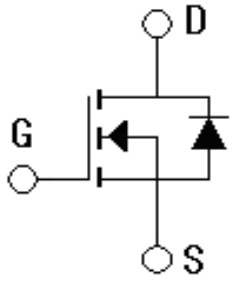
MG120R040

主要参数 MAIN CHARACTERISTICS

I_D	60A
V_{DSS}	1200V
Rdson-typ （@Vgs=18V）	45MΩ
Qg-typ	128nC

封装 **Package**



用途

- 光伏逆变器
- 开关模式电源
- 高压 DC/DC 转换器
- 电池充电器
- 电动驱动
- 脉冲电源应用

APPLICATIONS

- Solar Inverters
- Switch Mode Power Supplies
- High Voltage DC/DC Converters
- Battery Chargers
- Motor Drives
- Pulsed Power applications

产品特性

- 高阻断电压
- 低导通电阻
- 低电容高速开关
- 易于驱动
- 雪崩强度高
- RoHS 产品

FEATURES

- High Blocking Voltage
- Low On-Resistance
- High Speed Switching with Low Capacitances
- Easy to Parallel and Simple to Drive
- Avalanche Ruggedness
- RoHS product

优点

- 高的系统效率
- 降低冷却要求
- 提高功率密度
- 高的开关频率

BENEFITS

- Higher System Efficiency
- Reduced Cooling Requirements
- Increased Power Density
- Increased System Switching Frequency

订货信息 ORDER MESSAGE

订 货 型 号 Order codes				印 记 Marking	封 装 Package
有卤-条管	无卤-条管	有卤-编带	无卤-编带		
Halogen-Tube	**Halogen-Free-Tube**	**Halogen-reel**	**Halogen-Free-Reel**		
MG120R040-GE-B	MG120R040-GE-BR	N/A	N/A	MG120R040	TO-247

绝对最大额定值 ABSOLUTE RATINGS (Tc=25℃)

项 目 Parameter	符 号 Symbol	数 值 Value	单 位 Unit	测试条件 Tests conditions	注释 Note
最高漏极一源极直流电压 Drain-Source Voltage	V_{DSmax}	1200	V	V_{GS}=0V,I_D=100μA	
最高栅源电压 Gate-Source Voltage	V_{GSmax}	-8/+20	V	Absolute maximum values	
工作栅源电压 Gate-Source Voltage	V_{GSop}	-5/+18	V	Recommended operational values	
连续漏极电流 Drain Current -continuous	I_D	60	A	V_{GS}=20V, T_C=25˚C	
		40	A	V_{GS}=20V, T_C=100˚C	
最大脉冲漏极电流 Drain Current - pulse	I_{DM}	100	A	Pulse width limited by Tjmax	
耗散功率 Power Dissipation	P_D	312	W	T_C=25˚C, T_J=175˚C	Fig. 11
最高结温及存储温度 Operating and Storage Temperature Range	T_J，T_{STG}	-55～+175	℃		
引线最高焊接温度 Maximum Lead Temperature for Soldering Purposes	T_L	300	℃		

电特性 ELECTRICAL CHARACTERISTICS

项　目 Parameter	符　号 Symbol	测试条件 Tests conditions	最小 Min	典型 Typ	最大 Max	单位 Units	注释 Note
漏－源击穿电压 Drain-Source Voltage	BV_{DSS}	I_D=100μA, V_{GS}=0V	1200	-	-	V	
阈值电压 Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS},I_D=10mA, T_C=25℃	2	3.2	4	V	Fig. 6
		V_{DS} = V_{GS},I_D=10mA, T_C=150℃		2			
零栅压下漏极漏电流 Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=1200V,V_{GS}=0V, T_C=25℃	-	1	100	μA	
栅极体漏电流 Gate-body leakage current	I_{GSS}	V_{DS}=0V, V_{GS} =20V	-	-	200	nA	
导通电阻 Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS} =18V , I_D=33A, T_C=25℃	-	45	60	mΩ	Fig. 4
		V_{GS} =18V , I_D=33A, T_C=175℃		68		mΩ	
跨导 Transconductance	g_{fs}	V_{DS} = 20V, I_D=33A, TJ = 25 ˚C	-	20	-	S	Fig. 5
		V_{DS} = 20V, I_D=33A, TJ =175 ˚C		18.3		S	
输入电容 Input capacitance	C_{iss}	V_{DS}=1000V, V_{GS} =0V, f=1.0MHz ， V_{AC}=25 mV	-	3700	-	pF	Fig. 9
输出电容 Output capacitance	C_{oss}		-	120	-	pF	
反向传输电容 Reverse transfer capacitance	C_{rss}		-	22	-	pF	
导通开关能量 Turn-OnSwitching Energy	E_{ON}	V_{DS}=800V, V_{GS}=-5/18V,I_D= 33A, $R_{G(ext)}$ = 5Ω, L= 80μH	-	1.2	-	mJ	
关断开关能量 Turn-OffSwitching Energy	E_{OFF}		-	0.44	-		
延迟时间 Turn-On delay time	t_d(on)	V_{DD}=800V, V_{GS}=-5/18V I_D = 33A, $R_{G(ext)}$ = 5 Ω , Timing relative to V_{DS}	-	69	-	ns	
上升时间 Turn-On rise time	t_r		-	140	-	ns	
延迟时间 Turn-Off delay time	t_d(off)		-	50	-	ns	
下降时间 Turn-Off Fall time	t_f		-	42	-	ns	
栅电阻 Intrinsic gate resistance	R_G	f = 1 MHz , V_{AC}=25mV	-	2.1	-	Ω	
栅－源电荷 Gate-Source charge	Q_{gs}	V_{DD}=800V, V_{GS}=-5/18V I_D = 33A		40		nC	Fig. 10

栅一漏电荷 Gate-Drain charge	Q_{gd}			37			
栅极电荷总量 Total Gate Charge	Q_g			28			

漏一源二极管特性 Drain-Source Diode Characteristics

项　　目 Parameter	符　号 Symbol	测试条件 Tests conditions	典型 Typ	最大 Max	单位 Units	注释 Note
正向压降 Drain-Source Diode Forward Voltage	V_{SD}	V_{GS} =-5V, I_{SD} = 20 A, T_J = 25 °C	3.6		V	Fig. 7
		V_{GS} =-5V, I_{SD} = 20 A, T_J = 150 °C	3.3		V	Fig. 8
正向最大连续电流 Maximum Continuous Drain -Source Diode Forward Current	I_S	T_C=25℃	-	60	A	
反向恢复时间 Reverse recovery time	t_{rr}	V_{GS} =-5V, I_{SD} = 33 A, V_R=800V, dif/dt=1200A/μs	37		ns	
反向恢复电荷 Reverse recovery charge	Q_{rr}		165		nC	
峰值反向恢复电流 Peak Reverse Recovery Current	Irrm		16		A	

热特性 THERMAL CHARACTERISTIC

项　　目 Parameter	符　号 Symbol	典型 Typ	单位 Unit	注释 Note
结到管壳的热阻 Thermal Resistance, Junction to Case	Rth(j-c)	0.48	℃/W	Fig. 12
结到环境的热阻 Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	42	℃/W	

典型性能　Typical Performance

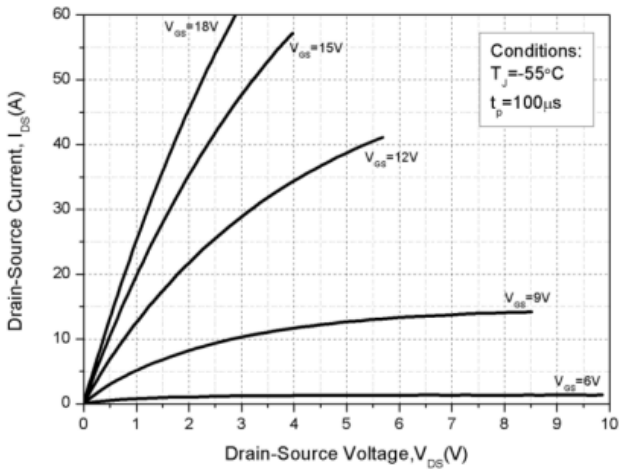


Figure 1. Output Characteristics T_J = -55 ℃

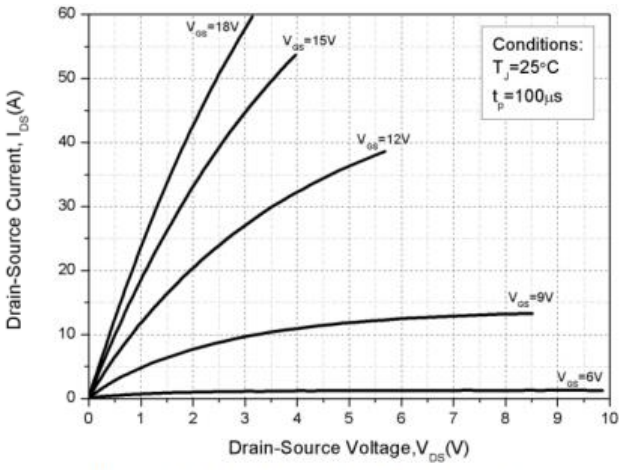


Figure 2. Output Characteristics T_J = 25 ℃

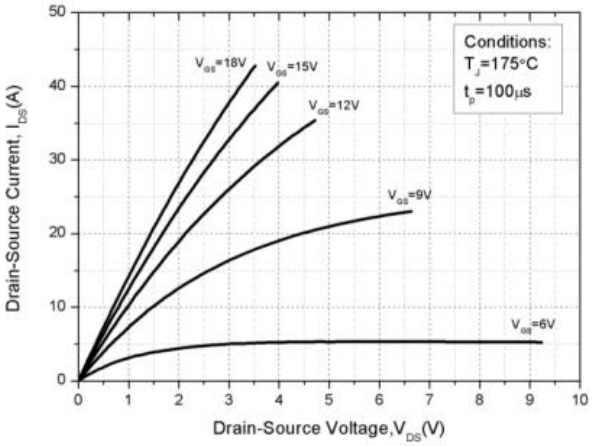


Figure 3. Output Characteristics T_J =150 ℃

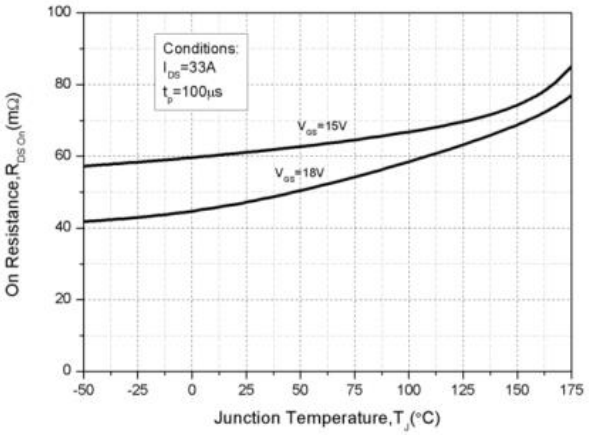


Figure 4. On-Resistance For Various Gate Voltage

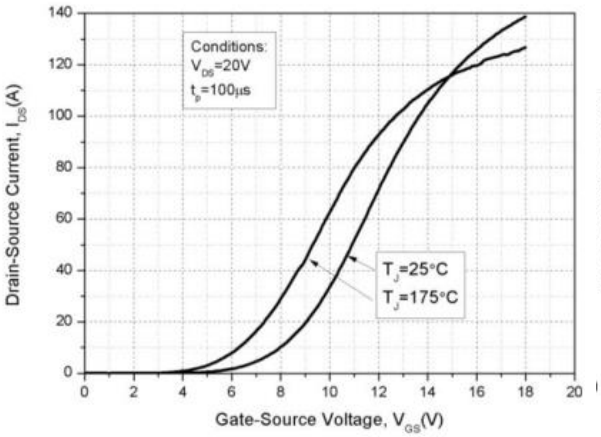


Figure 5. Transfer Characteristic

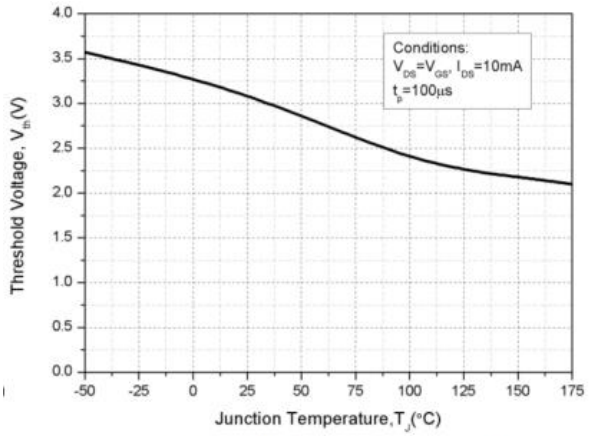


Figure 6. Threshold Voltage vs. Temperature For Various Junction Temperatures

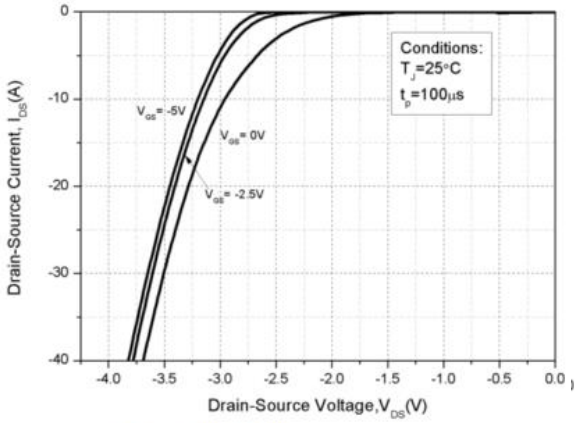


Figure 7.Body Diode Characteristics

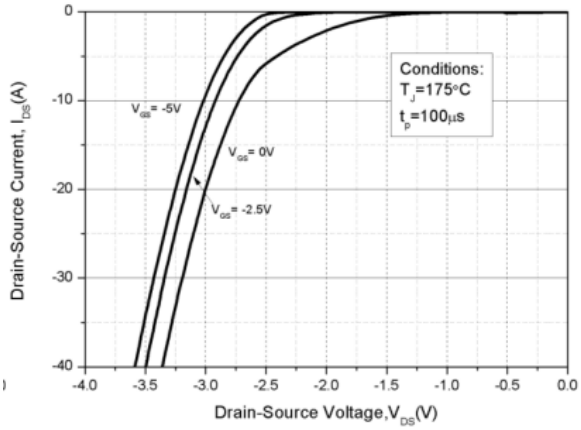


Figure 8.Body Diode Characteristics

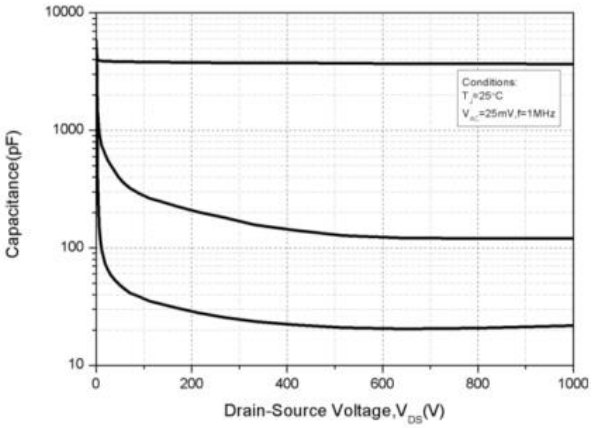


Figure 9.Capacitances vs. Drain-Source Voltage

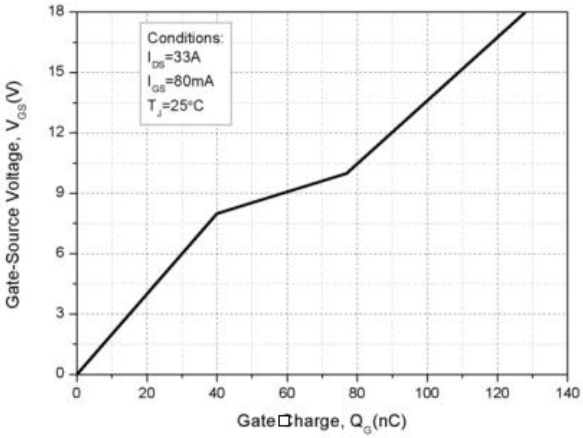


Figure 10. Gate Charge Characteristics

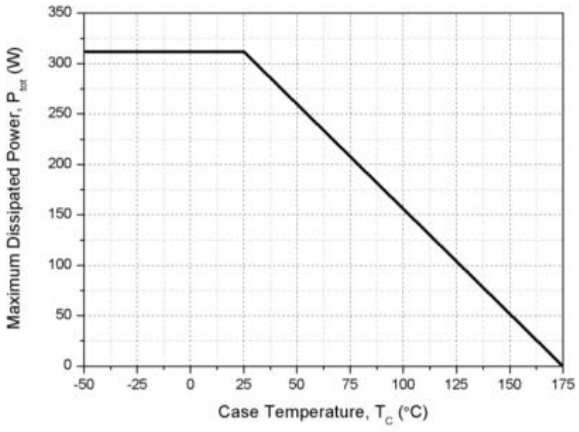


Figure 11.Power Dissipation Derating

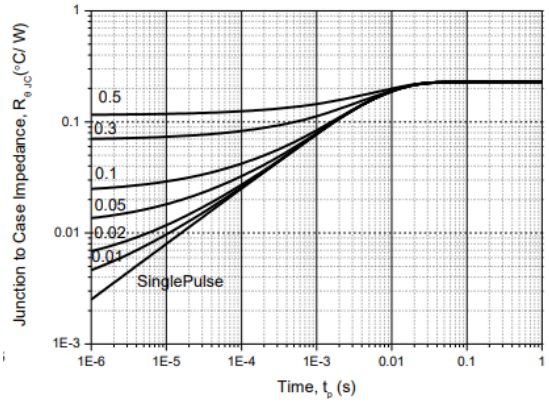
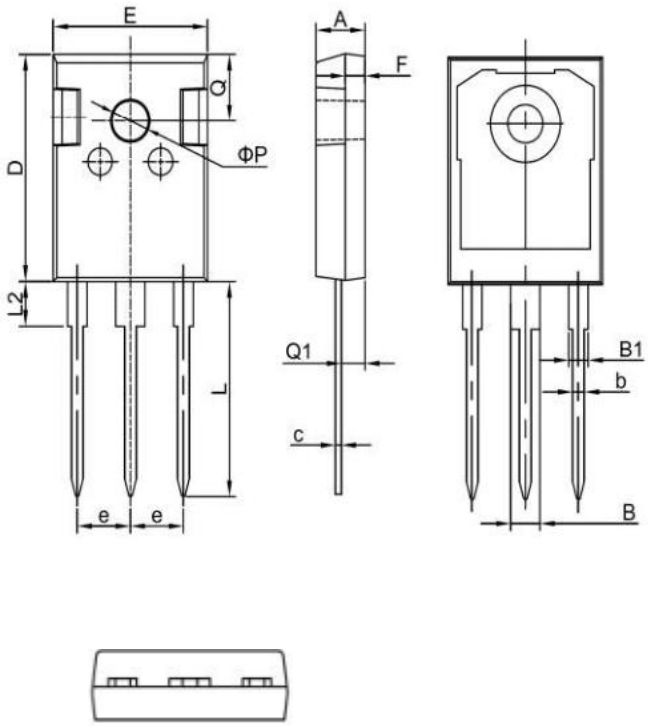


Figure 12. Transient Thermal Impendance

外形尺寸 PACKAGE MECHANICAL DATA

TO-247

单位 Unit：mm



符号 symbol	MIN	MAX
A	4.90	5.10
B	2.95	3.35
B1	1.95	2.35
b	1.15	1.35
c	0.50	0.70
D	20.90	21.10
E	15.70	15.90
e	5.34	5.54
F	1.90	2.10
L	19.40	20.40
L2	4.03	4.23
Q	6.00	6.40
Q1	2.30	2.50
P	3.50	3.70

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4.本说明书如有版本变更不另外告知

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3. Please do not exceed the absolute maximum ratings of the device when circuit designing.
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