

## 产品规格书

### Specification of Products

产品名称：MOSFET模块

产品型号：100A200V

浙江世菱电力电子有限公司

ZHEJIANG SHILING POWER ELECTRON CO.,LTD.

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SEMICONDUCTOR

## MOSFET

### Molding Type Module

200V/100A in one-package

### General Description

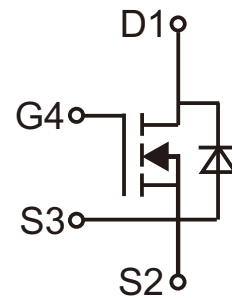
SHILINGPOWER MOSFET Power Module provides very low  $R_{DS(on)}$  as well as optimized intrinsic diode. It is designed for the applications such as SMPS and DC drives.

### Features

- Low  $R_{DS(on)}$
- Optimized intrinsic reverse diode
- Low inductance case avoid oscillations
- Kelvin source terminals for easy drive
- Isolated copper baseplate using DBC technology

### Typical Applications

- Main and auxiliary AC drives of electric vehicles
- DC servo and robot drives
- Battery vehicles
- UPS equipment
- Plasma cutting



Equivalent Circuit Schematic

## Absolute Maximum Ratings $T_C=25^\circ\text{C}$ unless otherwise noted

Symbol	Description		Units
$V_{DSS}$	Drain-Source Voltage	200	V
$V_{GSS}$	Gate-Source Voltage	$\pm 10$	V
$I_D$	Drain Current @ $T_C=25^\circ\text{C}$ @ $T_C=80^\circ\text{C}$	100 80	A
$I_F$	Diode Forward Current	251	A
$P_D$	Maximum Power Dissipation @ $T_j=175^\circ\text{C}$	630	W
$T_{jmax}$	Maximum Junction Temperature	175	$^\circ\text{C}$
$T_{pp}$	Operating Junction Temperature	- 40 to +150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature Range	- 40 to +125	$^\circ\text{C}$
$V_{ISO}$	Isolation Voltage RMS, $f=50\text{Hz}$ , $t=1\text{min}$	3000	V
Mounting Torque	Power Terminal Screw:M4 Mounting Screw:M4	2.5to 3.0 2.5 to 3.0	N.m

## Electrical Characteristics of MOSFET $T_C=25^\circ\text{C}$ unless otherwise noted

### Off Characteristics

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$T_j=25^\circ\text{C}$	200			V
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS}=V_{DSS}$ , $V_{GS}=0\text{V}$ , $T_j=25^\circ\text{C}$			1	$\mu\text{A}$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=V_{GSS}$ , $V_{DS}=0\text{V}$ , $T_j=25^\circ\text{C}$			$\pm 100$	nA

### On Characteristics

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
$V_{GS(th)}$	Gate-Source Threshold Voltage	$I_D=1.0\text{mA}$ , $V_{DS}=V_{GS}$ , $T_j=25^\circ\text{C}$	2.5		4.5	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	$I_D=40\text{A}$ , $V_{GS}=10\text{V}$ , $T_j=25^\circ\text{C}$		11.5	13.5	$\text{m}\Omega$
$g_{fs}$	Forward Transconductance	$V_{DS}=150\text{V}$ , $I_D=80\text{A}$	224			S

## Switching Characteristics

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
$R_{Gint}$	Internal Gate Resistance			1.35		$\Omega$
$t_{d(on)}$	Turn-On Delay Time	$V_{DD}=150V, I_D=80A,$ $R_G=0.26\Omega, V_{GS}=10V,$ $T_j=25^\circ C$		27		ns
$t_r$	Rise Time			119		ns
$t_{d(off)}$	Turn-Off Delay Time			47		ns
$t_f$	Fall Time			84		ns
$Q_g$	Total Gate Charge	$I_D=80A, V_{DS}=150V,$ $V_{GS}=10V$		302		nC
$Q_{gs}$	Gate-Source Charge			104		nC
$Q_{gd}$	Gate-Drain ("Miller") Charge			110		nC
$C_{iss}$	Input Capacitance	$V_{GS}=0V, V_{DS}=25V,$ $f=1.0MHz$		20.9		nF
$C_{oss}$	Output Capacitance			1.95		nF
$C_{rss}$	Reverse Transfer Capacitance			0.41		nF
$L_{CE}$	Stray Inductance				22	nH
$R_{CC+EE}$	Module Lead Resistance, Terminal to Chip	$T_c=25^\circ C$		0.65		m $\Omega$

## Electrical Characteristics of Inverse Diode $T_c=25^\circ C$ unless otherwise

noted

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
$V_{SD}$	Diode Forward Voltage	$I_F=150A, V_{GS}=0V, T_j=25^\circ C$			1.30	V
$t_{rr}$	Diode Reverse Recovery Time	$V_R=150V, I_F=100A,$ $di/dt=200A/\mu s, T_j=25^\circ C$		110		ns
$Q_{rr}$	Diode Reverse Recovery Charge				1.03	

## Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-Case (per MOSFET)		0.199	K/W
$R_{\theta CS}$	Case-to-Sink (Conductive grease applied)	0.046		K/W
Weight	Weight of Module	35		g

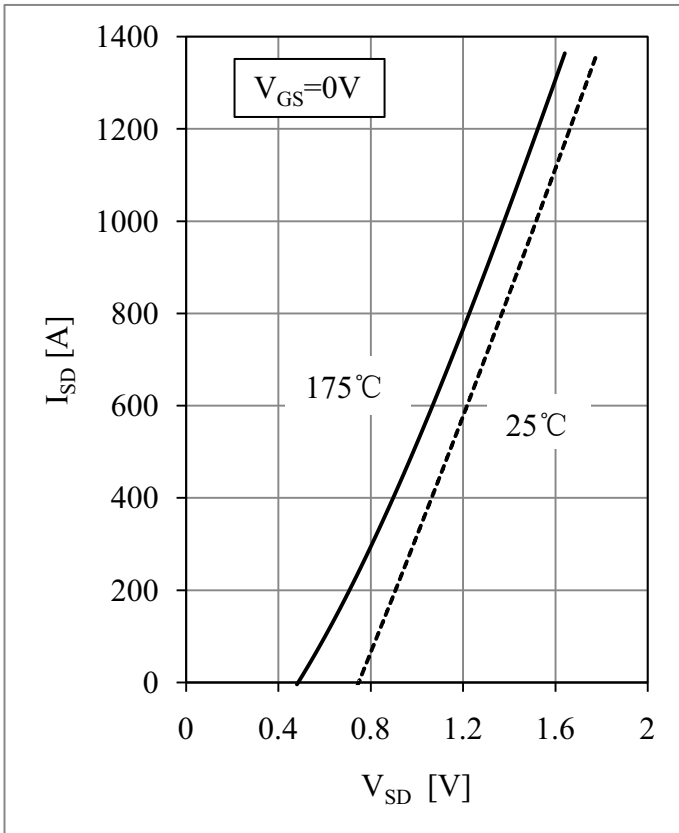


Fig 5. Inverse Diode Output Characteristic

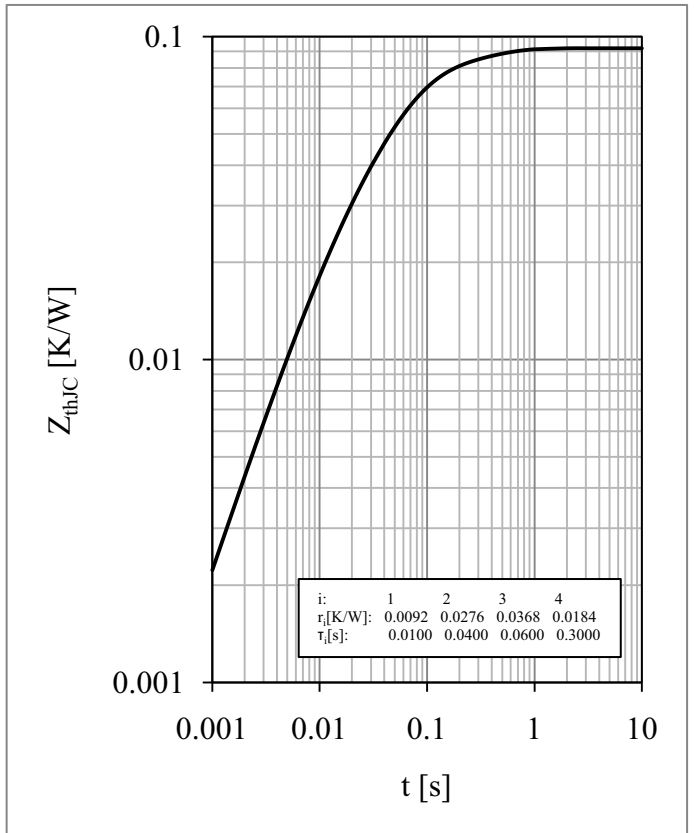


Fig 6. Transient Thermal Impedance

## Package Dimension

