



XM150N03D

用途

- ❖ 负载开关
- ❖ PWM 应用
- ❖ 电池管理系统

APPLICATIONS

- ❖ Load Switch
- ❖ PWM Application
- ❖ BMS

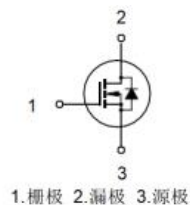
特点

- ❖ 高级沟槽技术
- ❖ 优异的导通电阻 (RDS(ON)) 和低门极电荷
- ❖ RoHS 产品
- ❖ 产品全部经过雪崩测试

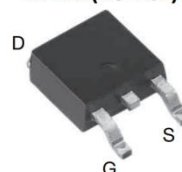
FEATURES

- ❖ Advanced Trench Technology
- ❖ Excellent RDS(ON) and Low Qg
- ❖ RoHS product
- ❖ 100% avalanche tested

封装 Package



DPAK (TO-252)



XM150N03D

主要参数

MAIN CHARACTERISTICS

Rdson-typ (@Vgs=10V)	Vdss	Id	Qg-typ	EAS
1.8mΩ	30V	150A	63nC	210mJ

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		
XM150N03D	T0-252-3L	YES	编带	2500



绝对最大额定值 ABSOLUTE RATINGS (T_c=25°C)

参数名称 Parameter name	符号 Symbol	型号 XM150N03D	单位 Value
最高漏极—源极直流电压 Drain-Source Voltage	V _{DSS}	30	V
连续漏极电流 Drain Current-continuous	I _D T _c =25°C	150	A
	I _D T _c =100°C	95	
最大脉冲漏极电流 (注1) Drain Current - pulse (note 1)	I _{DM}	450	A
最高栅源电压 Gate-Source Voltage	V _{GSS}	±20	V
单脉冲雪崩能量 (注2) Single Pulsed Avalanche Energy (note 2)	E _{AS}	210	mJ
雪崩电流 (注 1) Avalanche Current (note 1)	I _{AR}	150	A
耗散功率 Power Dissipation	P _D T _c =25°C	75	W
最高结温及存储温度 Operating and Storage Temperature Range	T _J , T _{STG}	-55~+150	°C
最高焊接温度 Maximum welding temperature	T _L	300	°C

热特性 THERMAL CHARACTERISTIC

参数名称 Parameter name	符号 Symbol	型号 XM150N03D	单位 Unit
结到管壳的热阻 Thermal Resistance, Junction to Case	R _{th(j-c)}	1.8	°C/W
结到环境的热阻 Thermal Resistance, Junction to Ambient	R _{th(j-A)}	45	°C/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—源击穿电压 Drain-Source Voltage	BVDSS	ID=250 μ A, VGS=0V	30	—	—	V
击穿电压温度特性 Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS} / \Delta T_J$	ID=250 μ A, referenced to 25°C	—	0.06	—	V/°C
零栅压下漏极漏电流 Zero Gate Voltage Drain Current	IDSS	VDS=30V, TC=25°C	—	—	1	uA
		VDS=30V, TC=125°C	—	—	10	
反向栅极体漏电流 Gate-body leakage current	IGSS	VDS=0V, VGS =±20V	—	—	±100	nA

通态特性 On-Characteristics

阈值电压 Gate Threshold Voltage	VGS(th)	VDS = VGS, ID=250 μ A	1.0	1.5	2.5	V
静态导通电阻 Static Drain-Source On-ResistanceStatic Drain-Source	RDS(ON)	VGS=4.5V, ID=20A	—	4.0	5.0	mΩ
		VGS=10V, ID=35A	—	1.8	2.0	
正向跨导 Forward Transconductance	gfs	VDS=20V, ID=10A (note 4)	—	20	—	S

动态特性 Dynamic Characteristics

输入电容 Input capacitance	Ciss	VDS=15V, VGS=0V, f=1.0MHZ	—	3850	—	pF
输出电容 Output capacitance	Coss		—	660	—	pF
反向传输电容 Reverse transfer capacitance	Crss		—	515	—	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	$t_{d(on)}$	$V_{DD}=15V, I_D=30A, R_G=3\Omega$ (note 4, 5)	—	9	—	ns
上升时间 Turn-On rise time	t_r		—	19	—	ns
延迟时间 Turn-Off delay time	$t_{d(off)}$		—	45	—	ns
下降时间 Turn-Off Fall time	t_f		—	16	—	ns
栅极电荷总量 Total Gate Charge	Q_g	$V_{DS}=20V, I_D=30A$ $V_{GS}=10V$ (note 4, 5)	—	63	—	nC
栅—源电荷 Gate-Source charge	Q_{gs}		—	13	—	nC
栅—漏电荷 Gate-Drain charge	Q_{gd}		—	22	—	nC

漏—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	—	—	150	A
正向最大脉冲电流 Maximum Pulsed Drain-Source Diode Forward Current	I	I_{SM}	—	—	450	A
正向压降 Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=30A$	—	—	1.2	V
反向恢复时间 Reverse recovery time	t_{rr}	$V_{GS}=0V, I_S=30A$ $dI_F/dt=100A/\mu s$ (note 4)	—	18	—	ns
反向恢复电荷 Reverse recovery charge	Q_{rr}	$V_{GS}=0V, I_S=30A$ $dI_F/dt=100A/\mu s$ (note 4)	—	5	—	nC

注释:

1: 脉冲宽度由最高结温限制

2: $L=0.5mH, I_{AS}=18A, V_{DD}=15V, R_G=3\Omega$, 起始结温 $T_J=25^\circ C$

3: $I_{SD} \leq 80A, di/dt \leq 300A/\mu s, V_{DD} \leq BVDSS$, 起始结温 $T_J=25^\circ C$

4: 脉冲测试: 脉冲宽度 $\leq 300\mu s$, 占空比 $\leq 2\%$

5: 基本与工作温度无关。

Notes:

1: Pulse width limited by maximum junction temperature

2: $L=0.5mH, I_{AS}=18A, V_{DD}=15V, R_G=3\Omega$, Starting $T_J=25^\circ C$

3: $I_{SD} \leq 80A, di/dt \leq 300A/\mu s, V_{DD} \leq BVDSS$, Starting $T_J=25^\circ C$

4: Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

5: Essentially independent of operating temperature.



特征曲线 ELECTRICAL CHARACTERISTICS (curves)

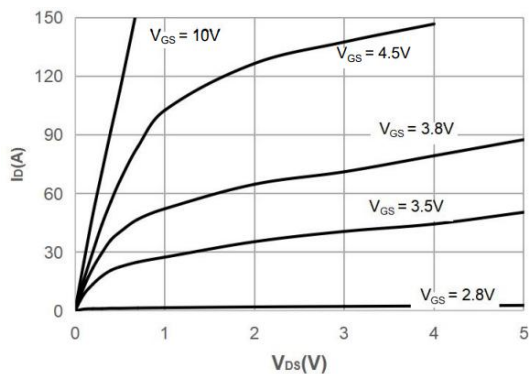


Figure 1: Output Characteristics

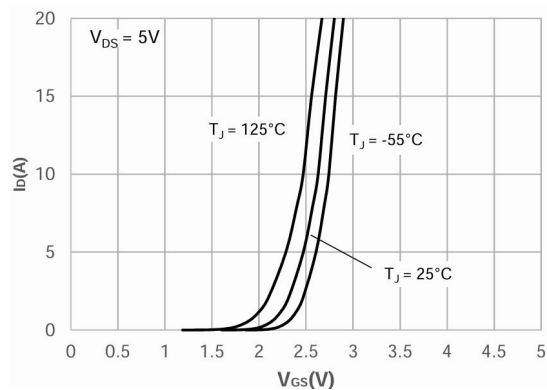


Figure 2: Typical Transfer Characteristics

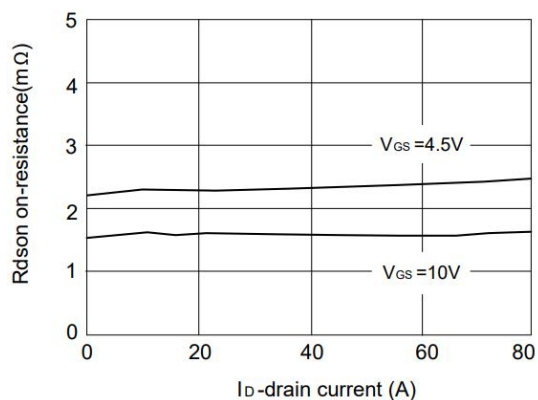


Figure 3: On-resistance vs. Drain Current

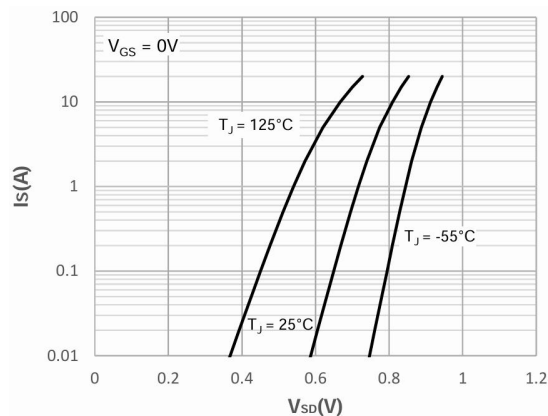


Figure 4: Body Diode Characteristics

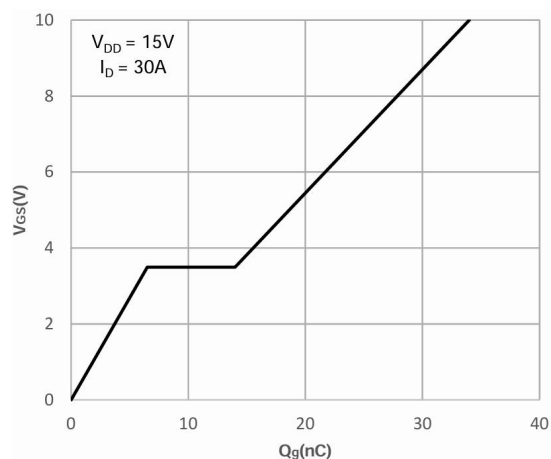


Figure 5: Gate Charge Characteristics

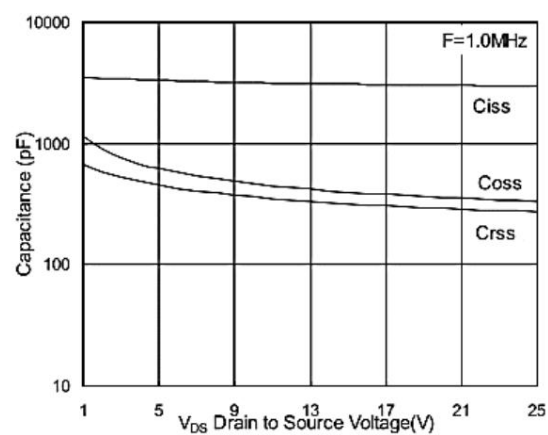


Figure 6: Capacitance Characteristics



特征曲线 ELECTRICAL CHARACTERISTICS (curves)

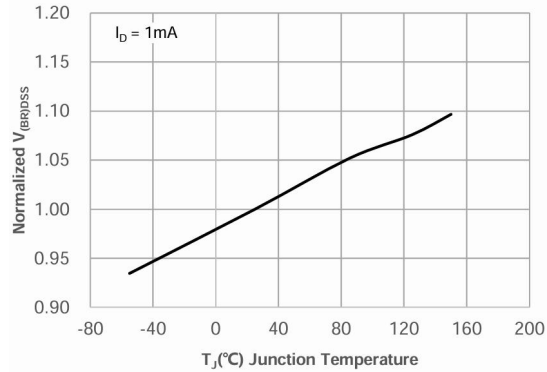


Figure 7: Normalized Breakdown voltage vs. Junction Temperature

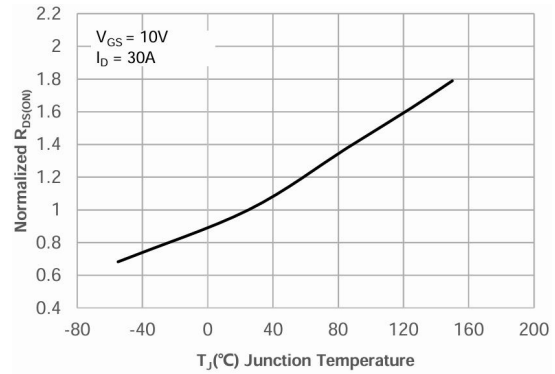


Figure 8: Normalized Breakdown voltage vs. Junction Temperature

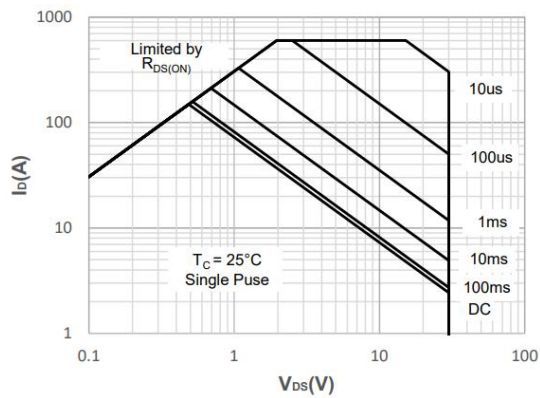


Figure 9: Maximum Safe Operating Area

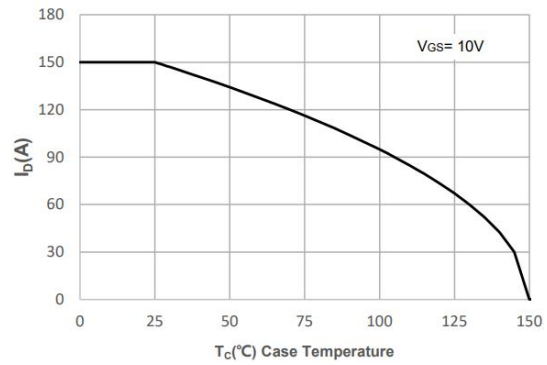


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

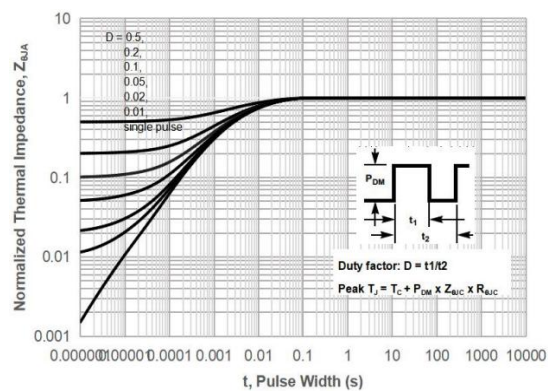


Figure 11: Normalized Maximum Transient Thermal Impedance

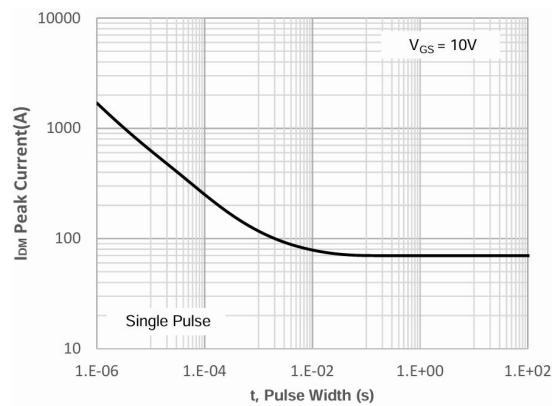


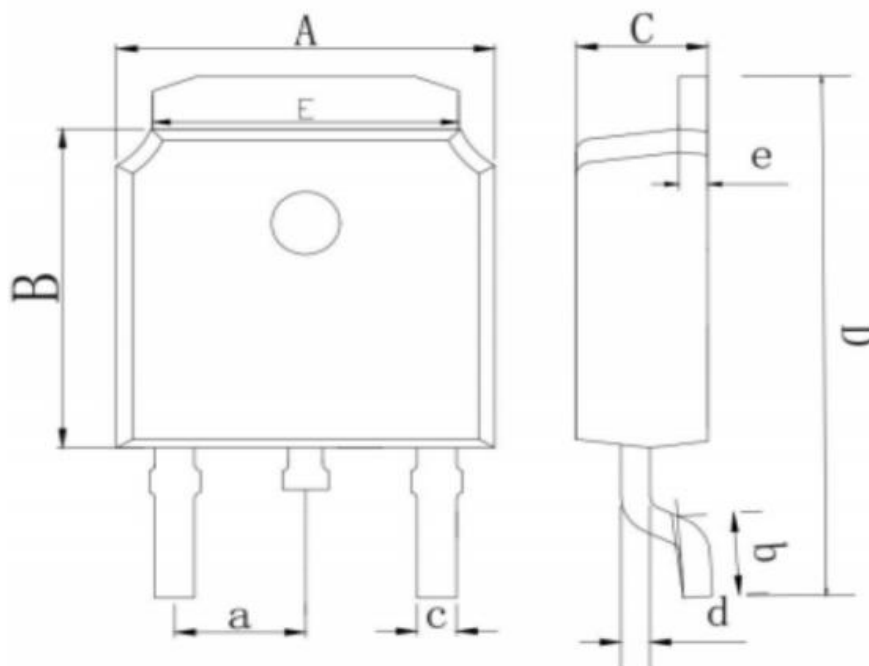
Figure 12: Peak Current Capacity



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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