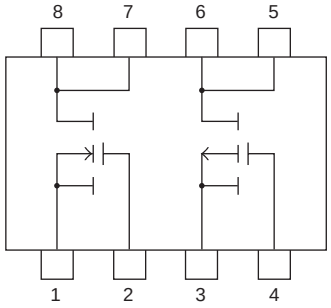
Package Dimensions

unit : mm (typ)

7012-002

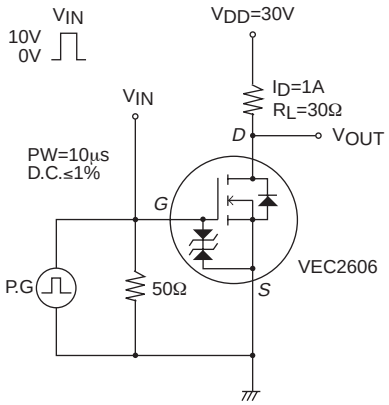


Electrical Connection

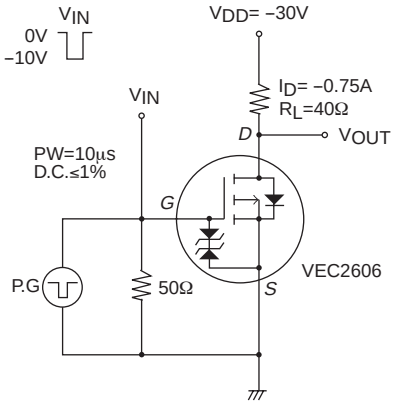


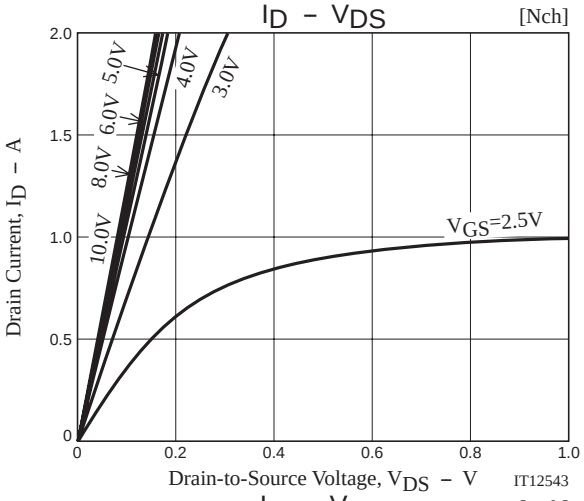
Switching Time Test Circuit

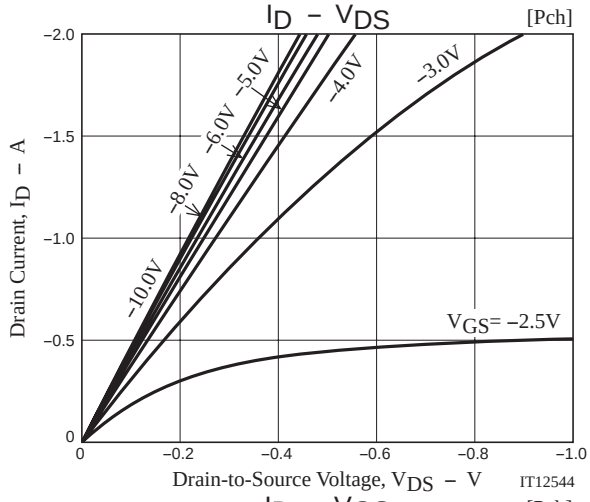
[N-channel]

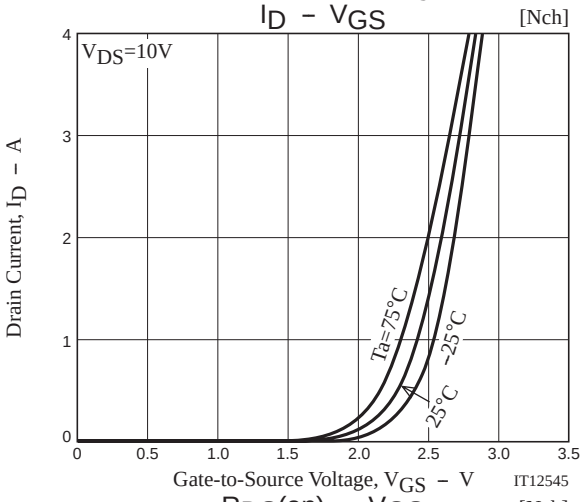


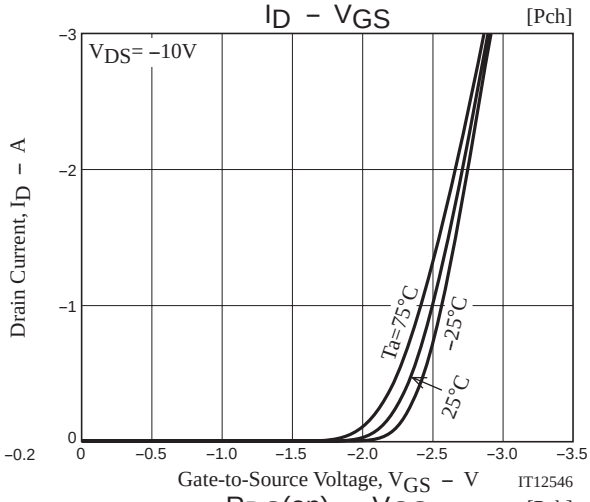
[P-channel]

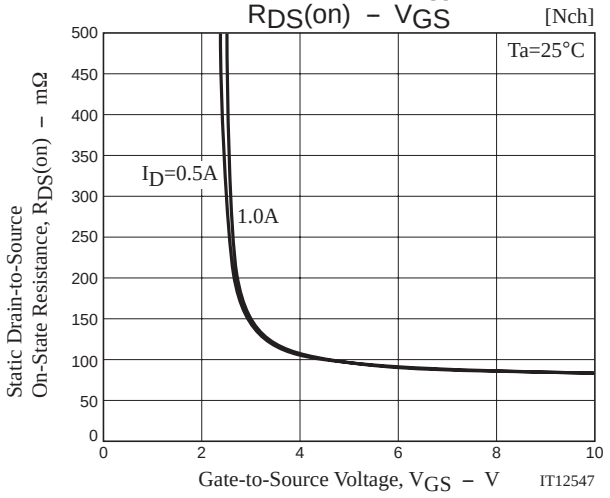


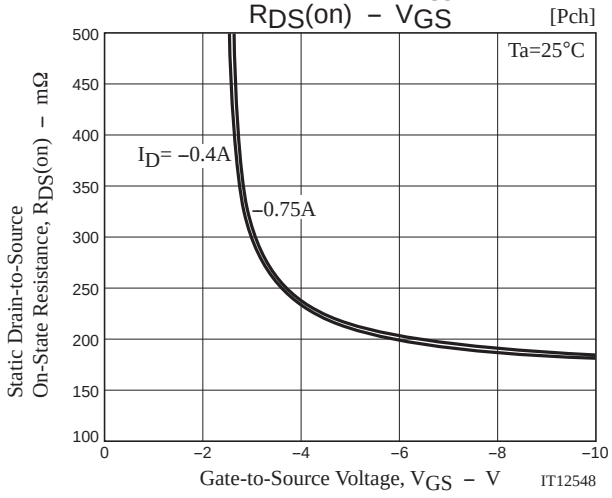


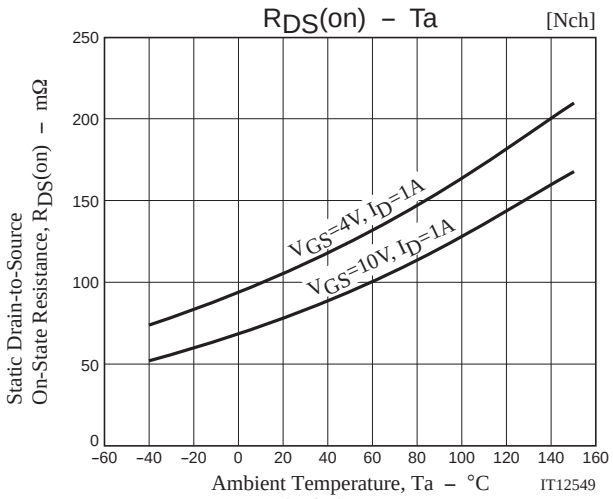


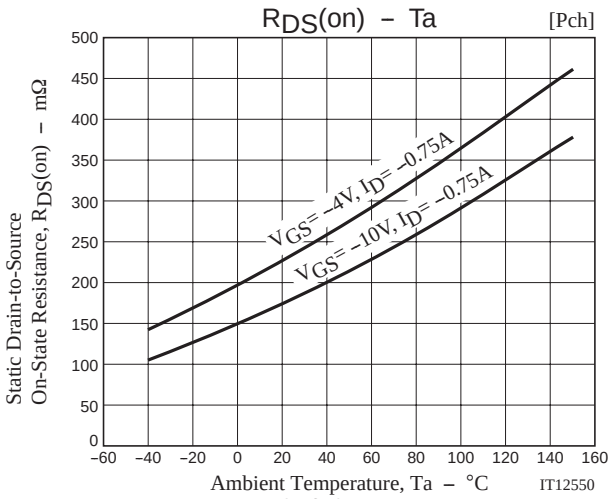


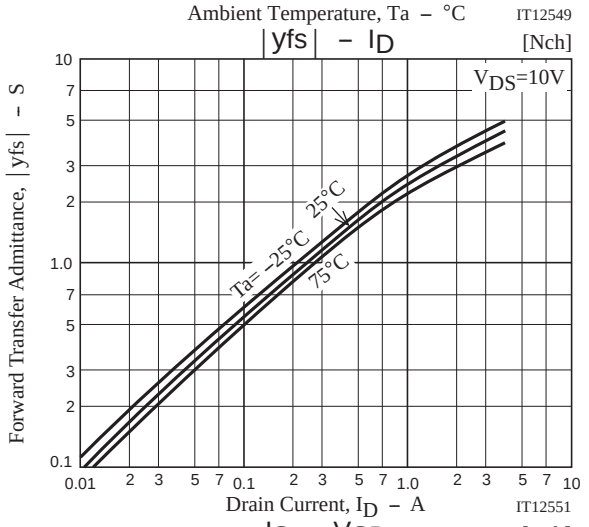


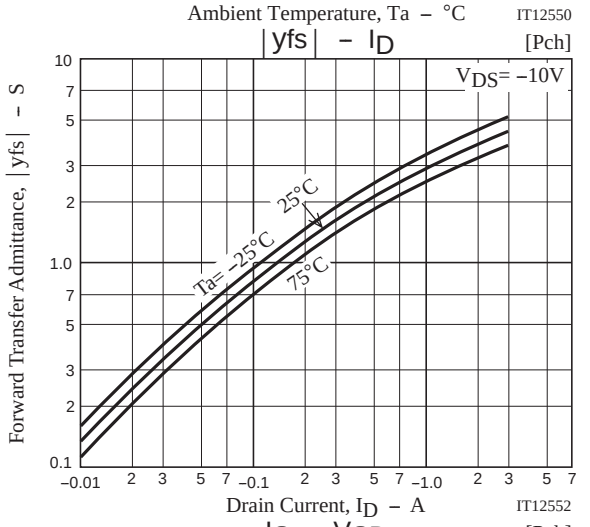


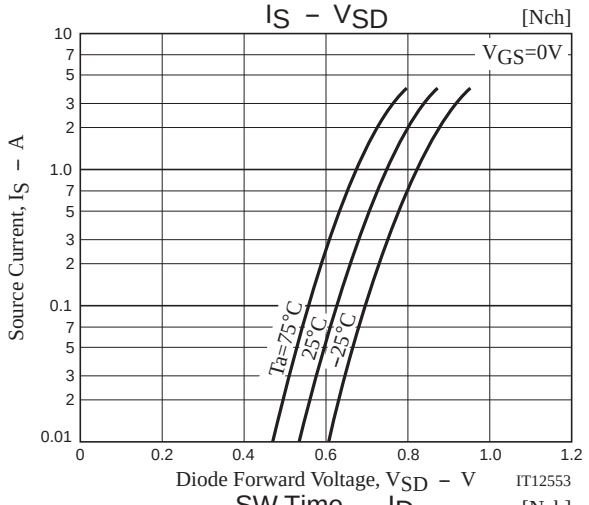


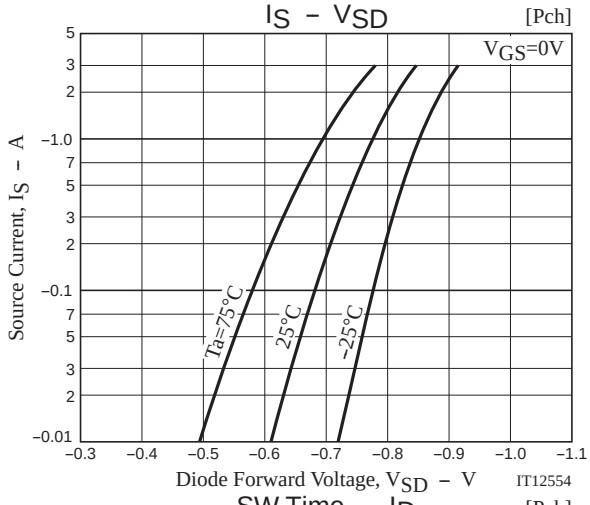

RDS(on) – Ta
[Nch]
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
VGS=4V, ID=1A
VGS=10V, ID=1A
Ambient Temperature, Ta – °C
IT12549

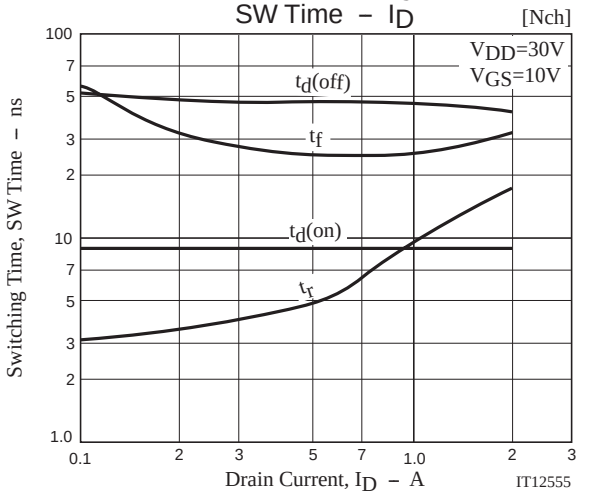

RDS(on) – Ta
[Pch]
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
VGS= –4V, ID= –0.75A
VGS= –10V, ID= –0.75A
Ambient Temperature, Ta – °C
IT12550

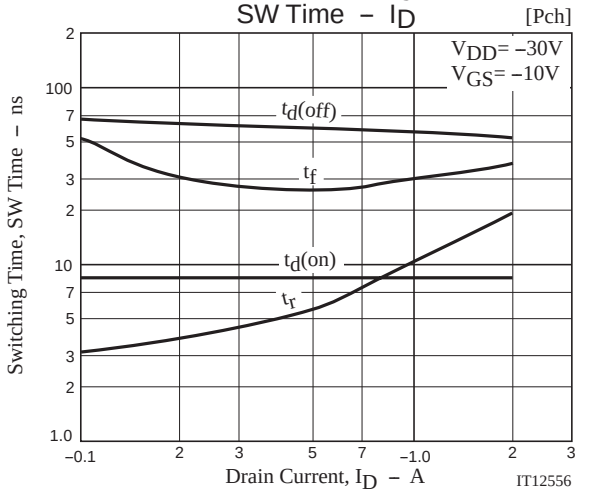

|yfs| – ID
[Nch]
VDS=10V
Forward Transfer Admittance, |yfs| – S
Ta= –25°C
25°C
75°C
Drain Current, ID – A
IT12551


|yfs| – ID
[Pch]
VDS= –10V
Forward Transfer Admittance, |yfs| – S
Ta= –25°C
25°C
75°C
Drain Current, ID – A
IT12552

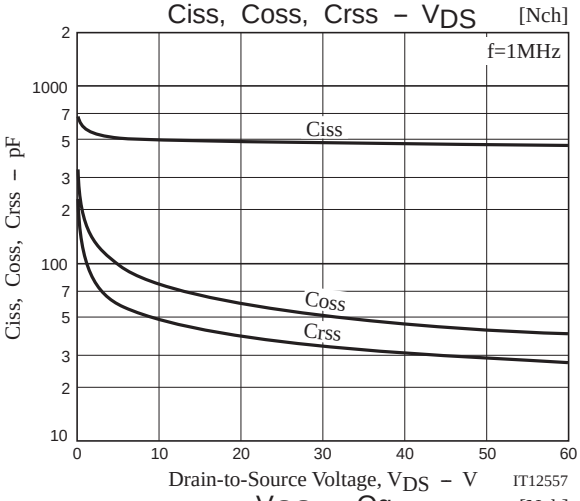

IS – VSD
[Nch]
VGS=0V
Source Current, IS – A
Ta=75°C
25°C
–25°C
Diode Forward Voltage, VSD – V
IT12553


IS – VSD
[Pch]
VGS=0V
Source Current, IS – A
Ta=75°C
25°C
–25°C
Diode Forward Voltage, VSD – V
IT12554

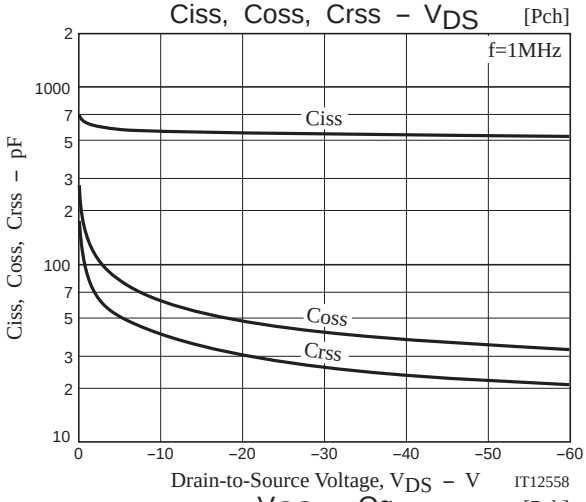

SW Time – ID
[Nch]
VDD=30V
VGS=10V
td(off)
tf
td(on)
tr
Switching Time, SW Time – ns
Drain Current, ID – A
IT12555


SW Time – ID
[Pch]
VDD= –30V
VGS= –10V
td(off)
tf
td(on)
tr
Switching Time, SW Time – ns
Drain Current, ID – A
IT12556

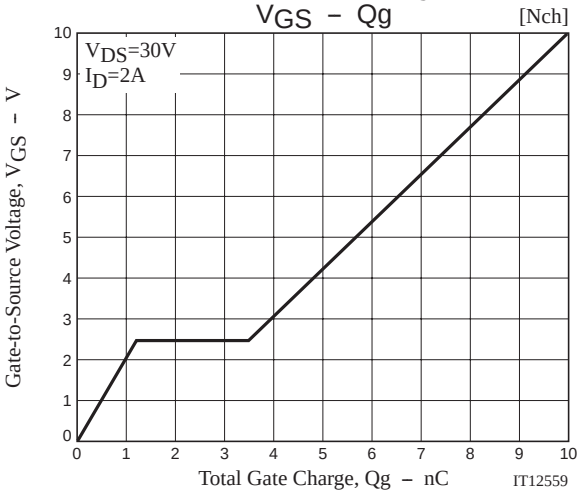
Ciss, Coss, Crss – V_{DS} [Nch]



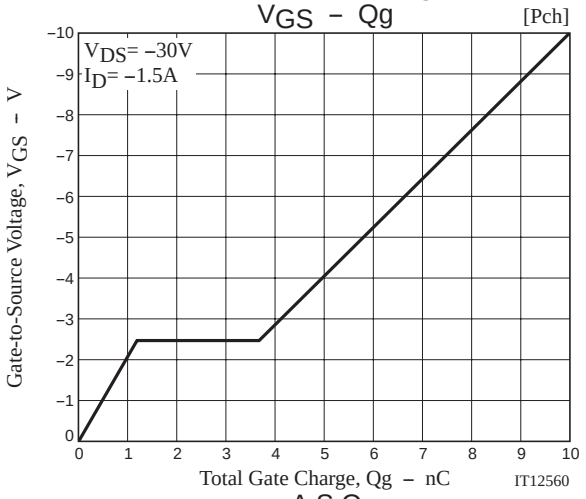
Ciss, Coss, Crss – V_{DS} [Pch]



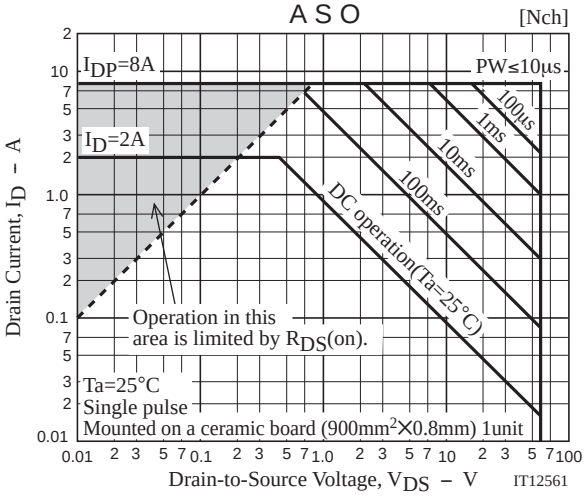
V_{GS} – Qg [Nch]



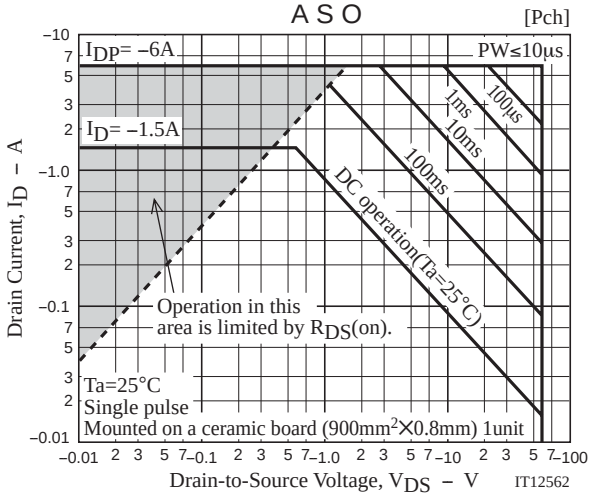
V_{GS} – Qg [Pch]



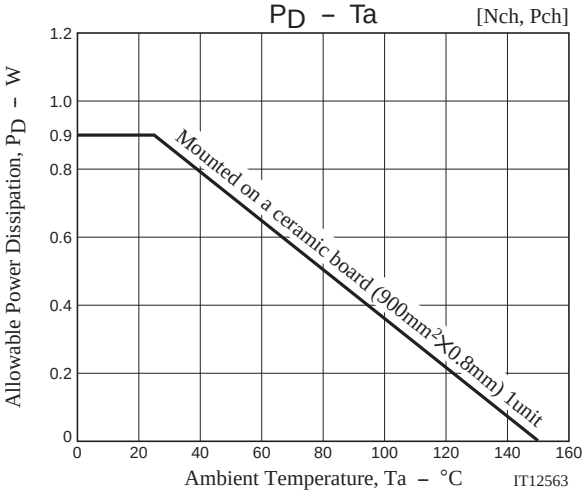
A S O [Nch]



A S O [Pch]



P_D – Ta [Nch, Pch]



Note on usage : Since the VEC2606 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

This catalog provides information as of June, 2007. Specifications and information herein are subject to change without notice.