

**YGMOS Technology Crop.**

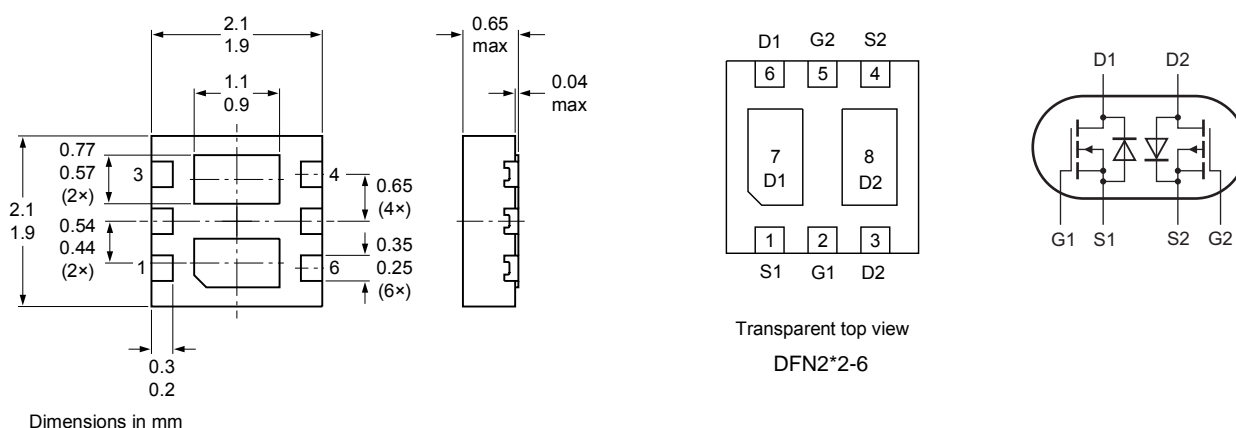
20V N and P-CHANNEL ENHANCEMENT MODE POWER MOSFET    20V N + P 沟道增强型 MOS 管

**N-Channel VDS= 20V**
**RDS(ON), Vgs@4.5V, Ids@3.0A = 40mΩ**
**RDS(ON), Vgs@2.5V, Ids@1.4A = 53mΩ**
**RDS(ON), Vgs@1.8V, Ids@1.4A = 70mΩ**
**P-Channel VDS= -20V**
**RDS(ON), Vgs@-4.5V, Ids@-3.4A = 55mΩ**
**RDS(ON), Vgs@-2.5V, Ids@-1.6A = 75mΩ**
**RDS(ON), Vgs@-1.8V, Ids@-1.5A = 110mΩ**
**Features    特性**

Advanced trench process technology    高级的加工技术

High Density Cell Design For Ultra Low On-Resistance    极低的导通电阻高密度的单元设计

Package Dimensions    封装尺寸及外形图


**Maximum Ratings and Thermal Characteristics (TA =25°C unless otherwise noted)    25°C 极限参数和热特性**

Parameter 极限参数	Symbol 符号	Ratings 等级		Unit 单位
		N-沟道	P-沟道	
Drain-Source Voltage 漏源电压	V <sub>DS</sub>	20	-20	V
Gate-Source Voltage 栅源电压	V <sub>GS</sub>	±12	±12	V
Continuous Drain Current 连续漏极电流	I <sub>D</sub>	5.3	-4.5	A
Pulsed Drain Current 脉冲漏极电流	I <sub>DM</sub>	12	-14	A
Total Power Dissipation 功耗	P <sub>D</sub> @TA=25°C	1.2	1.2	W
Total Power Dissipation 功耗	P <sub>D</sub> @TA=75°C	0.49	0.49	W
Operating Junction and Storage Temperature Range 使用及储存温度	T <sub>J</sub> , T <sub>stg</sub>	-55 ~ +150		°C
Junction-to-Ambient Thermal Resistance (PCB mounted) 结环热阻	R <sub>θJA</sub>	62.5		W/°C

 Device mounted on an FR4 PCB, single-sided copper, tin-plated and mounting pad for drain 6 cm<sup>2</sup>, t ≤ 5 s.

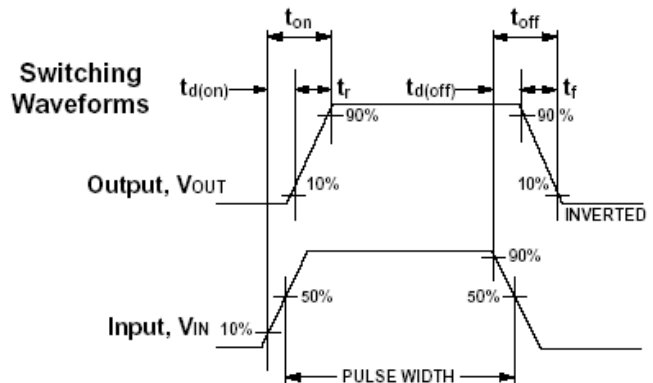
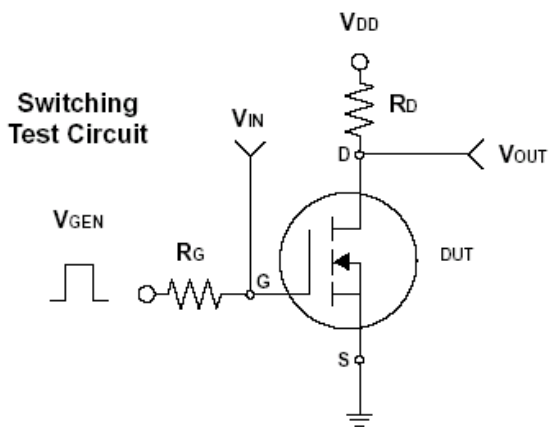
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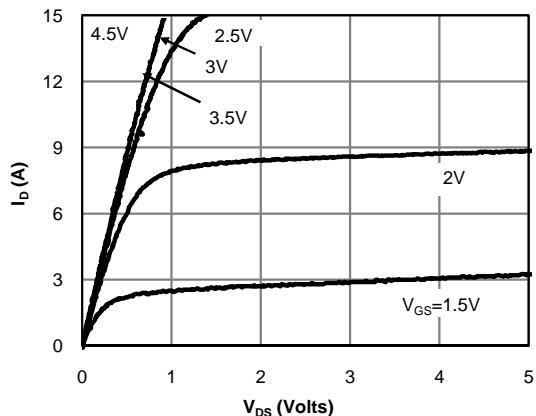
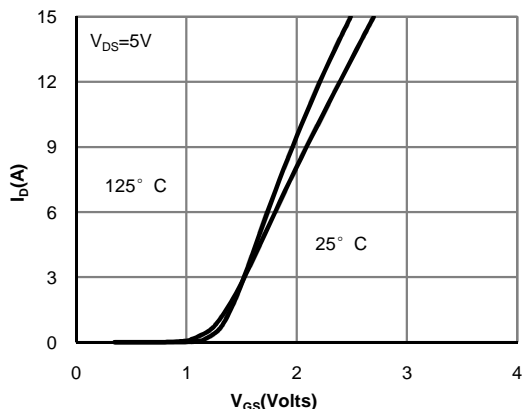
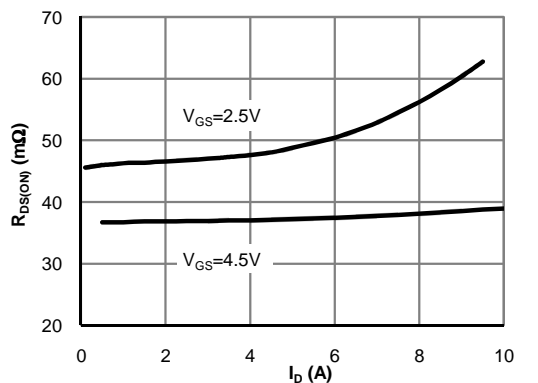
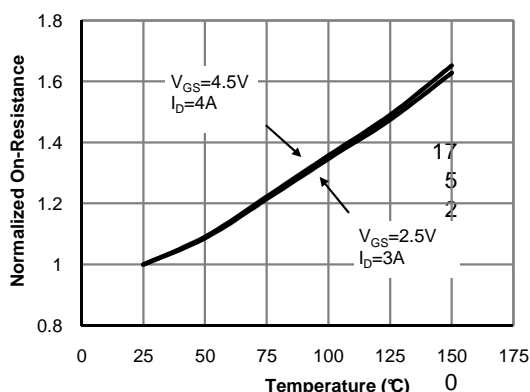
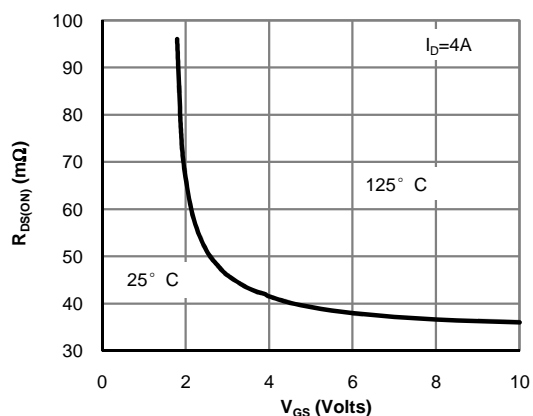
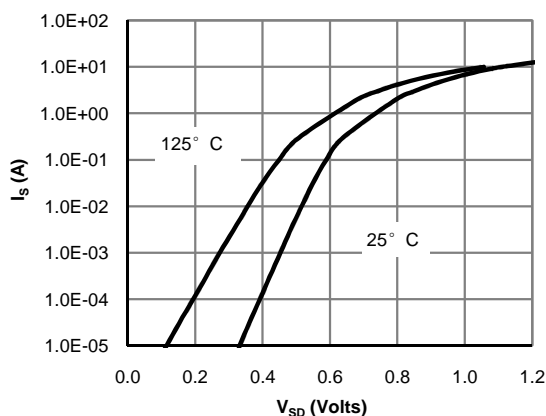
 N-Channel Electrical Characteristics (T<sub>j</sub> = 25°C unless otherwise specified)

N 沟道电气特性 25°C

Parameter 参数	符号	Test Condition 测试条件	最小值	典型值	最大值	单位
<b>Static 静态参数</b>						
Drain-Source Breakdown Voltage 漏源击穿电压	BV <sub>DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250uA	20	-	-	V
Drain-Source On-State Resistance 漏源导通电阻	R <sub>DS(on)</sub>	V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 3.0A		32.0	40.0	mΩ
Drain-Source On-State Resistance 漏源导通电阻	R <sub>DS(on)</sub>	V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 1.4A		40.0	53.0	
Drain-Source On-State Resistance 漏源导通电阻	R <sub>DS(on)</sub>	V <sub>GS</sub> = 1.8V, I <sub>D</sub> = 1.4A		60.0	75.0	
Gate Threshold Voltage 开启电压	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250uA	0.4		1.0	V
Zero Gate Voltage Drain Current 零栅压漏极电流	I <sub>DSS</sub>	V <sub>DS</sub> = 20V, V <sub>GS</sub> = 0V			1	uA
Gate Body Leakage 漏极短路时截止栅电流	I <sub>GSS</sub>	V <sub>GS</sub> = ±12V, V <sub>DS</sub> = 0V			±100	nA
Forward Transconductance 正向跨导	g <sub>fs</sub>	V <sub>DS</sub> = 10V, I <sub>D</sub> = 3.0A		5		S
<b>Dynamic 动态参数</b>						
Total Gate Charge 栅极总电荷	Q <sub>g</sub>	V <sub>DS</sub> = 10V, I <sub>D</sub> = 3.0A V <sub>GS</sub> = 4.5V		5	7	nC
Gate-Source Charge 栅-源极电荷	Q <sub>gs</sub>			1		
Gate-Drain Charge 栅-漏极电荷	Q <sub>gd</sub>			1.5		
Turn-On Delay Time 导通延迟时间	t <sub>d(on)</sub>	V <sub>DD</sub> = 10V, R <sub>G</sub> = 6Ω I <sub>D</sub> = 1A, V <sub>GS</sub> = 4.5V		8		ns
Turn-On Rise Time 导通上升时间	t <sub>r</sub>			15		
Turn-Off Delay Time 关断延迟时间	t <sub>d(off)</sub>			40		
Turn-Off Fall Time 关断下降时间	t <sub>f</sub>			16		
Input Capacitance 输入电容	C <sub>iss</sub>	V <sub>DS</sub> = 8V, V <sub>GS</sub> = 0V f = 1.0 MHz		660		pF
Output Capacitance 输出电容	C <sub>oss</sub>			87		
Reverse Transfer Capacitance 反向传输电容	C <sub>rss</sub>			74		
<b>Source-Drain Diode 源漏二极管参数</b>						
Max. Diode Forward Current 最大正向电流	I <sub>S</sub>				1.2	A
Diode Forward Voltage 正向电压	V <sub>SD</sub>	I <sub>S</sub> = 1.7A, V <sub>GS</sub> = 0V			1.2	V

Note: Pulse test: pulse width ≤ 300us, duty cycle ≤ 2% 注意: 脉冲测试: 脉冲宽度 ≤ 300us 死区 ≤ 2%



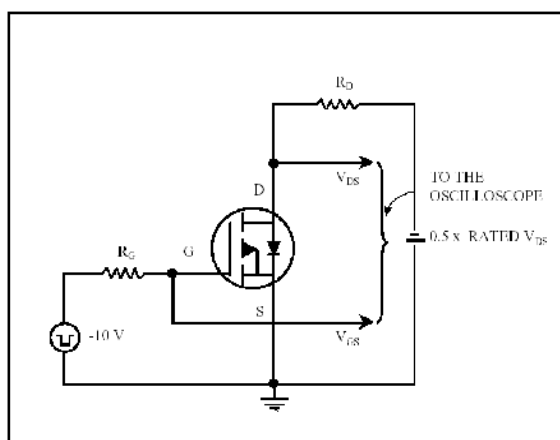
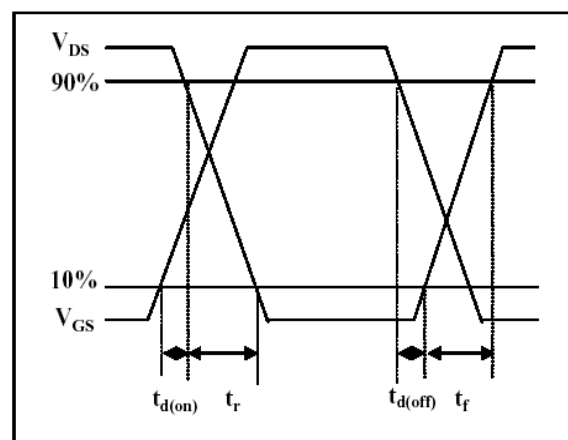
**YGMOS Technology Crop.**
**N-Channel Characteristics Curve N 沟道电气性能特征曲线**

**Figure 1: On-Region Characteristics (Note D)**

**Figure 2: Transfer Characteristics (Note D)**

**Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note D)**

**Figure 4: On-Resistance vs. Junction Temperature (Note D)**

**Figure 5: On-Resistance vs. Gate-Source Voltage (Note D)**

**Figure 6: Body-Diode Characteristics (Note D)**

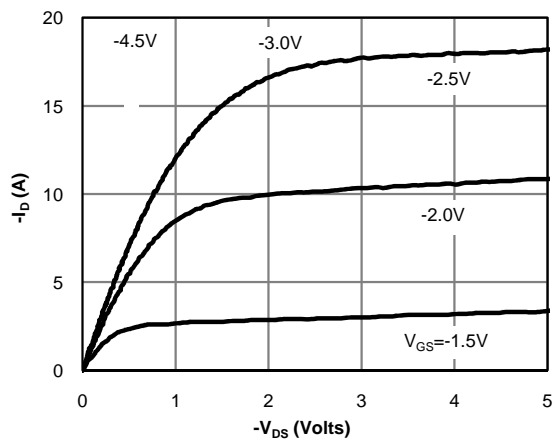
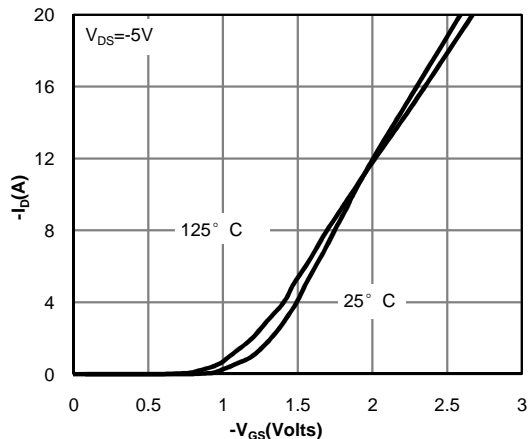
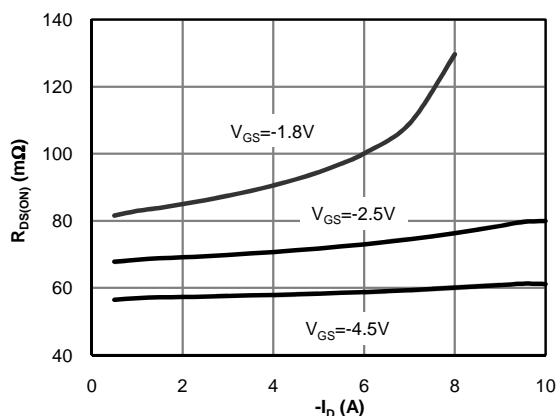
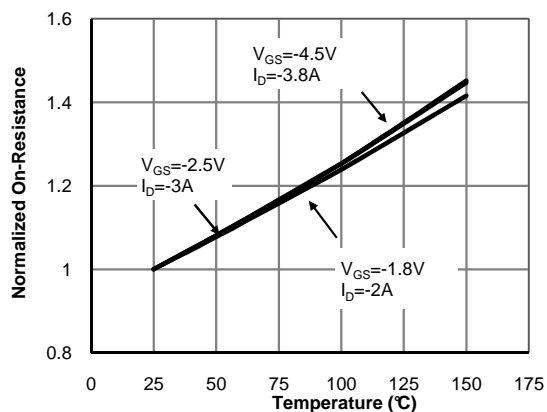
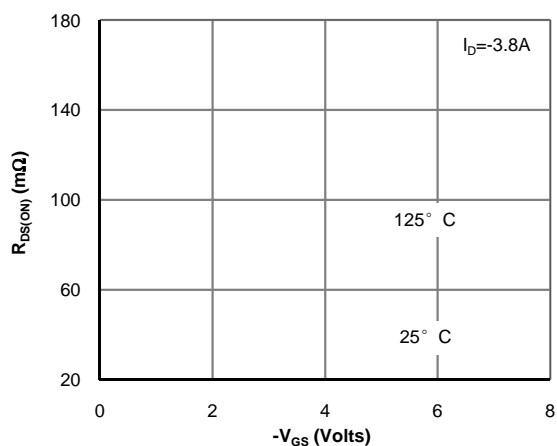
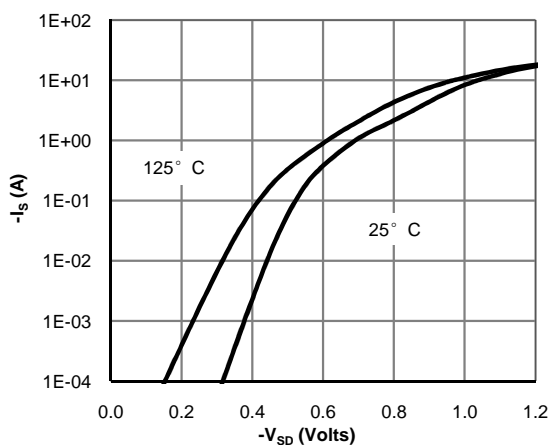
**YGMOS Technology Crop.**

P-Channel Electrical Characteristics (Tj = 25°C unless otherwise specified) P 沟道电气特性 25°C

Parameter 参数	符号	Test Condition 测试条件	最小值	典型值	最大值	单位
<b>Static 静态参数</b>						
Drain-Source Breakdown Voltage 漏源击穿电压	$BV_{DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	-20	-	-	V
Drain-Source On-State Resistance 漏源导通电阻	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -3.4A$		55.0	70.0	mΩ
Drain-Source On-State Resistance 漏源导通电阻	$R_{DS(on)}$	$V_{GS} = -2.5V, I_D = -1.6A$		78.0	90.0	
Drain-Source On-State Resistance 漏源导通电阻	$R_{DS(on)}$	$V_{GS} = -1.8V, I_D = -1.5A$		110	135	mΩ
Gate Threshold Voltage 开启电压	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	-0.48	-0.65	-0.90	V
Zero Gate Voltage Drain Current 零栅压漏极电流	$I_{DSS}$	$V_{DS} = -20V, V_{GS} = 0V$			-1	μA
Gate Body Leakage 漏极短路时截止栅电流	$I_{GSS}$	$V_{GS} = \pm 12V, V_{DS} = 0V$			±100	nA
Forward Transconductance 正向跨导	$g_{fs}$	$V_{DS} = -10V, I_D = 3.4A$		15		S
<b>Dynamic 动态参数</b>						
Total Gate Charge 栅极总电荷	$Q_g$	$V_{DS} = -10V, I_D = 3.4A$ $V_{GS} = -5.0V$		16.5		nC
Gate-Source Charge 栅-源极电荷	$Q_{gs}$			1		
Gate-Drain Charge 栅-漏极电荷	$Q_{gd}$			1.65		
Turn-On Delay Time 导通延迟时间	$t_{d(on)}$	$V_{DS} = -10V, R_G = 6\Omega$ $I_D = 1A, V_{GS} = 4.5V$		8		ns
Turn-On Rise Time 导通上升时间	$t_r$			15		
Turn-Off Delay Time 关断延迟时间	$t_{d(off)}$			40		
Turn-Off Fall Time 关断下降时间	$t_f$			16		
Input Capacitance 输入电容	$C_{iss}$	$V_{DS} = -10V, V_{GS} = 0V$ $f = 1.0\text{ MHz}$		785		pF
Output Capacitance 输出电容	$C_{oss}$			80		
Reverse Transfer Capacitance 反向传输电容	$C_{rss}$			64		
<b>Source-Drain Diode 源漏二极管参数</b>						
Max. Diode Forward Current 最大正向电流	$I_S$				-1.2	A
Diode Forward Voltage 正向电压	$V_{SD}$	$I_S = -1.2A, V_{GS} = 0V$			-1.2	V

Note: Pulse test: pulse width ≤ 300μs, duty cycle ≤ 2% 注意: 脉冲测试: 脉冲宽度 ≤ 300μs 死区 ≤ 2%


**Switching Time Circuit**

**Switching Time Waveform**

**YGMOS Technology Corp.**
**P-Channel Characteristics Curve P 沟道电气性能特征曲线**

**Fig 1: On-Region Characteristics**

**Figure 2: Transfer Characteristics**

**Figure 3: On-Resistance vs. Drain Current and Gate Voltage**

**Figure 4: On-Resistance vs. Junction Temperature**

**Figure 5: On-Resistance vs. Gate-Source Voltage**

**Figure 6: Body-Diode Characteristics**