



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	V _{RRM}		15	V
Nonrepetitive Peak Reverse Surge Voltage	V _{RSM}		15	V
Average Output Current	I _O		1	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

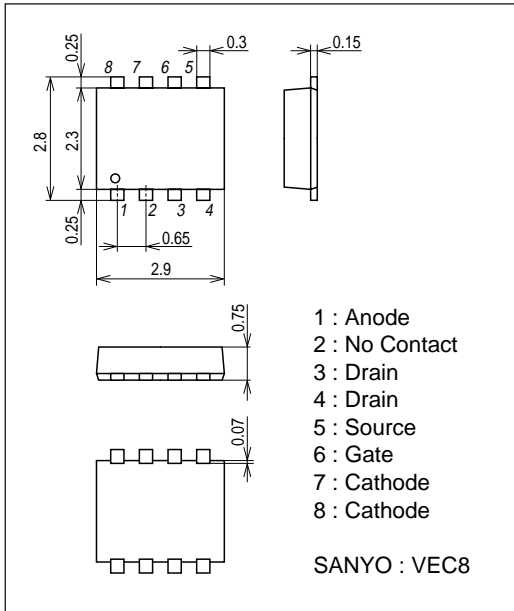
Electrical Characteristics at T_a=25°C

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} =±8V, V _{DS} =0V			±10	μA
Cutoff Voltage	V _{GS(off)}	V _{DS} =10V, I _D =1mA	0.4		1.3	V
Forward Transfer Admittance	y _{fs}	V _{DS} =10V, I _D =1.5A	2.9	4.8		S
Static Drain-to-Source On-State Resistance	R _{DS(on)1}	I _D =1.5A, V _{GS} =4V		51	66	mΩ
	R _{DS(on)2}	I _D =1A, V _{GS} =2.5V		61	85	mΩ
	R _{DS(on)3}	I _D =0.5A, V _{GS} =1.8V		75	113	mΩ
Input Capacitance	C _{iss}	V _{DS} =10V, f=1MHz		280		pF
Output Capacitance	C _{oss}	V _{DS} =10V, f=1MHz		60		pF
Reverse Transfer Capacitance	C _{rss}	V _{DS} =10V, f=1MHz		38		pF
Turn-ON Delay Time	t _{d(on)}	See specified Test Circuit.		13		ns
Rise Time	t _r	See specified Test Circuit.		35		ns
Turn-OFF Delay Time	t _{d(off)}	See specified Test Circuit.		35		ns
Fall Time	t _f	See specified Test Circuit.		25		ns
Total Gate Charge	Q _g	V _{DS} =10V, V _{GS} =4V, I _D =3A		8.8		nC
Gate-to-Source Charge	Q _{gs}	V _{DS} =10V, V _{GS} =4V, I _D =3A		0.85		nC
Gate-to-Drain "Miller" Charge	Q _{gd}	V _{DS} =10V, V _{GS} =4V, I _D =3A		0.85		nC
Diode Forward Voltage	V _{SD}	I _S =3A, V _{GS} =0V		0.82	1.2	V
[SBD]						
Reverse Voltage	V _R	I _R =0.5mA	15			V
Forward Voltage	V _{F1}	I _F =0.3A		0.30	0.32	V
	V _{F2}	I _F =0.5A		0.32	0.35	V
	V _{F3}	I _F =1A		0.39	0.435	V
Reverse Current	I _R	V _R =6V			90	μA
Interterminal Capacitance	C	V _R =10V, f=1MHz, 1 cycle		20		pF
Reverse Recovery Time	t _{rr}	I _F =I _R =100mA, See specified Test Circuit.			10	ns

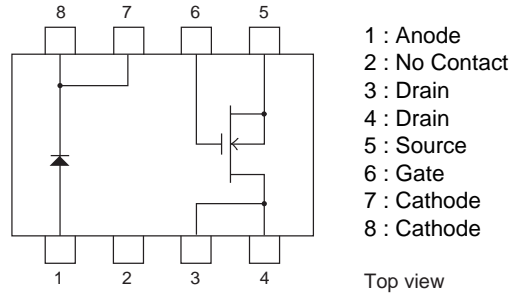
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Package Dimensions

unit : mm (typ)
7012-005

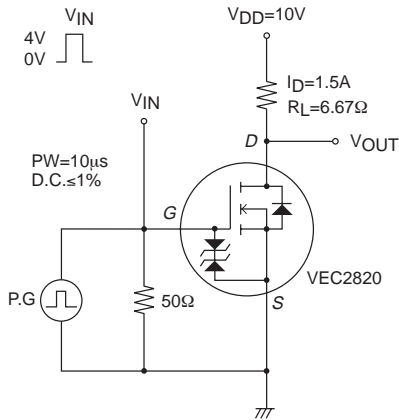


Electrical Connection



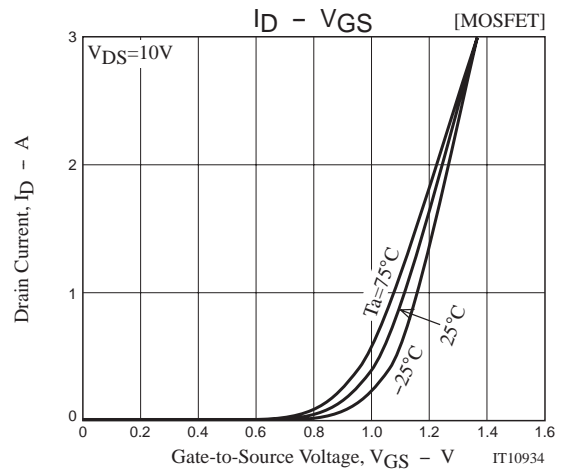
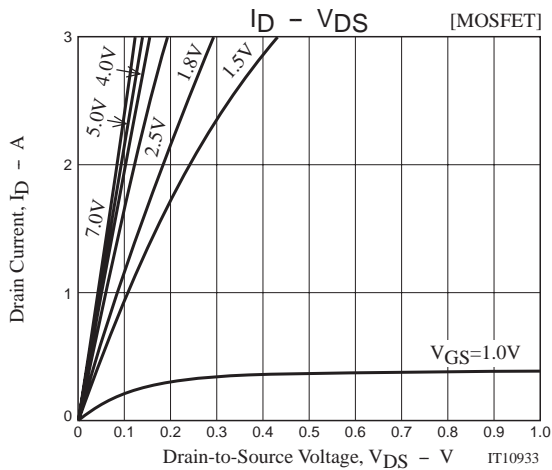
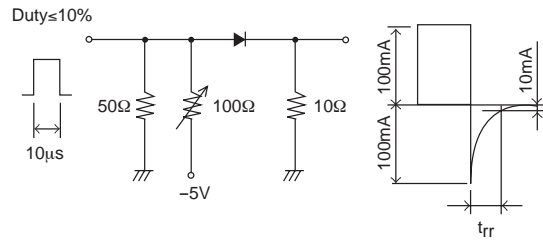
Switching Time Test Circuit

[MOSFET]

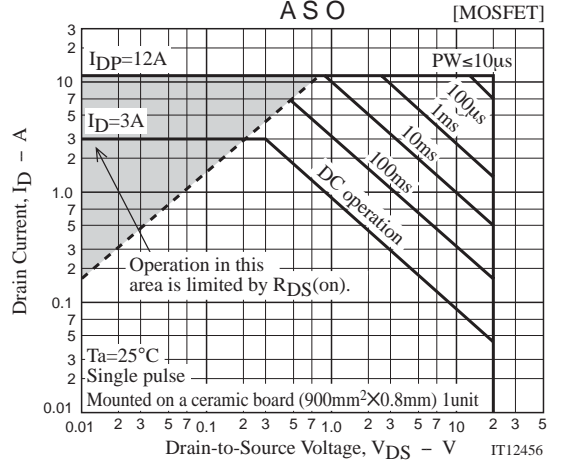
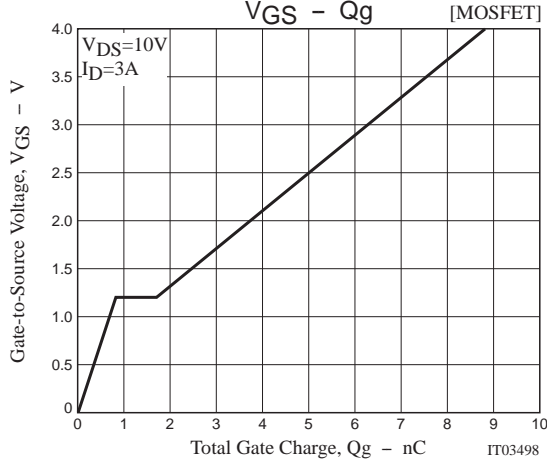
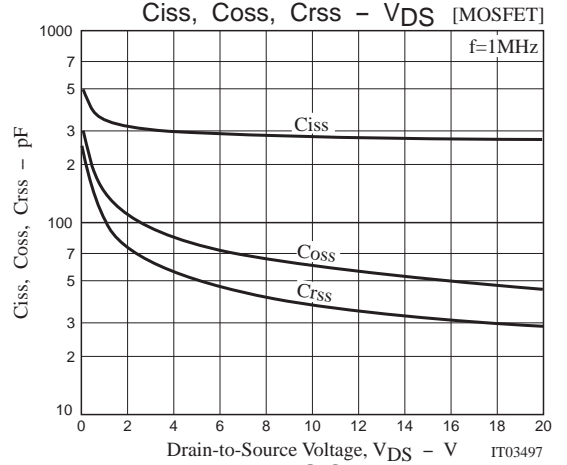
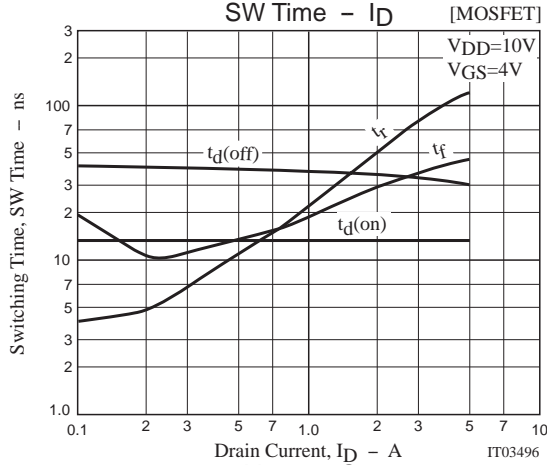
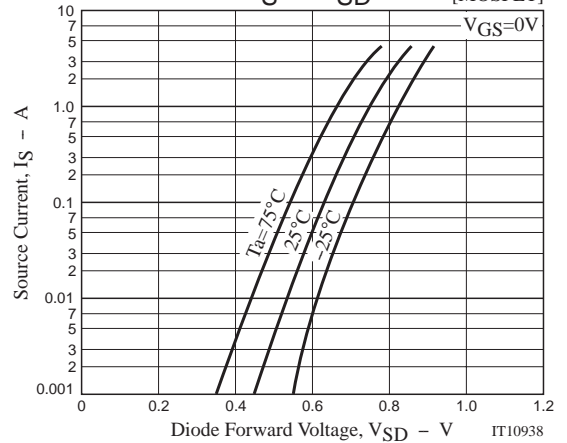
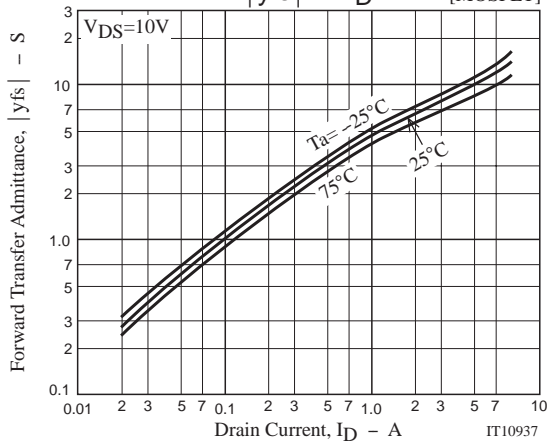
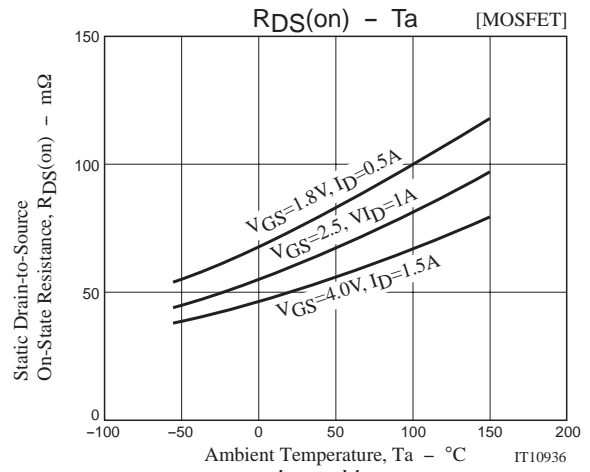
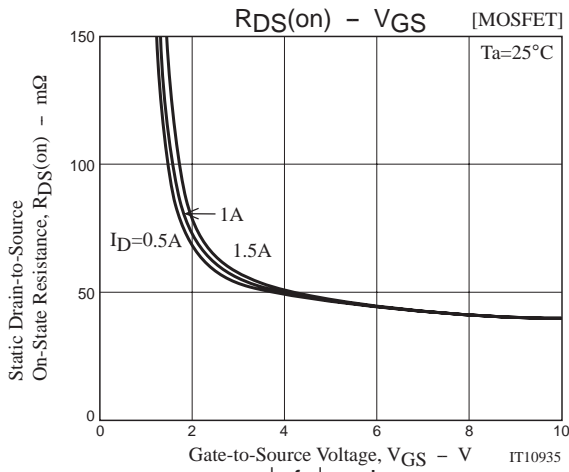


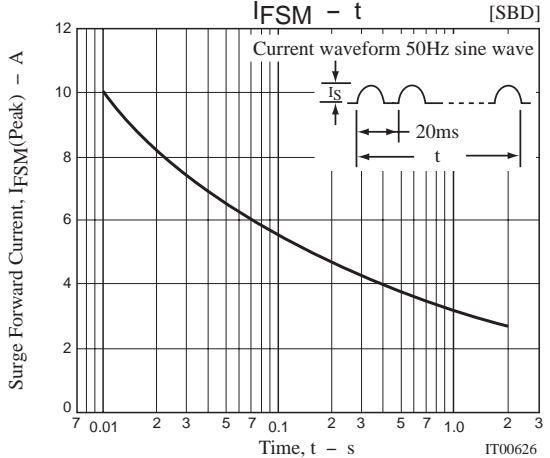
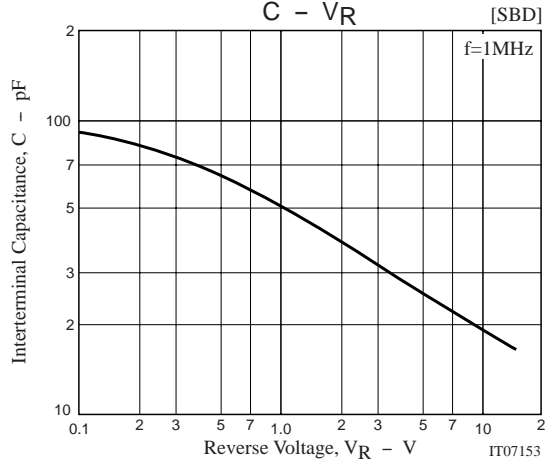
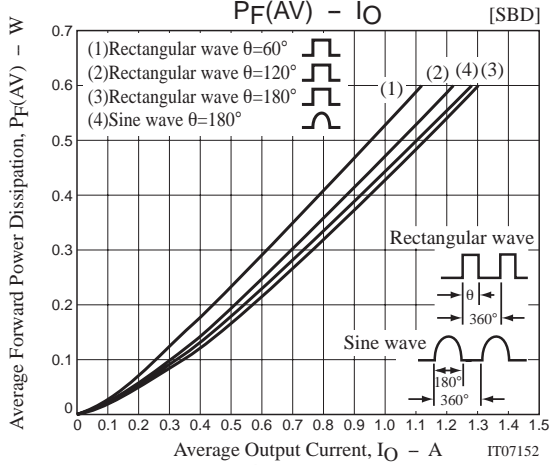
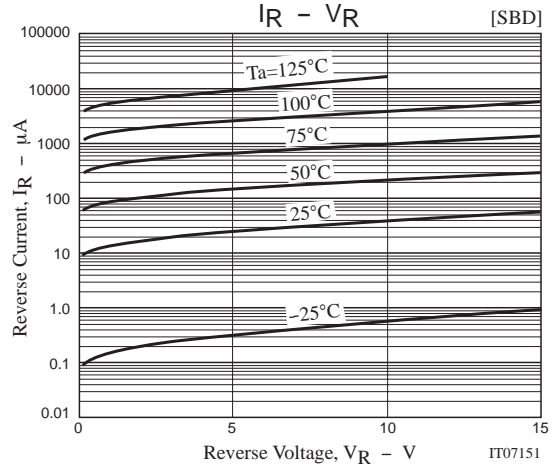
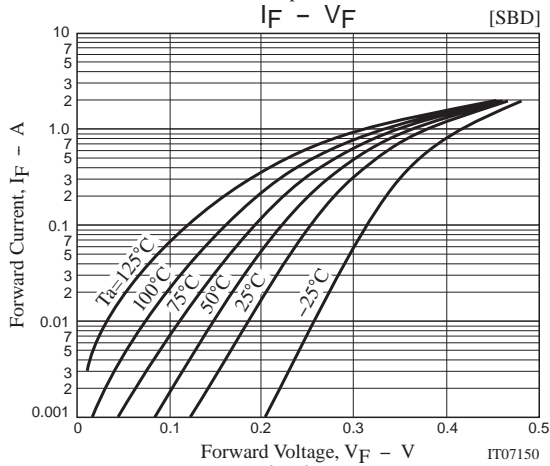
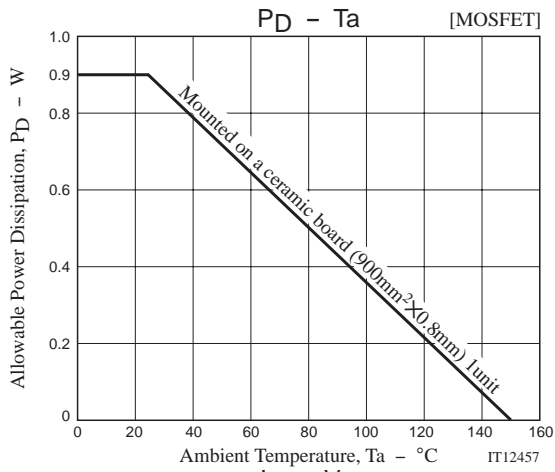
t_{rr} Test Circuit

[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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