



SANYO Semiconductors

## DATA SHEET

# VEC2415 — N-Channel Silicon MOSFET

## 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  $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DSS}$		60	V
Gate-to-Source Voltage	$V_{GSS}$		$\pm 20$	V
Drain Current (DC)	$I_D$		3	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	12	A
Allowable Power Dissipation	$P_D$	When mounted on ceramic substrate (900mm <sup>2</sup> ×0.8mm) 1unit	0.9	W
Total Dissipation	$P_T$	When mounted on ceramic substrate (900mm <sup>2</sup> ×0.8mm)	1.0	W
Channel Temperature	$T_{ch}$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

Electrical Characteristics at  $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1\text{mA}$ , $V_{GS}=0\text{V}$	60			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=60\text{V}$ , $V_{GS}=0\text{V}$			1	$\mu\text{A}$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 16\text{V}$ , $V_{DS}=0\text{V}$			$\pm 10$	$\mu\text{A}$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10\text{V}$ , $I_D=1\text{mA}$	1.2		2.6	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10\text{V}$ , $I_D=1.5\text{A}$		2.6		S

Marking : UN

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# VEC2415

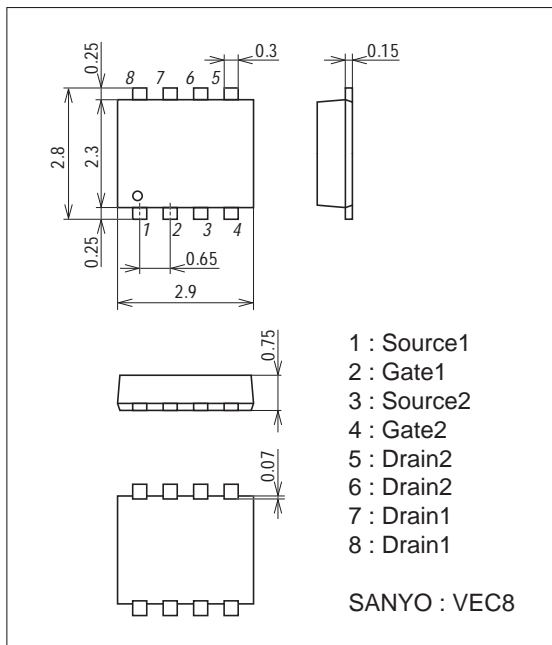
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=1.5A, V_{GS}=10V$		62	80	$m\Omega$
	$R_{DS(on)2}$	$I_D=0.75A, V_{GS}=4.5V$		76	106	$m\Omega$
	$R_{DS(on)3}$	$I_D=0.75A, V_{GS}=4V$		83	116	$m\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=20V, f=1MHz$		505		$\mu F$
Output Capacitance	$C_{oss}$	$V_{DS}=20V, f=1MHz$		57		$\mu F$
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=20V, f=1MHz$		37		$\mu F$
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	$Q_g$	$V_{DS}=30V, V_{GS}=10V, I_D=3A$		10		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=30V, V_{GS}=10V, I_D=3A$		1.6		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=30V, V_{GS}=10V, I_D=3A$		2.1		nC
Diode Forward Voltage	$V_{SD}$	$I_S=3A, V_{GS}=0V$		0.81	1.2	V

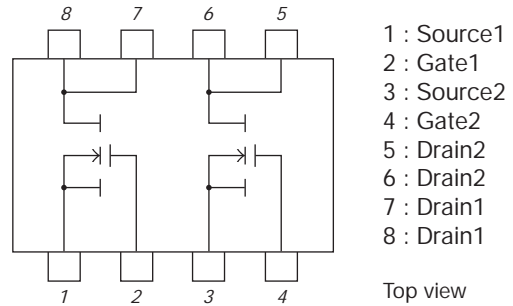
## Package Dimensions

unit : mm (typ)

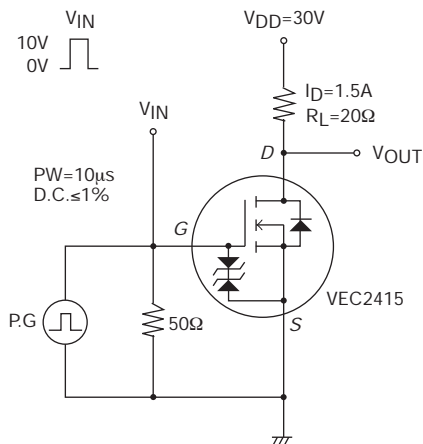
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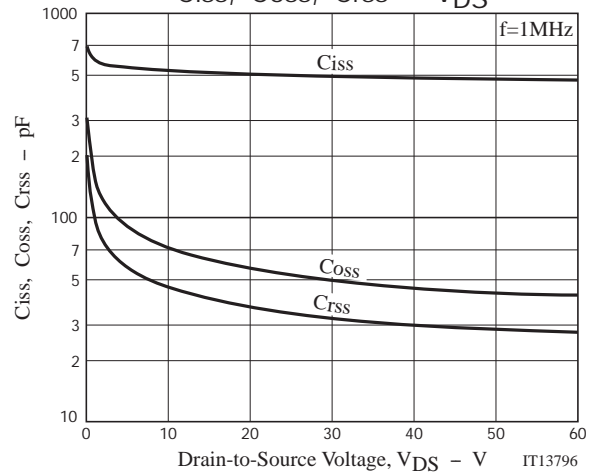
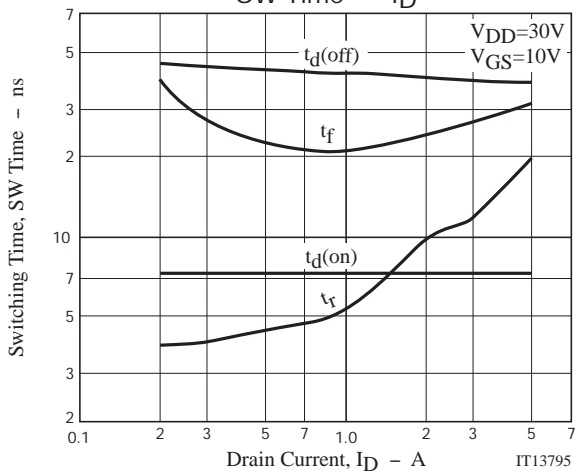
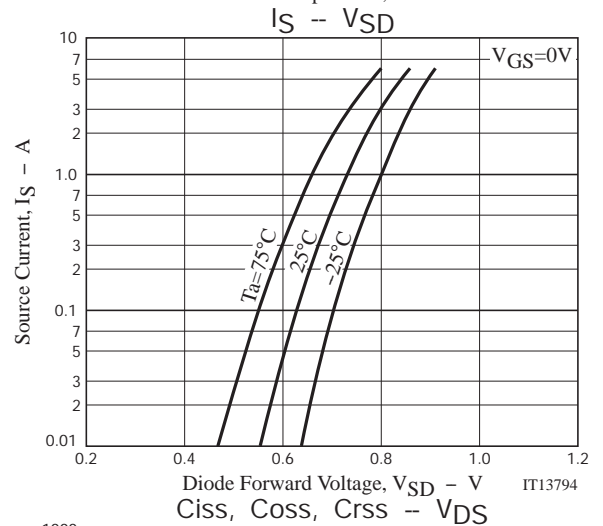
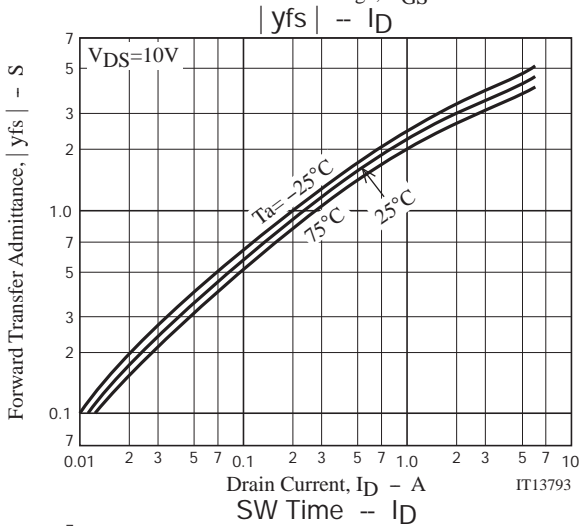
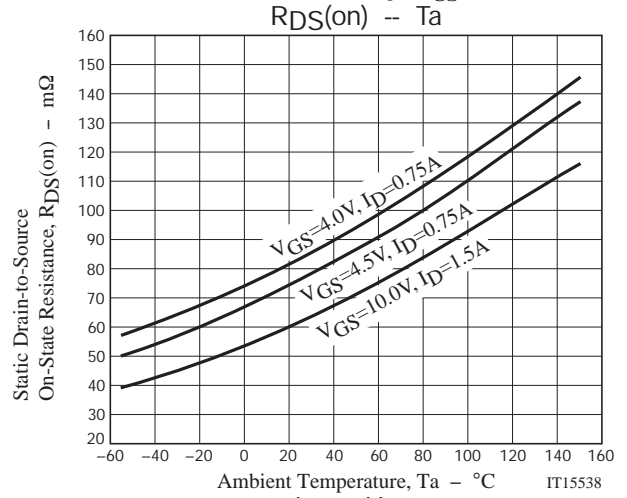
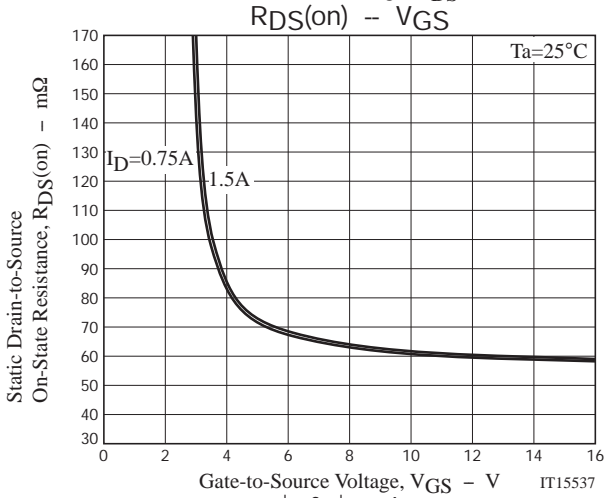
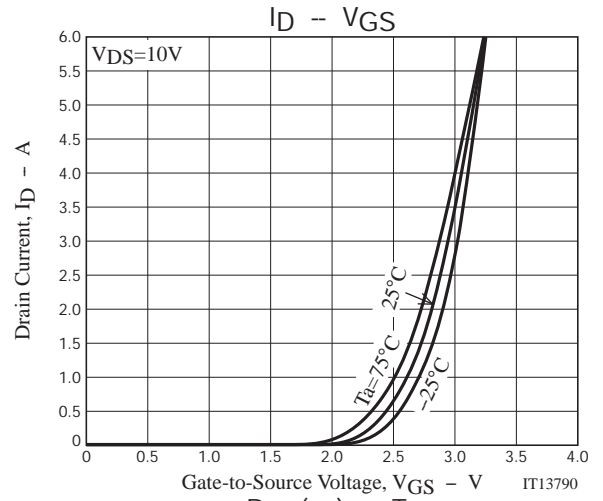
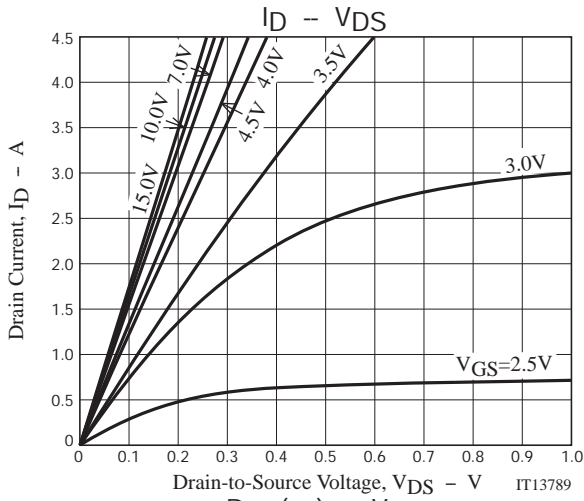


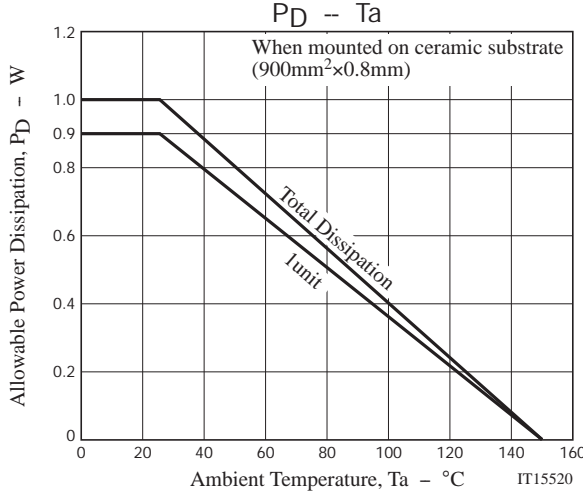
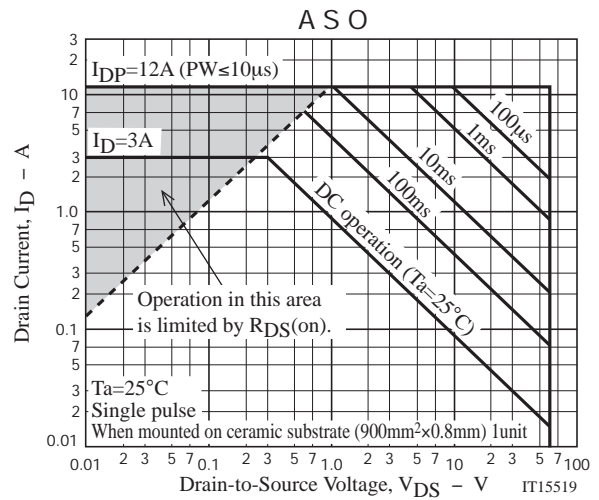
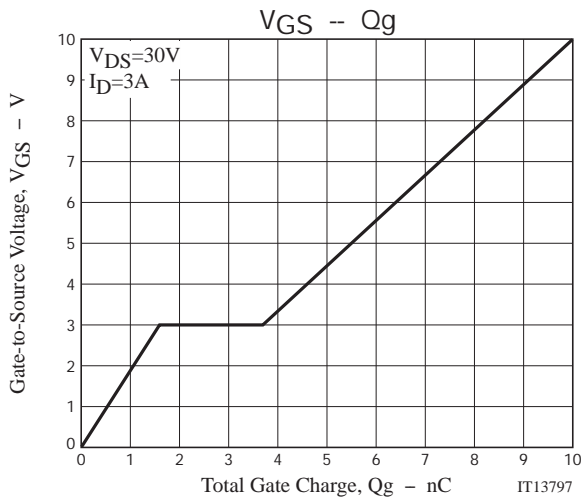
## Electrical Connection



## Switching Time Test Circuit







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

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