HIGH DIODE

M060P03LNC

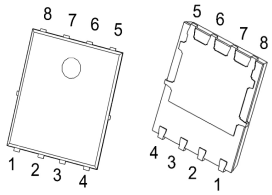
RoHS COMPLIANT

30V P-Channel MOSFET

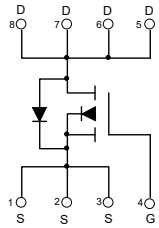
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-30V	6.0mΩ@-10V	-60A
	9.5mΩ@-4.5V	

PDFN5X6-8L



Schematic diagram



Feature

- Trench Technology Power MOSFET
- Low $R_{DS(ON)}$
- Low Gate Charge
- Low Gate Resistance
- 100% UIS Tested

Application

- Power Management
- Load Switching

Package Marking and Ordering Information

Part Number	Package	Marking	Packing	Reel Size	Tape Width	Qty
M060P03LNC	PDFN5X6-8L	M060P03L	Reel & Tape	330mm	12mm	5000pcs

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current[1]	T_C = 25°C	I_D	-60	A
	T_C = 100°C		-38	
Pulsed Drain Current[2]		I_{DM}	-240	A
Single Pulsed Avalanche Current[3]		I_{AS}	-35	A
Single Pulsed Avalanche Energy[3]		E_{AS}	306	mJ
Power Dissipation[5]	T_C = 25°C	P_D	48	W
Thermal Resistance from Junction to Ambient[6]		$R_{\theta JA}$	42	°C/W
Thermal Resistance from Junction to Case		$R_{\theta JC}$	2.6	°C/W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~ +150	°C

Electrical Characteristics (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250μA	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -30V, V_{GS} = 0V			-1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±100	nA
On Characteristics[4]						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-1.2	-1.7	-2.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = -10V, I_D = -20A		6	7.8	mΩ
		V_{GS} = -4.5V, I_D = -15A		9.5	13	
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = -15V, V_{GS} = 0V, f = 1MHz		3022		pF
Output Capacitance	C_{oss}			490		
Reverse Transfer Capacitance	C_{rss}			428		
Gate Resistance	R_g	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz		4.4		Ω
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS} = -25V, V_{GS} = -10V, I_D = -20A		66		nC
Gate-Source Charge	Q_{gs}			8		
Gate-Drain Charge	Q_{gd}			19		
Gate Plateau Voltage	$V_{plateau}$			-2.9		V
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = -15V, V_{GS} = -10V, R_G = 3Ω, I_D = -20A		10		ns
Turn-On Rise Time	t_r			12		
Turn-Off Delay Time	$t_{d(off)}$			67		
Turn-Off Fall Time	t_f			31		
Source-Drain Diode Characteristics						
Diode Forward Voltage[4]	V_{SD}	V_{GS} = 0V, I_S = -15A			-1.2	V
Diode Continuous Forward Current[1]	I_S	T_C = 25℃			-60	A
Diode Pulse Forward Current[2]	I_{SM}				-240	A

Notes:

1.The maximum current rating is limited by package. And device mounted on a large heatsink.

2.Pulse Test: Pulse Width ≤ 10μs, duty cycle ≤ 1%.

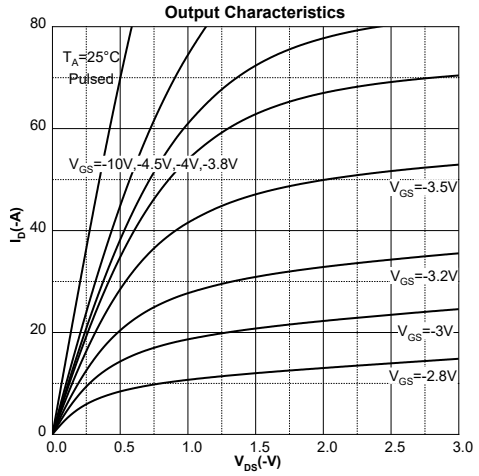
3.E_{AS} condition: V_{DD} = -15V, V_{GS} = -10V, L = 0.5mH, R_G = 25Ω Starting T_J = 25°C .

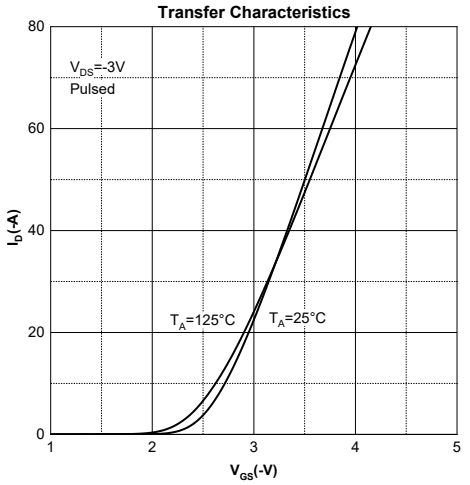
4.Pulse Test: Pulse Width ≤ 300μs, duty cycle ≤ 2%.

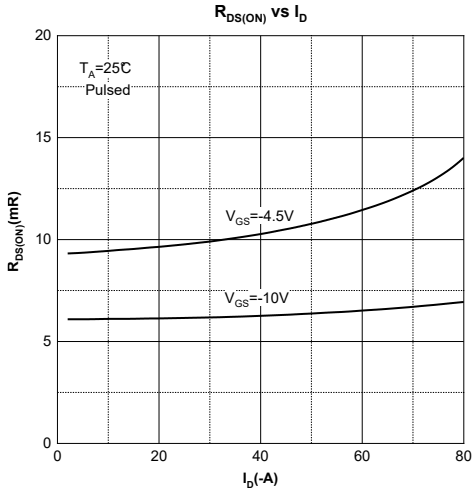
5.The power dissipation P_D is limited by $T_{J(MAX)}$ = 150°C. And device mounted on a large heatsink.

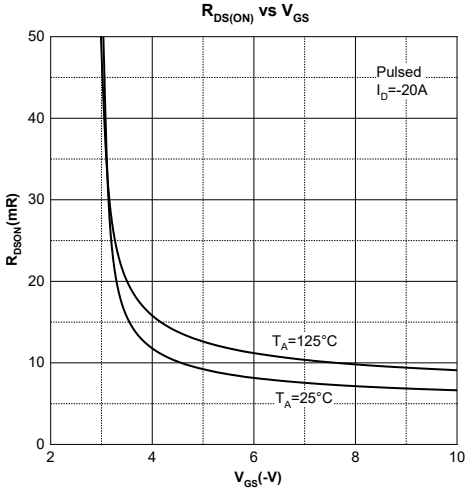
6.Device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A = 25°C.

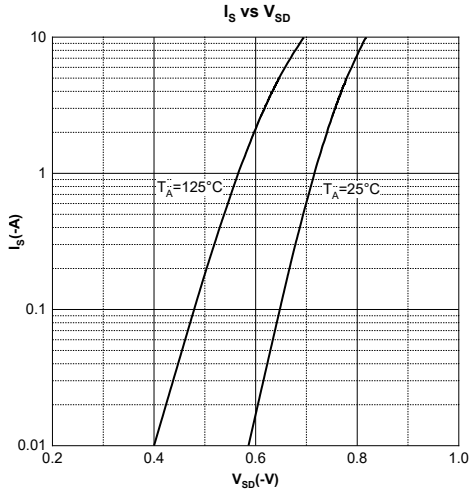
Typical Characteristics

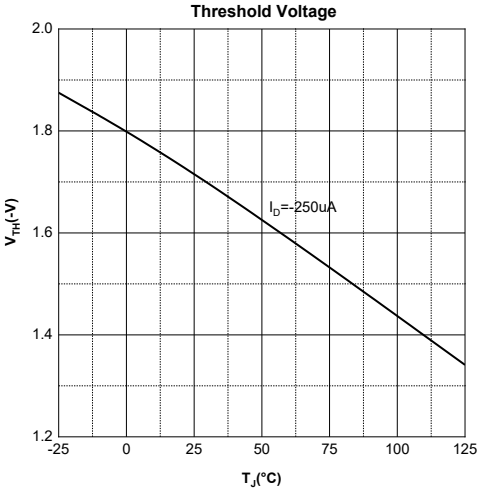




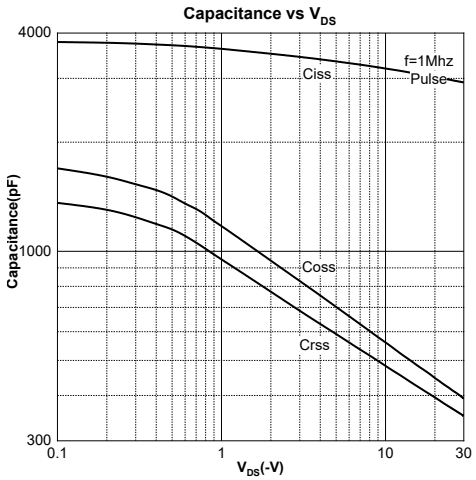


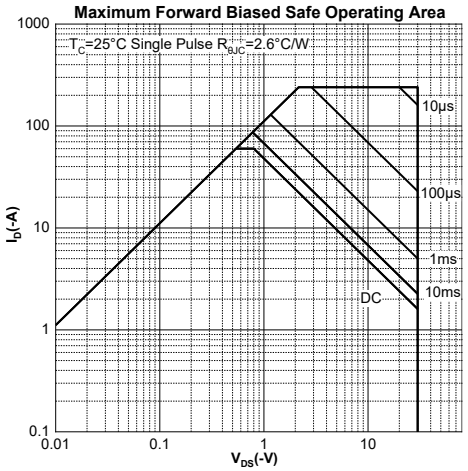


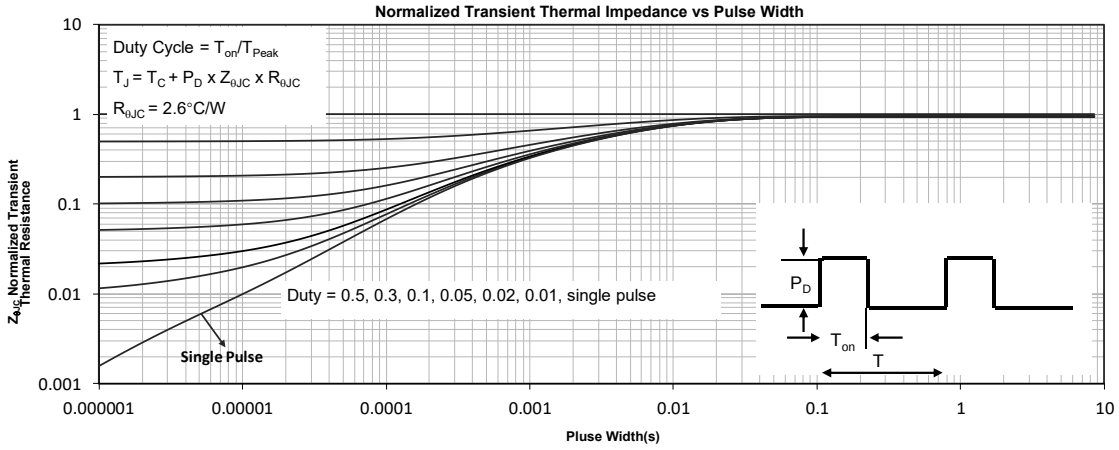




Typical Characteristics

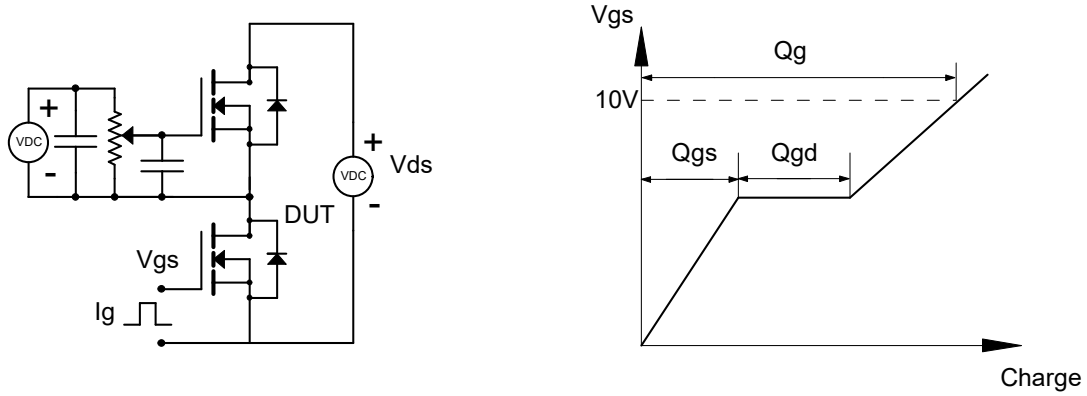




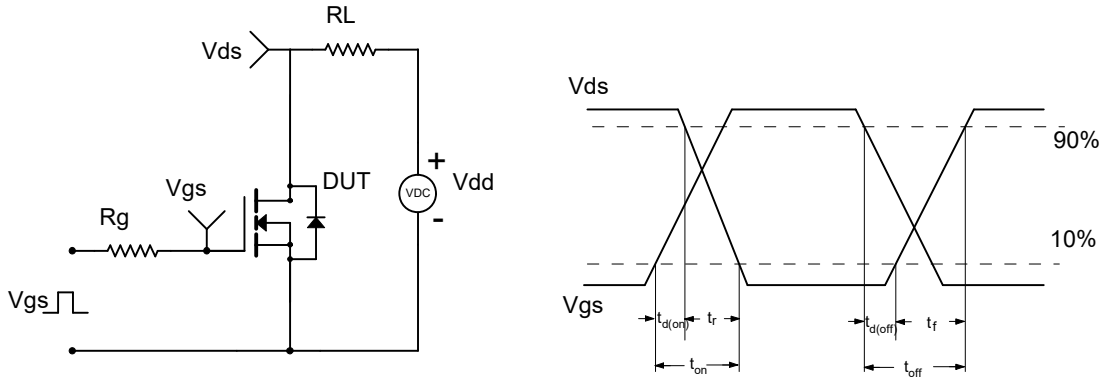


Typical Characteristics

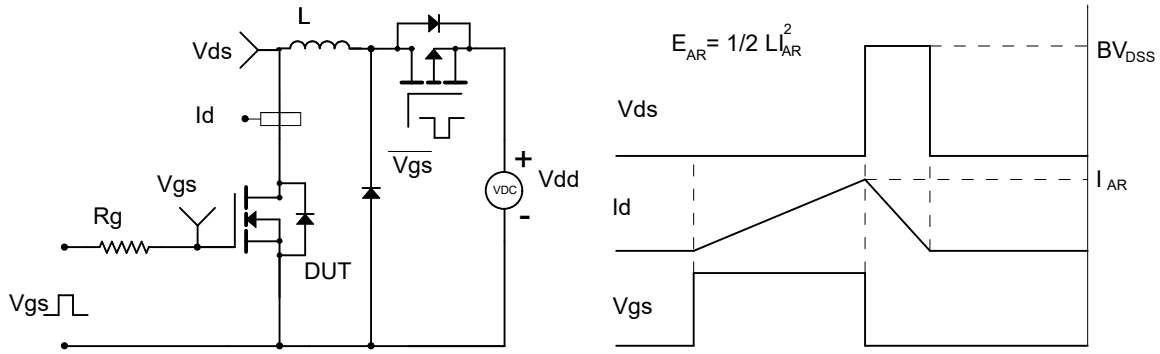
Gate Charge Test Circuit & Waveform

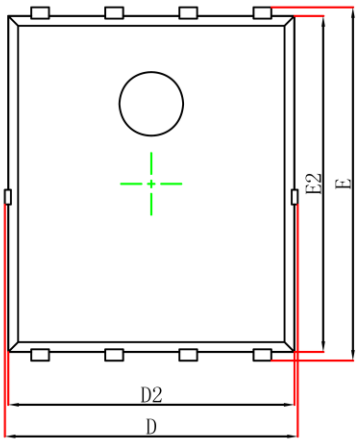


Resistive Switching Test Circuit & Waveform

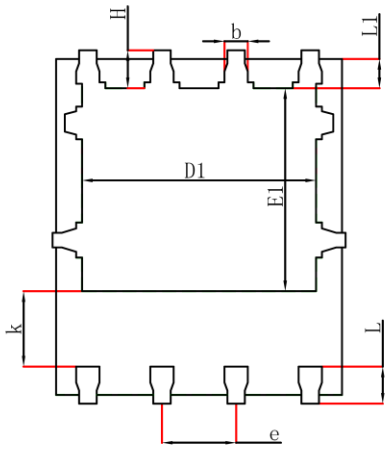


Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

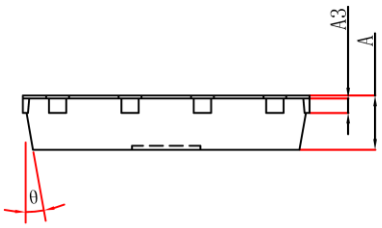




Top View
[顶视图]



Bottom View
[背视图]



Side View
[侧视图]

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.10	0.035	0.043
A3	0.254REF		0.010REF	
D	4.700	5.260	0.185	0.207
E	5.750	6.250	0.226	0.246
D1	3.560	4.500	0.140	0.177
E1	3.180	3.660	0.125	0.144
D2	4.700	5.100	0.185	0.201
E2	5.600	6.000	0.220	0.236
k	1.100	-	0.043	-
b	0.300	0.500	0.012	0.020
e	1.270TYP		0.050TYP	
L	0.510	0.710	0.020	0.028
L1	0.424	0.576	0.017	0.023
H	0.510	0.710	0.020	0.028
θ	8°	12°	8°	12°