Ordering number : ENN8027

SANYO Semiconductors
DATA SHEET

N-Channel Silicon MOSFET

VEC2402 — 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		4	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	16	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=2A	2.2	3.6		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=2A, V_{GS}=10V		37	48	mΩ
	R_{DS}(on)2	I_D=1A, V_{GS}=4V		70	98	mΩ
Input Capacitance	Ciss	V_{DS}=10V, f=1MHz		370		pF
Output Capacitance	Coss	V_{DS}=10V, f=1MHz		85		pF
Reverse Transfer Capacitance	Crss	V_{DS}=10V, f=1MHz		47		pF

Marking : BH

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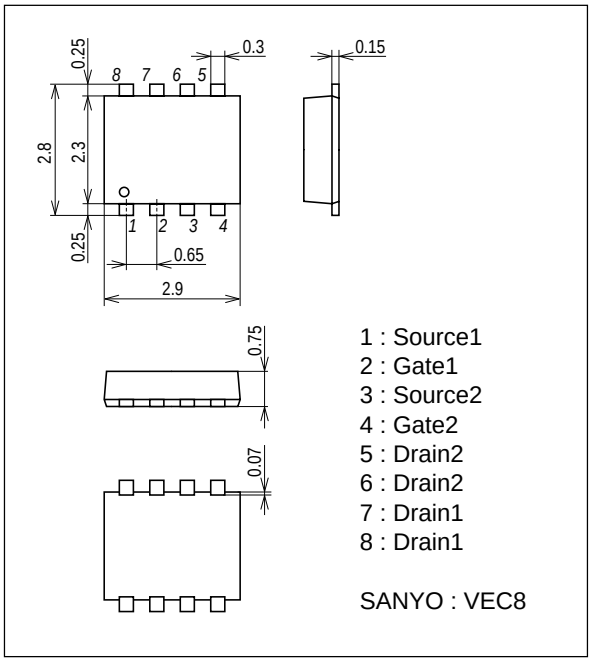
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-ON Delay Time	t_{d}(on)	See specified Test Circuit		11		ns
Rise Time	t_{r}	See specified Test Circuit		28		ns
Turn-OFF Delay Time	t_{d}(off)	See specified Test Circuit		37		ns
Fall Time	t_{f}	See specified Test Circuit		34		ns
Total Gate Charge	Qg	V_{DS}=10V, V_{GS}=10V, I_{D}=4A		8.5		nC
Gate-to-Source Charge	Qgs	V_{DS}=10V, V_{GS}=10V, I_{D}=4A		1.8		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=10V, V_{GS}=10V, I_{D}=4A		1.3		nC
Diode Forward Voltage	V_{SD}	I_{S}=4A, V_{GS}=0		0.83	1.2	V

Package Dimensions

unit : mm

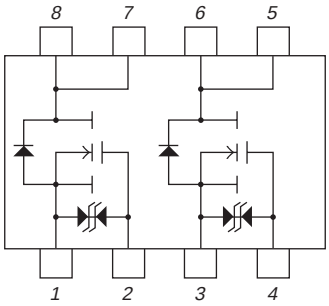
2227A



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

SANYO : VEC8

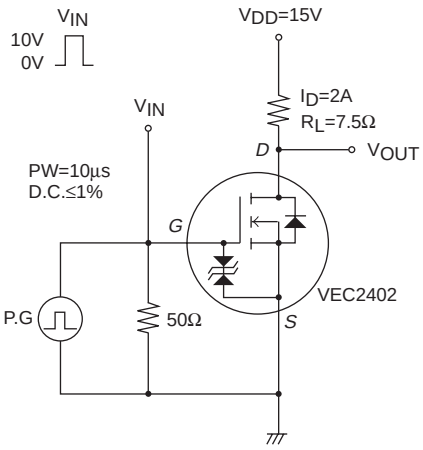
Electrical Connection

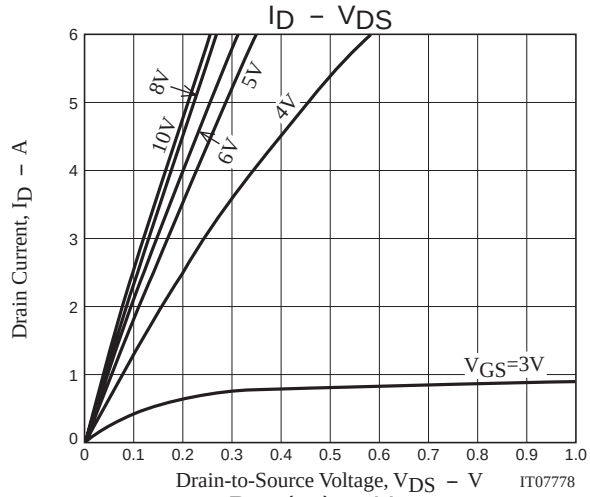


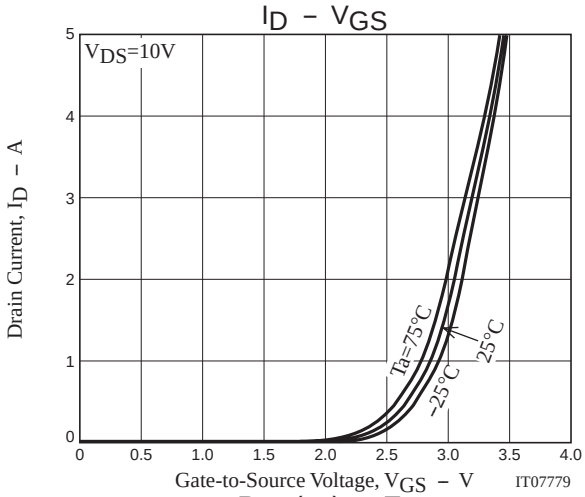
1 : Source1
2 : Gate1
3 : Source2
4 : Gate2
5 : Drain2
6 : Drain2
7 : Drain1
8 : Drain1

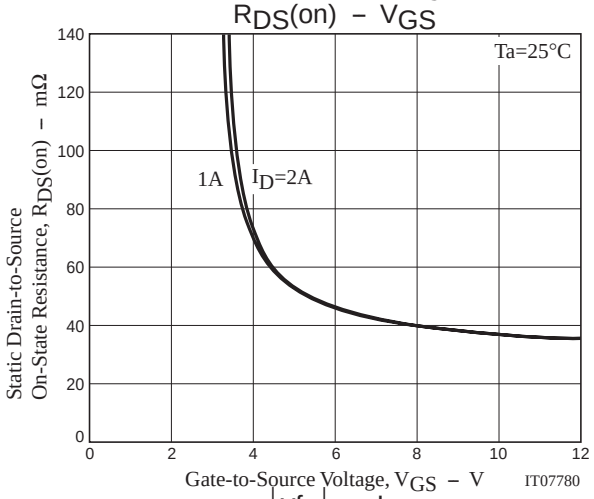
Top view

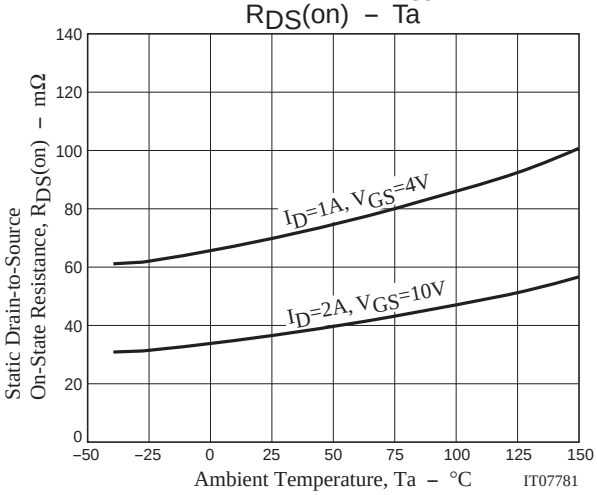
Switching Time Test Circuit

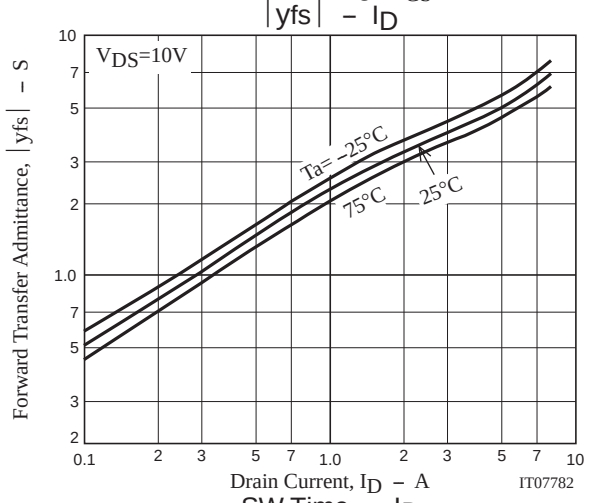


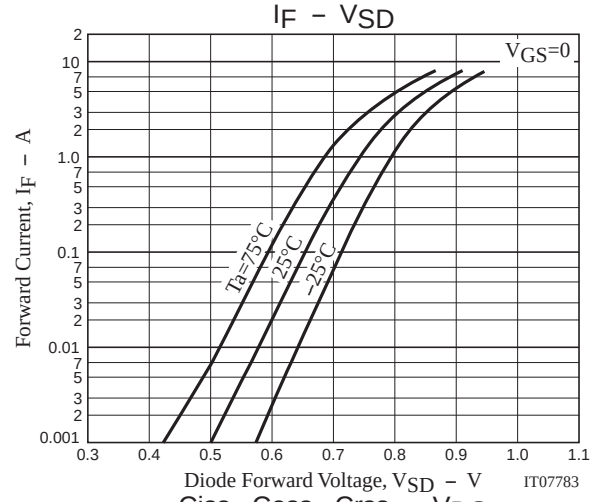

ID – VDS
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT07778
4.8V
10V
5V
6V
4V
VGS=3V

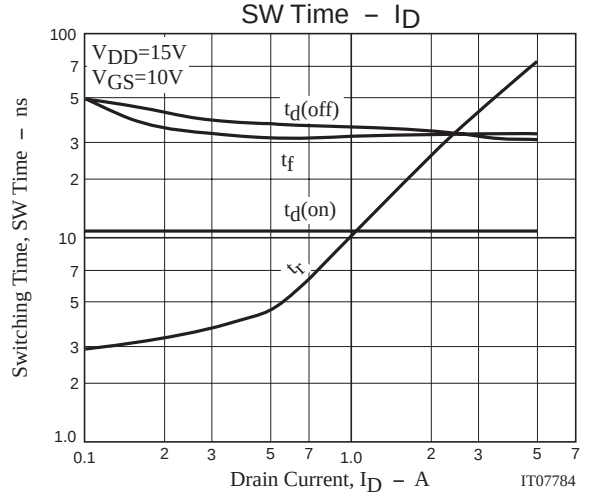

ID – VGS
VDS=10V
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
IT07779
Ta=75°C
25°C
–25°C

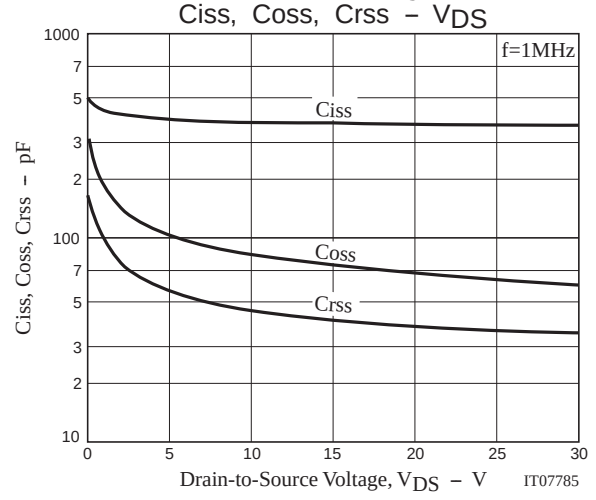

RDS(on) – VGS
Ta=25°C
Static Drain-to-Source
On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT07780
1A
ID=2A

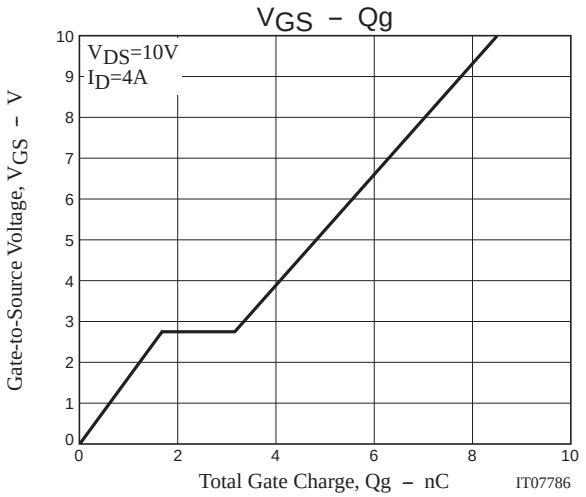

RDS(on) – Ta
Static Drain-to-Source
On-State Resistance, RDS(on) – mΩ
Ambient Temperature, Ta – °C
IT07781
ID=1A, VGS=4V
ID=2A, VGS=10V

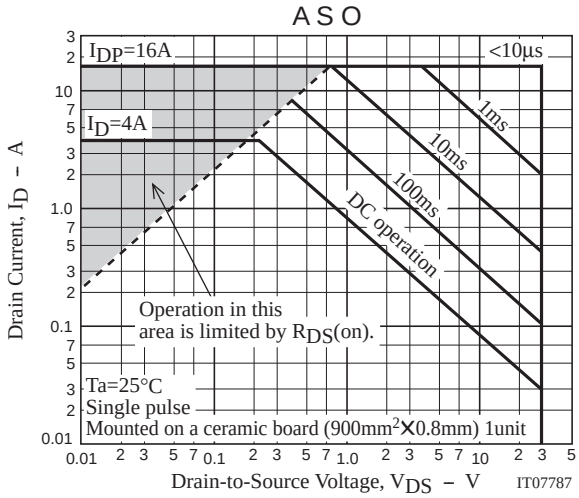

|yfs| – ID
VDS=10V
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT07782
Ta= –25°C
75°C
25°C

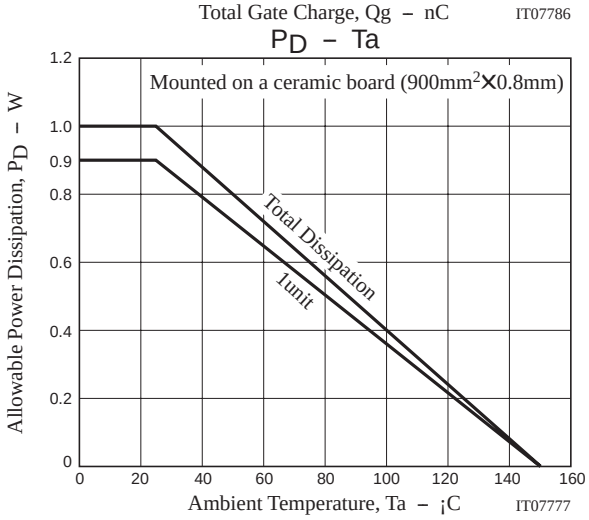

IF – VSD
VGS=0
Forward Current, IF – A
Diode Forward Voltage, VSD – V
IT07783
Ta=75°C
25°C
–25°C


SW Time – ID
VDD=15V
VGS=10V
Switching Time, SW Time – ns
Drain Current, ID – A
IT07784
td(off)
tf
td(on)
tr


Ciss, Coss, Crss – VDS
f=1MHz
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT07785
Ciss
Coss
Crss







Note on usage : Since the VEC2402 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.