Ordering number : ENA0567

SANYO Semiconductors

DATA SHEET

N-Channel Silicon MOSFET

VEC2408 — General-Purpose Switching Device Applications

Features

- The best suited for load switching applications.
- Low ON-resistance.
- Composite type facilitating high-density mounting.
- 1.8V drive.
- Mounting high 0.75mm.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		20	V
Gate-to-Source Voltage	V_{GSS}		±12	V
Drain Current (DC)	I_D		3.5	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	14	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}=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}=±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	$\|yfs\|$	V_{DS}=10V, I_D=1.5A	2.4	4		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	I_D=2A, V_{GS}=4V	37	47	60	mΩ
	$R_{DS(on)2}$	I_D=1A, V_{GS}=2.5V	42	61	85	mΩ
	$R_{DS(on)3}$	I_D=0.5A, V_{GS}=1.8V	47	79	118	mΩ
	$R_{DS(on)4}$	I_D=0.1A, V_{GS}=1.4V	72	167	540	mΩ
Input Capacitance	Ciss	V_{DS}=10V, f=1MHz		400		pF
Output Capacitance	Coss	V_{DS}=10V, f=1MHz		92		pF
Reverse Transfer Capacitance	Crss	V_{DS}=10V, f=1MHz		85		pF

Marking : CK

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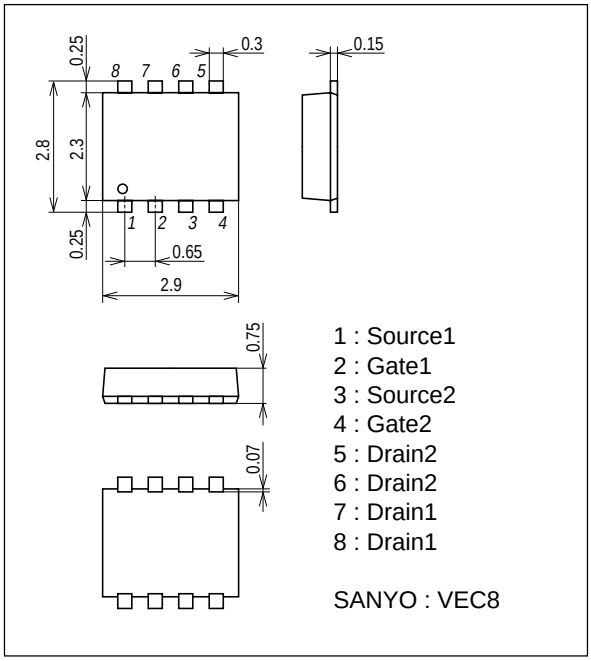
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		11		ns
Rise Time	t_r	See specified Test Circuit.		58		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		58		ns
Fall Time	t_f	See specified Test Circuit.		58		ns
Total Gate Charge	Qg	V_{DS}=10V, V_{GS}=4V, I_D=3.5A		6		nC
Gate-to-Source Charge	Qgs	V_{DS}=10V, V_{GS}=4V, I_D=3.5A		0.8		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=10V, V_{GS}=4V, I_D=3.5A		2.2		nC
Diode Forward Voltage	V_{SD}	I_S=3.5A, V_{GS}=0V		0.85	1.2	V

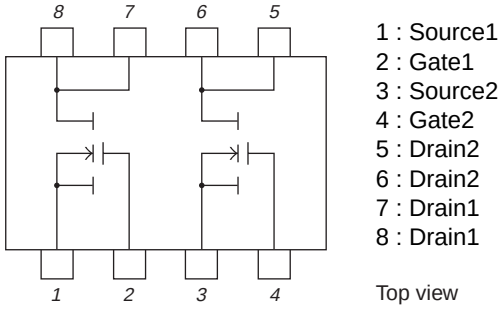
Package Dimensions

unit : mm (typ)

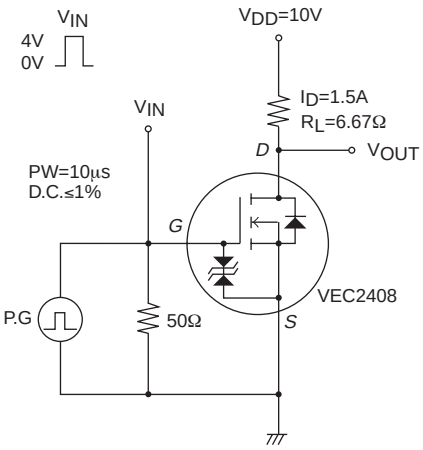
7012-002

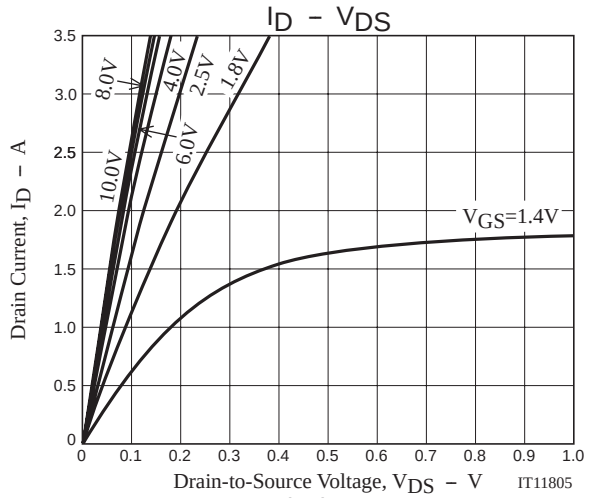


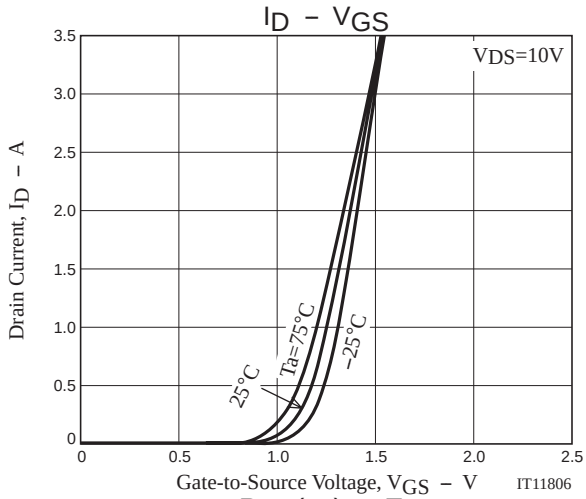
Electrical Connection

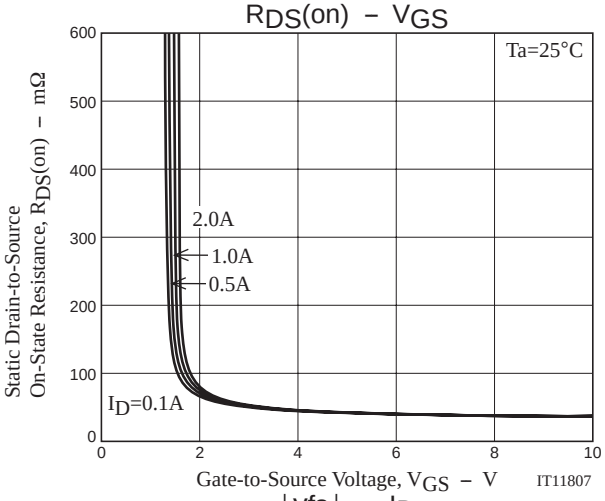


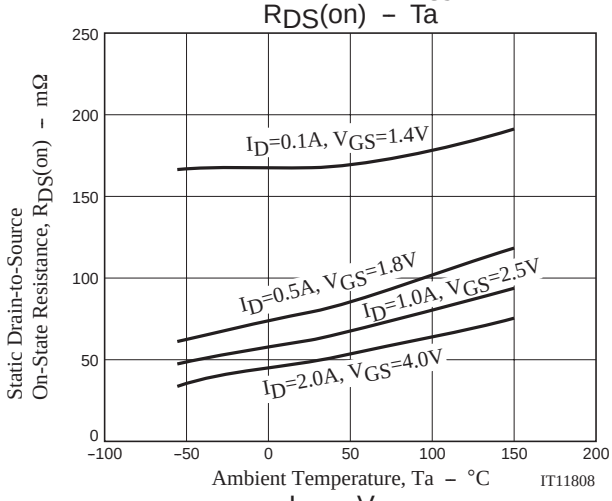
Switching Time Test Circuit

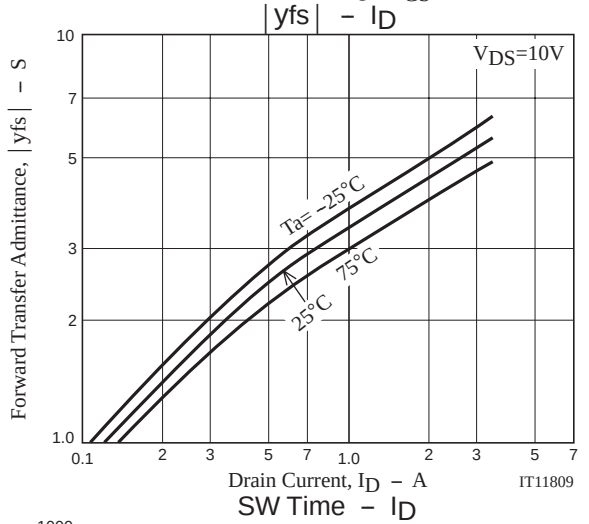


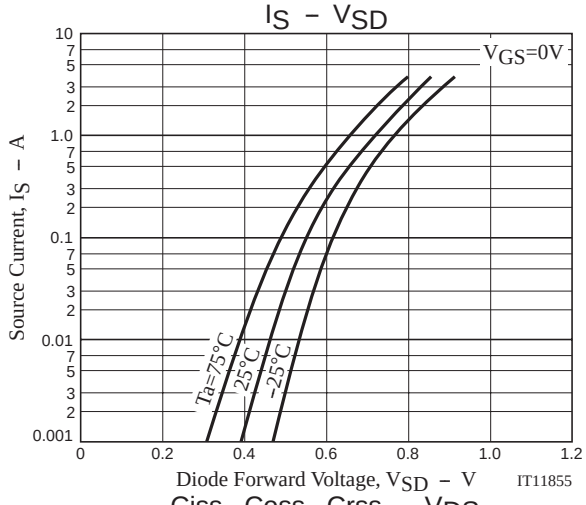

ID – VDS
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT11805
8.0V
4.0V
2.5V
1.8V
10.0V
6.0V
VGS=1.4V

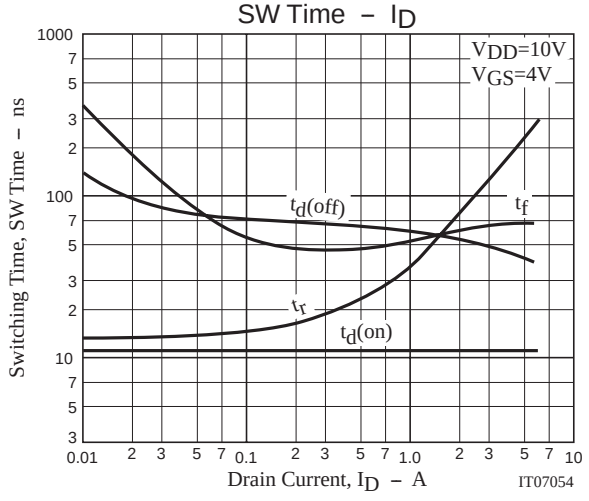

ID – VGS
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
IT11806
VDS=10V
25°C
Ta=75°C
–25°C

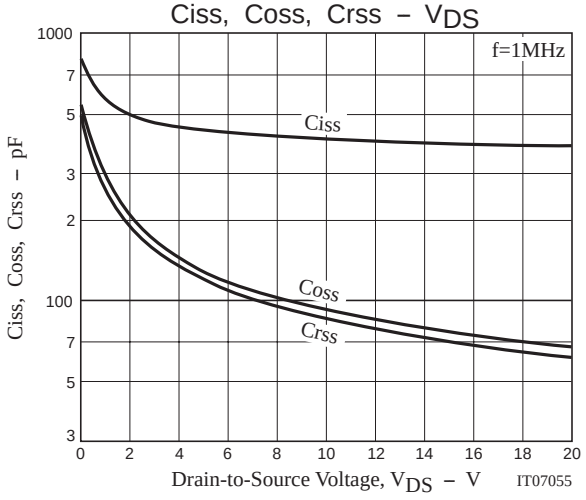

RDS(on) – VGS
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT11807
Ta=25°C
2.0A
1.0A
0.5A
ID=0.1A

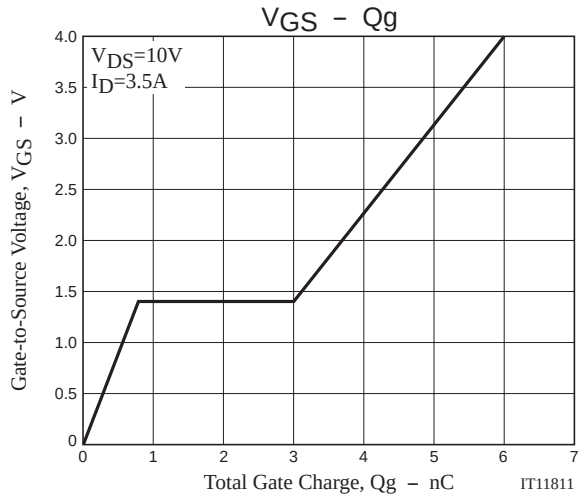

RDS(on) – Ta
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Ambient Temperature, Ta – °C
IT11808
ID=0.1A, VGS=1.4V
ID=0.5A, VGS=1.8V
ID=1.0A, VGS=2.5V
ID=2.0A, VGS=4.0V

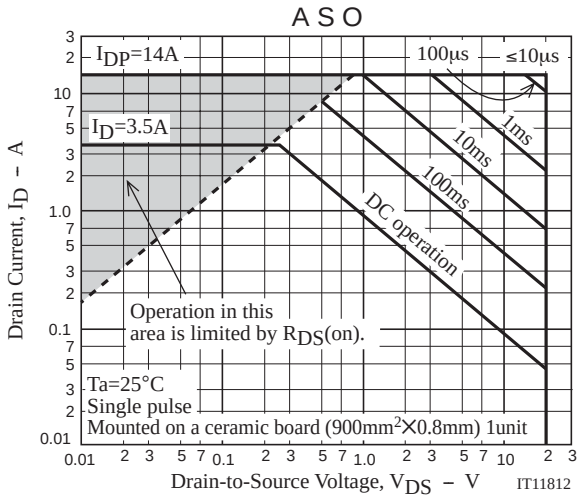

|yfs| – ID
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT11809
VDS=10V
Ta= –25°C
75°C
25°C

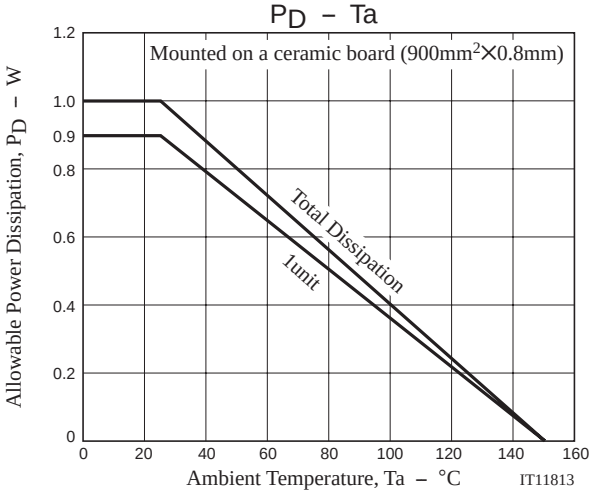

IS – VSD
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT11855
VGS=0V
Ta=75°C
25°C
–25°C


SW Time – ID
Switching Time, SW Time – ns
Drain Current, ID – A
IT07054
VDD=10V
VGS=4V
td(off)
tf
tr
td(on)


Ciss, Coss, Crss – VDS
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT07055
f=1MHz
Ciss
Coss
Crss







Note on usage : Since the VEC2408 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.