

Product Summary

V_{DS}	40V
$R_{DS(on)}@10V$	< 5.5m Ω
I_D	60A



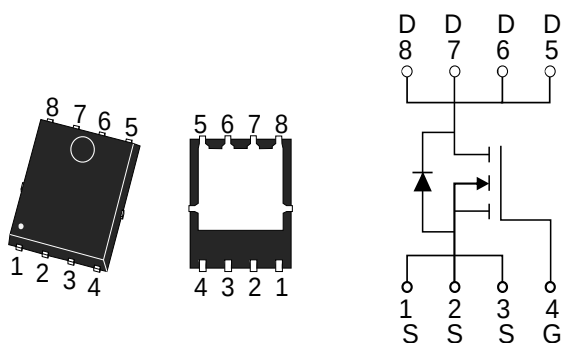
General Description

- Split gate trench MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(on)}$
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

Applications

- Power switching application
- Uninterruptible power supply
- DC-DC convertor

PDFN5060-8L



■ Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	40	V
Gate-source Voltage		V_{GS}	± 20	V
Drain Current	$T_C=25^{\circ}\text{C}$	I_D	60	A
	$T_C=70^{\circ}\text{C}$		39	
Pulsed Drain Current ^A		I_{DM}	240	A
Avalanche energy ^B		EAS	85	mJ
Total Power Dissipation ^C	$T_C=25^{\circ}\text{C}$	P_D	40	W
	$T_C=70^{\circ}\text{C}$		30	
Junction and Storage Temperature Range		T_J, T_{STG}	-55~+150	$^{\circ}\text{C}$



■ Electrical Characteristics (T_J=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =250μA	40	-	-	V
		V _{GS} = 0V, I _D =1mA	40	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =40V, V _{GS} =0V	-	-	1	μA
		V _{DS} =40V, V _{GS} =0V, T _j =150°C	-	-	100	
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V	-	-	±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	1.0	1.55	2.5	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =10A	-	4.5	5.5	mΩ
		V _{GS} =4.5V, I _D =8A	-	6.8	8.5	
Diode Forward Voltage	V _{SD}	I _S =1A, V _{GS} =0V	-	-	1.2	V
Gate resistance	R _G	f=1MHz	-	3.5	-	Ω
Maximum Body-Diode Continuous Current	I _S		-	-	36	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =20V, V _{GS} =0V, f=1MHz	600	948	1200	pF
Output Capacitance	C _{oss}		300	555	800	
Reverse Transfer Capacitance	C _{rss}		2	31	70	
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =20V, I _D =50A	10	17	30	nC
Gate-Source Charge	Q _{gs}		1	4.5	10	
Gate-Drain Charge	Q _{gd}		0.5	2	10	
Reverse Recovery Charge	Q _{rr}	I _F =50A, di/dt=100A/us	-	22	-	nC
Reverse Recovery Time	t _{rr}		-	40	-	ns
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =20V, I _D =50A R _{GEN} =3Ω	-	6.5	-	ns
Turn-on Rise Time	t _r		-	2.7	-	
Turn-off Delay Time	t _{D(off)}		-	26	-	
Turn-off fall Time	t _f		-	3.6	-	

A. Repetitive rating; pulse width limited by max. junction temperature.

B. T_J=25°C, V_G=10V, R_G=25Ω, L=0.5mH

C. P_d is based on max. junction temperature, using junction-case and junction-ambient thermal resistance.



■ Typical Electrical and Thermal Characteristics Diagrams

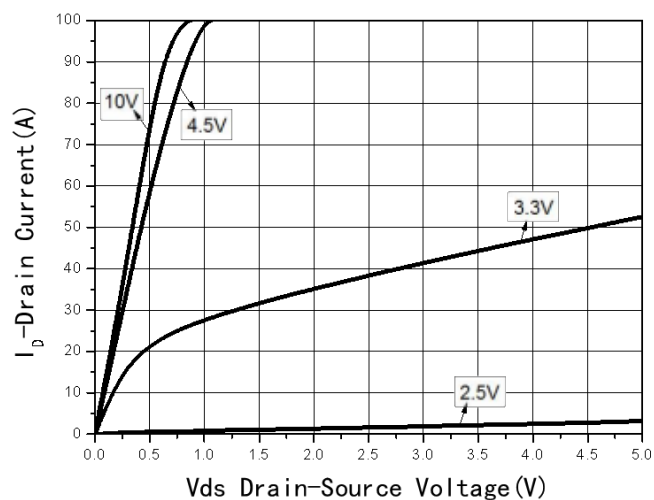


Fig1 Output Characteristics

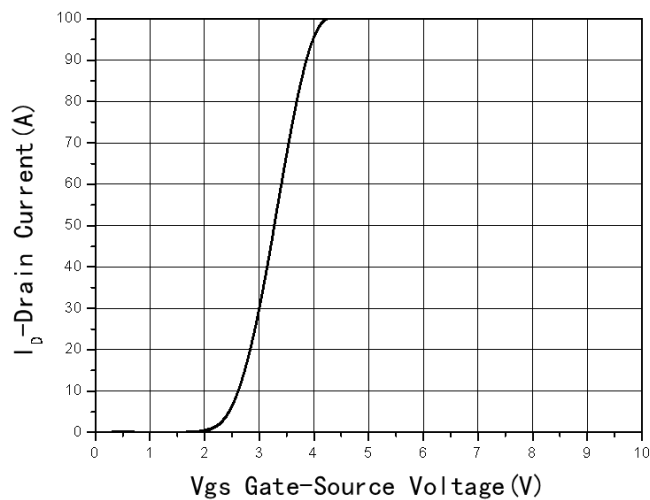


Fig2 Transfer Characteristics

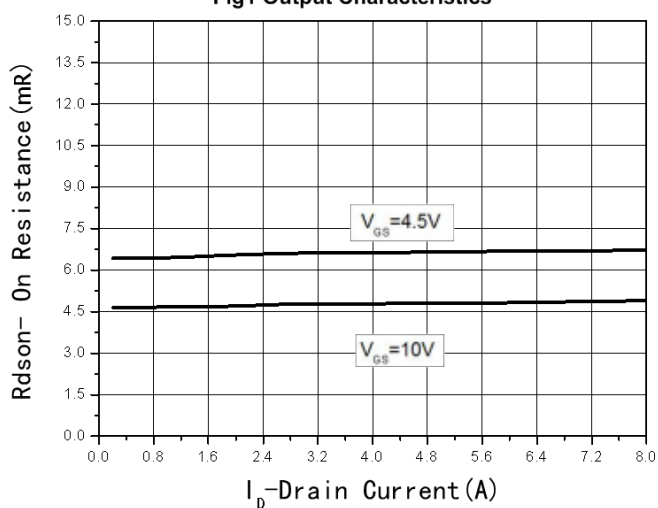


Fig3 Rdson-Drain current

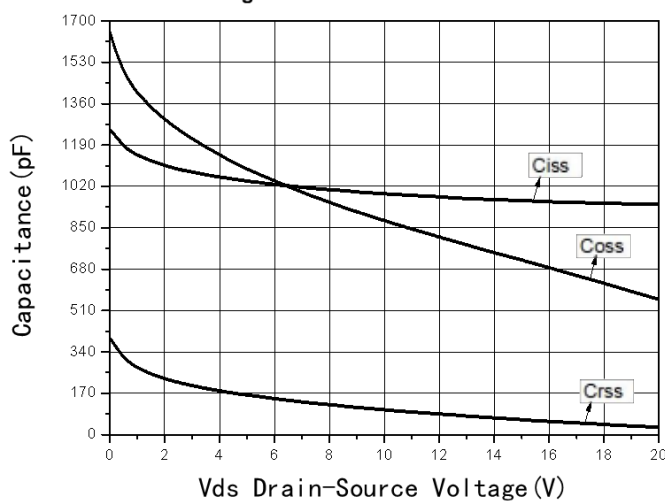


Fig4 Capacitance vs Vds

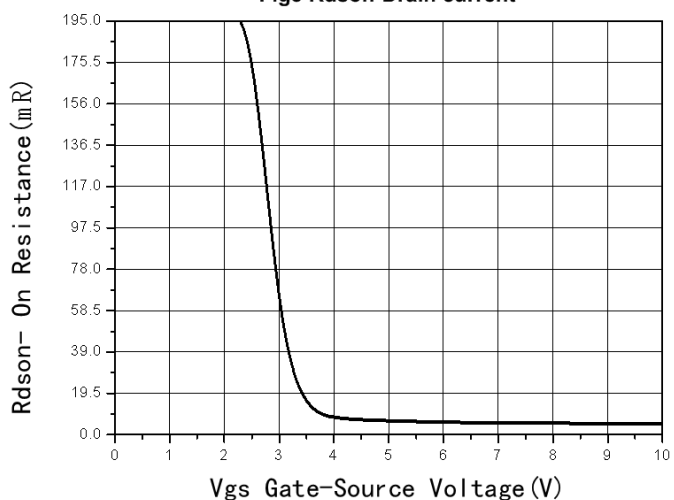


Fig5 Rdson-Gate Drain voltage

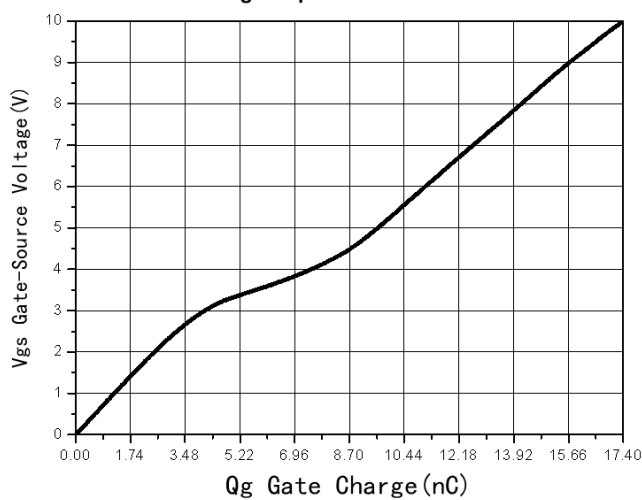


Fig6 Gate Charge



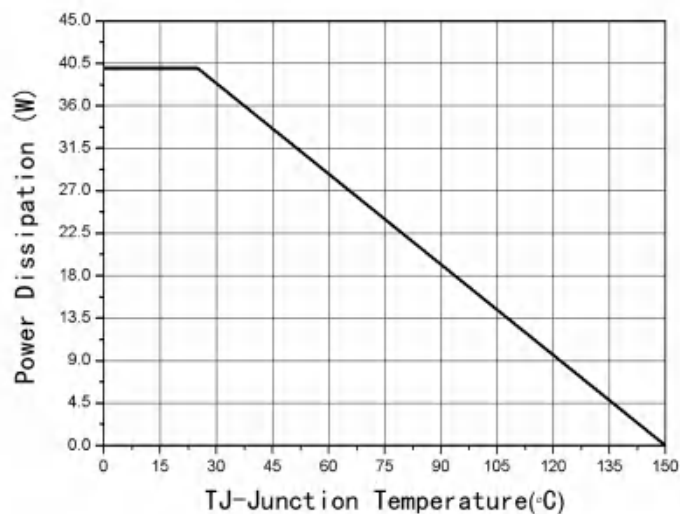


Fig7 Power De-rating

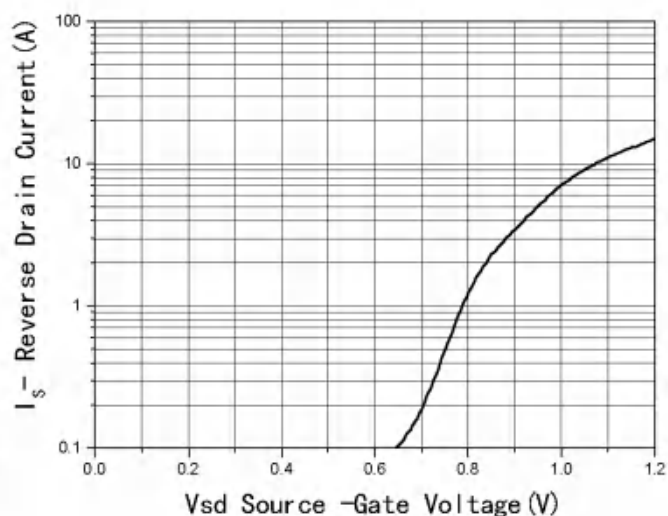
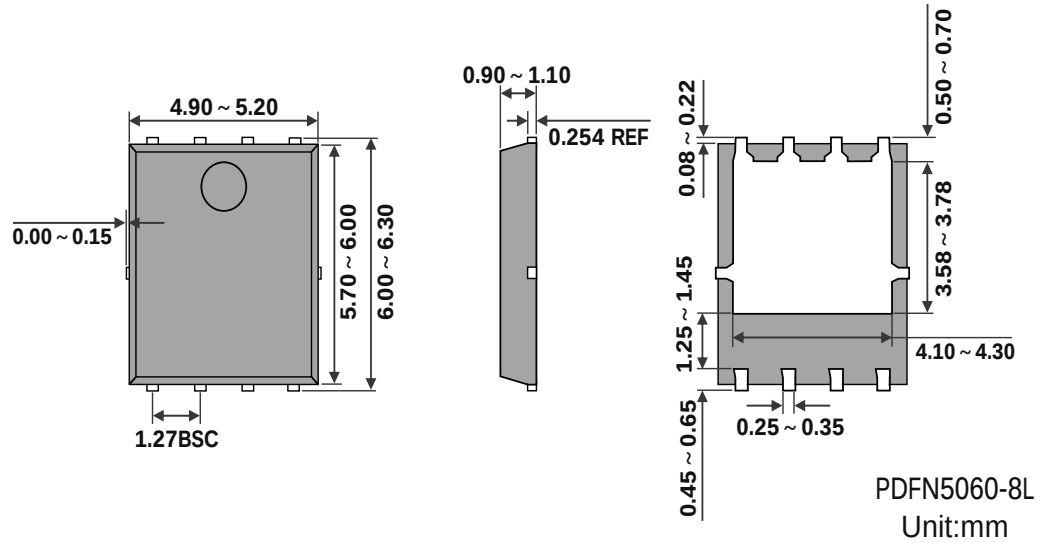


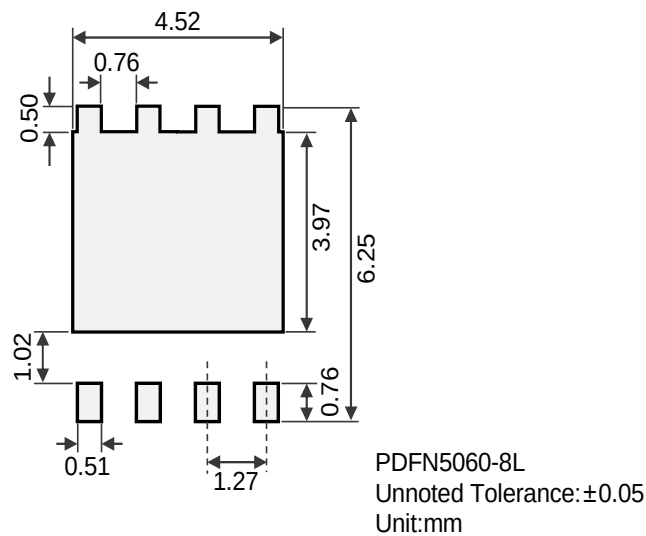
Fig8 Source-Drain Diode Forward



Package Outline Dimensions



Suggested Solder Pad Layout



Marking Information

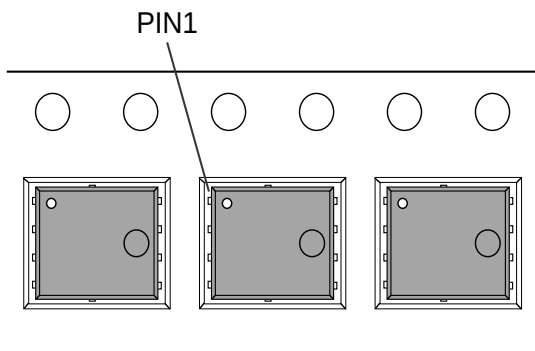


"MHCHXM" = Product Logo
 "Marking Code" = The Following
 "XXXX" = Date Code Marking

Marking Code	Part Number
S40N55LNA	HXMS40N55LNA



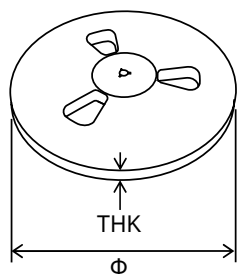
The Orientation Of The Product In The Carrier Tape



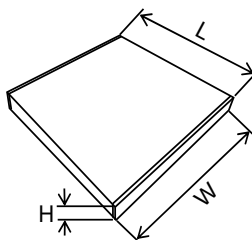
Packing Information

Packaging	Part Number	Quantity(pcs)	Size(mm)
Reel	Reel	5000	Φ330×THK15
	Inner Box	10000	L355×W335×H48
	Outer Box	80000	L415×W375×H360

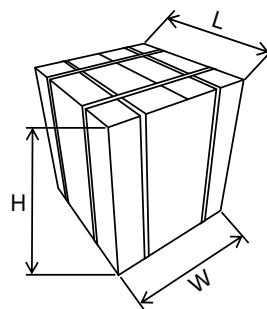
Packaging:Reel



Reel



Reel Inner Box



Reel Outer Box



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2. The graphs shown in this datasheet are representing typical data only and do not show guaranteed values.
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