



MG170R01K

主要参数 MAIN CHARACTERISTICS

I_D (25°C)	5A
V_{DSS}	1700V
$R_{DS(on)-typ}$ (@ $V_{GS}=20V$)	650mΩ
Q_g-typ	13nC

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

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

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

APPLICATIONS

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

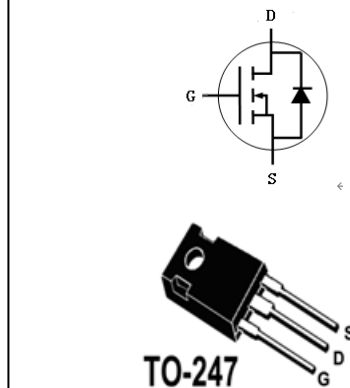
FEATURES

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

BENEFITS

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

封装 Package



订货信息 ORDER MESSAGE

订 货 型 号 Order codes	印 记 Marking	封 装 Package
无卤-条管 Halogen-Free-Tube		
MG170R01K-GE-BR	MG170R01K	TO-247

绝对最大额定值 ABSOLUTE RATINGS ($T_C=25^{\circ}\text{C}$)

项 目 Parameter	符 号 Symbol	数 值 Value	单 位 Unit	测试条件 Tests conditions
最高漏极-源极直流电压 Drain-Source Voltage	V_{DSmax}	1700	V	$V_{GS}=0V, I_D=100\mu A$
最高栅源电压 Gate-Source Voltage	V_{GSmax}	-10/+25	V	Absolute maximum values
工作栅源电压 Gate-Source Voltage	V_{GSop}	-5/+20	V	Recommended operational values
连续漏极电流 Drain Current -continuous	I_D	5	A	$V_{GS}=20V, T_C=25^{\circ}\text{C}$
		3.5	A	$V_{GS}=20V, T_C=100^{\circ}\text{C}$
最大脉冲漏极电流 Drain Current - pulse	I_{DM}	6	A	Pulse width limited by T_{jmax}
耗散功率 Power Dissipation	P_D	62	W	$T_C=25^{\circ}\text{C}, T_J=150^{\circ}\text{C}$
最高结温及存储温度 Operating and Storage Temperature Range	T_J, T_{STG}	-55~+150	$^{\circ}\text{C}$	
引线最高焊接温度 Maximum Lead Temperature for Soldering Purposes	T_L	300	$^{\circ}\text{C}$	



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
漏—源击穿电压 Drain-Source Voltage	BV_{DSS}	$I_D=100\mu A, V_{GS}=0V$	1700	-	-	V
阈值电压 Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D=5mA, T_C=25^{\circ}C$	2	2.65	4	V
		$V_{DS} = V_{GS}, I_D=5mA, T_C=150^{\circ}C$		1.75		
零栅压下漏极漏电流 Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=1700V, V_{GS}=0V, T_C=25^{\circ}C$	-	1	100	μA
栅极体漏电流 Gate-body leakage current	I_{GSS}	$V_{DS}=0V, V_{GS}=20V$	-	20	200	nA
导通电阻 Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=20V, I_D=2A, T_C=25^{\circ}C$	-	650	750	m Ω
		$V_{GS}=20V, I_D=2A, T_C=150^{\circ}C$		950		m Ω
跨导 Transconductance	g_{fs}	$V_{DS}=20V, I_D=2A, T_J=25^{\circ}C$	-	1.2	-	S
		$V_{DS}=20V, I_D=2A, T_J=150^{\circ}C$		1.0		S
输入电容 Input capacitance	C_{iss}	$V_{DS}=1000V,$ $V_{GS}=0V,$ $f=1.0MHz,$ $V_{AC}=25mV$	-	380	-	pF
输出电容 Output capacitance	C_{oss}		-	14	-	pF
反向传输电容 Reverse transfer capacitance	C_{rss}		-	3.2	-	pF
导通开关能量 Turn-On Switching Energy	E_{ON}	$V_{DS}=1200V, V_{GS}=-5/20V, I_D=2A,$ $R_{G(ext)}=2.5\Omega, L=1478\mu H$	-	37	-	μJ
关断开关能量 Turn-Off Switching Energy	E_{OFF}		-	15	-	
延迟时间 Turn-On delay time	$t_d(on)$	$V_{DD}=1200V, V_{GS}=-5/20V, I_D=2A,$ $R_{G(ext)}=2.5\Omega, R_L=600\Omega,$ Timing relative to V_{DS}	-	6	-	ns
上升时间 Turn-On rise time	t_r		-	9.5	-	ns
延迟时间 Turn-Off delay time	$t_d(off)$		-	14.2	-	ns
下降时间 Turn-Off Fall time	t_f		-	23	-	ns
栅电阻 Intrinsic gate resistance	R_G	$f=1MHz, V_{AC}=25mV$	-	20	-	Ω
栅—源电荷 Gate-Source charge	Q_{gs}	$V_{DD}=800V, V_{GS}=-5/20V, I_D=20A$		4.8		nC
栅—漏电荷 Gate-Drain charge	Q_{gd}			5.6		
栅极电荷总量 Total Gate Charge	Q_g			13		





漏—源二极管特性 Drain-Source Diode Characteristics

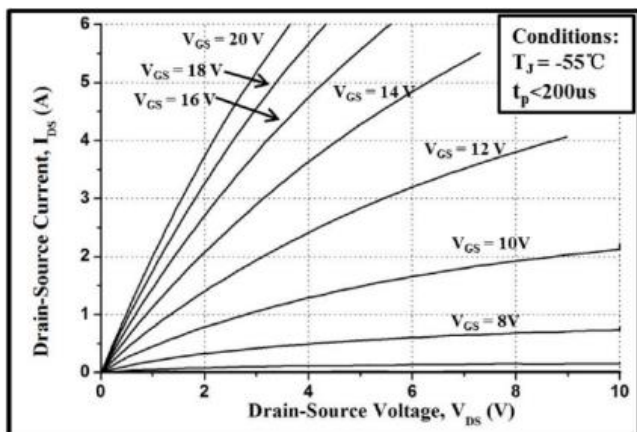
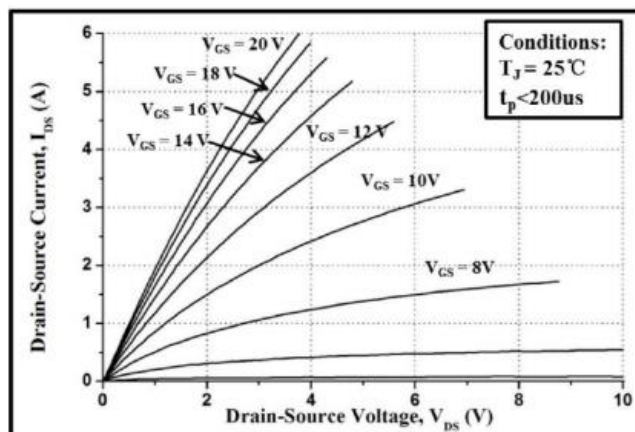
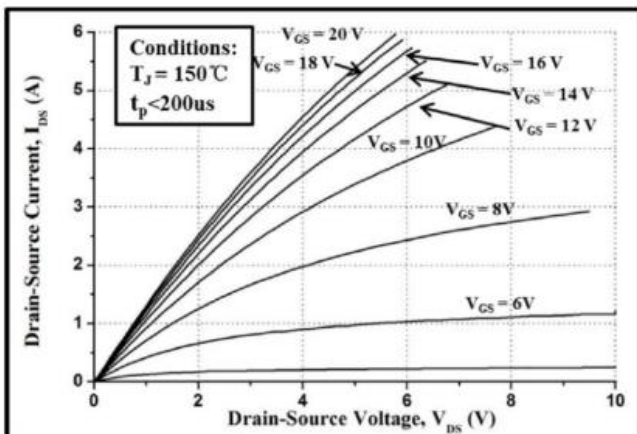
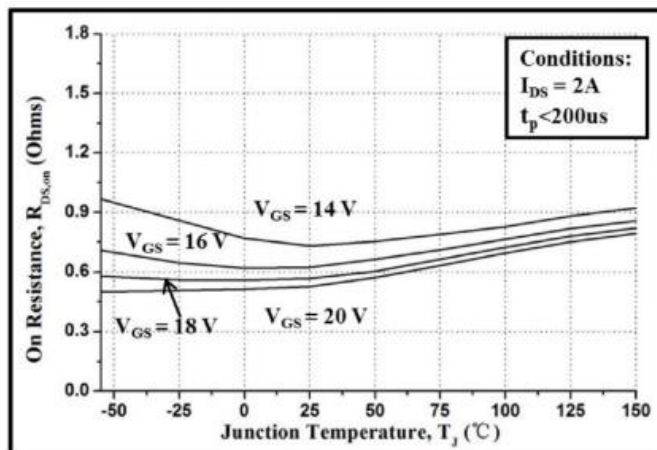
项 目 Parameter	符 号 Symbol	测试条件 Tests conditions	典型 Typ	最大 Max	单位 Units
正向压降 Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS} = -5V, I_{SD} = 1A, T_J = 25^\circ C$	3.5		V
		$V_{GS} = -5V, I_{SD} = 1A, T_J = 150^\circ C$	3.3		V
正向最大连续电流 Maximum Continuous Drain-Source Diode Forward Current	I_S	$T_C = 25^\circ C$	-	4	A
反向恢复时间 Reverse recovery time	t_{rr}	$V_{GS} = -5V, I_{SD} = 2A, V_R = 1200V, \text{dif/dt} = 1200A/\mu s$	22		ns
反向恢复电荷 Reverse recovery charge	Q_{rr}		31		nC
峰值反向恢复电流 Peak Reverse Recovery Current	I_{rrm}		3.5		A

热特性 THERMAL CHARACTERISTIC

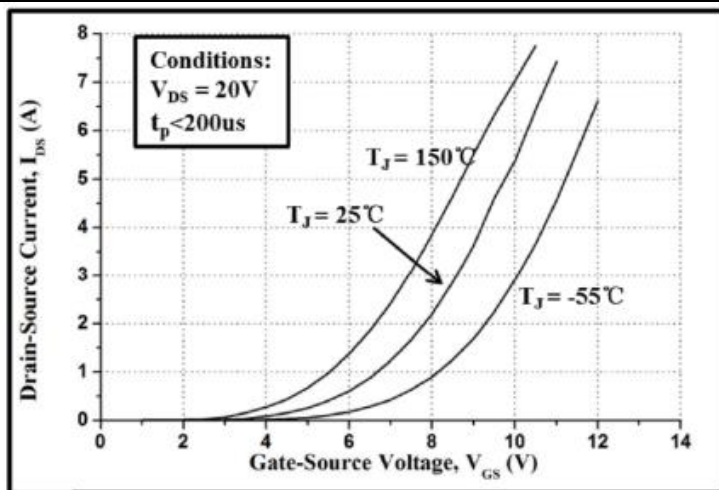
项 目 Parameter	符 号 Symbol	典型 Typ	单位 Unit
结到管壳的热阻 Thermal Resistance, Junction to Case	$R_{th(j-c)}$	1.8	$^\circ C/W$
结到环境的热阻 Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	40	$^\circ C/W$



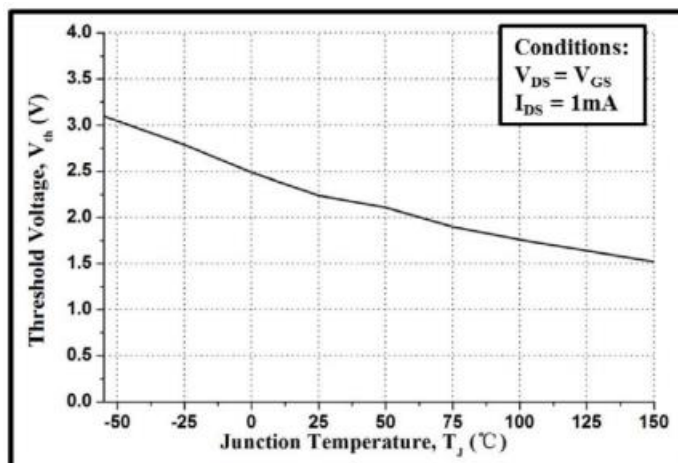
典型性能 Typical Performance

Output Characteristics $T_J = -55^\circ\text{C}$ Output Characteristics $T_J = 25^\circ\text{C}$ Output Characteristics $T_J = 150^\circ\text{C}$ 

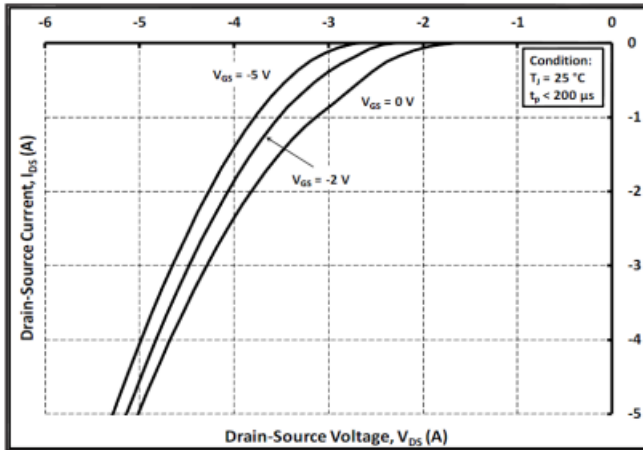
On-Resistance For Various Gate Voltage



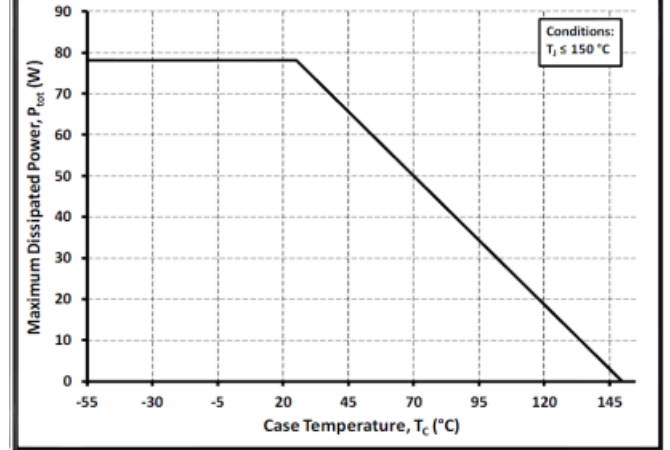
Transfer Characteristic



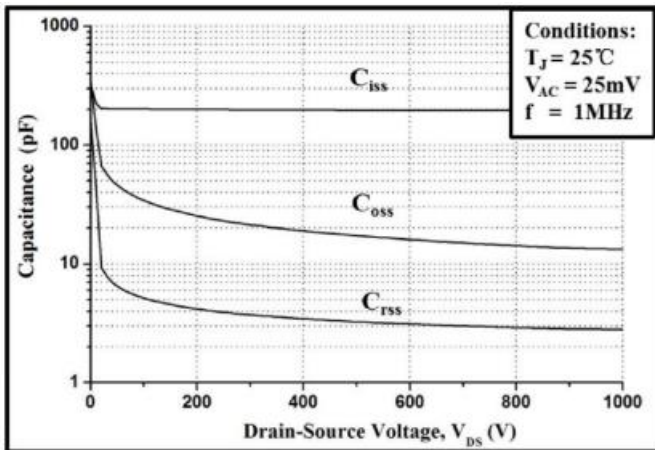
Threshold Voltage vs. Temperature or Various Junction Temperatures



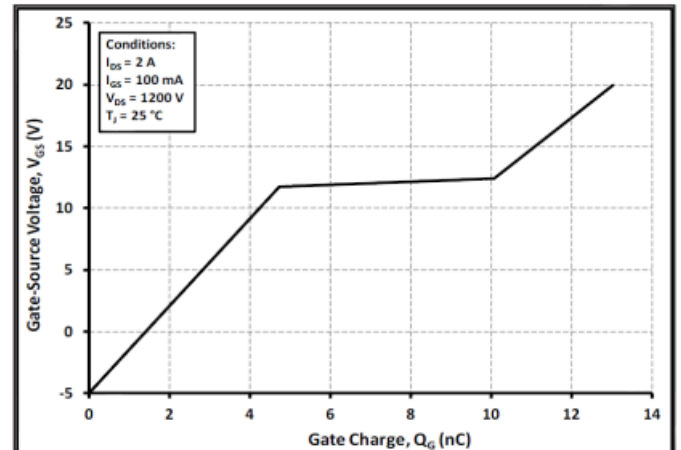
Body Diode Characteristics,



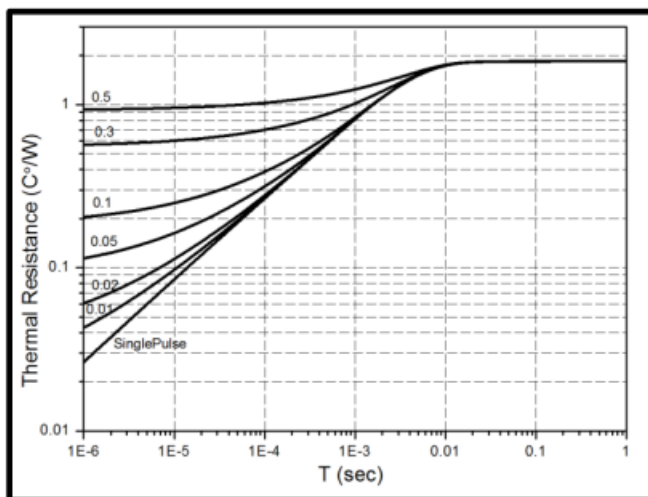
Power Dissipation Derating



Capacitances vs. Drain-Source Voltage



Gate Charge Characteristics



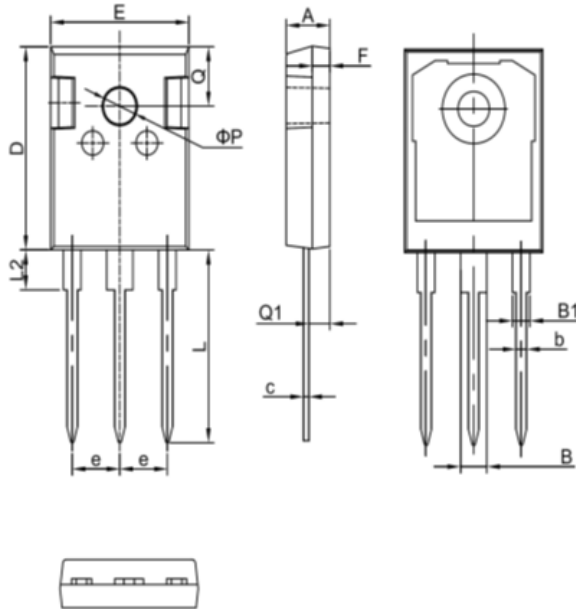
Transient Thermal Impedance



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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