深圳市旭茂微电子有限公司
Shenzhen Xumao Microelectronics Co., LTD

XM100N03D

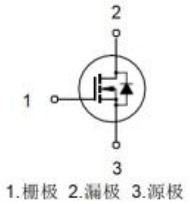
用途 APPLICATIONS

- 负载开关 — Load Switch
- PWM 应用 — PWM Application
- 电池管理系统 — BMS

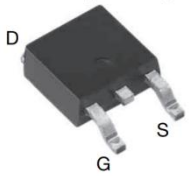
特点 FEATURES

- 高级沟槽技术 — Advanced Trench Technology
- 优异的导通电阻(RDS(ON))和低门极电荷 — Excellent RDS(ON) and Low Qg
- RoHS 产品 — RoHS product
- 产品全部经过雪崩测试 — 100% avalanche tested

封装 Package



DPAK (TO-252)



XM100N03D

主要参数
MAIN CHARACTERISTICS

Rdson-typ (@Vgs=10V)	VDSS	ID	Qg-typ	EAS
3.6mΩ	30V	100A	42nC	92mJ

订货信息
ORDER MESSAGE

订货型号 Order codes			包装方式 Package	包装数量 SPQ(Pcs)
印记 Marking	封装形式 Package form	无卤素 Halogen Free		
XM100N03D	TO-252-3L	YES	编带	2500

绝对最大额定值 ABSOLUTE RATINGS (Tc=25℃)

参数名称 Parameter name	符号 Symbol	型号 XM100N03D	单位 Value
最高漏极一源极直流电压 Drain-Source Voltage	VDSS	30	V
连续漏极电流 Drain Current-continuous	ID Tc=25℃	100	A
	ID Tc=100℃	65	
最大脉冲漏极电流（注1） Drain Current - pulse (note 1)	I_{DM}	400	A
最高栅源电压 Gate-Source Voltage	V_{GSS}	±20	V
单脉冲雪崩能量（注2） SinglePulsedAvalanche Energy (note 2)	E_{AS}	92	mJ
雪崩电流（注 1） Avalanche Current (note 1)	I_{AR}	100	A
耗散功率 Power Dissipation	P_D T_C=25℃	55	W
最高结温及存储温度 Operating and Storage Temperature Range	TJ, TSTG	-55～+150	℃
最高焊接温度 Maximum welding temperature	T_L	300	℃

热特性 THERMAL CHARACTERISTIC

参数名称 Parameter name	符号 Symbol	型号 XM100N03D	单位 Unit
结到管壳的热阻 Thermal Resistance, Junction to Case	Rth(j-c)	2.5	℃/W
结到环境的热阻 Thermal Resistance, Junction to Ambient	Rth(j-A)	33	℃/W

关态特性 Off -Characteristics

参数名称 Parameter name	符 号 Symbol	测试条件 Tests conditions	最小 Min	典型 Typ	最 大 Max	单位 Units
漏一源击穿电压 Drain-Source Voltage	BV_{DSS}	ID=250μA, VGS=0V	30	-	-	V
击穿电压温度特性 Breakdown. Voltage Temperature. Coefficient	$\Delta BV_{DSS}/\Delta T_J$	ID=250μA, referenced to 25℃	-	0.06	-	V/℃
零栅压下漏极漏电流 Zero Gate Voltage Drain Current	I_{DSS}	VDS=30V, TC=25℃	-	-	1	uA
		VDS=30V, TC=125℃	-	-	10	
反向栅极体漏电流 Gate-body leakage current, reverse	I_{GSSR}	VDS=0V, VGS =-20V			-100	nA

通态特性 On-Characteristics

阈值电压 Gate Threshold Voltage	$V_{GS(th)}$	VDS = VGS , ID=250μA	1.0	1.5	2.5	V
静态导通电阻 Static Drain-Source On-ResistanceStatic Drain-Source	$R_{DS(ON)}$	V_{GS} =4.5V , I_D=20A	-	4.3	5.7	mΩ
		V_{GS} =10V , I_D=35A	-	3.6	4.0	
正向跨导 Forward Transconductance	gfs	V_{DS} = 20V, I_D=10A (note 4)	-	7	-	S

动态特性 Dynamic Characteristics

输入电容 Input capacitance	Ciss	VDS=15V, VGS =0V, f=1.0MHZ	-	1985	2180	pF
输出电容 Output capacitance	Coss		-	260	-	pF
反向传输电容 Reverse transfer capacitance	Crss		-	215	-	pF

开关特性 Switching Characteristics

参数名称 Parameter name	符 号 Symbol	测试条件 Tests conditions	最小 Min	典型 Typ	最 大 Max	单位 Units
延迟时间 Turn-On delay time	td(on)	V_{DD}=15V, ID=30A, RG=3Ω (note 4, 5)	–	9	–	ns
上升时间 Turn-On rise time	tr		–	14	–	ns
延迟时间 Turn-Off delay time	td(off)		–	35	–	ns
下降时间 Turn-Off Fall time	tf		–	11	–	ns
栅极电荷总量 Total Gate Charge	Qg	VDS =20V , ID=30A VGS =10V (note 4, 5)	–	42	–	nC
栅一源电荷 Gate-Source charge	Qgs		–	9.5	–	nC
栅一漏电荷 Gate-Drain charge	Qgd		–	11	–	nC

漏一源二极管特性及最大额定值 Drain-Source Diode Characteristics and Maximum Ratings

正向最大连续电流 Maximum Continuous Drain -Source Diode Forward Current	I	I_S	–	–	100	A
正向最大脉冲电流 Maximum Pulsed Drain-Source Diode Forward Current	I	I_{SM}	–	–	300	A
正向压降 Drain-Source Diode Forward Voltage	V_{SD}	VGS=0V, IS=20A	–	–	1.2	V
反向恢复时间 Reverse recovery time	t_{rr}	VGS=0V, IS=20A dIF/dt=100A/μs (note 4)	–	12	–	ns
反向恢复电荷 Reverse recovery charge	Q_{rr}	VGS=0V, IS=20A dI_F/dt=100A/μs (note 4)	–	3.5	–	nC

注释：

1：脉冲宽度由最高结温限制

2：L=0.5mH, IAS=18A, VDD=15V, RG=3Ω，起始结温 TJ=25℃

3：ISD ≤80A, di/dt ≤300A/μs, VDD≤BVDSS, 起始结温 TJ=25℃

4：脉冲测试：脉冲宽度≤300μs, 占空比≤2%

5：基本与工作温度无关。

Notes:

1 : Pulse width limited by maximum junction temperature

2: L=0.5mH, IAS=18A, VDD=1V, RG=3Ω, Starting TJ=25℃

3 : ISD ≤80A, di/dt ≤300A/μs, VDD≤BVDSS, Starting TJ=25℃

4: Pulse Test: Pulse Width ≤300μs, Duty Cycle≤2%

5: Essentially independent of operating temperature.

特征曲线 ELECTRICAL CHARACTERISTICS (curves)

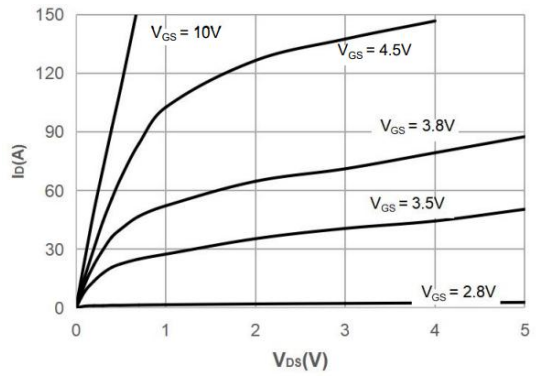


Figure 1: Output Characteristics

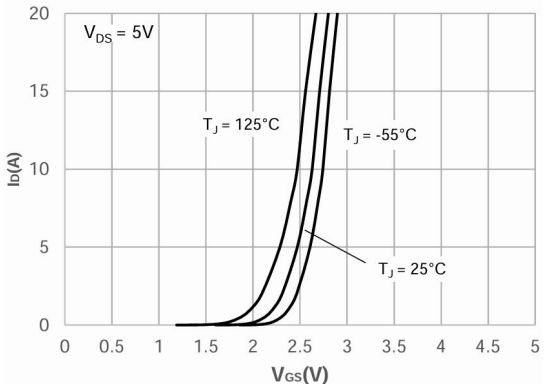


Figure 2: Typical Transfer Characteristics

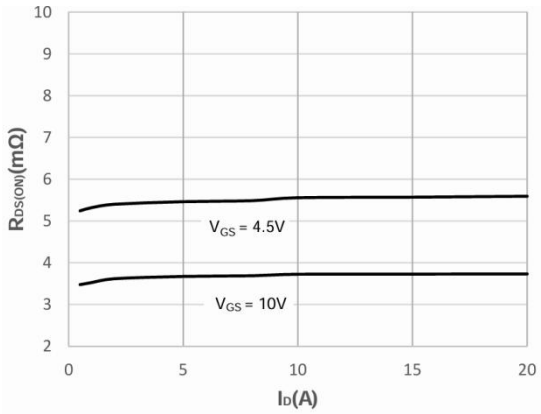


Figure 3: On-resistance vs. Drain Current

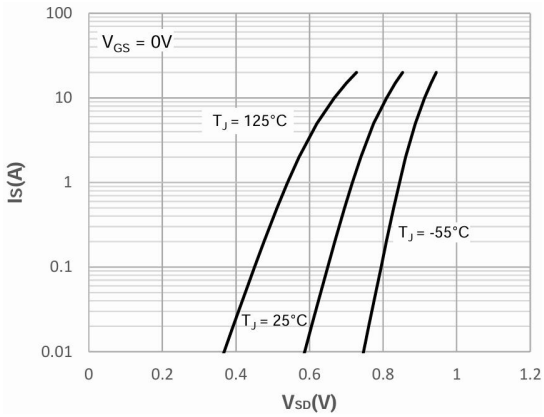


Figure 4: Body Diode Characteristics

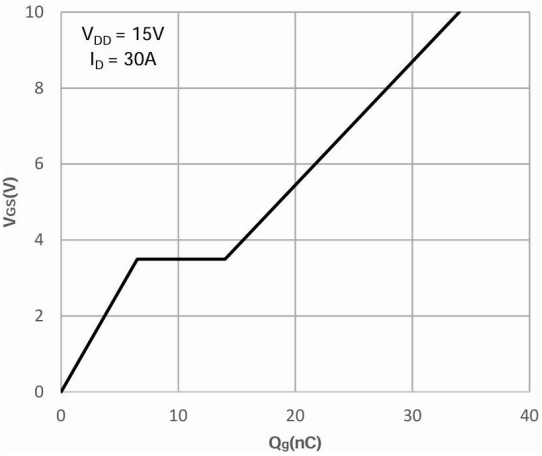


Figure 5: Gate Charge Characteristics

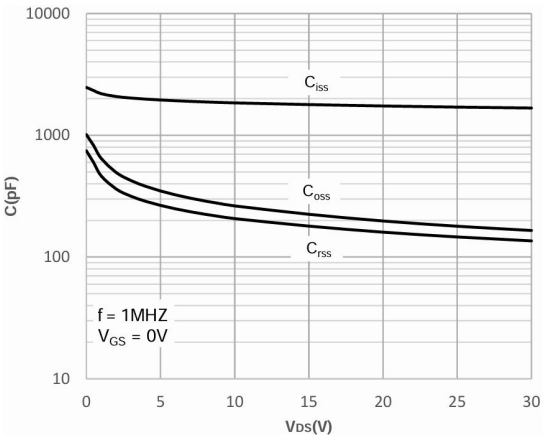


Figure 6: Capacitance Characteristics

特征曲线 ELECTRICAL CHARACTERISTICS (curves)

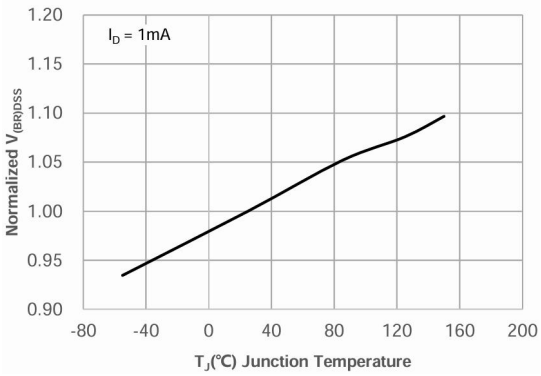


Figure 7: Normalized Breakdown voltage vs. Junction Temperature

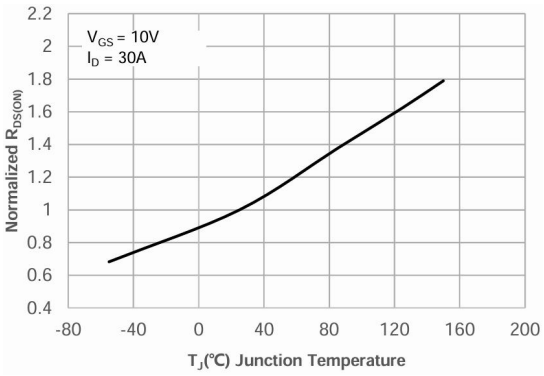


Figure 8: Normalized Breakdown voltage vs. Junction Temperature

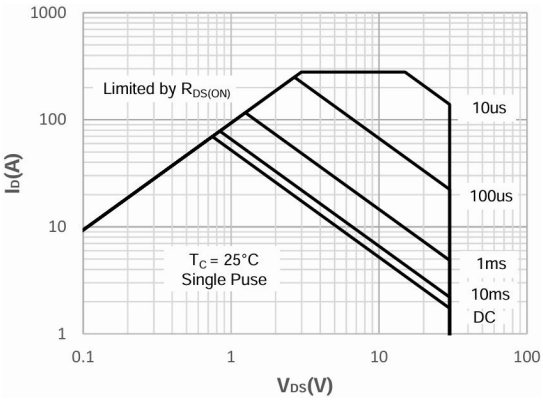


Figure 9: Maximum Safe Operating Area

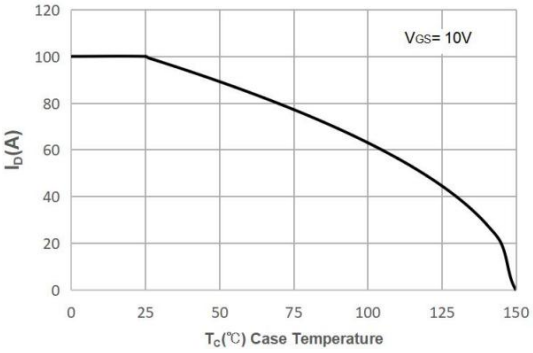


Figure 10: Maximum Continuous Drian Current vs. Case Temperature

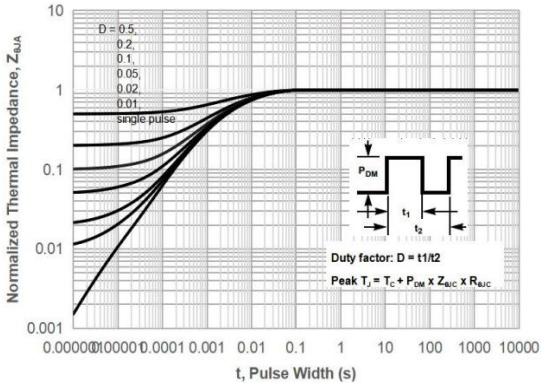


Figure 11: Normalized Maximum Transient Thermal Impedance

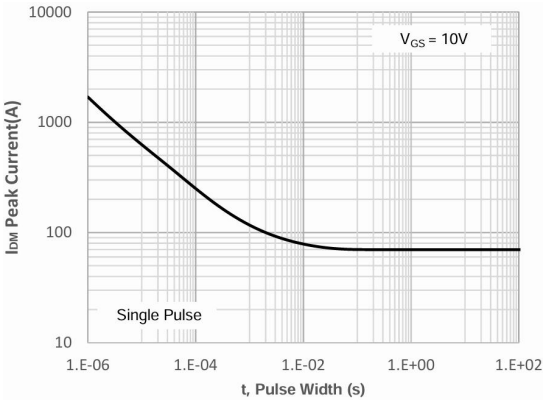
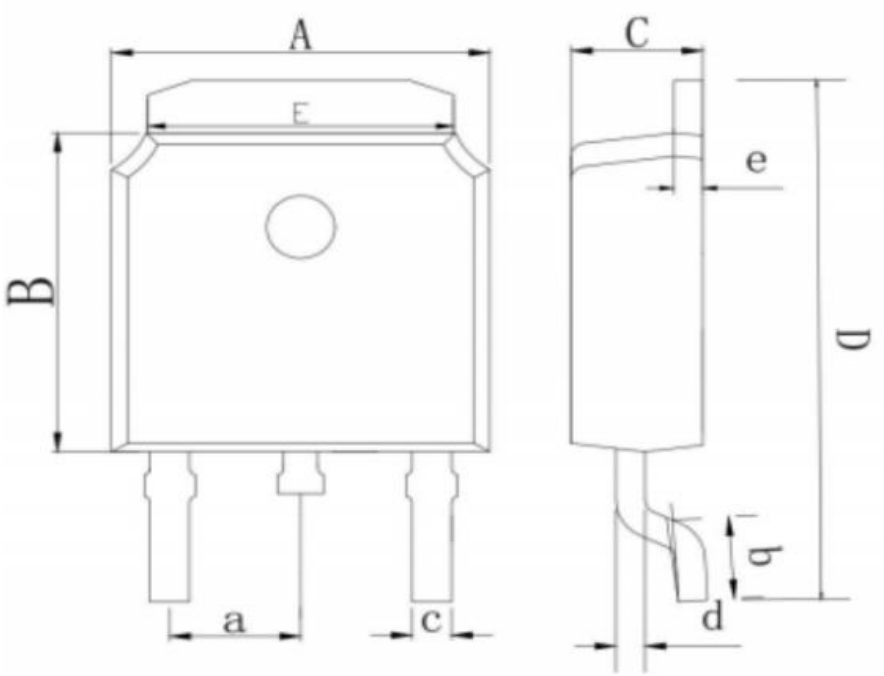


Figure 12: Peak Current Capacity

外形尺寸 PACKAGE MECHANICAL DATA

TO-252-3L 单位 Unit：mm



DIM	INCHES		MM		NOTE
	min	max	min	max	
A	0.25	0.27	6.3	6.9	
B	0.23	0.25	5.8	6.4	
C	0.08	0.10	2.1	2.5	
D	0.35	0.43	9.0	11.0	
E	0.21	0.22	5.3	5.5	
a	0.08	0.10	2.1	2.5	
b	0.06	0.06	1.4	1.6	
c	0.02	0.03	0.6	0.8	
d	0.02	0.02	0.4	0.6	
e	0.02	0.02	0.4	0.6	

版本更新 Version updates

版本号 Edition	时间 Date	更新记录

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1.深圳市旭茂微电子有限公司保留说明书的更改权，恕不另行通知。客户在下单前应获取我司最新版本资料，并验证相关信息是否最新和完整。

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