



SANYO Semiconductors

## DATA SHEET

# VEC2801 — General-Purpose Switching Device Applications

MOSFET : P-Channel Silicon MOSFET

SBD : Schottky Barrier Diode

## Features

- The best suited for DC / DC converter.
- Composite type with a P-Channel Silicon MOSFET and a Schottky Barrier Diode contained in one package facilitating high-density mounting.

### [MOSFET]

- Low ON-resistance.
- 1.8V drive.

### [SBD]

- Short reverse recovery time.
- Low forward voltage.

## Specifications

### Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
[MOSFET]				
Drain-to-Source Voltage	V <sub>DSS</sub>		-12	V
Gate-to-Source Voltage	V <sub>GSS</sub>		±8	V
Drain Current (DC)	I <sub>D</sub>		-3	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	-12	A
Allowable Power Dissipation	P <sub>D</sub>	Mounted on a ceramic board (900mm <sup>2</sup> ×0.8mm) 1unit	0.9	W
Channel Temperature	T <sub>ch</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +125	°C
[SBD]				
Repetitive Peak Reverse Voltage	V <sub>R</sub> RM		15	V
Nonrepetitive Peak Reverse Surge Voltage	V <sub>R</sub> S		15	V
Average Output Current	I <sub>O</sub>		1	A
Surge Forward Current	I <sub>F</sub> SM	50Hz sine wave, 1 cycle	3	A
Junction Temperature	T <sub>j</sub>		-55 to +125	°C
Storage Temperature	T <sub>stg</sub>		-55 to +125	°C

Marking : BL

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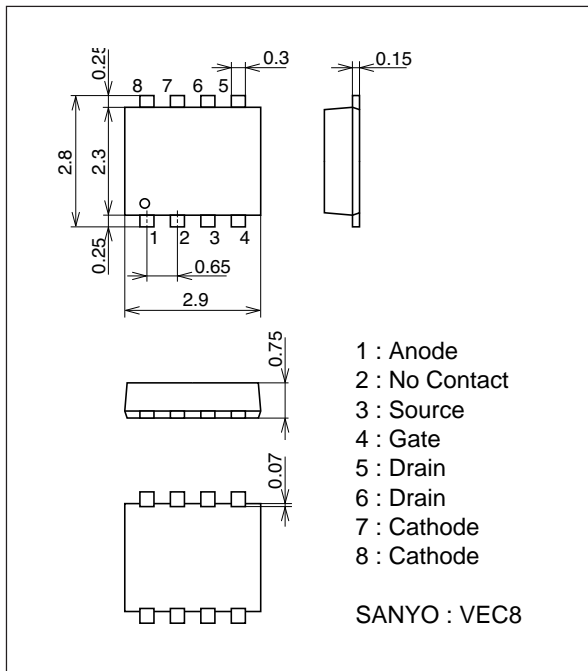
# VEC2801

## Electrical Characteristics at Ta=25°C

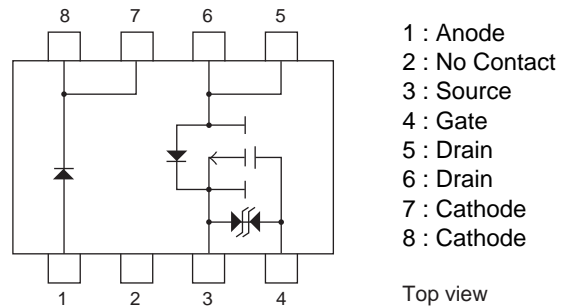
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[MOSFET]						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = -1\text{mA}, V_{GS} = 0$	-12			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -12\text{V}, V_{GS} = 0$			-1	$\mu\text{A}$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS} = \pm 6.4\text{V}, V_{DS} = 0$			$\pm 10$	$\mu\text{A}$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = -6\text{V}, I_D = -1\text{mA}$	-0.3		-1.3	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = -6\text{V}, I_D = -1.5\text{A}$	4.2	6		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D = -3\text{A}, V_{GS} = -4.5\text{V}$		47	62	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D = -1.5\text{A}, V_{GS} = -2.5\text{V}$		64	89	$\text{m}\Omega$
	$R_{DS(on)3}$	$I_D = -0.3\text{A}, V_{GS} = -1.8\text{V}$		85	122	$\text{m}\Omega$
Input Capacitance	$C_{iss}$	$V_{DS} = -6\text{V}, f = 1\text{MHz}$		940		$\text{pF}$
Output Capacitance	$C_{oss}$	$V_{DS} = -6\text{V}, f = 1\text{MHz}$		230		$\text{pF}$
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS} = -6\text{V}, f = 1\text{MHz}$		180		$\text{pF}$
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		14		ns
Rise Time	$t_r$	See specified Test Circuit.		84		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		104		ns
Fall Time	$t_f$	See specified Test Circuit.		106		ns
Total Gate Charge	$Q_g$	$V_{DS} = -6\text{V}, V_{GS} = -4.5\text{V}, I_D = -3\text{A}$		11		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS} = -6\text{V}, V_{GS} = -4.5\text{V}, I_D = -3\text{A}$		1.6		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS} = -6\text{V}, V_{GS} = -4.5\text{V}, I_D = -3\text{A}$		2.8		nC
Diode Forward Voltage	$V_{SD}$	$I_S = -3\text{A}, V_{GS} = 0$		-0.85	-1.2	V
[SBD]						
Reverse Voltage	$V_R$	$I_R = 1\text{mA}$	15			V
Forward Voltage	$V_F$	$I_F = 1\text{A}$		0.35	0.45	V
Reverse Current	$I_R$	$V_R = 6\text{V}$			500	$\mu\text{A}$
Interterminal Capacitance	$C$	$V_R = 10\text{V}, f = 1\text{MHz}$		45		$\text{pF}$
Reverse Recovery Time	$t_{rr}$	$I_F = I_R = 100\text{mA}$ , See specified Test Circuit.			15	ns
Thermal Resistance	$R_{th(j-a)}$	Mounted on a ceramic board (900mm <sup>2</sup> ×0.8mm)		70		$^{\circ}\text{C} / \text{W}$

## Package Dimensions

unit : mm (typ)  
7012-004



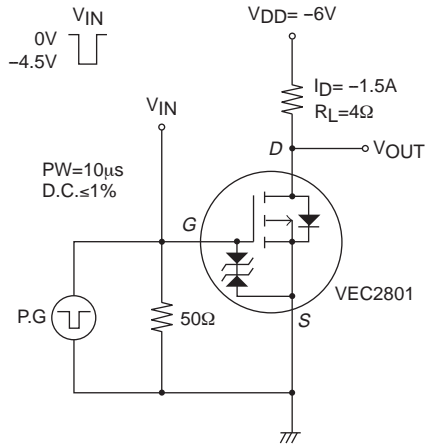
## Electrical Connection



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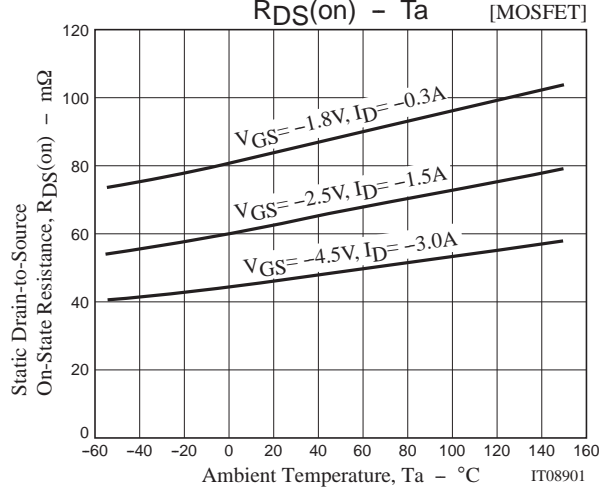
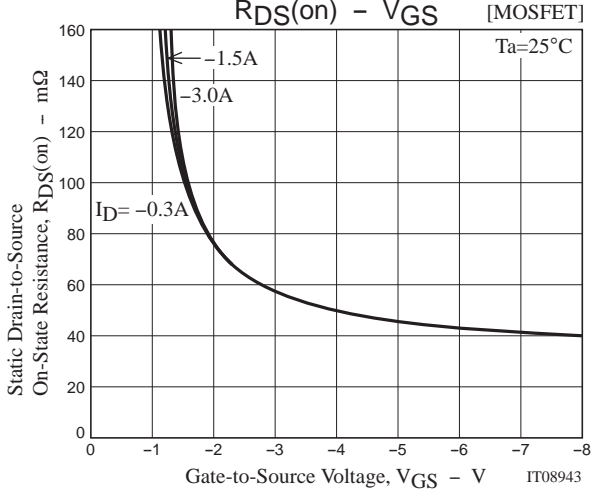
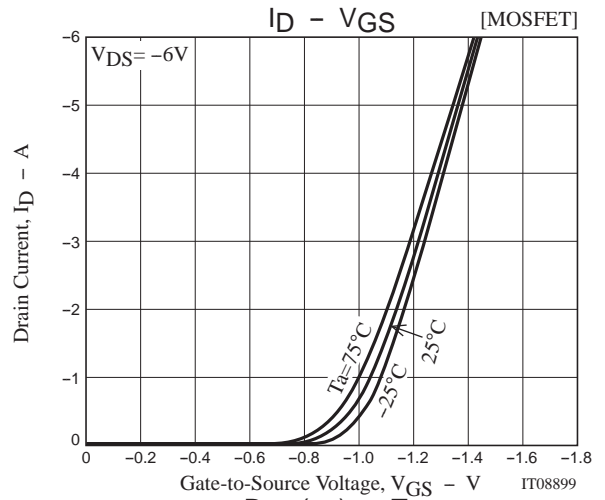
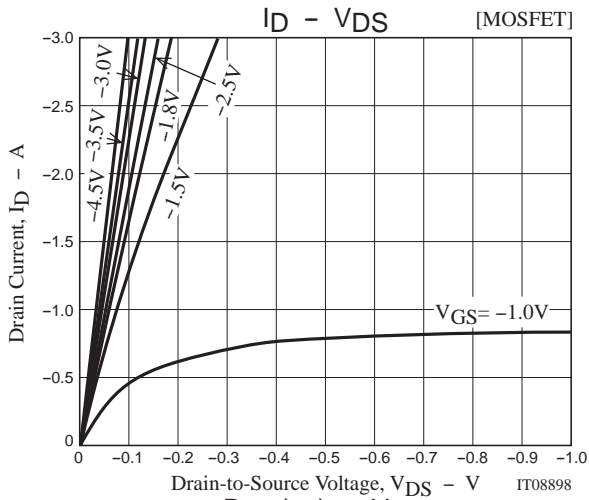
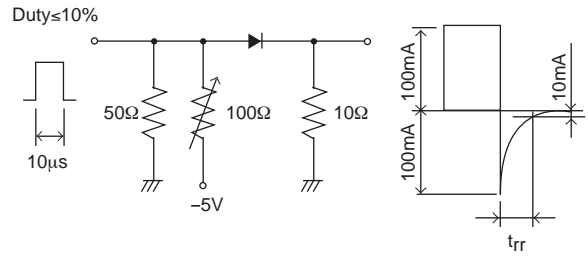
## Switching Time Test Circuit

[MOSFET]

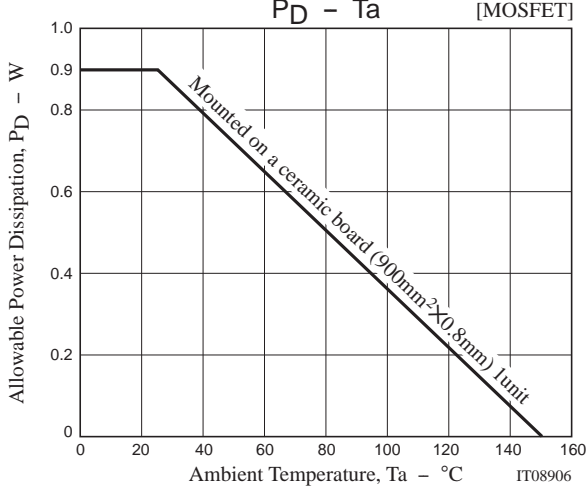
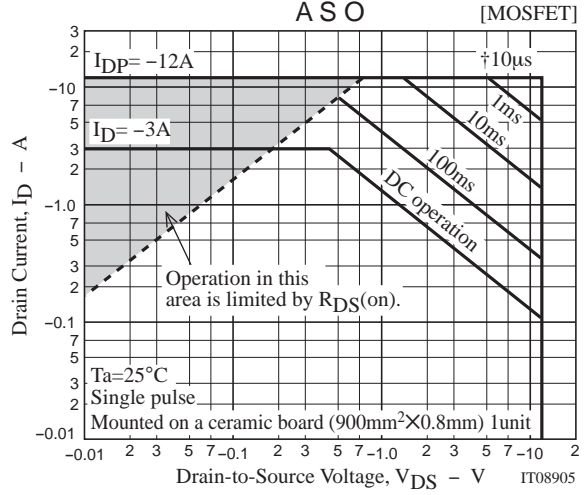
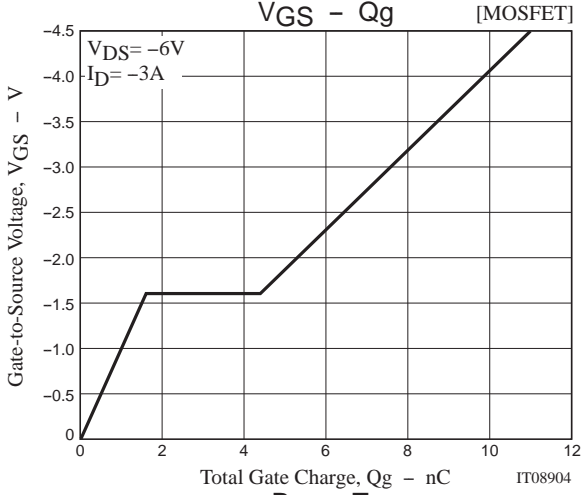
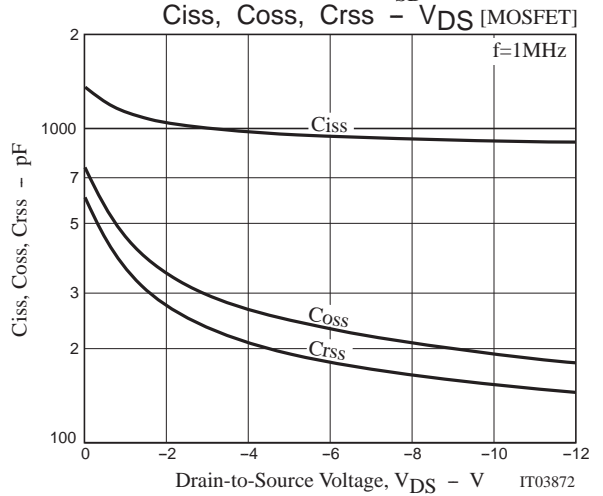
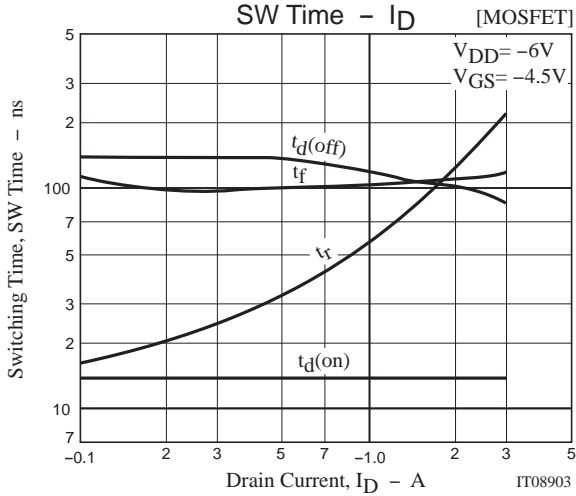
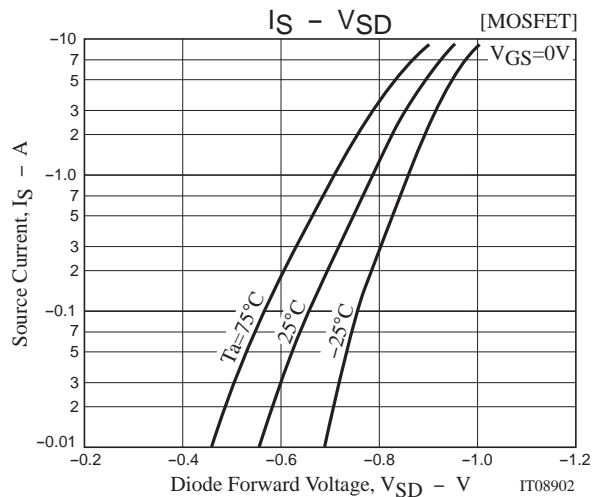
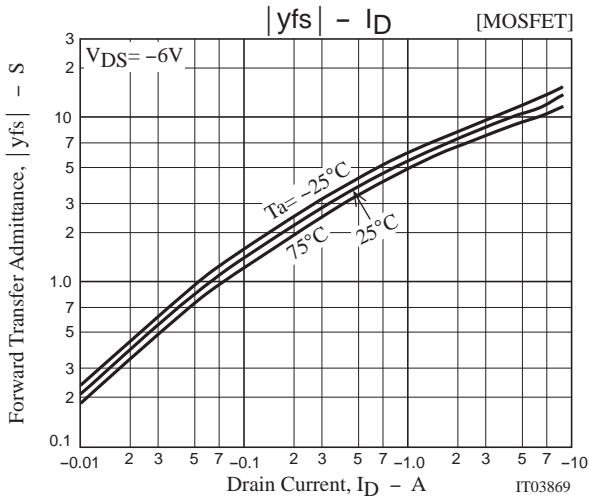


## $t_{rr}$ Test Circuit

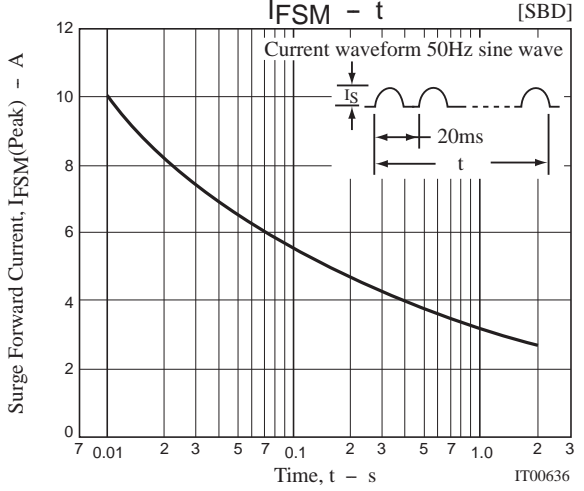
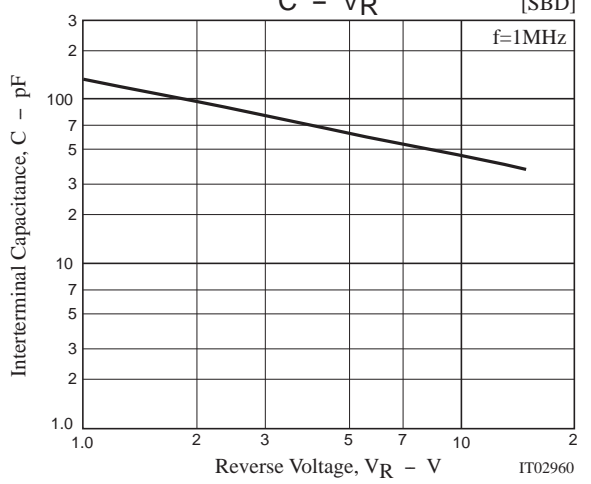
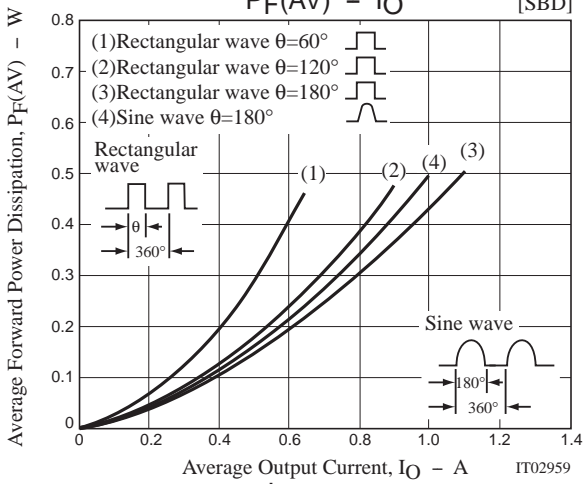
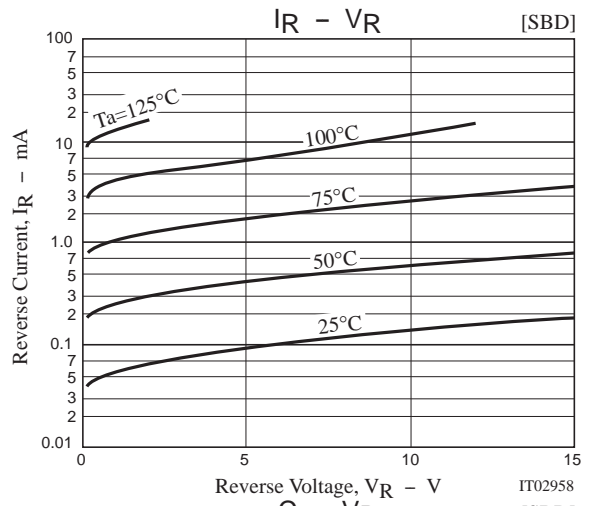
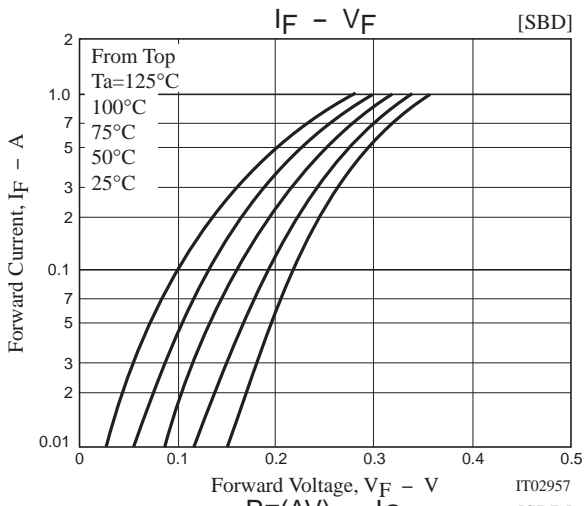
[SBD]



# VEC2801



# VEC2801



Note on usage : Since the VEC2801 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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