

General Description

The MY130N10P is the high cell density trench N-ch MOSFETs, which provide excellent R_{DS(ON)} and gate charge for most of the synchronous buck converter applications.

The MY130N10P meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

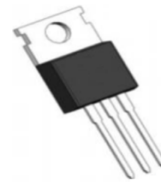


Features

V _{DSS}	100	V
I _D	147	A
R _{DS(ON)} (atV _{GS} =10V)	4.7	mΩ
R _{DS(ON)} (atV _{GS} =8V)	5.1	mΩ

Application

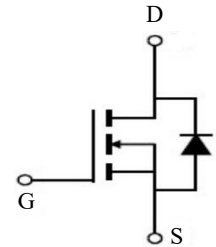
- Switch Mode Power Supplies
- Power Management in Inverter System
- Battery Management System



TO-220



TO-263



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY130N10P	TO-220	130N10P	1000

ABSOLUTE RATINGS (T_c=25 °C)

Parameter	Symbol	Value	Unit
		MY130N10	
Drain-Source Voltage	V _{DS}	100	V
Drain Current -continuous *	I _D (T _c =25°C) (Silicon Limited)	147	A
	I _D (T _c =25°C) (Package Limited)	120	A
	I _D (T _c =100°C) (Silicon Limited)	93	A
Drain Current – puls (note1)	I _{DM}	588	A
Gate-Source Voltage	V _{GS}	±20	V
Single Pulsed Avalanche Energy (note 2)	E _{AS}	288	mJ
Avalanche Current (note 1)	I _{AR}	24	A
Repetitive Avalanche Current (note 1)	E _{AR}	35	mJ
Peak Diode Recovery <u>dv/dt</u> (note 3)	<u>dv/dt</u>	5.0	V/ns
Power Dissipation	P _D (T _c =25°C)	173.6	W
	-Derate above 25°C	1.39	W/°C
Operating and Storage Temperature Range	T _J , T _{STG}	-55+150	°C
Maximum Lead Temperature for Soldering Purposes	T _L	260	°C

Electrical Characteristics at $T_j=25^\circ\text{C}$ unless otherwise specified

项目 Parameter	符号 Symbol	测试条件 Tests conditions	最小 Min	典型 Typ	最大 Max	单位 Units
关态特性 Off-Characteristics						
漏-源击穿电压 Drain-Source Voltage	BV_{DSS}	$I_D=250\mu\text{A}, V_{GS}=0\text{V}$	100	-	-	V
击穿电压温度特性 Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	$I_D=250\mu\text{A}$, referenced to 25°C	-	0.1	-	V/ $^\circ\text{C}$
零栅压下漏极漏电流 Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=100\text{V}, V_{GS}=0\text{V}, T_C=25^\circ\text{C}$	-	-	1	μA
		$V_{DS}=80\text{V}, T_C=125^\circ\text{C}$	-	-	100	μA
栅极体漏电流 Gate-body leakage current	$I_{DSS (F/R)}$	$V_{DS}=0\text{V}, V_{GS}=\pm 20\text{V}$	-	-	± 100	nA
通态特性 On-Characteristics						
阈值电压 Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D=250\mu\text{A}$	2.0	-	4.0	V
静态导通电阻 Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10\text{V}, I_D=50\text{A}$	-	4.7	5.4	m Ω
正向跨导 Forward Transconductance	g_{fs}	$V_{DS} = 10\text{V}, I_D=50\text{A}$ (note 4)	-	75	-	S
动态特性 Dynamic Characteristics						
栅电阻 Gate Resistance	R_g	$f=1.0\text{MHz}, V_{DS}$ OPEN	-	1.6	-	Ω
输入电容 Input capacitance	C_{iss}	$V_{DS}=50\text{V},$ $V_{GS}=0\text{V},$ $f=1.0\text{MHz}$	-	5100	-	pF
输出电容 Output capacitance	C_{oss}		-	878	-	
反向传输电容 Reverse transfer capacitance	C_{rss}		-	75	-	
开关特性 Switching Characteristics						
延迟时间 Turn-On delay time	$t_{d(on)}$	$V_{DS}=50\text{V},$ $I_D=50\text{A},$ $R_G=5\Omega$ $V_{GS}=10\text{V}$ (note 4, 5)	-	24	-	ns
上升时间 Turn-On rise time	t_r		-	21	-	ns
延迟时间 Turn-Off delay time	$t_{d(off)}$		-	50	-	ns
下降时间 Turn-Off Fall time	t_f		-	27	-	ns
栅极电荷总量 Total Gate Charge	Q_g	$V_{DS}=50\text{V},$ $I_D=50\text{A},$ $V_{GS}=10\text{V}$ (note 4, 5)	-	74	-	nC
栅-源电荷 Gate-Source charge	Q_{gs}		-	25	-	nC
栅-漏电荷 Gate-Drain charge	Q_{gd}		-	14	-	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_S	-	-	147	A
正向最大脉冲电流 Maximum Pulsed Drain-Source Diode Forward Current		I_{SM}	-	-	588	A
正向压降 Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0\text{V}, I_S=50\text{A}$	-	-	1.2	V
反向恢复时间 Reverse recovery time	t_{rr}	$V_{GS}=0\text{V}, I_S=50\text{A}, dI/dt=100\text{A}/\mu\text{s}$ (note 4)	-	66	-	ns
反向恢复电荷 Reverse recovery charge	Q_{rr}		-	150	-	nC

**Typical Characteristics****热特性 THERMAL CHARACTERISTIC**

项目 Parameter	符号 Symbol	P/S130N10	单位 Unit
结到管壳的热阻 Thermal Resistance, Junction to Case	Rth(j-c)	0.72	°C/W
结到环境的热阻 Thermal Resistance, Junction to Ambient	Rth(j-A)	62.5	°C/W

注释:

- 1: 脉冲宽度由最高结温限制
- 2: L=1mH, I_{AS}=24A, V_{DD}=50V, R_G=25 Ω, 起始结温 T_J=25°C
- 3: I_{SD} ≤147A, di/dt ≤300A/μs, V_{DD} ≤BV_{DSS}, 起始结温 T_J=25°C
- 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=1mH, I_{AS}=24A, V_{DD}=50V, R_G=25 Ω, Starting T_J=25°C
- 3: I_{SD} ≤147A, di/dt ≤300A/μs, V_{DD} ≤BV_{DSS}, Starting T_J=25°C
- 4: Pulse Test: Pulse Width ≤300μs, Duty Cycle ≤2%
- 5: Essentially independent of operating temperature



Figure 1. Safe Operating Area

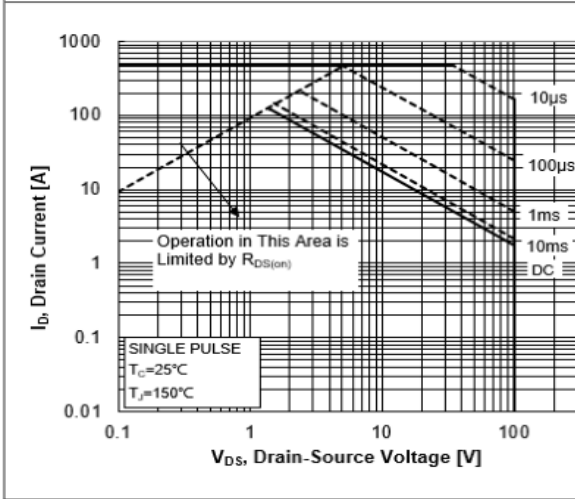


Figure 2. Maximum Power Dissipation vs Case Temperature

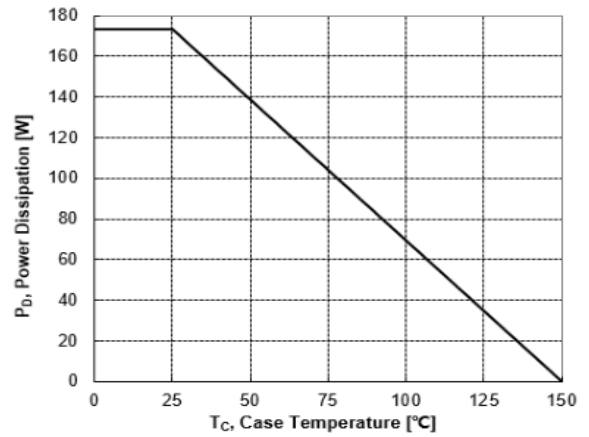


Figure 3. Maximum Continuous Drain Current vs Case Temperature

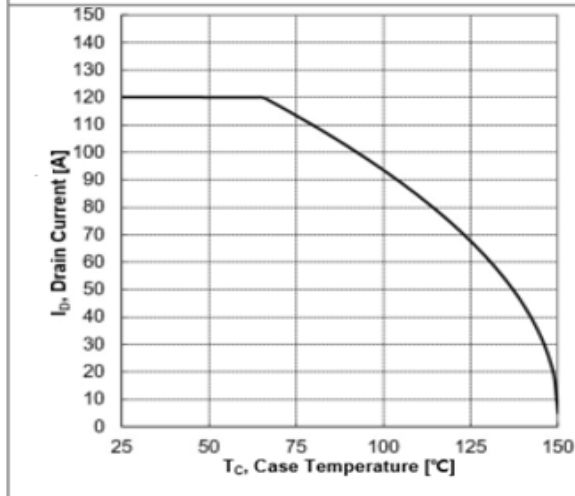


Figure 4. Typical Output Characteristics

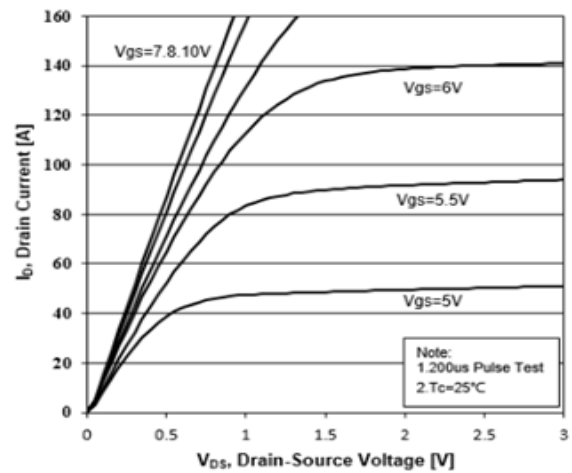


Figure 5. Transient Thermal Impedance

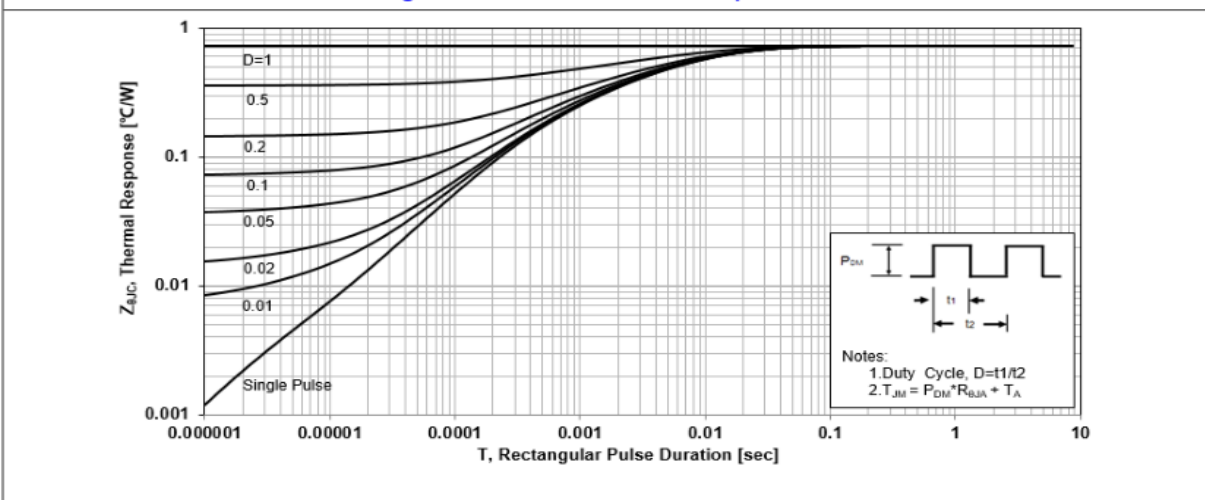




Figure 6. Typical Transfer Characteristics

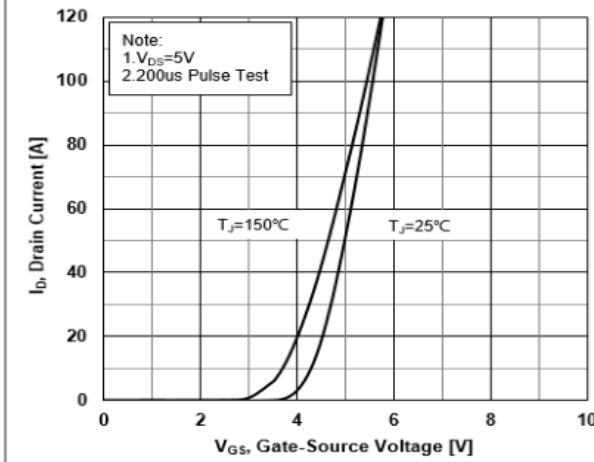


Figure 7. Source-Drain Diode Forward Characteristics

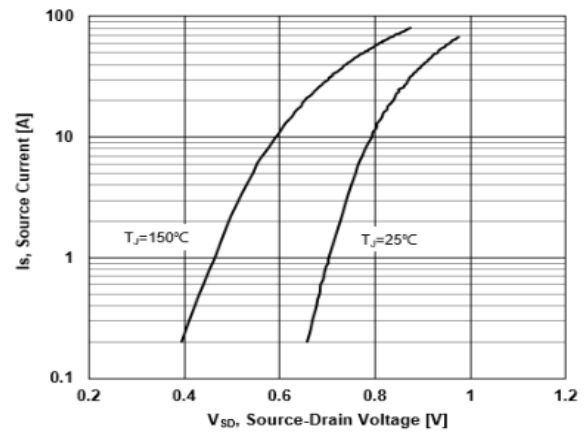


Figure 8. Drain-Source On-Resistance vs Drain Current

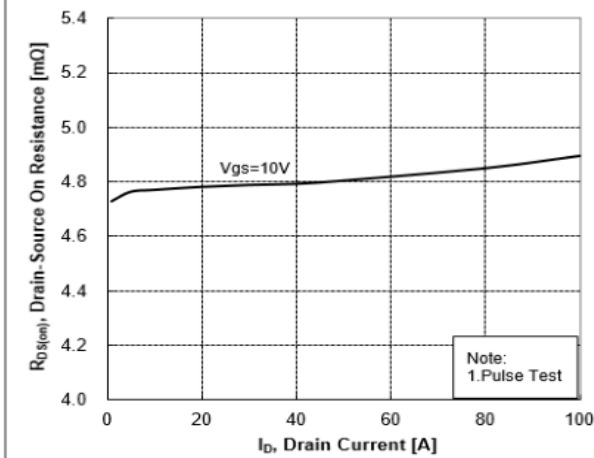


Figure 9. Normalized On-Resistance vs Junction Temperature

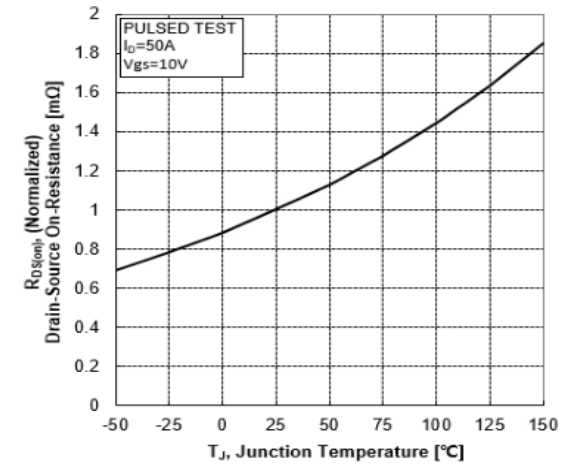


Figure 10. Normalized Threshold Voltage vs Junction Temperature

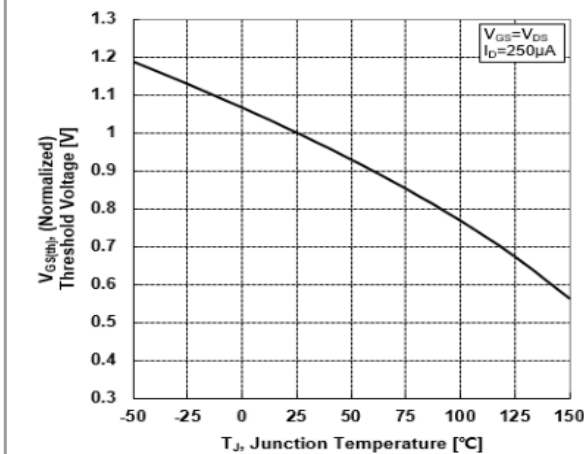


Figure 11. Normalized Breakdown Voltage vs Junction Temperature

