Ordering number : ENA1713

SANYO Semiconductors
DATA SHEET

N-Channel Silicon MOSFET

VEC2415 — General-Purpose Switching Device Applications

Features

- 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}		60	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	When mounted on ceramic substrate (900mm^2×0.8mm) 1unit	0.9	W
Total Dissipation	P_T	When mounted on ceramic substrate (900mm^2×0.8mm)	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	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=1.5A		2.6		S

Marking : UN

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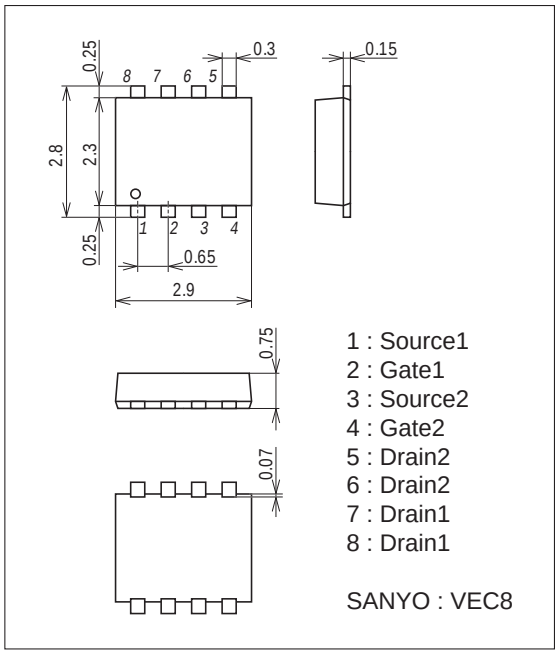
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Static Drain-to-Source On-State Resistance	$R_{DS}(on)1$	I_D=1.5A, V_{GS}=10V		62	80	mΩ
	$R_{DS}(on)2$	I_D=0.75A, V_{GS}=4.5V		76	106	mΩ
	$R_{DS}(on)3$	I_D=0.75A, V_{GS}=4V		83	116	mΩ
Input Capacitance	Ciss	V_{DS}=20V, f=1MHz		505		pF
Output Capacitance	Coss	V_{DS}=20V, f=1MHz		57		pF
Reverse Transfer Capacitance	Crss	V_{DS}=20V, f=1MHz		37		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		7.3		ns
Rise Time	t_r	See specified Test Circuit.		7.5		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		41		ns
Fall Time	t_f	See specified Test Circuit.		22		ns
Total Gate Charge	Qg	V_{DS}=30V, V_{GS}=10V, I_D=3A		10		nC
Gate-to-Source Charge	Qgs	V_{DS}=30V, V_{GS}=10V, I_D=3A		1.6		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=30V, V_{GS}=10V, I_D=3A		2.1		nC
Diode Forward Voltage	V_{SD}	I_S=3A, V_{GS}=0V		0.81	1.2	V

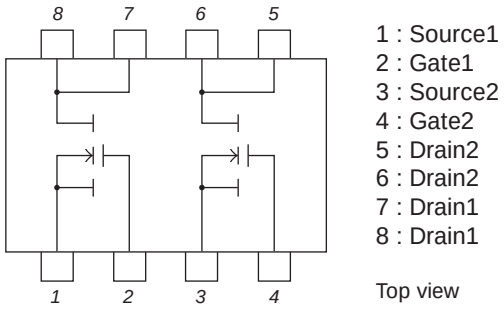
Package Dimensions

unit : mm (typ)

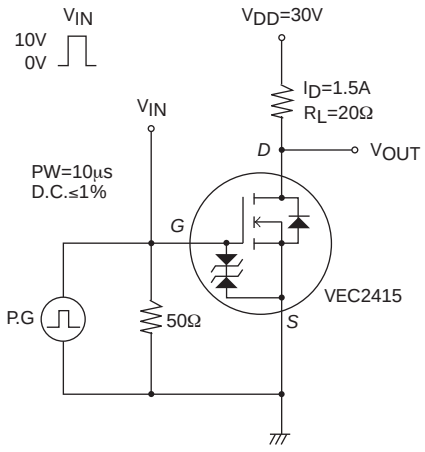
7012-002

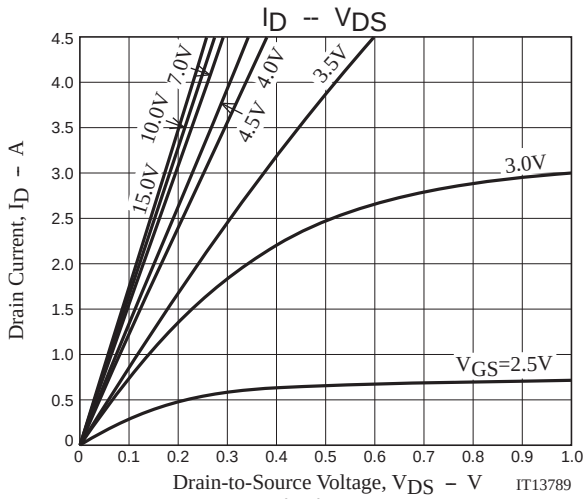


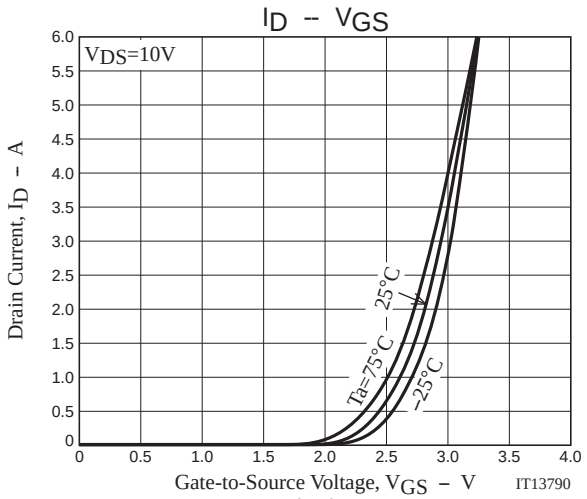
Electrical Connection

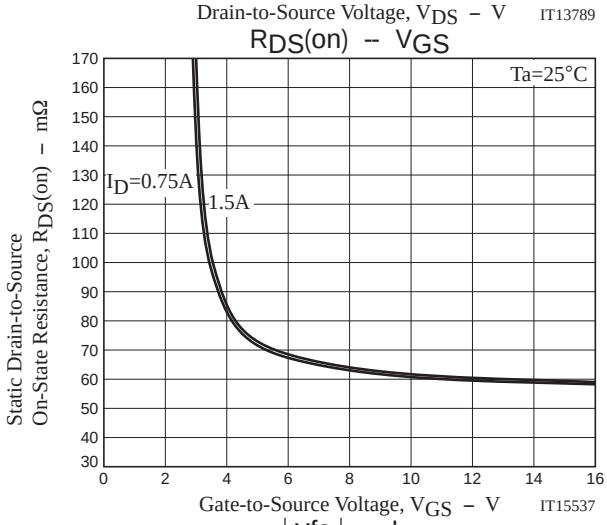


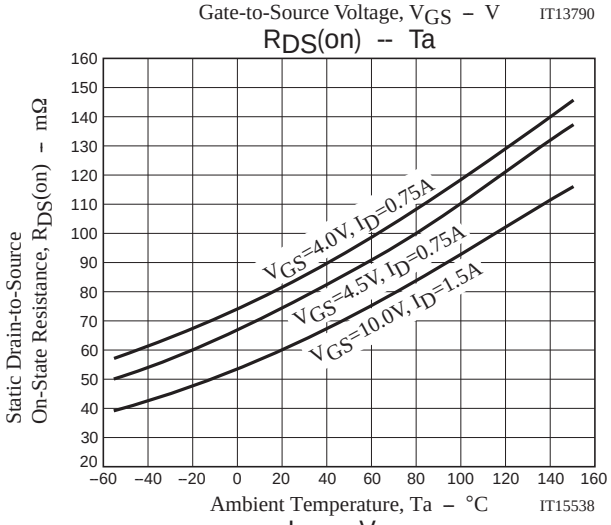
Switching Time Test Circuit

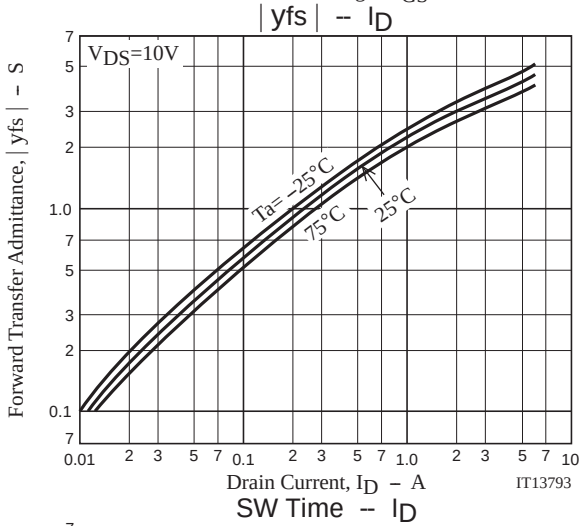


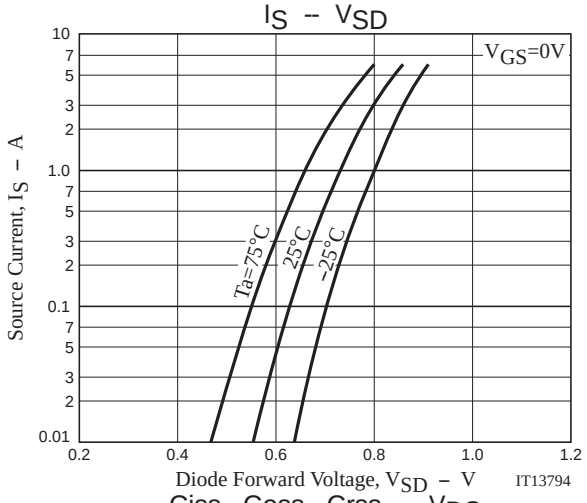

ID -- VDS
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT13789
10.0V
7.0V
4.0V
3.5V
4.5V
15.0V
3.0V
VGS=2.5V

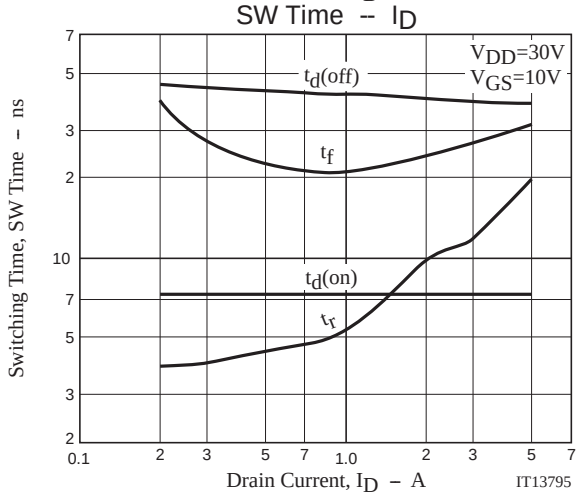

ID -- VGS
VDS=10V
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
IT13790
25°C
Ta=75°C
–25°C

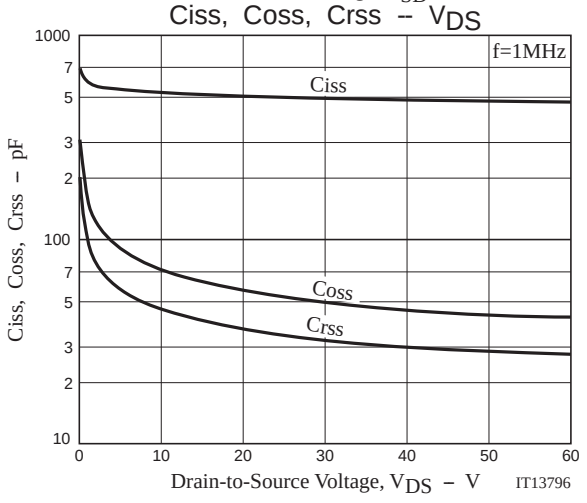

RDS(on) -- VGS
Ta=25°C
ID=0.75A
1.5A
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT15537

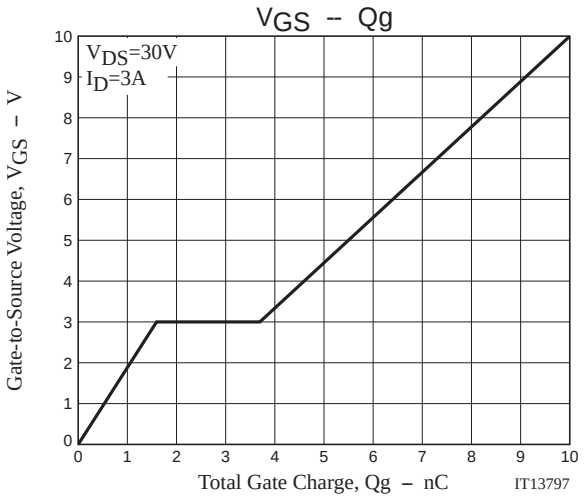

RDS(on) -- Ta
VGS=4.0V, ID=0.75A
VGS=4.5V, ID=0.75A
VGS=10.0V, ID=1.5A
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Ambient Temperature, Ta – °C
IT15538

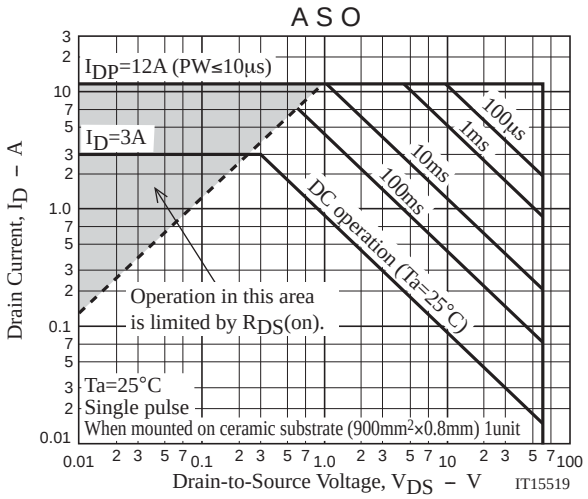

| yfs | -- ID
VDS=10V
Ta= –25°C
75°C
25°C
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
IT13793

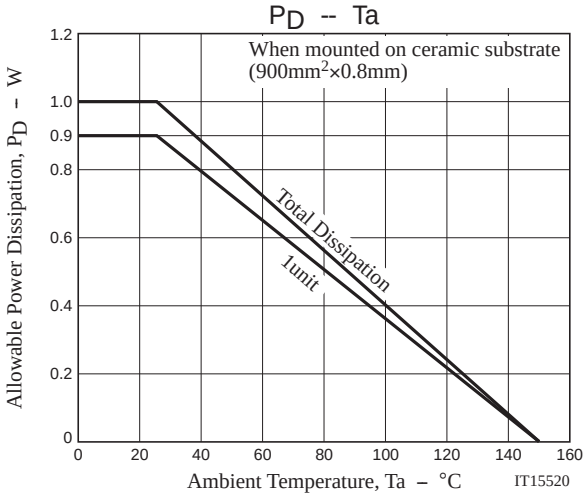

IS -- VSD
VGS=0V
Ta=75°C
25°C
–25°C
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT13794


SW Time -- ID
VDD=30V
VGS=10V
td(off)
tf
td(on)
tr
Switching Time, SW Time – ns
Drain Current, ID – A
IT13795


Ciss, Coss, Crss -- VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT13796







Note on usage : Since the VEC2415 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

This catalog provides information as of May, 2010. Specifications and information herein are subject to change without notice.