



SANYO Semiconductors

## DATA SHEET

VEC2822

MOSFET : P-Channel Silicon MOSFET

SBD : Schottky Barrier Diode

# General-Purpose Switching Device Applications

## Features

- 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
- Ultrahigh-speed switching.
- 1.8V drive.

### [SBD]

- Low switching noise.
- Low leakage current and high reliability due to planar structure.

## Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
[MOSFET]				
Drain-to-Source Voltage	V <sub>DSS</sub>		-20	V
Gate-to-Source Voltage	V <sub>GSS</sub>		±10	V
Drain Current (DC)	I <sub>D</sub>		-3.5	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	-14	A
Allowable Power Dissipation	P <sub>D</sub>	Mounted on a ceramic board (1200mm <sup>2</sup> ×0.8mm) 1unit	1.0	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>RRM</sub>		15	V
Nonrepetitive Peak Reverse Surge Voltage	V <sub>RSM</sub>		17	V

Marking : CY

Continued on next page.

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**SANYO Semiconductor Co., Ltd.**

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# VEC2822

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Parameter	Symbol	Conditions	Ratings	Unit
Average Output Current	$I_O$	Mounted on a ceramic board (1200mm <sup>2</sup> ×0.8mm) 1unit	2	A
Surge Forward Current	$I_{FSM}$	50Hz sine wave, 1 cycle	10	A
Junction Temperature	$T_J$		-55 to +125	°C
Storage Temperature	$T_{stg}$		-55 to +125	°C

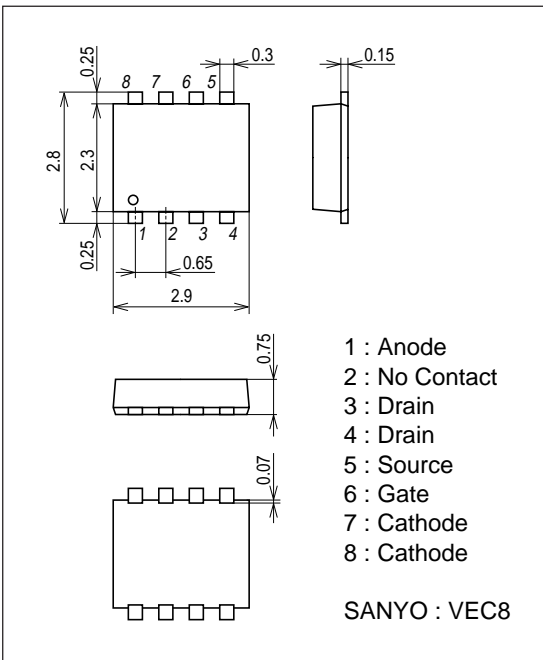
## Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[MOSFET]						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=-1mA, V_{GS}=0V$	-20			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-20V, V_{GS}=0V$			-1	μA
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 8V, V_{DS}=0V$			±10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=-10V, I_D=-1mA$	-0.4		-1.4	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=-10V, I_D=-2A$	3.5	5.8		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=-2A, V_{GS}=-4.5V$		55	72	mΩ
	$R_{DS(on)2}$	$I_D=-1A, V_{GS}=-2.5V$		77	108	mΩ
	$R_{DS(on)3}$	$I_D=-0.3A, V_{GS}=-1.8V$		112	168	mΩ
Input Capacitance	$C_{iss}$	$V_{DS}=-10V, f=1MHz$		680		pF
Output Capacitance	$C_{oss}$	$V_{DS}=-10V, f=1MHz$		115		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=-10V, f=1MHz$		80		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		12		ns
Rise Time	$t_r$	See specified Test Circuit.		57		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		68		ns
Fall Time	$t_f$	See specified Test Circuit.		58		ns
Total Gate Charge	$Q_g$	$V_{DS}=-10V, V_{GS}=-4.5V, I_D=-3.5A$		8.7		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=-10V, V_{GS}=-4.5V, I_D=-3.5A$		1.5		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=-10V, V_{GS}=-4.5V, I_D=-3.5A$		1.8		nC
Diode Forward Voltage	$V_{SD}$	$I_S=-3.5A, V_{GS}=0V$		-0.83	-1.2	V
[SBD]						
Reverse Voltage	$V_R$	$I_R=0.2mA$	15			V
Forward Voltage	$V_F$	$I_F=2A$		0.5	0.56	V
Reverse Current	$I_R$	$V_R=7.5V$			30	μA
Interterminal Capacitance	$C$	$V_R=10V, f=1MHz$		27		pF
Reverse Recovery Time	$t_{rr}$	$I_F=I_R=100mA$ , See specified Test Circuit.			10	ns

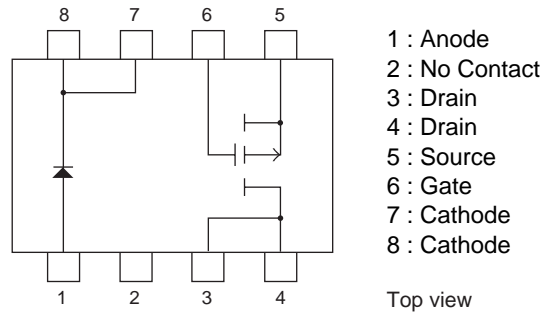
## Package Dimensions

unit : mm (typ)

7012-005

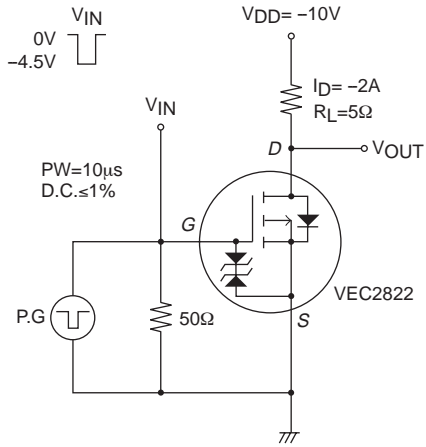


## Electrical Connection



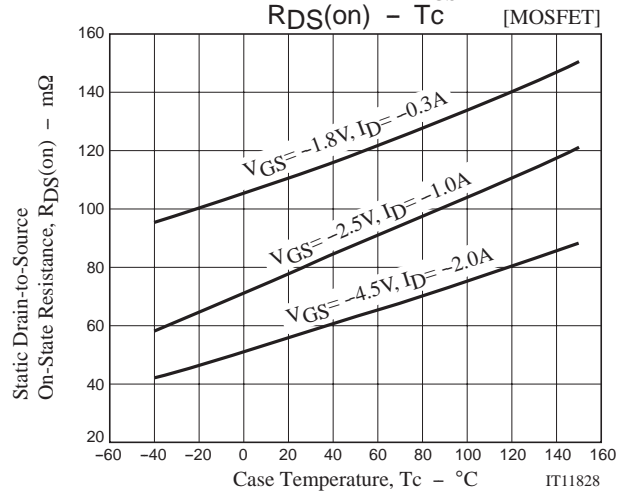
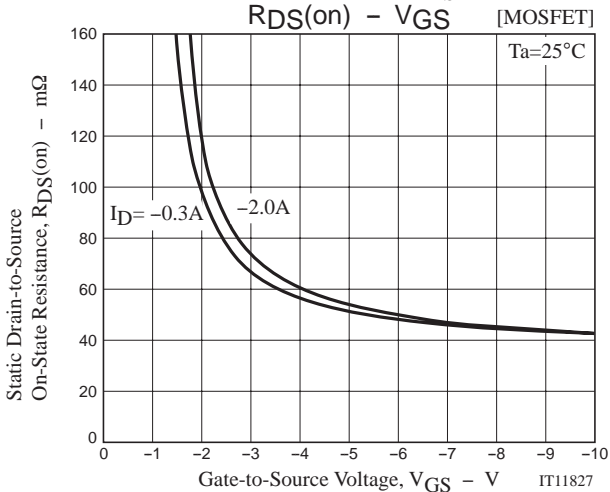
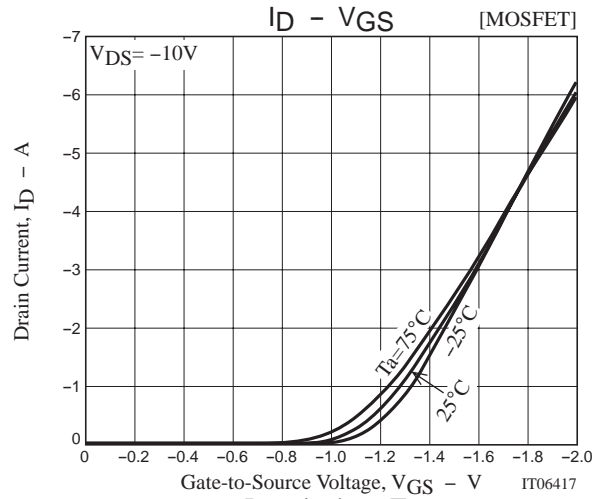
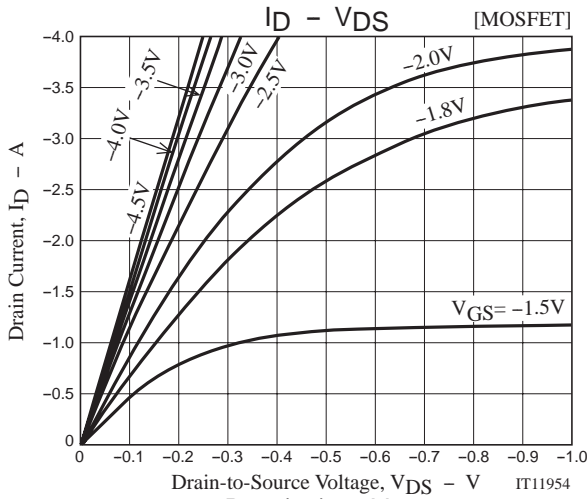
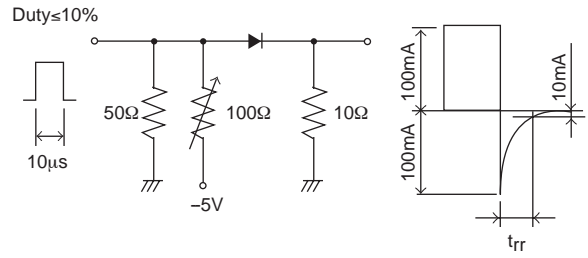
Switching Time Test Circuit

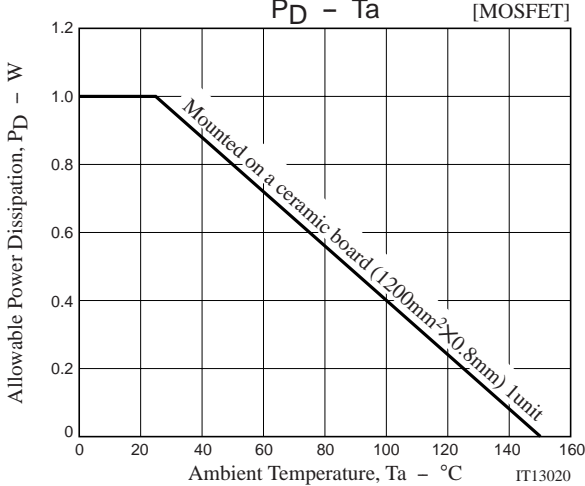
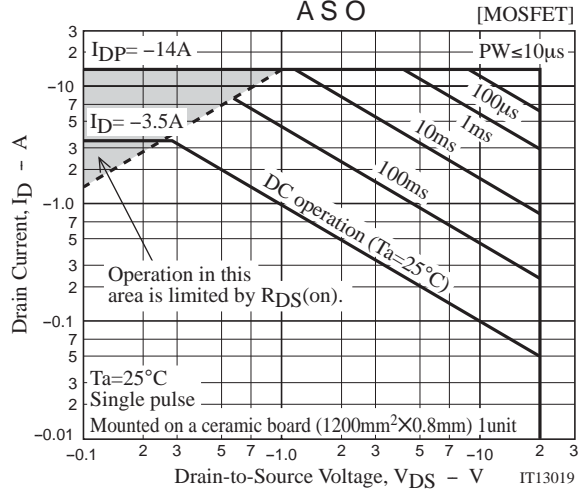
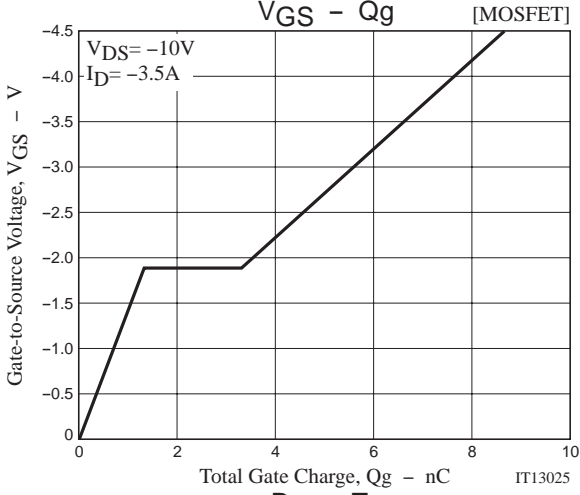
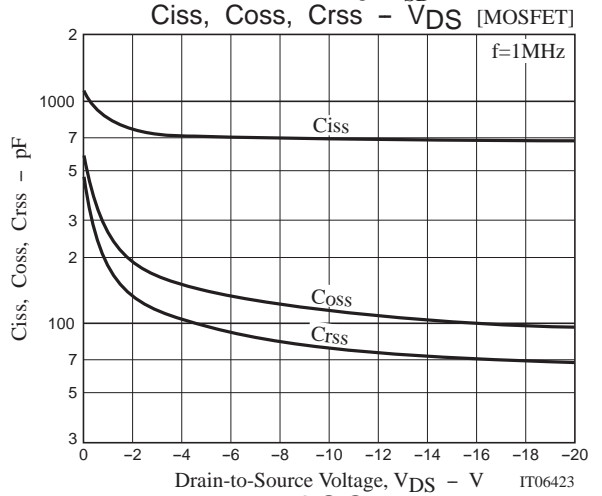
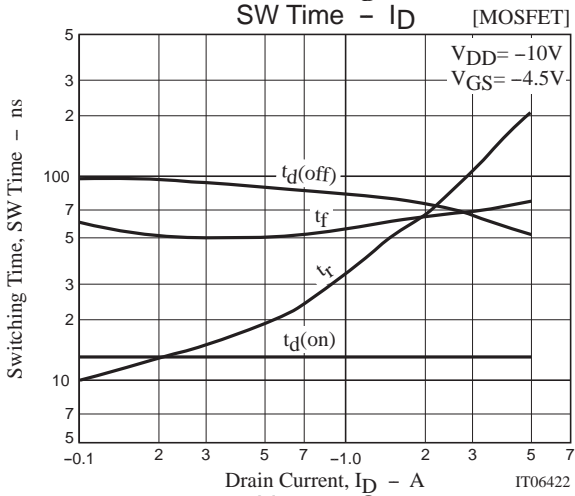
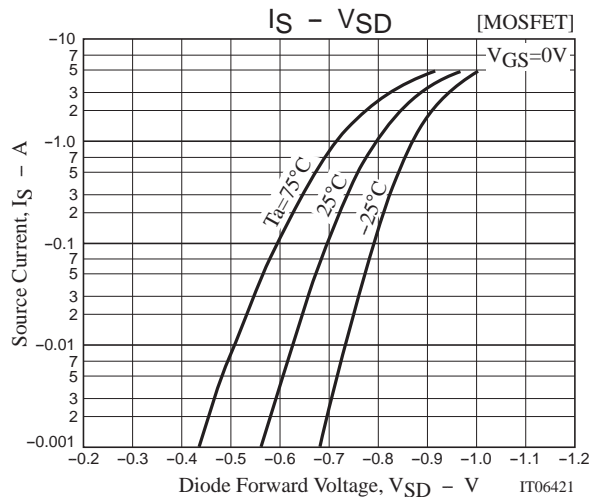
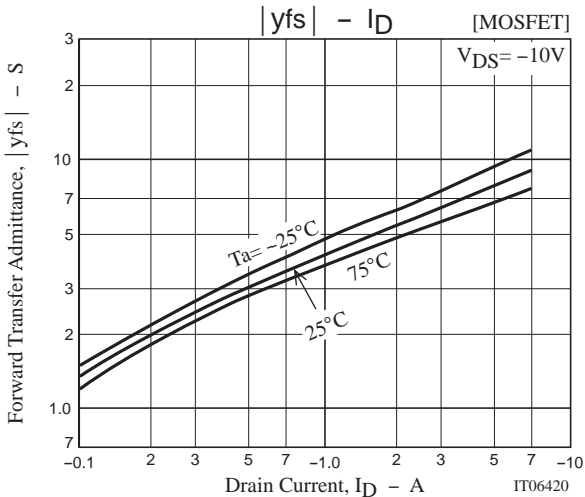
[MOSFET]

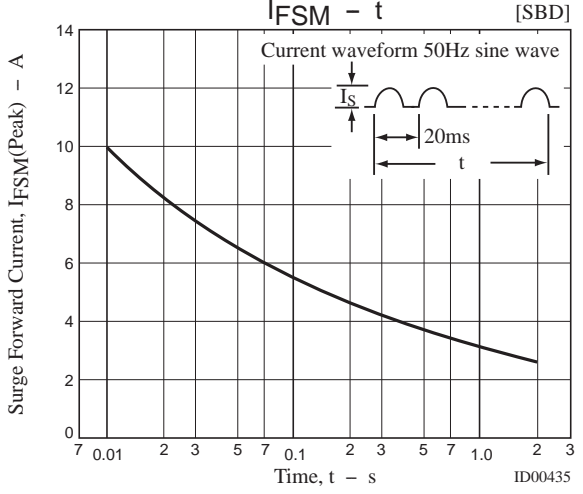
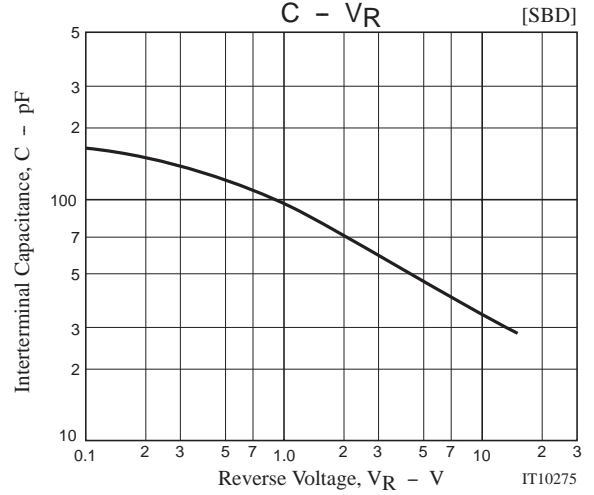
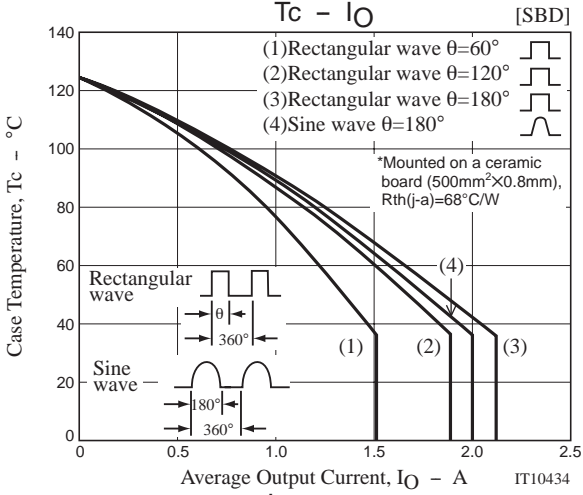
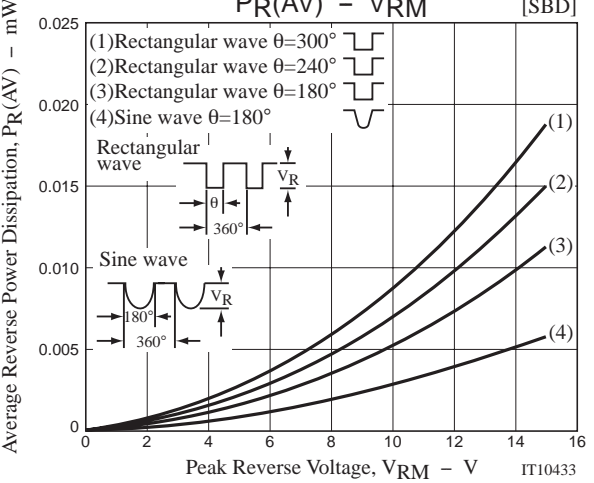
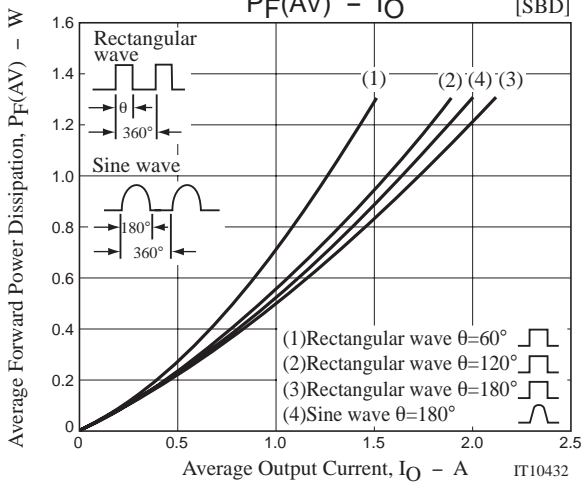
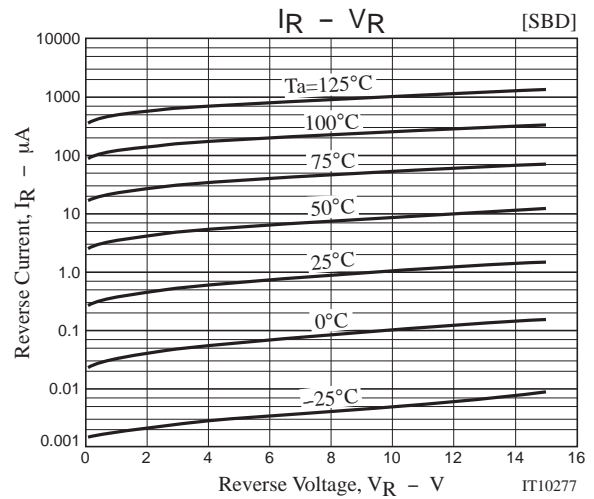
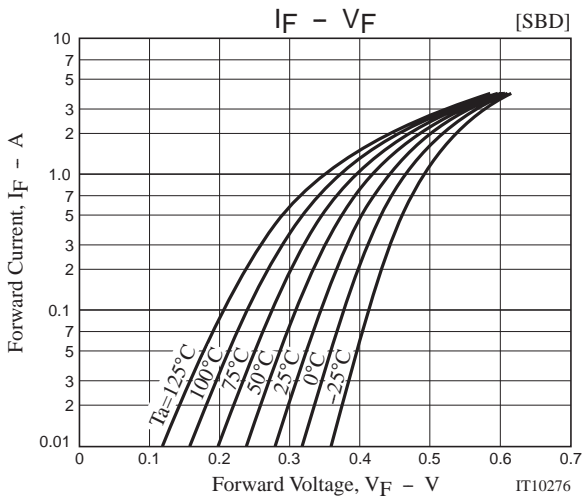


$t_{rr}$  Test Circuit

[SBD]







Note on usage : Since the VEC2822 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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