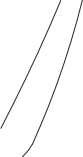
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| **JMGP500V15A**  m  **Description**   |  |  |  |  | | --- | --- | --- | --- | | **JMG** **N-channel** **Enhancement** **Mode** **Power** **MOSFET** | | | | | **Features**  150V, 8A  RDS(ON)< 55mΩ @ VGS =10V  RDS(ON)< 66mΩ @ VGS =6V  Advanced Split Gate Trench Technology  Excellent RDS(ON) and Low Gate Charge  Lead free product is acquired | | **Application**  Load Switch  PWM Application  Power management |  | | *100%* *UIS* *TESTED!* *100%* *ΔVds* *TESTED!* |  | | **SOP-8** **top** **view** | **Schematic** **Diagram**  **500V15A**  **XX**  **Marking** **and** **pin** **Assignment** | | |   **Package** **Marking** **and** **Ordering** **Information**   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | **Device** **Marking** | **Device** | **OUTLINE** | **Device** **Package** | **Reel** **Size** | **Reel**  **PCS** | **Per** **Carton**  **(PCS)** | | 500V15A | JMGP500V15A | TAPING | SOP-8 | 13inch | 4000 | 48000 |   **Absolute** **Maximum** **Ratings** (TA=25℃ unless otherwise specified)   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Symbol** | **Parameter** | | **Max.** | **Units** | | VDSS | Drain-Source Voltage | | 150 | V | | VGSS | Gate-Source Voltage | | ±20 | V | | ID | Continuous Drain Current | TA= 25℃ | 8 | A | | TA= 100℃ | 5.2 | A | | IDM | Pulsed Drain Current note1 | | 32 | A | | EAS | Single Pulsed Avalanche Energy note2 | | 5.7 | J | | PD | Power Dissipation | TA= 25℃ | 6 | W | | RθJA | Thermal Resistance, Junction to Ambient | | 21 | ℃/W | | TJ , TSTG | Operating and Storage Temperature Range | | -55 to +150 | ℃ |   **JieJie** **Microelectronics** **CO.** **,** **Ltd** Version :1.0  **-** **1** **-** |

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| **JMGP500V15A**  μ  n  m  m  p  p  p  n  n  n  n  **Electrical** **Characteristics** (TJ=25℃ unless otherwise specified)   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | **Symbol** | **Parameter** | **Test** **Condition** | **Min.** | **Typ.** | **Max.** | **Units** | | **Off** **Characteristic** | | | | | | | | V(BR)DSS | Drain-Source Breakdown Voltage | VGS=0V, ID=250μA | 150 | - | - | V | | IDSS | Zero Gate Voltage Drain Current | VDS=150V, VGS=0V, | - | - | 1.0 | A | | IGSS | Gate to Body Leakage Current | VDS=0V, VGS=±20V | - | - | ±100 | A | | **On** **Characteristics** | | | | | | | | VGS(th) | Gate Threshold Voltage | VDS=VGS , ID=250μA | 2 | 3 | 4 | V | | RDS(on) | Static Drain-Source on-Resistance note3 | VGS=10V, ID=8A | - | 42 | 55 | Ω | | VGS=6V, ID=5A | - | 47 | 66 | Ω | | **Dynamic** **Characteristics** | | | | | | | | Ciss | Input Capacitance | VDS=75V, VGS=0V,  f=1MHz | - | 1233 | - | F | | Coss | Output Capacitance | - | 99 | - | F | | Crss | Reverse Transfer Capacitance | - | 5 | - | F | | Qg | Total Gate Charge | VDS=75V, ID=8A,  VGS=10V | - | 28 | - | C | | Qgs | Gate-Source Charge | - | 7.6 | - | C | | Qgd | Gate-Drain(“Miller”) Charge | - | 5.3 | - | C | | **Switching** **Characteristics** | | | | | | | | td(on) | Turn-on Delay Time | VDS=75V,ID=8A, RGEN=6Ω , VGS=10V | - | 14 | - | ns | | tr | Turn-on Rise Time | - | 4.2 | - | ns | | td(off) | Turn-off Delay Time | - | 24 | - | ns | | tf | Turn-off Fall Time | - | 4.9 | - | ns | | **Drain-Source** **Diode** **Characteristics** **and** **Maximum** **Ratings** | | | | | | | | IS | Maximum Continuous Drain to Source Diode Forward Current | | - | - | 8 | A | | ISM | Maximum Pulsed Drain to Source Diode Forward Current | | - | - | 32 | A | | VSD | Drain to Source Diode Forward Voltage | VGS=0V, IS=8A | - | - | 1.2 | V | | trr | Body Diode Reverse Recovery Time | IF=8A, dI/dt=100A/μs | - | 75 | - | ns | | Qrr | Body Diode Reverse Recovery Charge | - | 109 | - | C |   Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature  2. EAS condition: TJ=25℃, VDD=50V, VG=10V, RG=25Ω , L=0.5mH IAS=4.8A  3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%  **JieJie** **Microelectronics** **CO.** **,** **Ltd** Version :1.0  **-** **2** **-** |



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| C(pF)  105  104  Ciss  103  C  102  101 Crss  100 VDS(V)  oss  10  8  6  4  2  0   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  |  |  |  |  | |  |  |  |  |  | |  | 125℃ |  | TJ=25℃ |  | |  |  |  |  |  | |  |  |  |  |  | |  |  | VSD(V) |  |  |   1.0E+01 1.0E+00  1.0E-01  1.0E-02  1.0E-03  1.0E-04  1.0E-05  60  50  40  30  20   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  |  |  |  |  | |  |  | TJ= | 125℃ |  | |  |  |  |  | 25℃ | |  |  | VGS(V) |  |  |   40  30  20  10  0  40  30  20  10  0  **Figure** **2:** Typical Transfer Characteristics  0.0 0.2 0.4 0.6 0.8 1.0  **Figure** **6:** Capacitance Characteristics  0 1.5 3.0 4.5 6.0 7.5  **Figure** **4**: Body Diode Characteristics  0 10 20 30 40 50  0  IS(A)  ID (A)  **JMGP500V15A**  **Typical** **Performance** **Characteristics**  **Figure1:** Output Characteristics  ID (A)   |  |  |  |  |  | | --- | --- | --- | --- | --- | | 6  10V | V | 5V |  |  | |  |  |  |  |  | |  |  |  |  | VGS=4.5V | |  |  | VDS(V) |  |  |   0 2 4 6 8 1  **Figure** **3:**On-resistance vs. Drain Current  RDS(ON) (mΩ)   |  |  |  |  | | --- | --- | --- | --- | |  |  | VGS=6V |  | |  |  |  |  | |  |  | |  |  | |  |  | VGS=10V |  | |  | ID(A) | |  |   0 5 10 15 20  **Figure** **5:** Gate Charge Characteristics  VGS(V)   |  |  |  |  |  | | --- | --- | --- | --- | --- | | VDS=75V ID=8A |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  | Qg(nC) |  |  |   0 6 12 18 24 30  **JieJie** **Microelectronics** **CO.** **,** **Ltd** Version :1.0  **-** **3** **-** |

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| **JMGP500V15A** | | | |
| **Figure** **7:** Normalized Breakdown Voltage vs. Junction Temperature  VBR(DSS) | **Figure** **8:** Normalized on Resistance vs.  Junction Temperature  RDS(on) | | |
| 1.3  1.2  1.1  1.0  0.9  0  00 -50 0 50 100 150 200   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  | |  |  |  |  |  |  | |  |  |  |  |  |  | |  |  |  |  |  |  | |  |  |  |  |  |  | |  |  |  |  |  |  | |  |  |  |  |  |  | |  |  |  |  |  |  | |  |  |  |  |  |  | |  |  | Tj (℃) | |  |  |   -1 |
| 3.25  2.5  1.75  1.0  0.25 | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  | |  |  |  |  |  |  | |  |  |  |  |  |  | |  |  | Tj (℃) | |  |  | | |
| -100 -50 0 50 100 150 200  **Figure** **10:** Maximum Continuous Drain Current vs. Case Temperature | | |
| **Figure** **9:** Maximum Safe Operating Area  ID(A) |
| 10  8  6  4  2  0 | | ID(A) |
| |  |  | | --- | --- | | 102  101  100  10-1  10-2 | 10μs 100μs  1ms  10ms  Limited by RDS(on) 100ms  DC  TC=25℃  Single pulse  VDS (V) | |
| |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  | |  |  |  |  |  |  |  | |  |  |  |  |  |  |  | |  |  |  |  |  |  |  | |  |  |  | Tc (℃) |  |  |  | |
| 0 25 50 75 100 125 150 175 | | |
| 0.1 1 10 100 |
| **Figure.11:** Maximum Effective  Transient Thermal Impedance, Junction-to-Case | | | |
| 10-5 10-4 10-3 10-2 10-1 100 101  ZthJ-C(℃/W)  10-2  102  101  100  10-1  D=0.01  Single  10-6 | | | |
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| **JMGP500V15A**  **Test** **Circuit**    **Figure1:Gate** **Charge** **Test** **Circuit** **&** **Waveform**    **Figure** **2:** **Resistive** **Switching** **Test** **Circuit** **&** **Waveforms**    **Figure** **3:Unclamped** **Inductive** **Switching** **Test** **Circuit** **&** **Waveforms**  **JieJie** **Microelectronics** **CO.** **,** **Ltd** Version :1.0  **-** **5** **-** |

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| **JMGP500V15A**  **Package** **Mechanical** **Data-SOP-8**    Information furnished in this document is believed to be accurate and reliable. However, Jiangsu JieJie Microelectronics Co.,Ltd assumes no responsibility for the consequences of use without consideration for such information nor use beyond it.  Information mentioned in this document is subject to change without notice, apart from that when an agreement is signed, Jiangsu JieJie complies with the agreement.  Products and information provided in this document have no infringement of patents. Jiangsu JieJie assumes no responsibility for any infringement of other rights of third parties which may result from the use of such products and information.  This document supersedes and replaces all information previously supplied.  is a registered trademark of Jiangsu JieJie Microelectronics Co.,Ltd.  Copyright ©2020 Jiangsu JieJie Microelectronics Co.,Ltd. Printed All rights reserved.  **JieJie** **Microelectronics** **CO.** **,** **Ltd** Version :1.0  **-** **6** **-** |