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

Continued on next page.



SANYO Semiconductor Co., Ltd.
http://semicon.sanyo.com/en/network

51910PA TK IM TC-00002293 No. A1713-1/4

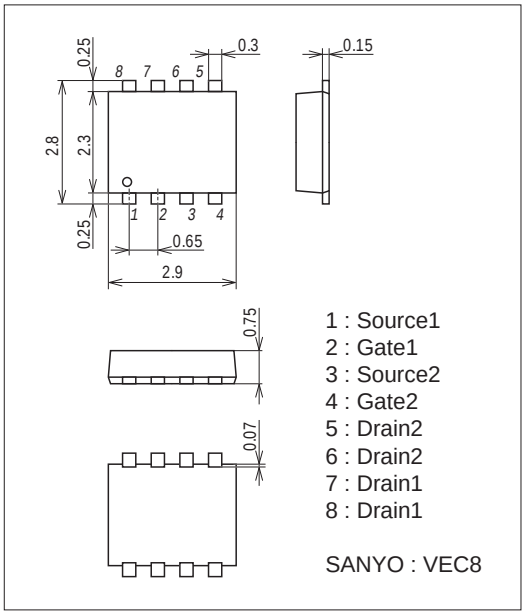
Continued from preceding page.

| 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 |

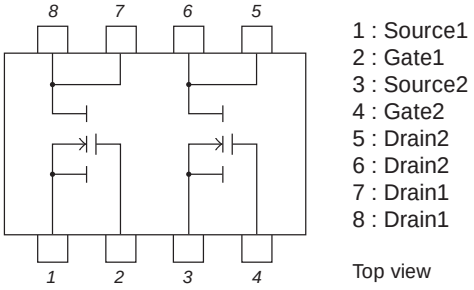
## Package Dimensions

unit : mm (typ)

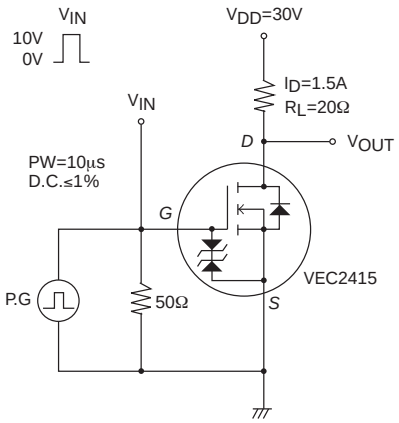
7012-002

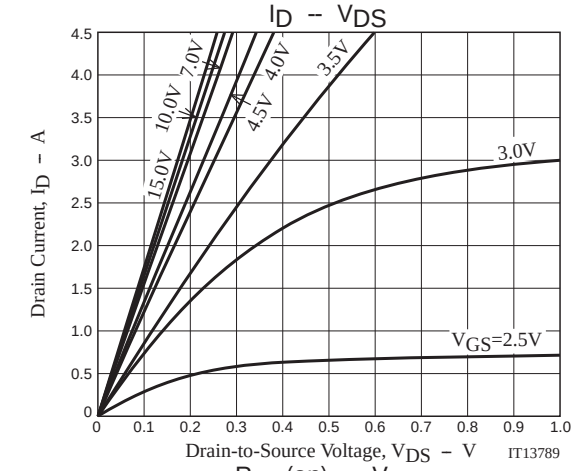


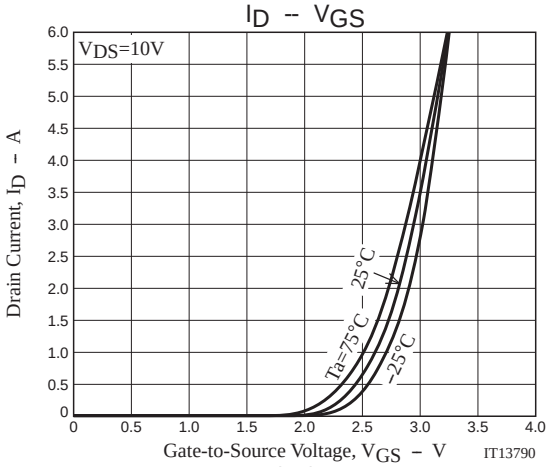

## Electrical Connection

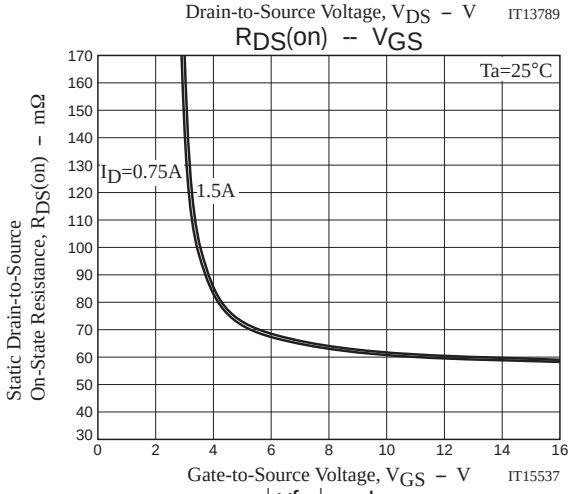


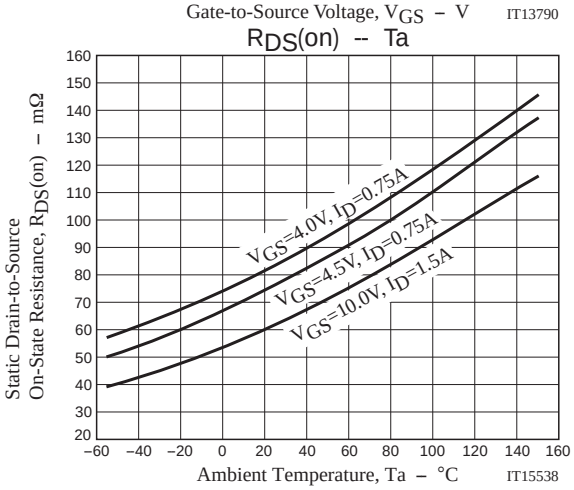

## Switching Time Test Circuit

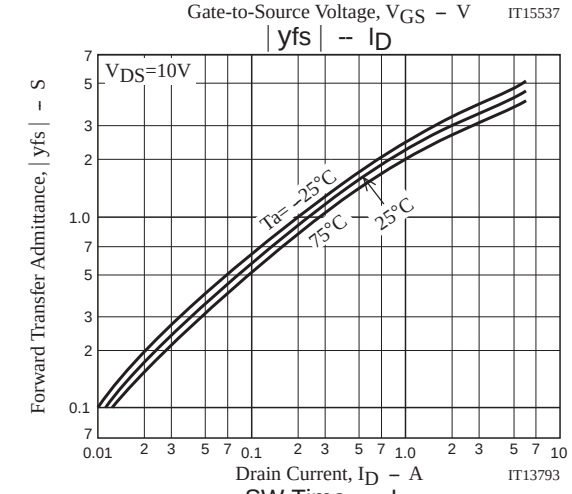


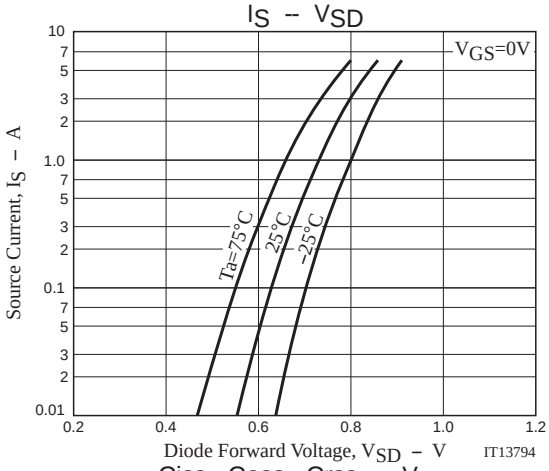


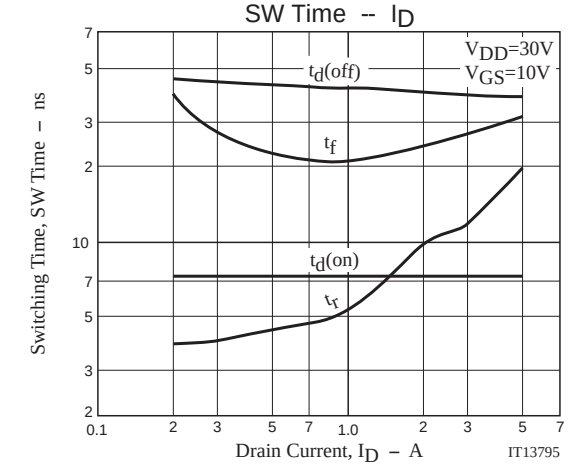



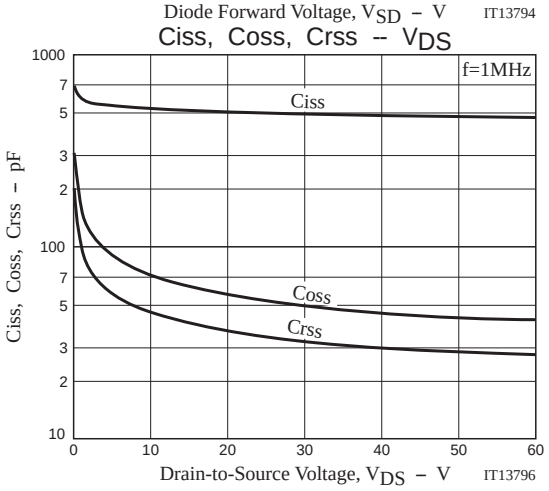



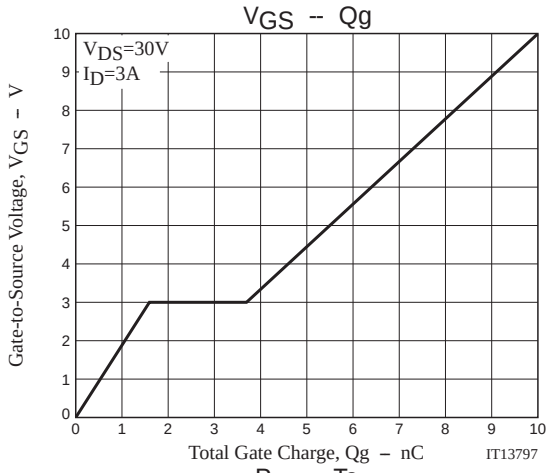



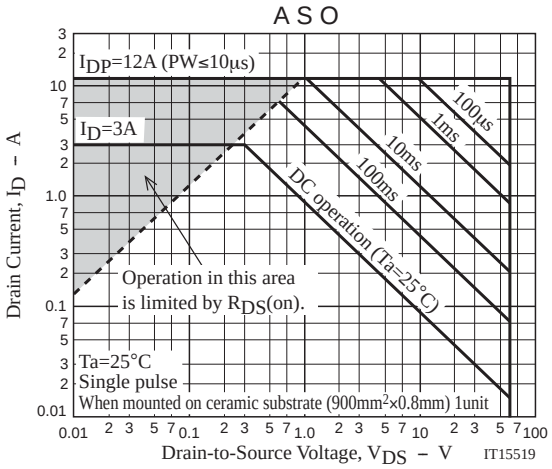



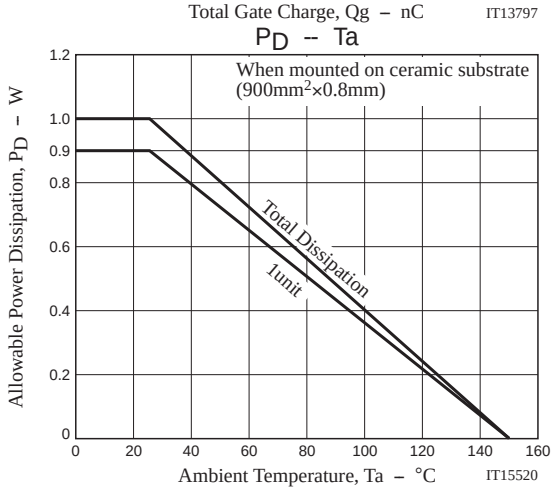






Note on usage : Since the VEC2415 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.