Ordering number : ENN8026

SANYO Semiconductors
DATA SHEET

P-Channel Silicon MOSFET

VEC2302 — General-Purpose Switching Device Applications

Features

- The best suited for inverter applications.
- Low ON-resistance.
- Composite type facilitating high-density mounting.
- 4V drive.
- Mounting high 0.75mm.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		-30	V
Gate-to-Source Voltage	V_{GSS}		±20	V
Drain Current (DC)	I_D		-3	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	-12	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (900mm²×0.8mm)1unit	0.9	W
Total Dissipation	P_T	Mounted on a ceramic board (900mm²×0.8mm)	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	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=-1mA, V_{GS}=0	-30			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=-30V, V_{GS}=0			-1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±16V, V_{DS}=0			±10	μA
Cutoff Voltage	$V_{GS(off)}$	V_{DS}=-10V, I_D=-1mA	-1.0		-2.4	V
Forward Transfer Admittance	$\|yfs\|$	V_{DS}=-10V, I_D=-1.5A	2.0	3.4		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	I_D=-1.5A, V_{GS}=-10V		65	86	mΩ
	$R_{DS(on)2}$	I_D=-0.7A, V_{GS}=-4V		117	168	mΩ
Input Capacitance	Ciss	V_{DS}=-10V, f=1MHz		510		pF
Output Capacitance	Coss	V_{DS}=-10V, f=1MHz		115		pF
Reverse Transfer Capacitance	Crss	V_{DS}=-10V, f=1MHz		78		pF

Marking : BB

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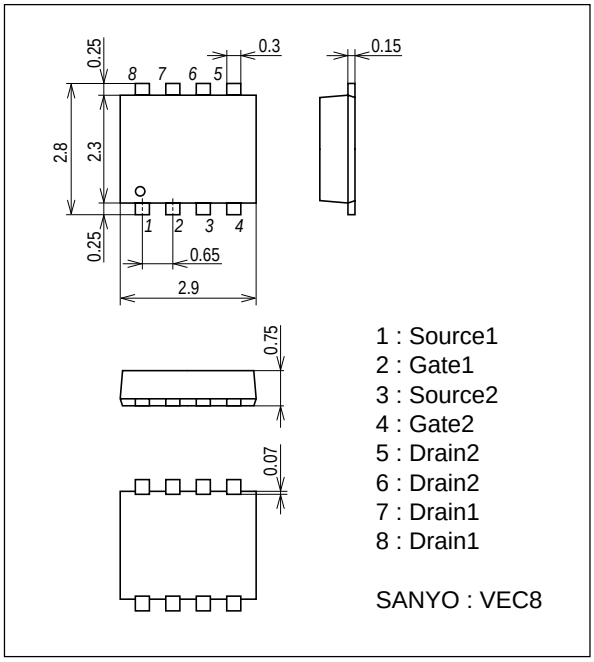
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit		11		ns
Rise Time	t_r	See specified Test Circuit		17		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit		53		ns
Fall Time	t_f	See specified Test Circuit		35		ns
Total Gate Charge	Qg	V_{DS}=–10V, V_{GS}=–10V, I_D=–3A		11		nC
Gate-to-Source Charge	Qgs	V_{DS}=–10V, V_{GS}=–10V, I_D=–3A		2.4		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=–10V, V_{GS}=–10V, I_D=–3A		1.7		nC
Diode Forward Voltage	V_{SD}	I_S=–3A, V_{GS}=0		–0.87	–1.5	V

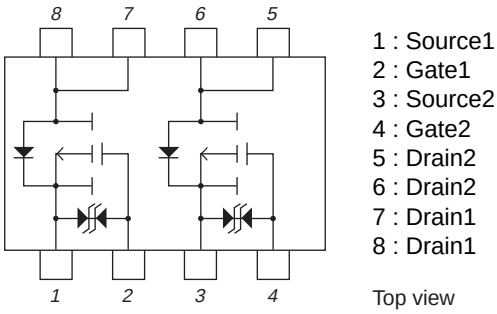
Package Dimensions

unit : mm

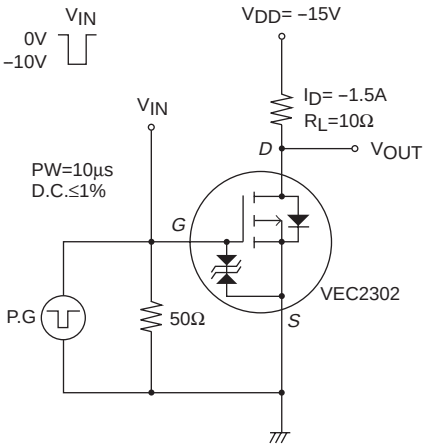
2227A

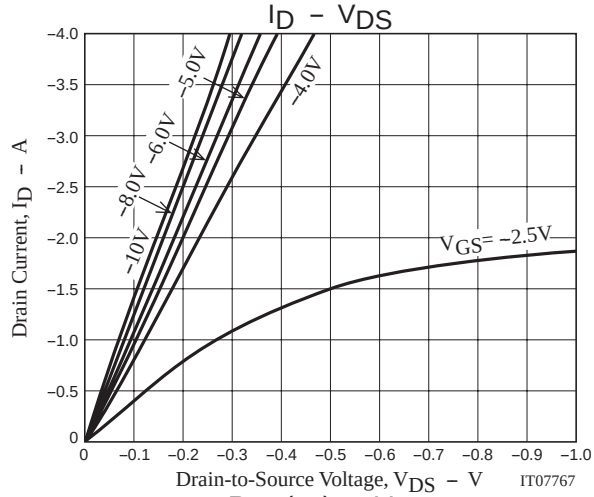


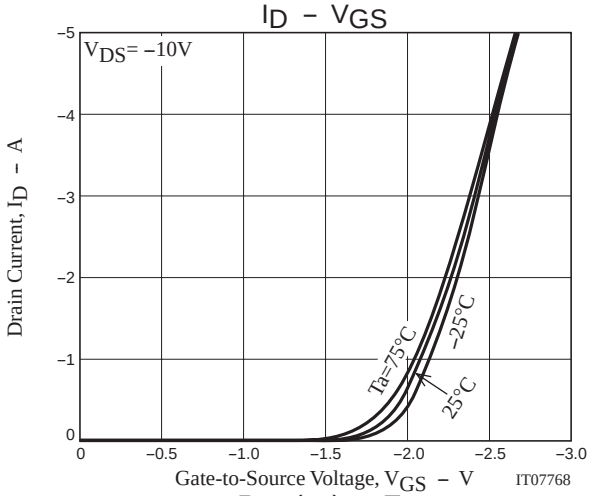
Electrical Connection

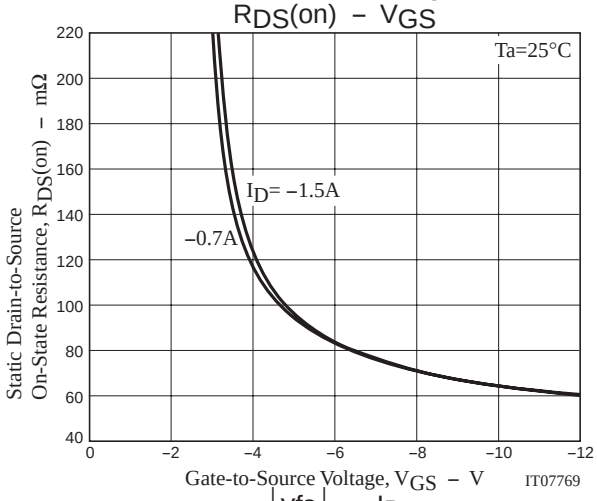


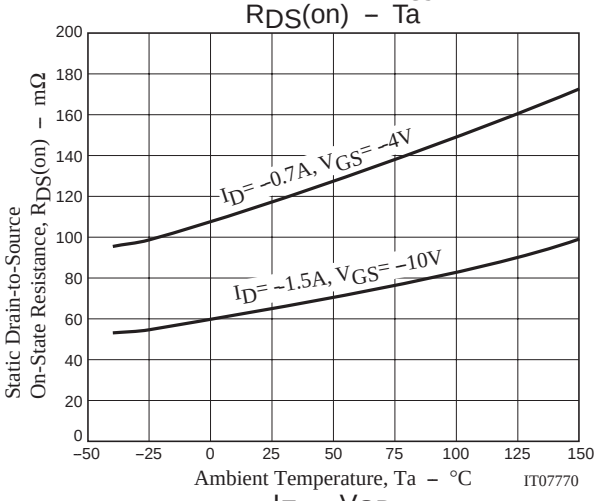
Switching Time Test Circuit

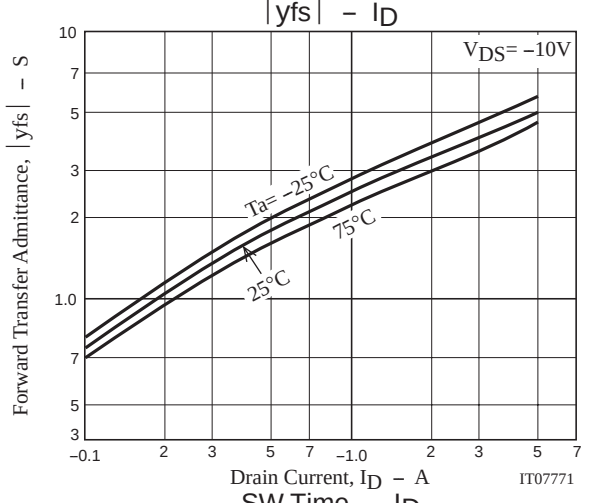


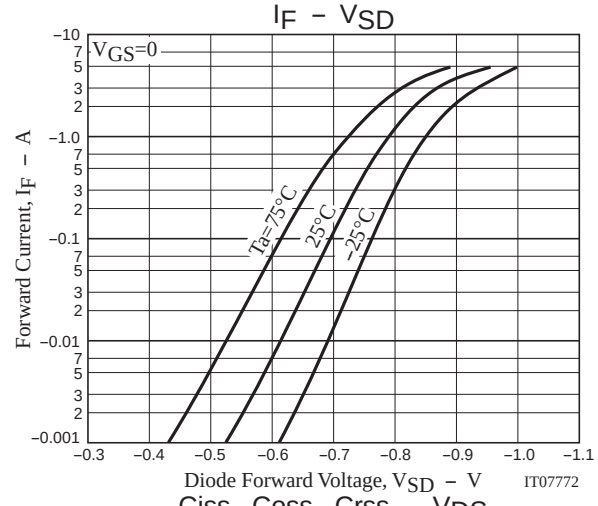

ID – VDS
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT07767
–4.0V
–5.0V
–6.0V
–8.0V
–10V
VGS= –2.5V

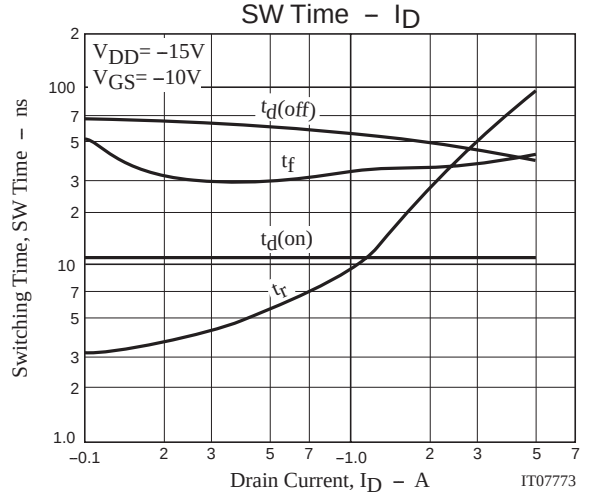

ID – VGS
VDS= –10V
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
IT07768
Ta=75°C
25°C
–25°C

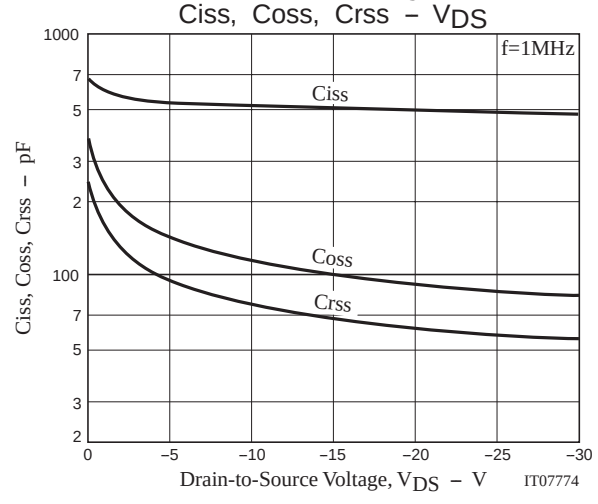

RDS(on) – VGS
Ta=25°C
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT07769
ID= –1.5A
–0.7A

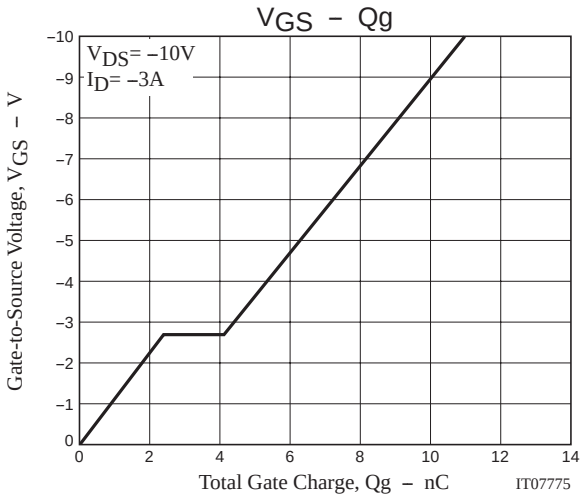

RDS(on) – Ta
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Ambient Temperature, Ta – °C
IT07770
ID= –0.7A, VGS= –4V
ID= –1.5A, VGS= –10V

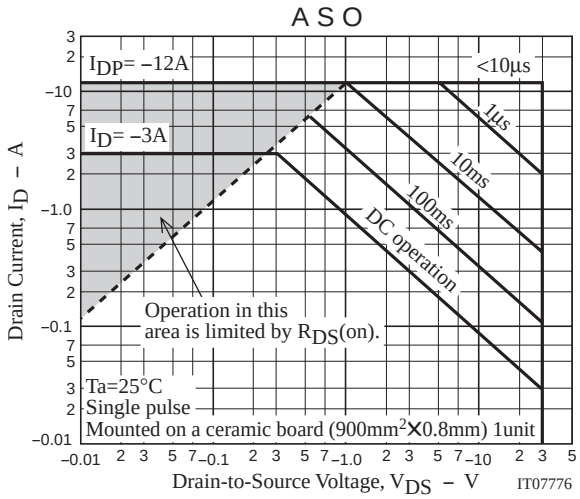

|yfs| – ID
VDS= –10V
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT07771
Ta= –25°C
75°C
25°C

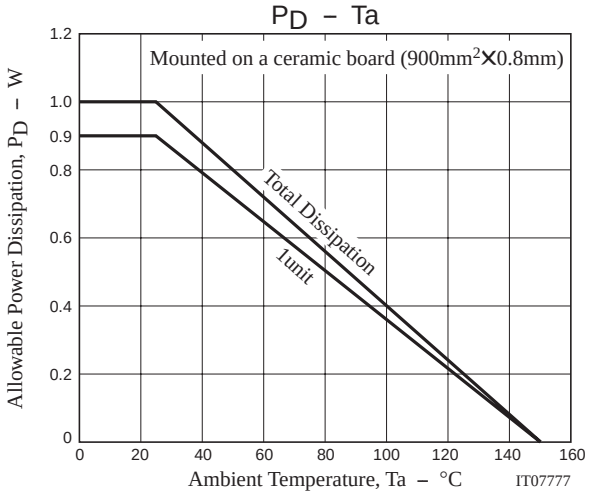

IF – VSD
VGS=0
Forward Current, IF – A
Diode Forward Voltage, VSD – V
IT07772
Ta=75°C
25°C
–25°C


SW Time – ID
VDD= –15V
VGS= –10V
Switching Time, SW Time – ns
Drain Current, ID – A
IT07773
td(off)
tf
td(on)
tr


Ciss, Coss, Crss – VDS
f=1MHz
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT07774
Ciss
Coss
Crss







Note on usage : Since the VEC2302 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.