

DESCRIPTION

The MXND805 uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge. It can be used in a wide variety of applications.

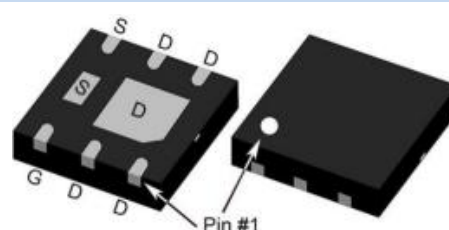
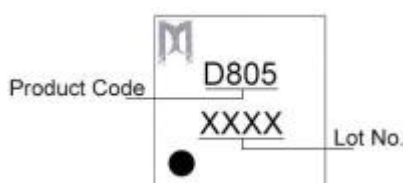
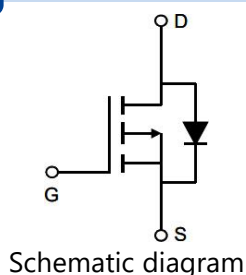
GENERAL FEATURES

- $V_{DS} = -12V$, $I_D = -8.5A$
 $R_{DS(ON)}(Typ.) = 19m\Omega$ @ $V_{GS} = -2.5V$
 $R_{DS(ON)}(Typ.) = 14m\Omega$ @ $V_{GS} = -4.5V$
- High Power and current handling capability
- Lead free product is acquired
- Surface Mount Package

APPLICATION

- PWM applications
- Load switch
- Power management
- Battery Protection

PINOUT



ORDERING INFORMATION

Part Number	Marking	Storage Temperature	Package	Devices Per Reel
MXND805	D805	-55°C to 150°C	UDFN2X2-6L	-

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-12	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current-Continuous	I_D	-8.5	A
Pulsed Drain Current ^(Note1)	I_{DM}	-32	A
Maximum Power Dissipation	P_D	2.8	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	°C

THERMAL RESISTANCE

Thermal Resistance, Junction-to-Ambient ^(Note2)	$R_{\theta JA}$	45	°C/W
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Note 1. Repetitive Rating: Pulse width limited by maximum junction temperature.

Note 2. Surface Mounted on FR4 Board, $t \leq 10$ sec.



ELECTRICAL CHARACTERISTICS($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
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Off Characteristics

Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-	-12	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-12V, V_{GS}=0V$	-	-	-1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 12V, V_{DS}=0V$	-	-	± 100	nA

On Characteristics(Note3)

Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.4	-0.7	-1.2	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=-2.5V, I_D=-5A$	-	19	25	m Ω
		$V_{GS}=-4.5V, I_D=-6A$	-	14	18	m Ω
Forward Transconductance	g_{FS}	$V_{DS}=-5V, I_D=-6A$	-	33	-	S

Dynamic Characteristics(Note4)

Input Capacitance	C_{iss}	$V_{DS}=-10V, V_{GS}=0V, F=10KHz$	-	1770	-	pF
Output Capacitance	C_{oss}		-	410	-	pF
Reverse Transfer Capacitance	C_{rss}		-	390	-	pF

Switching Characteristics(Note4)

Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=-10V, R_L=1\Omega, V_{GS}=-4.5V, R_G=3\Omega$	-	11	-	nS
Turn-on Rise Time	t_r		-	25	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	70	-	nS
Turn-Off Fall Time	t_f		-	42	-	nS
Total Gate Charge	Q_g	$V_{DS}=-10V, I_D=-6A, V_{GS}=-4.5V$	-	15	-	nC
Gate-Source Charge	Q_{gs}		-	4	-	nC
Gate-Drain Charge	Q_{gd}		-	7	-	nC

Drain-Source Diode Characteristics

Diode Forward Voltage ^(Note3)	V_{SD}	$V_{GS}=0V, I_S=-2A$	-	-	-1.2	V
Diode Forward Current ^(Note2)	I_S		-	-	-3.5	A

Note 2. Surface Mounted on FR4 Board, $t \leq 10$ sec.

Note 3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.

Note 4. Guaranteed by design, not subject to production



TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

Figure 1. Switching Test Circuit

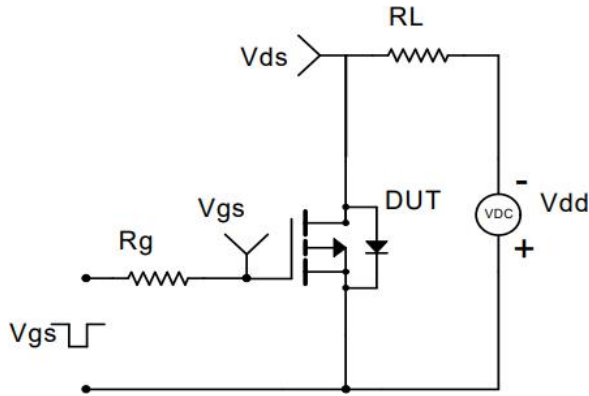


Figure 2. Switching Waveform

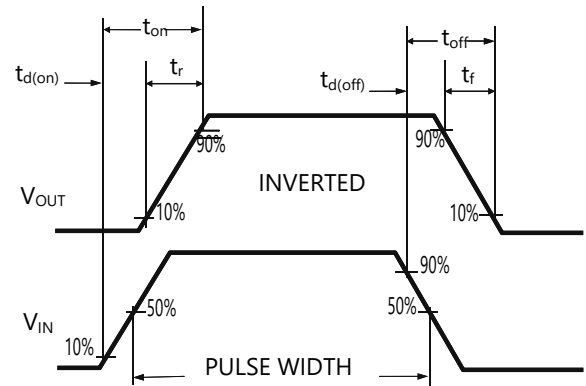


Figure 3. Power De-rating

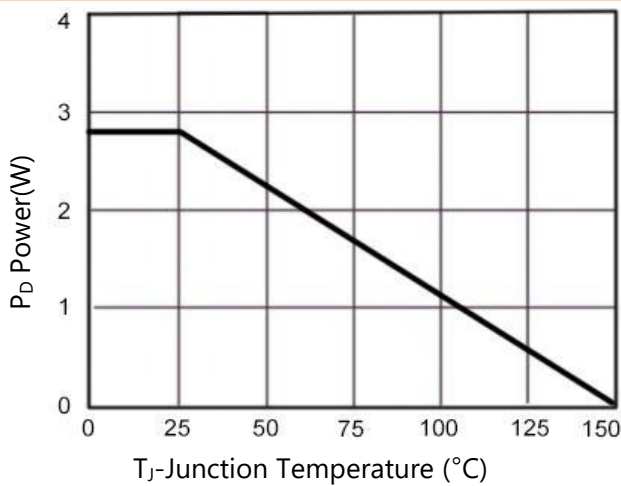


Figure 4. Drain Current

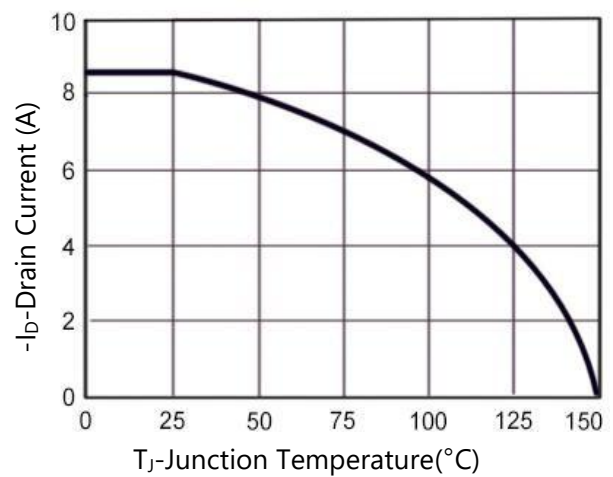


Figure 5. Output Characteristics

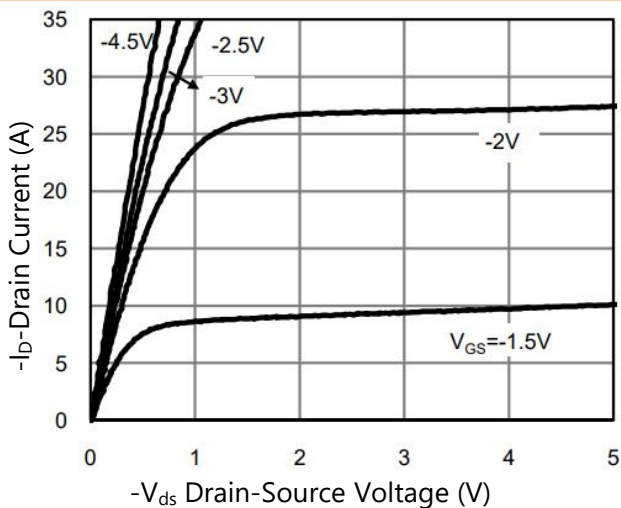
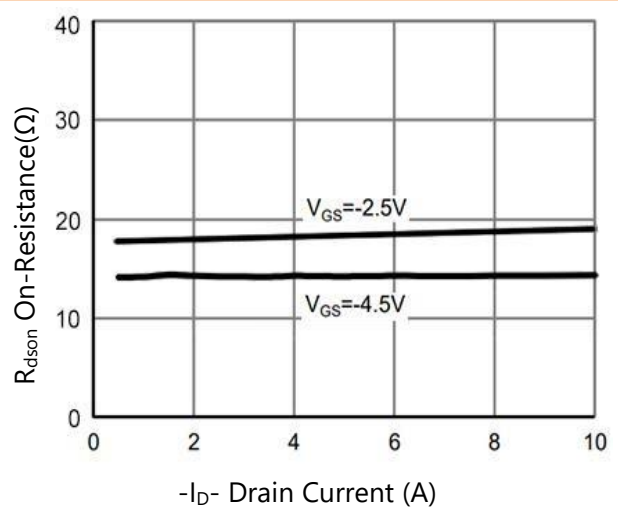


Figure 6. Rds(on) vs Drain Current





TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

Figure 7. Transfer Characteristics

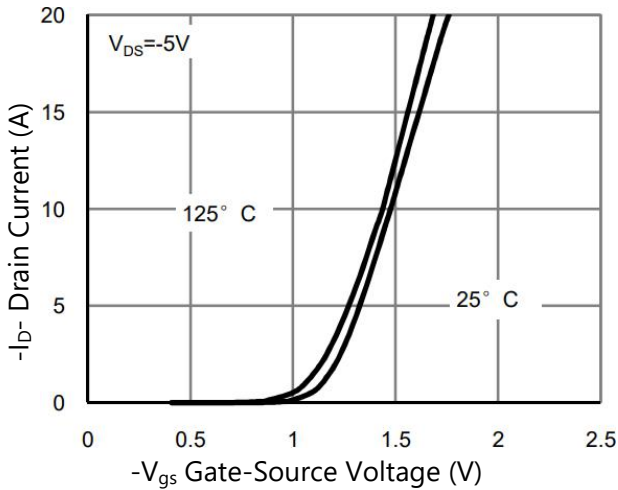


Figure 8. R_{dson} vs Junction Temperature

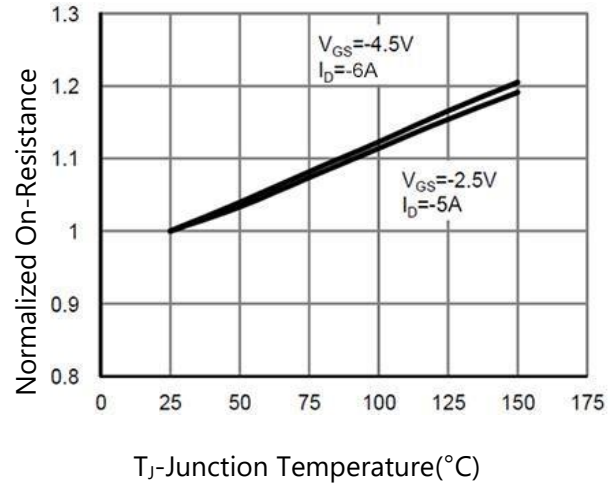


Figure 9. R_{dson} vs V_{gs}

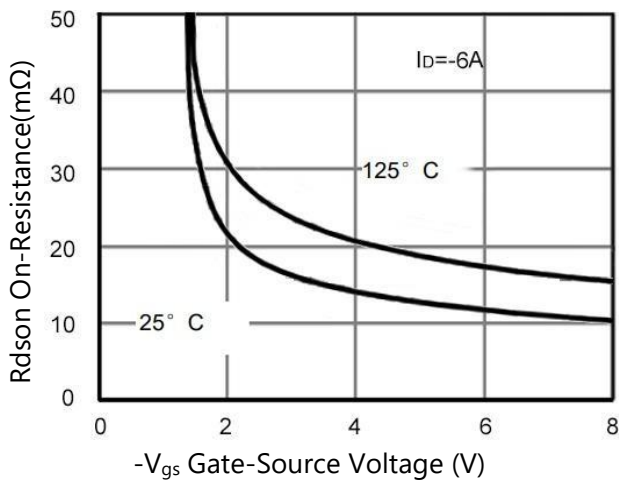


Figure 10. Capacitance vs V_{ds}

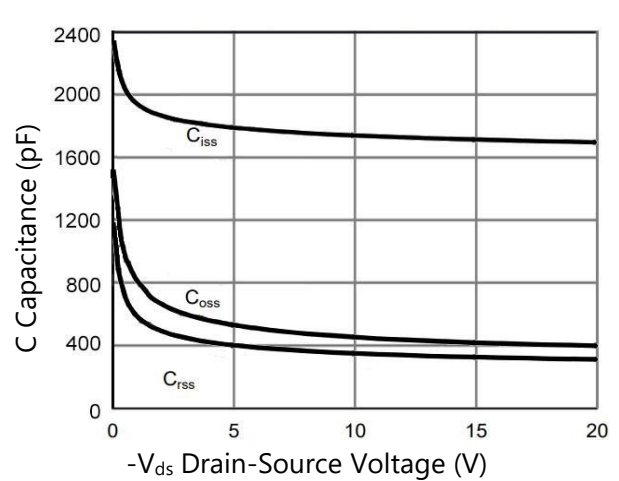


Figure 11. Gate Charge

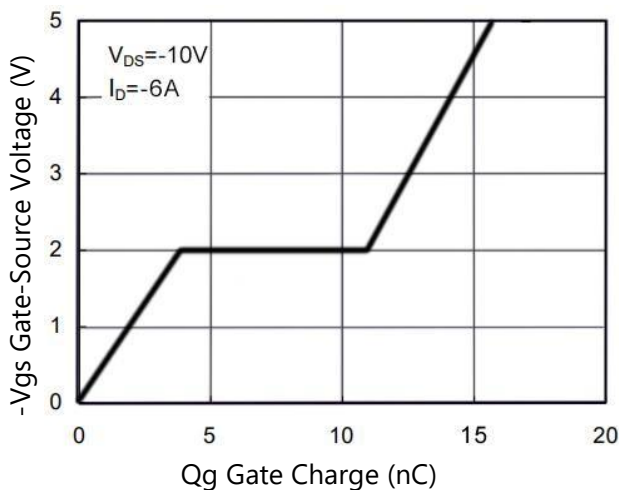
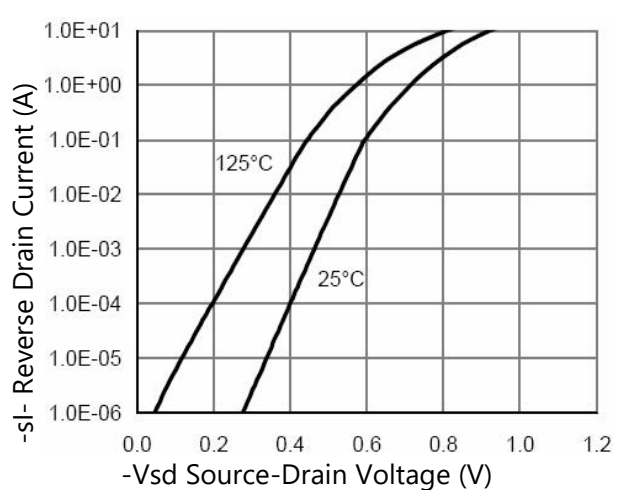


Figure 12. Source- Drain Diode Forward





TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

Figure 13. Safe Operation Area

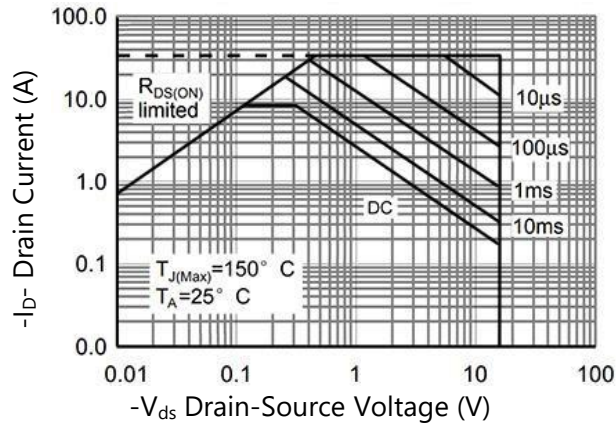
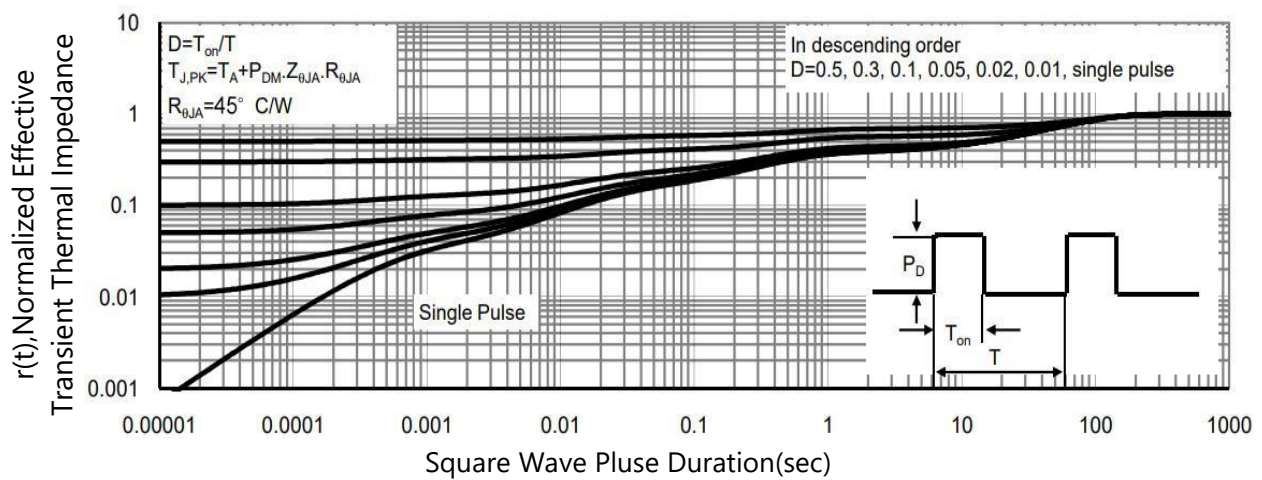


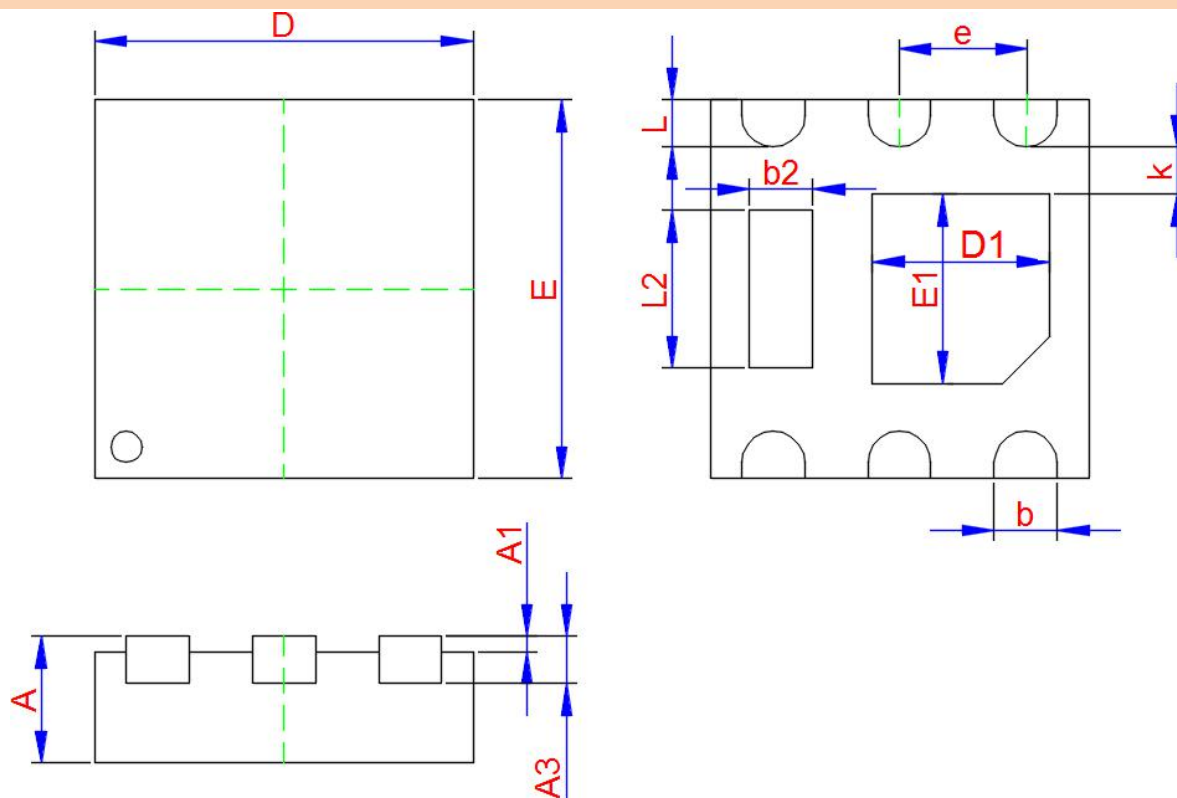
Figure 14. Normalized Maximum Transient Thermal Impedance





PACKAGE INFORMATION

UDFN2X2-6L



Symbol	Dimensions In Millimeters		
	Min.	Typ.	Max.
A	0.450	0.500	0.550
A1	0.000	-	0.050
A3	0.120	0.150	0.190
D	1.950	2.000	2.050
E	1.950	2.000	2.050
D1	0.970	1.000	1.030
E1	0.970	1.000	1.030
b	0.250	0.300	0.350
L	0.200	0.250	0.300
b2	0.250	0.300	0.350
L2	0.750	0.800	0.850
k	0.250MIN.		
e	0.650TYP.		