Edited by Foxit PDF Editor
Copyright (c) by Foxit Corporation, 2003 - 2010
For Evaluation Only.

SILVERMICRO

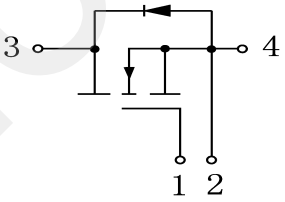
MM40SD120B5H

1.2kV, 40A Silicon Carbide Single Switch Module

特性：

- 超低开关损耗
- 零反向恢复电流
- 零关断拖尾电流
- 高开关频率
- 正温温度系数 V_F 和 $V_{DS(on)}$
- 铜底板和氧化铝 DBC

Features：



- Ultra Low Loss
- Zero Reverse Recovery Current
- Zero Turn-off Tail Current
- High-Frequency Operation
- Positive Temperature Coefficient on V_F and $V_{DS(on)}$
- Cu Baseplate, Al_2O_3 DBC

应用：

- UPS 电源、开关电源
- 马达驱动
- 太阳能逆变器

Applications：

UPS、SMPS
Motor Drives
Solar Inverters

最大额定值 /Absolute Maximum Ratings（T_C = 25℃ unless otherwise specified）

V_{DSS}	漏极－源极电压 Drain-Source Blocking Voltage		1200	V
V_{GSS}	栅极－源极电压 Gate-Source Voltage		+25/-10	V
I_D	漏极直流电流 Continuous Drain Current	T_C = 100℃	40	A
		T_C = 25℃	65	A
$I_{DM(1)}$	漏极脉冲电流 Peak Drain Current Repetitive	T_J = 150℃	80	A
P_D	最大耗散功率 Maximum Power Dissipation	T_C = 25℃ T_{Jmax}=150℃	210	W

2014 NJSME All rights reserved

Edited by Foxit PDF Editor
Copyright (c) by Foxit Corporation, 2003 - 2010
For Evaluation Only.

SILVERMICRO

电气特性Electrical Characteristics (T_J = 25℃)

静态特性/ Static characteristics

			Min	Typ	Max	
$V_{GS(th)}$	栅极阈值电压 Gate Threshold Voltage	I_D = 1 mA, V_{DS} = V_{GS}	1.7	2.2	3.0	V
$R_{DS(on)}$	导通电阻 On State Resistance	I_D = 40A ,V_{DS} = 10V T_J = 25℃		40		mΩ
I_{DSS}	漏极漏电流 Drain-Source Leakage Current	V_{DS} = V_{DSS},V_{GS} = 0V T_J = 25℃			1	mA
I_{GSS}	栅极漏电流 Gate- Source Leakage Current	V_{GS} = V_{GSS},V_{DS} = 0V T_J = 25℃			200	nA
C_{iss}	输入电容 Input Capacitance	V_{DS} = 800V, V_{GS} = 0V , f ＝1MHz		0.90		nF
C_{oss}	输出电容 Output Capacitance			0.14		nF
Crss	反向传输电容 Reverse Transfer Capacitance			0.04		nF
Q_g	栅极总电量 Total Gate Charge	I_D = 40A , V_{DS} = 800V, V_{GS} = 20V		98.0		nC
Q_{gs}	栅极－源极电量 Gate-Source Charge			21.1		nC
Q_{gd}	栅极－漏极电量 Gate-Drain (Miller) Charge			36.0		nC

开关特性/Switching Characteristics

$t_{d(on)}$	开通延迟时间 Turn-on Delay Time	V_{GS} = 800V, I_D = 40A, R_G = 20Ω,V_{GE} = 0/20V, 感性负载 Inductive Load T_J = 25℃		6.0		ns
t_r	上升时间 Rise Time			7.5		ns
$t_{d(off)}$	关断延迟时间 Turn-off Delay Time			11.5		ns
t_f	下降时间 Fall Time			16.2		ns
$R_{\theta JC}$	MOSFET 芯片与外壳间热阻 Junction-To-Case MOSFET			0.059		℃/W

碳化硅肖特基续流二极管/ Free-Wheeling SiC Schottky diode

最大额定值 / Maximum Rated Values

V_{RRM}	反向重复峰值电压 Repetitive peak reverse voltage			1200		V
I_F	二极管正向直流电流 Diode Continuous Forward Current			40		A
V_{SD}	正向压降 Forward Voltage	I_F = 40A,V_{DS} = 800V, di_F/dt = 400A/μs, T_J = 25℃		1.80		V
I_{rr}	反向恢复峰值电流 Peak Reverse Recovery Current			15		A
t_{rr}	反向恢复时间 Reverse Recovery Time			40		ns
Q_{rr}	反向恢复电荷 Reverse Recovery Charge			3.0		μC
$R_{\theta JC}$	二极管芯片与外壳间热阻 Junction-To-Case diode			1.018		℃/W

SilverMicro

2014 NJSME All rights reserved

Edited by Foxit PDF Editor
Copyright (c) by Foxit Corporation, 2003 - 2010
For Evaluation Only.

SILVERMICRO

模块 / Module

V_{iso}	绝缘测试电压 Isolation Voltage(All Terminals Shorted)	f = 50Hz, 1minute		2500		V
T_J	最大结温 Maximum Junction Temperature			150		℃
T_{JOP}	最大工作结温范围 Maximum Operating Junction Temperature Range			-40 +150		℃
T_{stg}	储藏温度 Storage Temperature			-40 +125		℃
$R_{\theta CS}$	使用导热脂时外壳与散热器间热阻 Case-To-Sink (Conductive Grease Applied)			0.1		℃/W
M	功率端子螺钉:M4 Power Terminals Screw:M4		0.5		1.5	N·m
M	散热器安装螺钉:M5 Mounting Screw:M5		0.5		1.5	N·m
G	重量 Weight			32		g

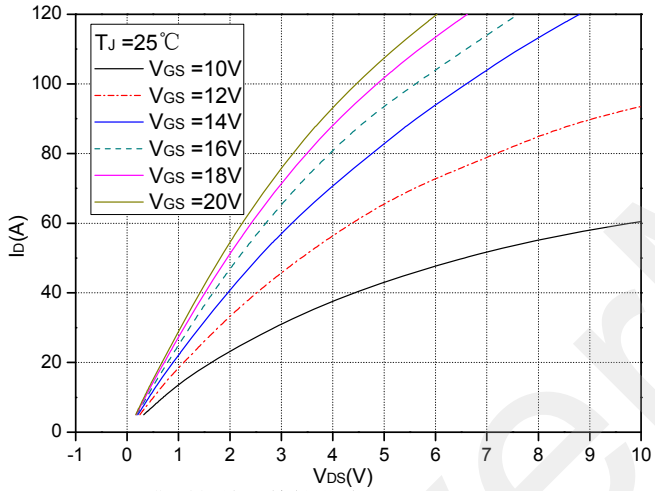


Fig.1 典型的输出特性曲线
Typical Output Characteristics

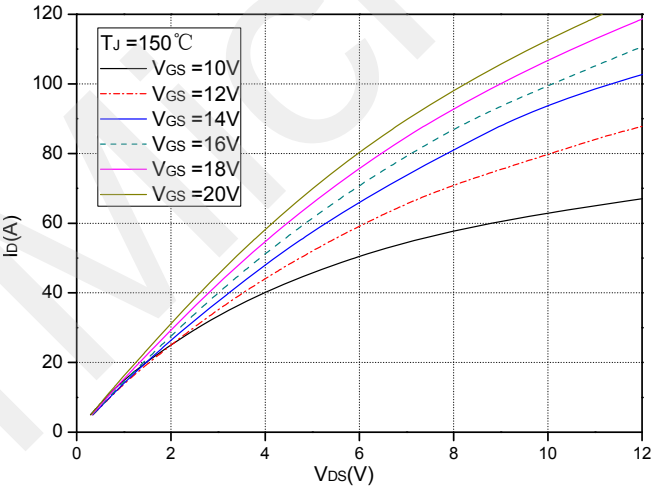


Fig.2 典型的输出特性曲线
Typical Output Characteristics

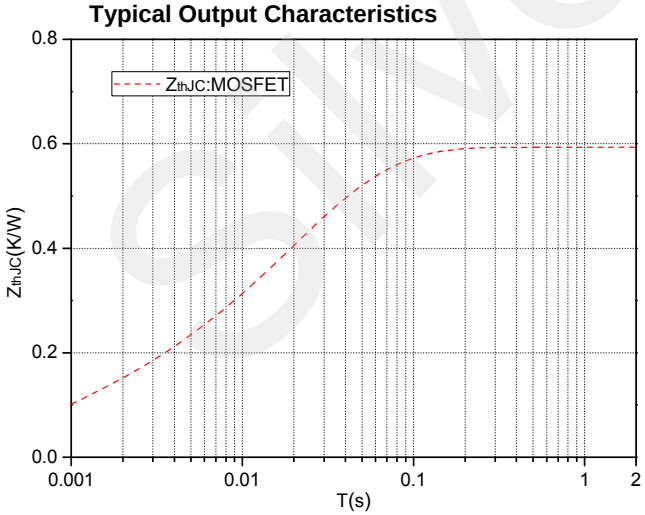


Fig.3 瞬态热阻抗(MOSFET)
Transient thermal impedance (MOSFET)

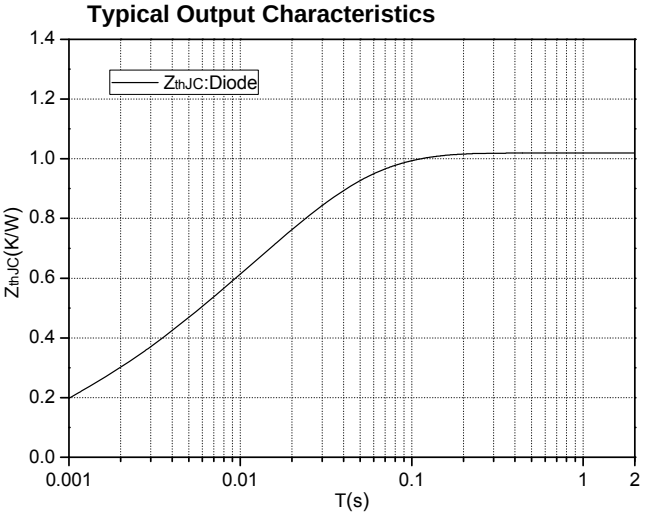


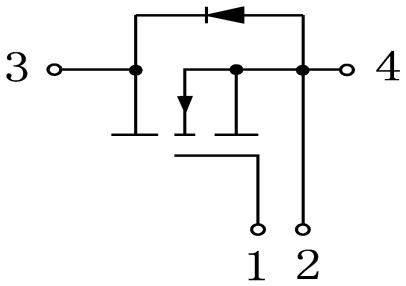
Fig.4 瞬态热阻抗(二极管)
Transient thermal impedance (Diode)

Silvermicro

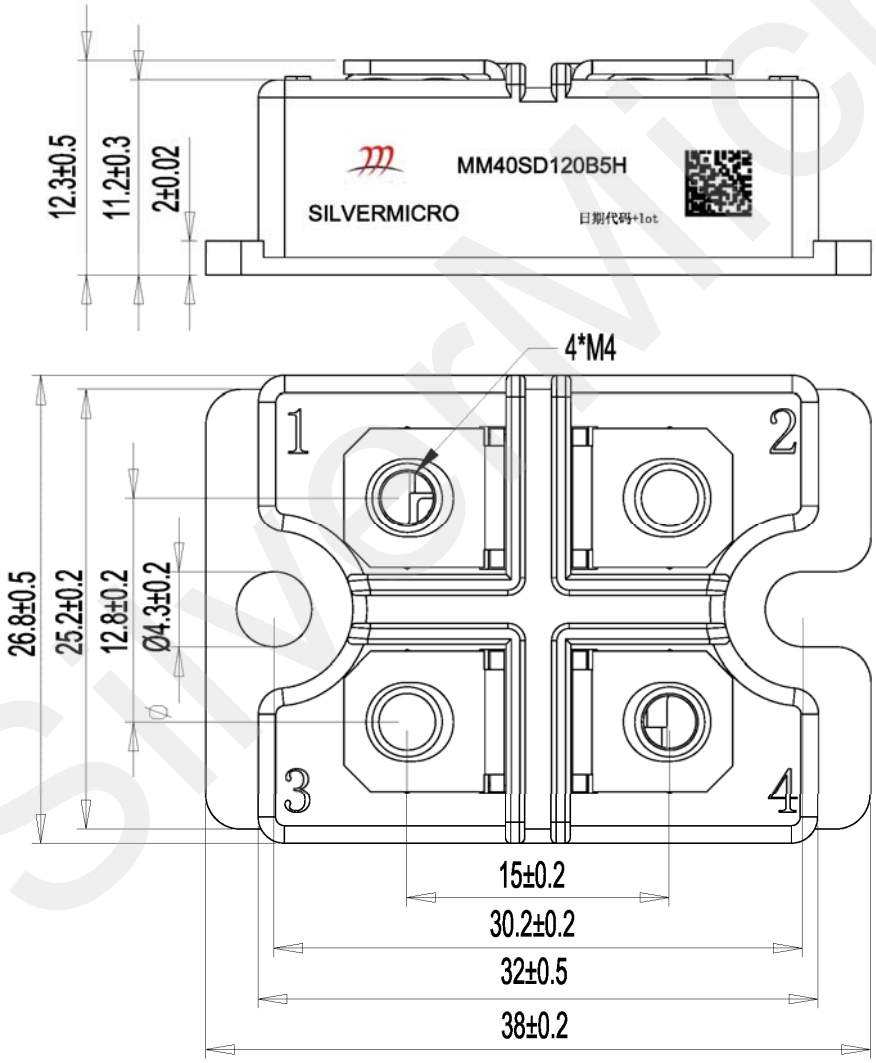
2014 NJSME All rights reserved

Edited by Foxit PDF Editor
Copyright (c) by Foxit Corporation, 2003 - 2010
For Evaluation Only.

内部电路 / Internal Circuit:



封装（单位：mm）/ Package Outline (Unit: mm):



SilverMicro

2014 NJSME All rights reserved

Edited by Foxit PDF Editor
Copyright (c) by Foxit Corporation, 2003 - 2010
For Evaluation Only.

SILVERMICRO

声明

本文件中的所有信息是精确、可靠的。但是，不论明示或默示，NJSME 不对该等信息的精确性和完整性给予任何陈述和保证，且 NJSME 不对使用该等信息造成的后果承担责任。

信息更改

NJSME 有权在未通知情况下随时更改文件中公布的信息，包括但不限于技术参数与产品说明。本文件取代先于此次公布的所有信息。

Announcement

Information in this document is believed to be accurate and reliable. However, NJSME does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information.

Right to make changes

NJSME reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.

SilverMicro

2014 NJSME All rights reserved QQ 597298353