Ordering number : ENA0577

SANYO Semiconductors
DATA SHEET

VEC2818

MOSFET : P-Channel Silicon MOSFET
SBD : Schottky Barrier Diode

General-Purpose Switching Device Applications

Features

- DC / DC converter.
- Composite type with a P-Channel Sillicon 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]
- 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		−3.5	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	−14	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (1200mm²X0.8mm) 1unit	1.0	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−55 to +125	°C
[SBD]				
Repetitive Peak Reverse Voltage	V_{RRM}		30	V
Nonrepetitive Peak Reverse Surge Voltage	V_{RSM}		30	V
Average Output Current	I_O		2	A
Surge Forward Current	I_{FSM}	50Hz sine wave, 1 cycle	5	A
Junction Temperature	Tj		−55 to +125	°C
Storage Temperature	Tstg		−55 to +125	°C

Marking : CQ

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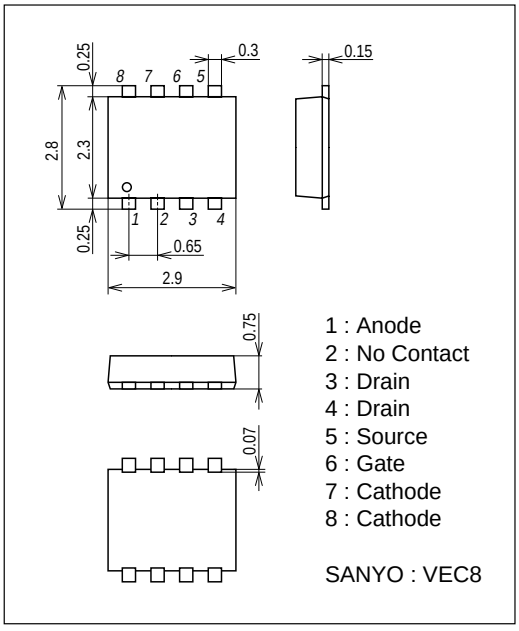
Electrical Characteristics at Ta=25°C

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}=±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	$\|yfs\|$	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	Ciss	V_{DS}=–10V, f=1MHz		680		pF
Output Capacitance	Coss	V_{DS}=–10V, f=1MHz		115		pF
Reverse Transfer Capacitance	Crss	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	Qg	V_{DS}=–10V, V_{GS}=–4.5V, I_D=–3.5A		8.7		nC
Gate-to-Source Charge	Qgs	V_{DS}=–10V, V_{GS}=–4.5V, I_D=–3.5A		1.5		nC
Gate-to-Drain “Miller” Charge	Qgd	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=2mA	30			V
Forward Voltage	V_F	I_F=2A		0.4	0.45	V
Reverse Current	I_R	V_R=15V			1.25	mA
Interterminal Capacitance	C	V_R=10V, f=1MHz		75		pF
Reverse Recovery Time	t_{rr}	I_F=I_R=100mA, See specified Test Circuit.			20	ns

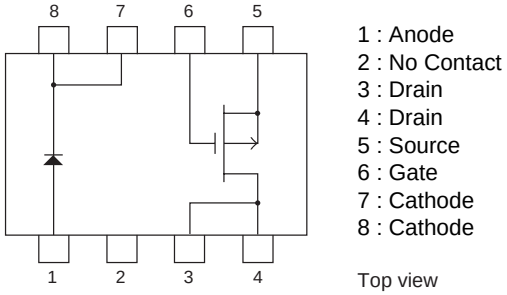
Package Dimensions

unit : mm (typ)

7012-005

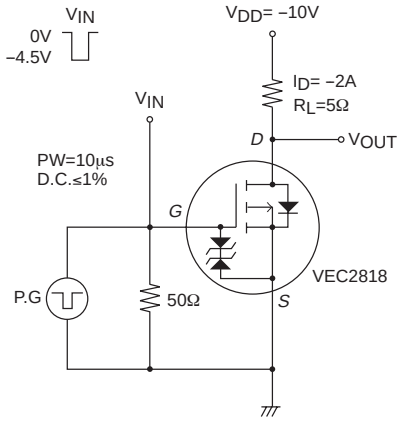


Electrical Connection



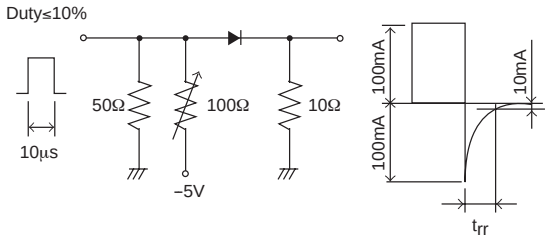
Switching Time Test Circuit

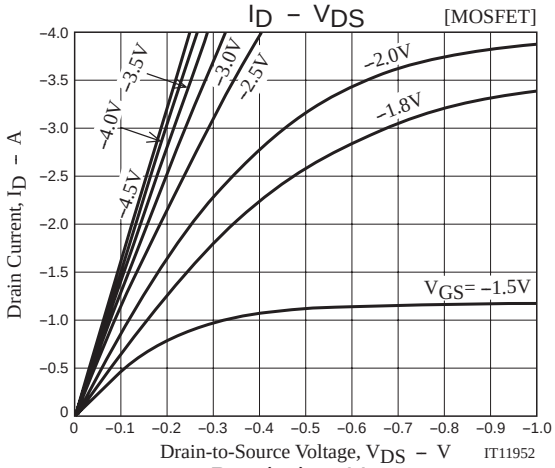
[MOSFET]

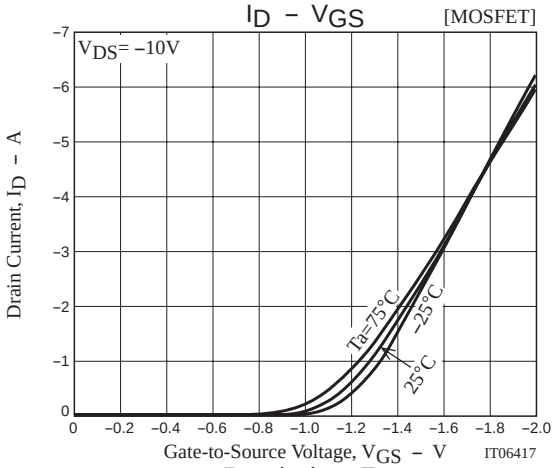


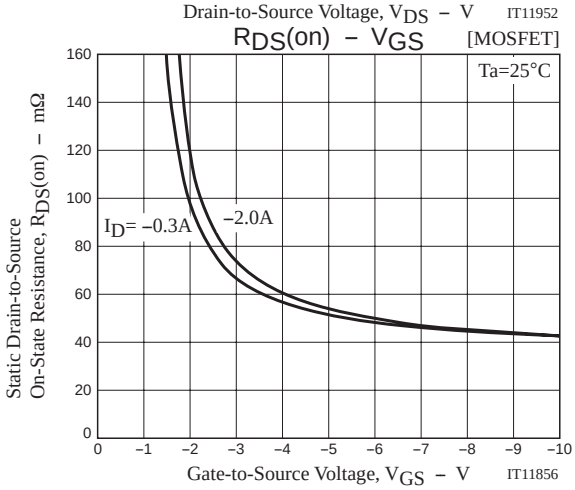
t_{rr} Test Circuit

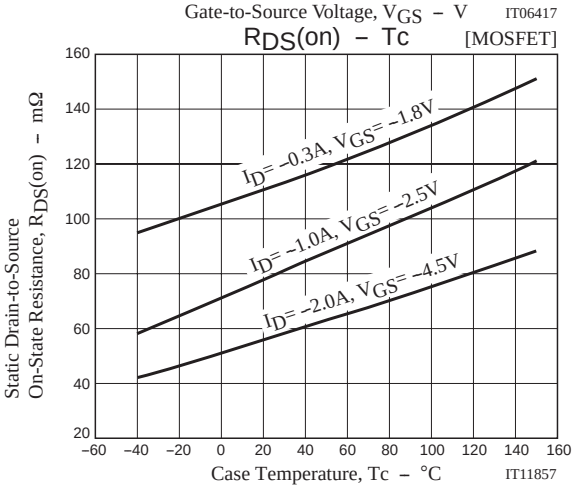
[SBD]

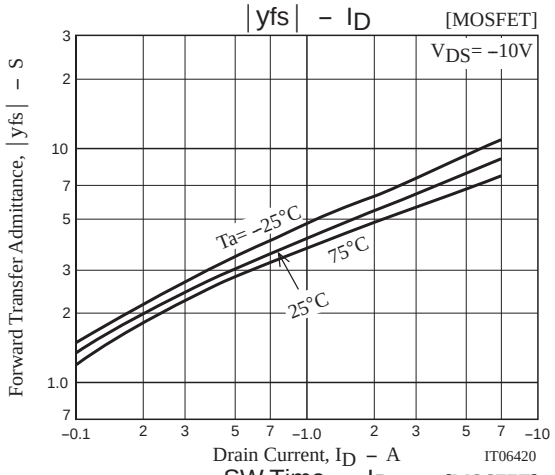


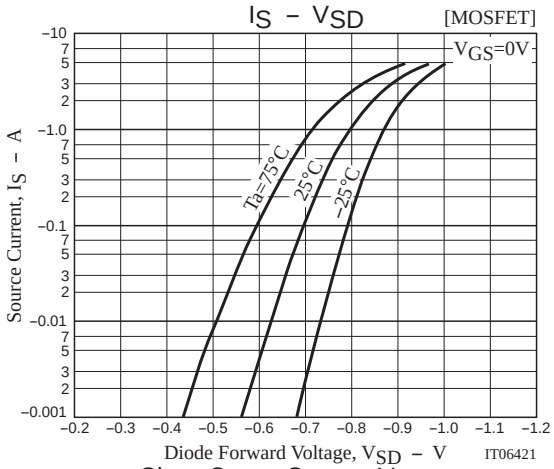


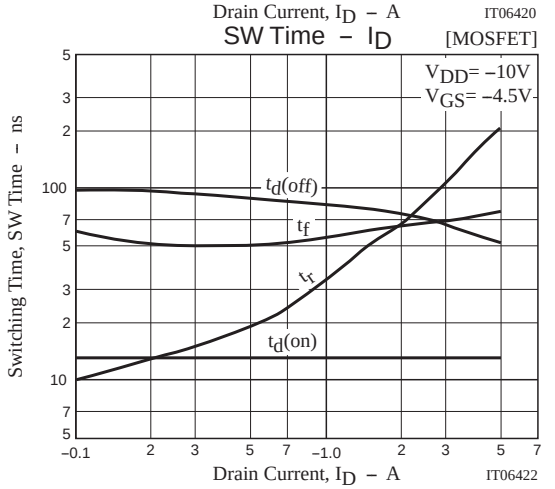


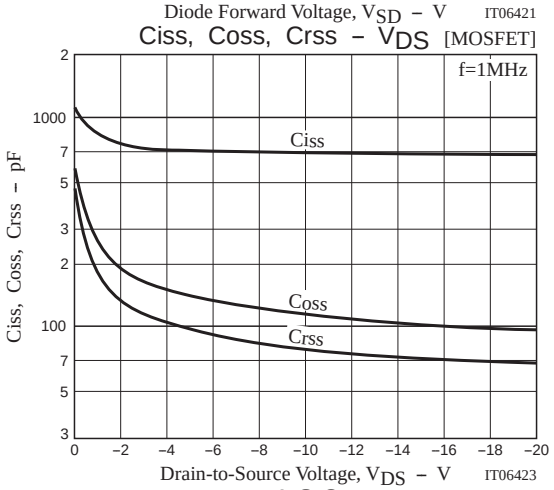


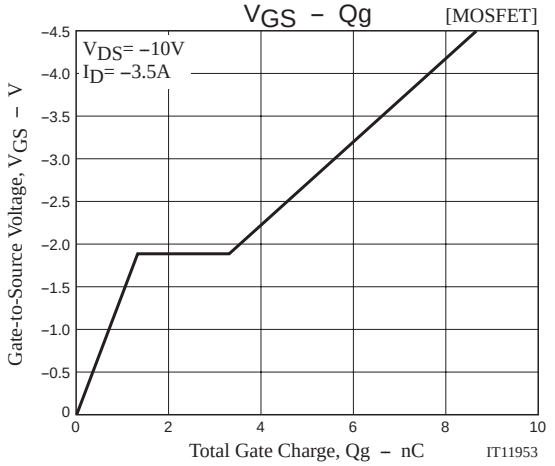


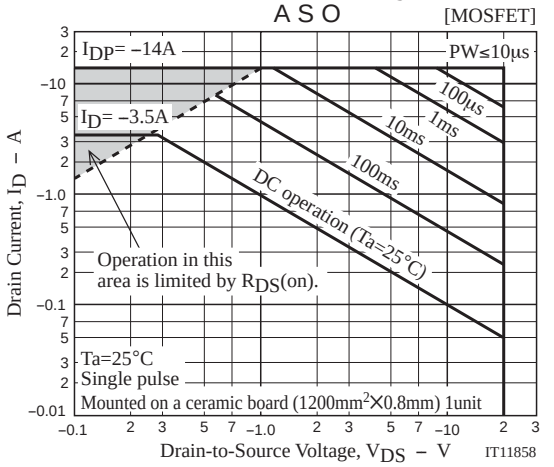


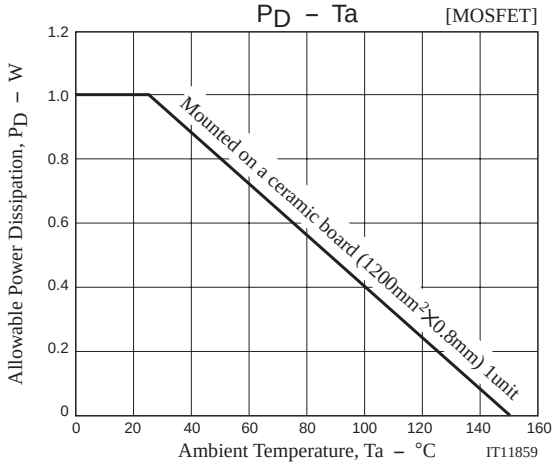




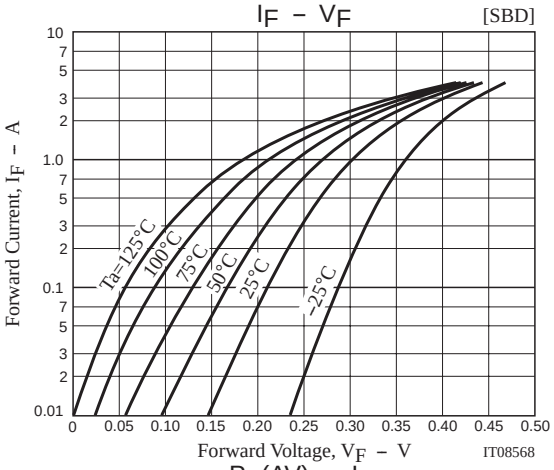




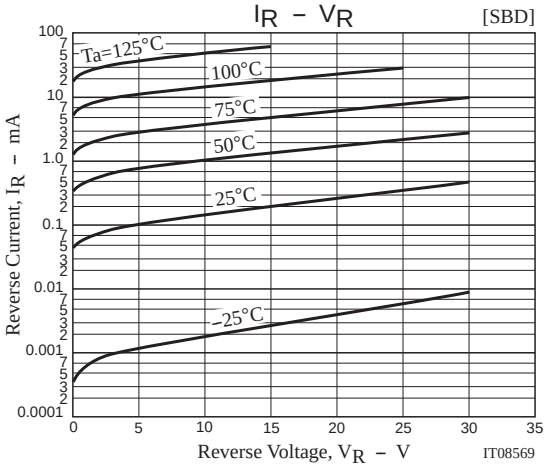




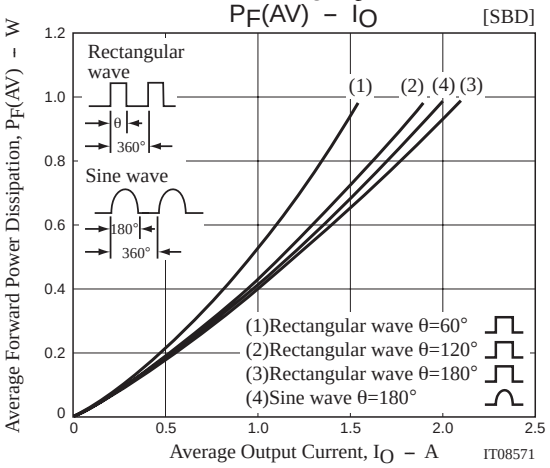
$I_F - V_F$ [SBD]



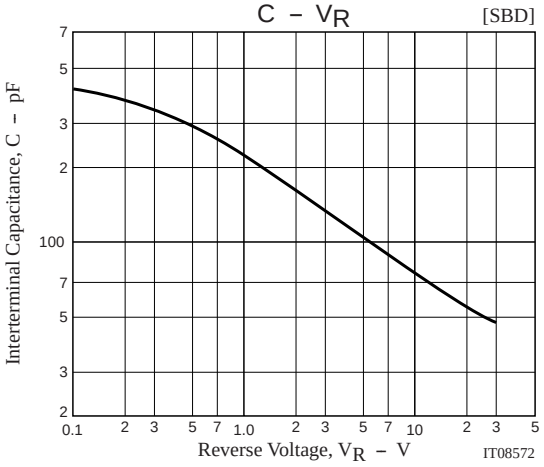
$I_R - V_R$ [SBD]



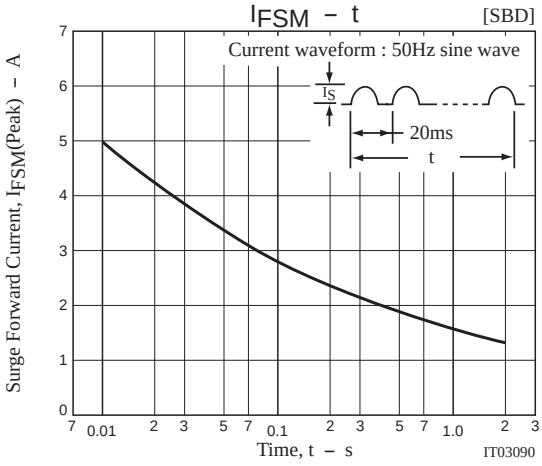
$P_{F(AV)} - I_O$ [SBD]



$C - V_R$ [SBD]



$I_{FSM} - t$ [SBD]



Note on usage : Since the VEC2818 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.