



SANYO Semiconductors

DATA SHEET

VEC2820

MOSFET : N-Channel Silicon MOSFET

SBD : Schottky Barrier Diode

General-Purpose Switching Device Applications

Features

- Composite type with an N-channel silicon MOSFET and a schottky barrier diode (SS10015M) 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 _{DSS}		20	V
Gate-to-Source Voltage	V _{GSS}		±10	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	Mounted on a ceramic board (900mm ² ×0.8mm) 1unit	0.9	W
Channel Temperature	T _{ch}		150	°C
Storage Temperature	T _{stg}		-55 to +125	°C

Marking : CU

Continued on next page.

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Parameter	Symbol	Conditions	Ratings	Unit
[SBD]				
Repetitive Peak Reverse Voltage	VRRM		15	V
Nonrepetitive Peak Reverse Surge Voltage	VRSM		15	V
Average Output Current	IO		1	A
Surge Forward Current	IFSM	50Hz sine wave, 1 cycle	10	A
Junction Temperature	Tj		-55 to +125	°C
Storage Temperature	Tstg		-55 to +125	°C

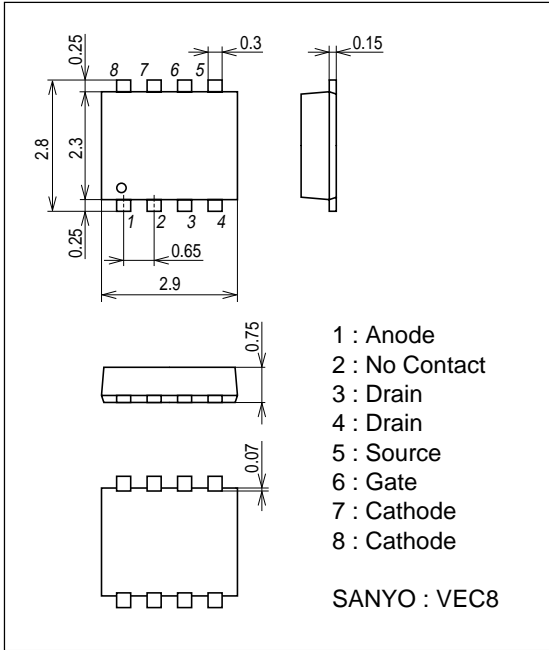
Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[MOSFET]						
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=1mA, VGS=0V	20			V
Zero-Gate Voltage Drain Current	IDSS	VDS=20V, VGS=0V			1	μA
Gate-to-Source Leakage Current	IGSS	VGS=±8V, VDS=0V			±10	μA
Cutoff Voltage	VGS(off)	VDS=10V, ID=1mA	0.4		1.3	V
Forward Transfer Admittance	yfs	VDS=10V, ID=1.5A	2.9	4.8		S
Static Drain-to-Source On-State Resistance	RDS(on)1	ID=1.5A, VGS=4V		51	66	mΩ
	RDS(on)2	ID=1A, VGS=2.5V		61	85	mΩ
	RDS(on)3	ID=0.5A, VGS=1.8V		75	113	mΩ
Input Capacitance	Ciss	VDS=10V, f=1MHz		280		pF
Output Capacitance	Coss	VDS=10V, f=1MHz		60		pF
Reverse Transfer Capacitance	Crss	VDS=10V, f=1MHz		38		pF
Turn-ON Delay Time	td(on)	See specified Test Circuit.		13		ns
Rise Time	tr	See specified Test Circuit.		35		ns
Turn-OFF Delay Time	td(off)	See specified Test Circuit.		35		ns
Fall Time	tf	See specified Test Circuit.		25		ns
Total Gate Charge	Qg	VDS=10V, VGS=4V, ID=3A		8.8		nC
Gate-to-Source Charge	Qgs	VDS=10V, VGS=4V, ID=3A		0.85		nC
Gate-to-Drain "Miller" Charge	Qgd	VDS=10V, VGS=4V, ID=3A		0.85		nC
Diode Forward Voltage	VSD	IS=3A, VGS=0V		0.82	1.2	V
[SBD]						
Reverse Voltage	VR	IR=0.5mA	15			V
Forward Voltage	VF1	IF=0.3A		0.30	0.32	V
	VF2	IF=0.5A		0.32	0.35	V
	VF3	IF=1A		0.39	0.435	V
Reverse Current	IR	VR=6V			90	μA
Interterminal Capacitance	C	VR=10V, f=1MHz, 1 cycle		20		pF
Reverse Recovery Time	trr	IF=IR=100mA, See specified Test Circuit.			10	ns

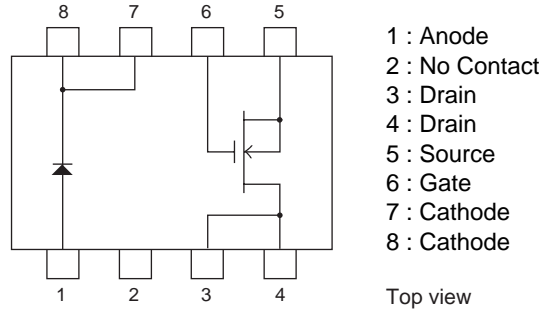
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Package Dimensions

unit : mm (typ)
7012-005



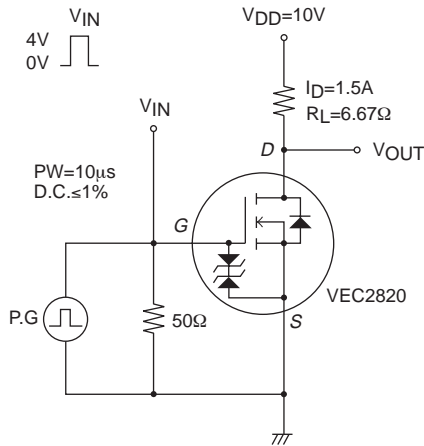
Electrical Connection



- 1 : Anode
 - 2 : No Contact
 - 3 : Drain
 - 4 : Drain
 - 5 : Source
 - 6 : Gate
 - 7 : Cathode
 - 8 : Cathode
- Top view

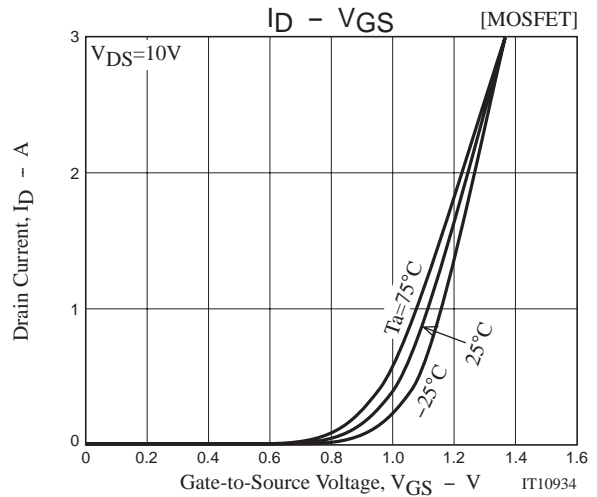
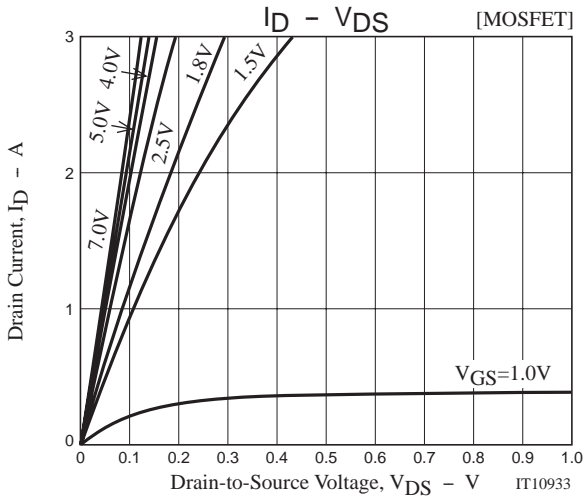
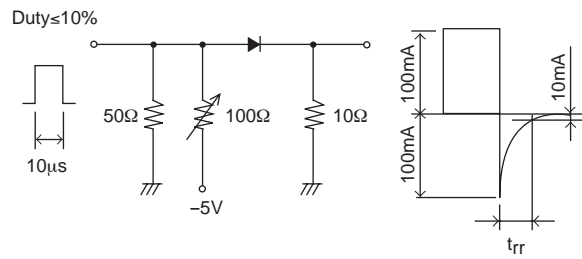
Switching Time Test Circuit

[MOSFET]

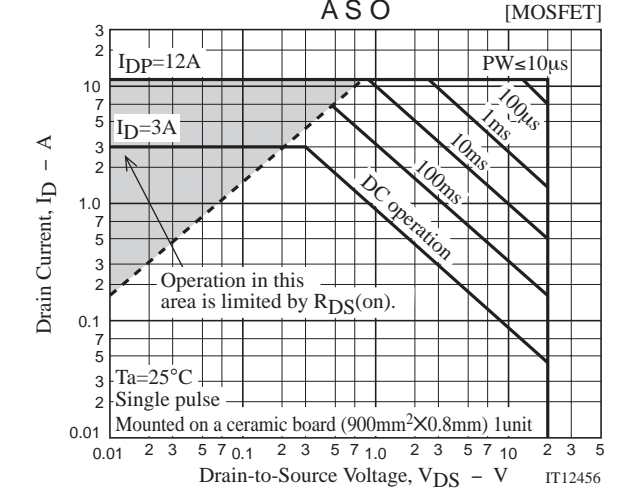
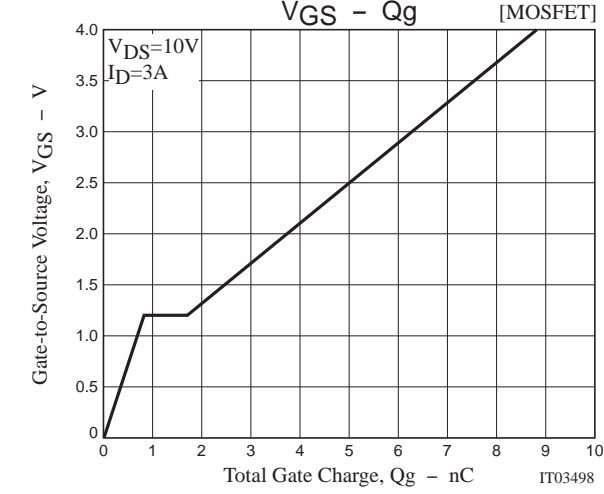
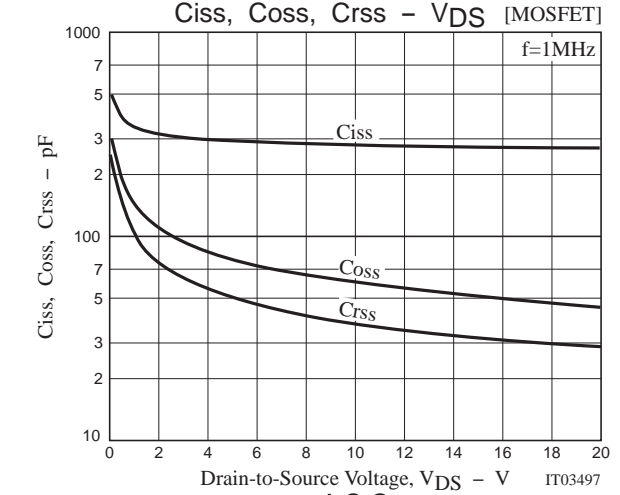
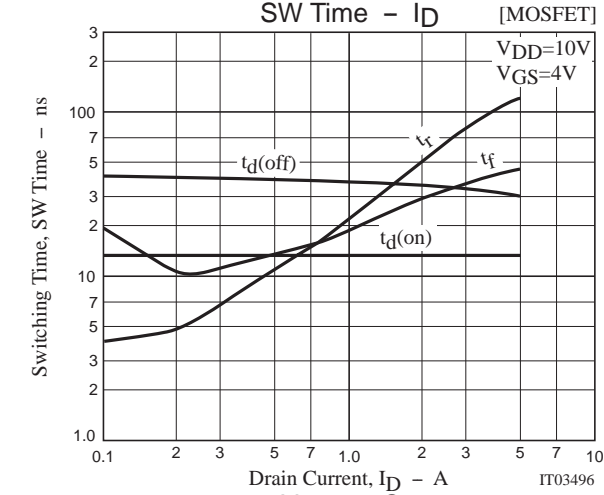
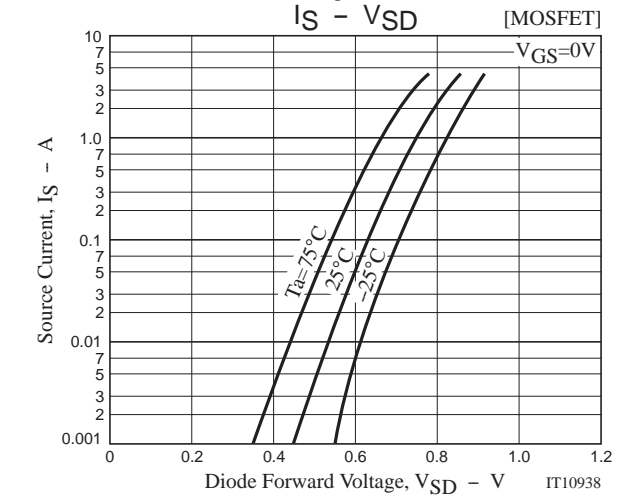
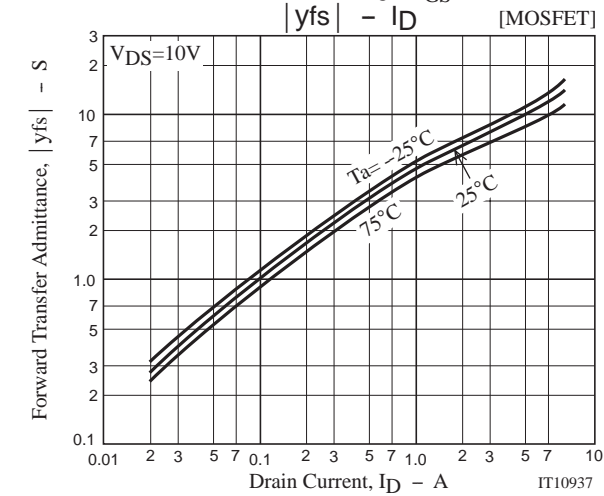
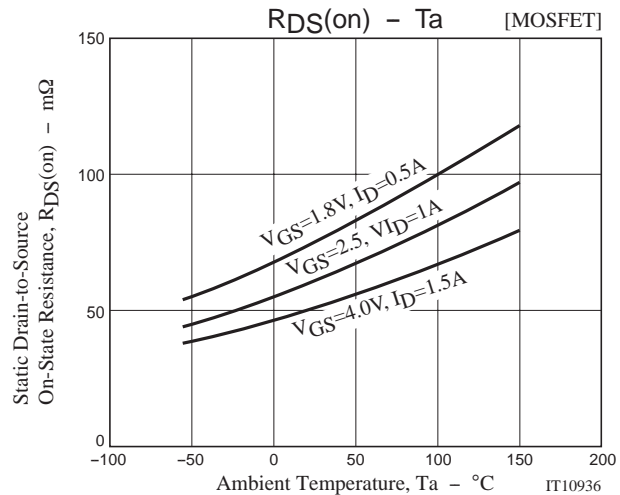
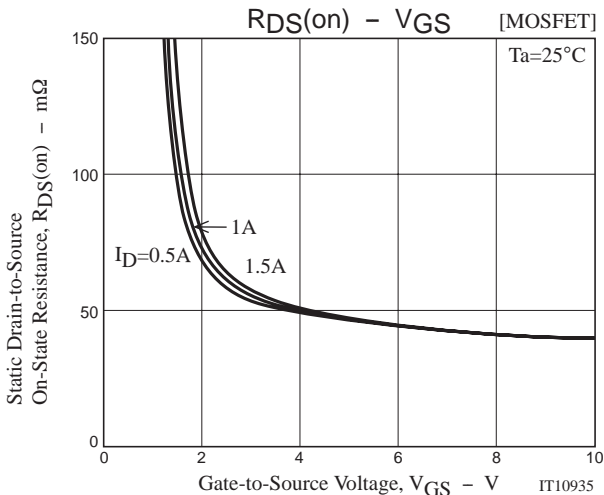


t_{rr} Test Circuit

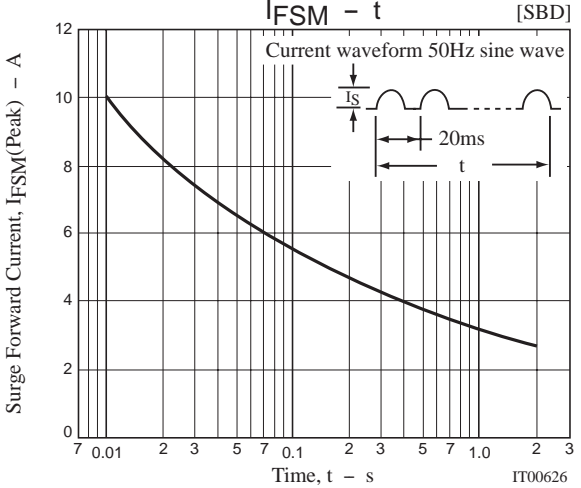
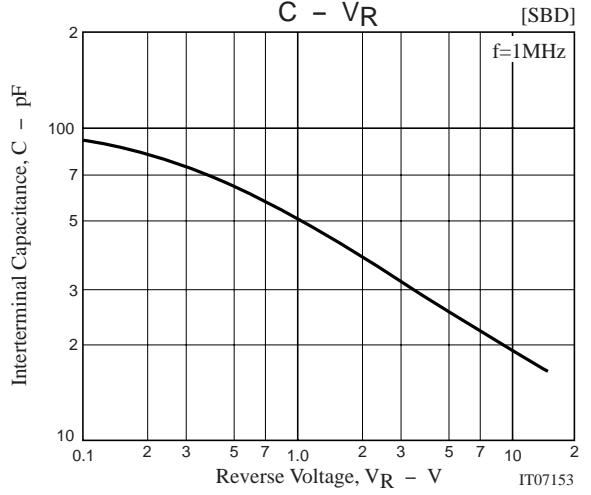
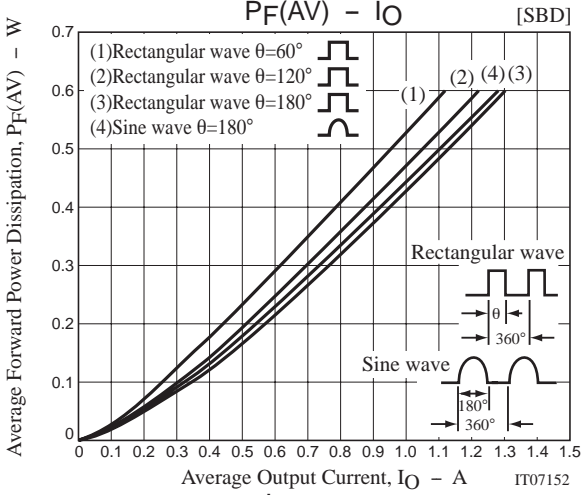
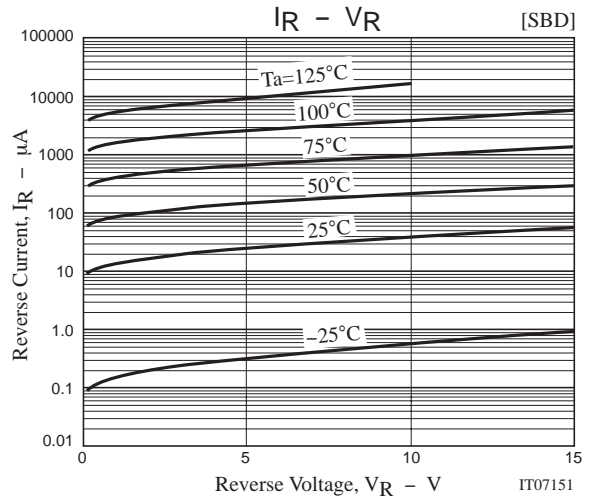
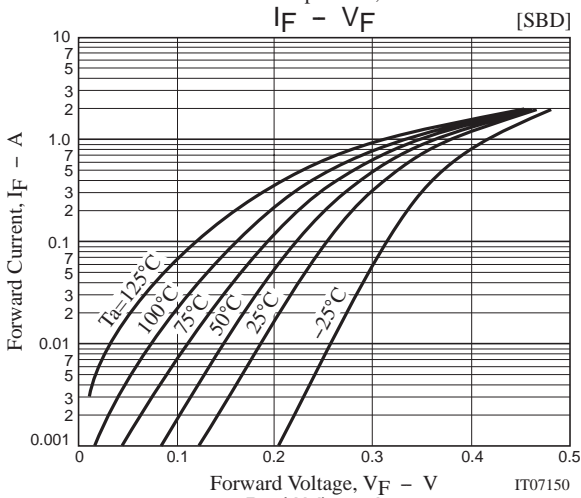
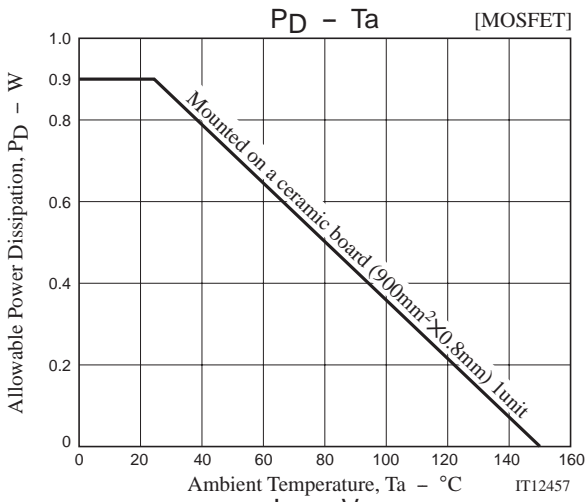
[SBD]



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Note on usage : Since the VEC2820 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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