MHCHXM®

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HXMS40N11HNA

N-Channel Enhancement Mode Power MOSFET

Features

- Uses MHCHXM advanced PerfectMOS technology
- Extremely low on-resistance $R_{DS(on)}$
- Excellent Q_gx$R_{DS(on)}$ product(FOM)
- Excellent Low Ciss
- Qualified according to JEDEC criteria

Applications

- Switching application
- Li-battery protection
- DC-DC

Beneficts

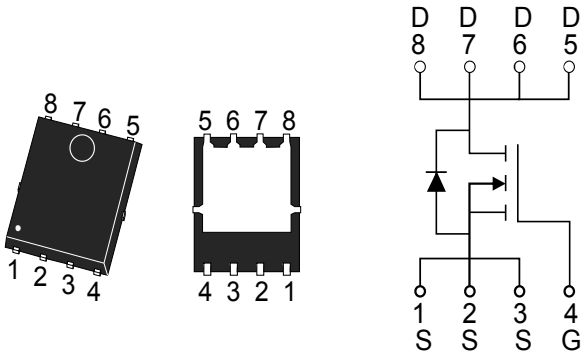
- High robustness and reliability
- Increases maximum current capability
- Low power loss, high power density
- Easy paralleling

Product Summary

V_{DS}	40V
$R_{DS(on)@10V\ typ}$	0.86mΩ
I_D	260A

RoHS Reach

PDFN5060-8L



Absolute Maximum Ratings (T_C=25℃unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	260	A
Drain Current-Continuous(T_C=100℃)	I_D (100℃)	210	A
Pulsed Drain Current	I_{DM}	380	A
Maximum Power Dissipation	P_D	200	W
Derating factor		1.9	W/℃
Single pulse avalanche energy (Note 5)	E_{AS}	368	mJ
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 175	℃

1. EAS condition : Tj=25℃,V_{DD}=32V,V_G=10V,L=0.5mH,Rg=25Ω,I=38A

Thermal Characteristic

Thermal Resistance,Junction-to-Case (Note 2)	$R_{\theta JC}$	0.4	℃/W

Electrical Characteristics (T_C=25℃unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	40		-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=40V,V_{GS}=0V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	2.0	2.9	3.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=50A	-	0.86	1.05	mΩ
Forward Transconductance	g_{FS}	V_{DS}=5V,I_D=115A		70	-	S
Dynamic Characteristics (Note4)						
Input Capacitance	C_{lss}	V_{DS}=20V,V_{GS}=0V, F=1MHz	-	5200	-	PF
Output Capacitance	C_{oss}		-	3600	-	PF
Reverse Transfer Capacitance	C_{rss}		-	86	-	PF
Gate resistance	Rg	VGS=0V,f=1MHz	-	2.5		Ω
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=20V,I_D=20A V_{GS}=10V,R_G=1.6Ω	-	25	-	nS
Turn-on Rise Time	t_r		-	35	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	72	-	nS
Turn-Off Fall Time	t_f		-	26	-	nS
Total Gate Charge	Q_g	V_{DS}=20V,I_D=20A, V_{GS}=10V	-	105	-	nC
Gate-Source Charge	Q_{gs}		-	25		nC
Gate-Drain Charge	Q_{gd}		-	26		nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS}=0V,I_S=50A	-		1.2	V
Diode Forward Current (Note 2)	I_S		-	-	260	A
Reverse Recovery Time	t_{rr}	T_J = 25°C, I_F =20A di/dt = 100A/μs	-	85	-	nS
Reverse Recovery Charge	Qrr		-	52	-	nC

Typical Electrical and Thermal Characteristics

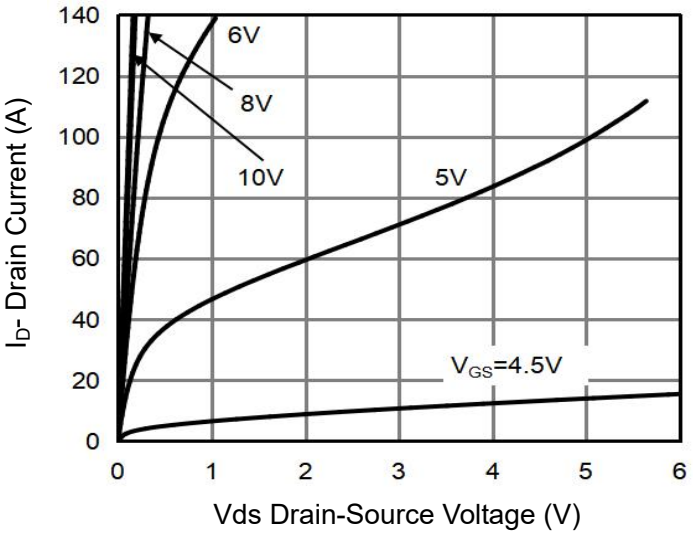


Figure 1 Output Characteristics

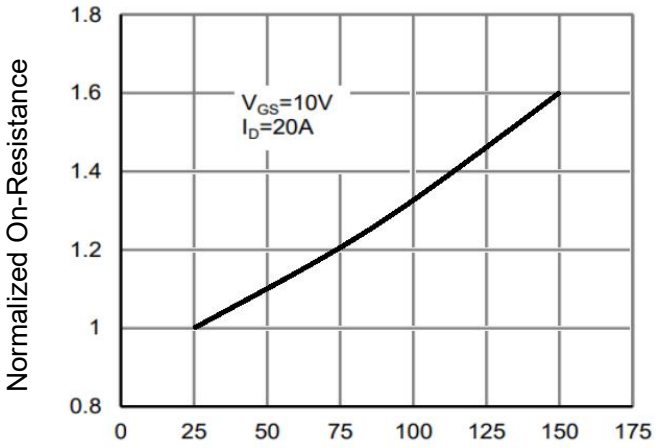


Figure 4 Rdson-Junction Temperature

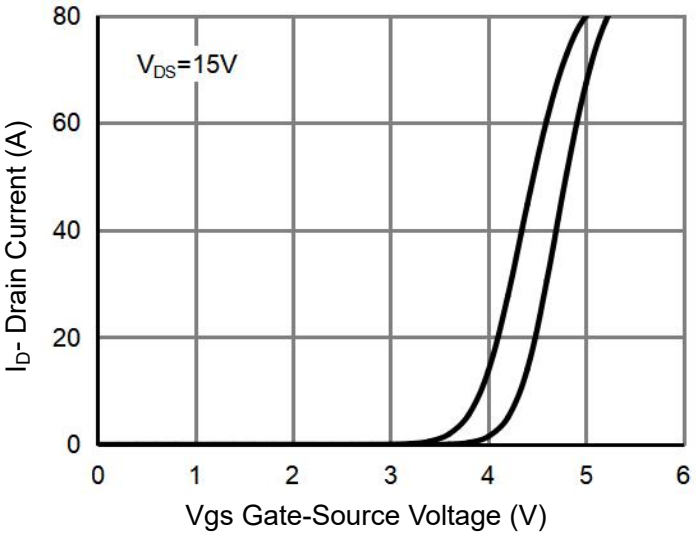


Figure 2 Transfer Characteristics

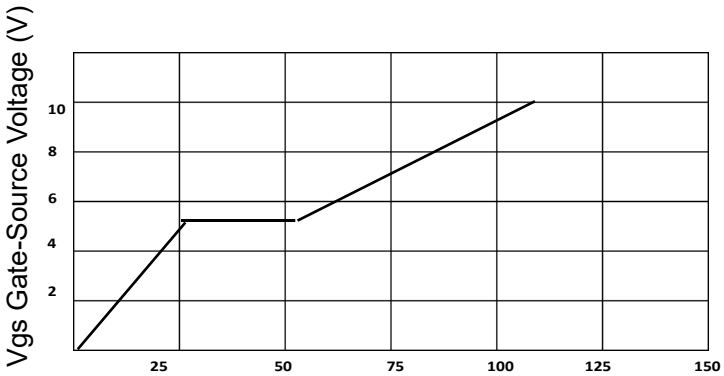


Figure 5 Gate Charge

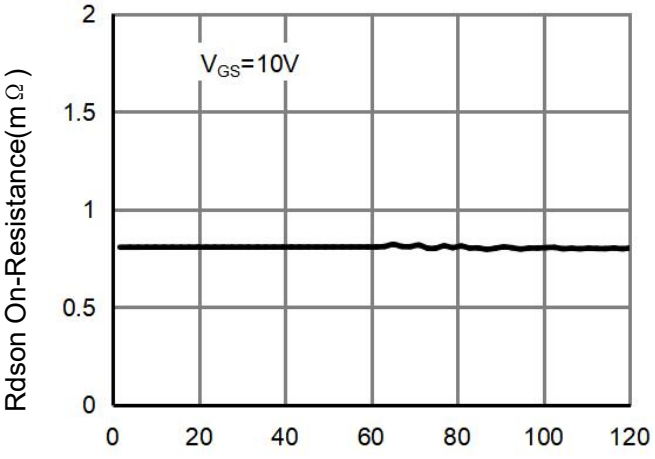


Figure 3 Rdson- Drain Current

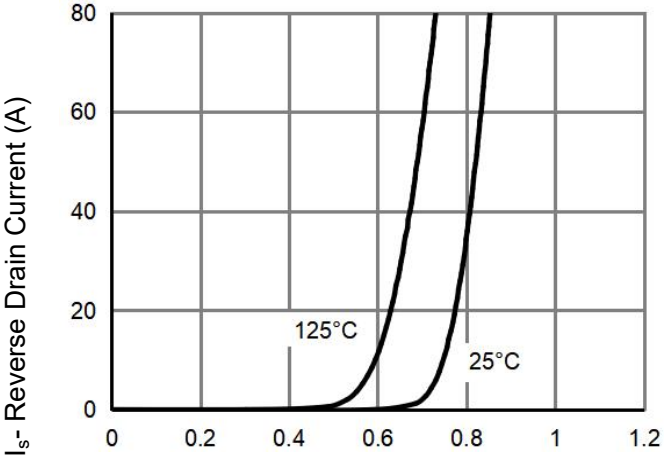


Figure 6 Source- Drain Diode Forward

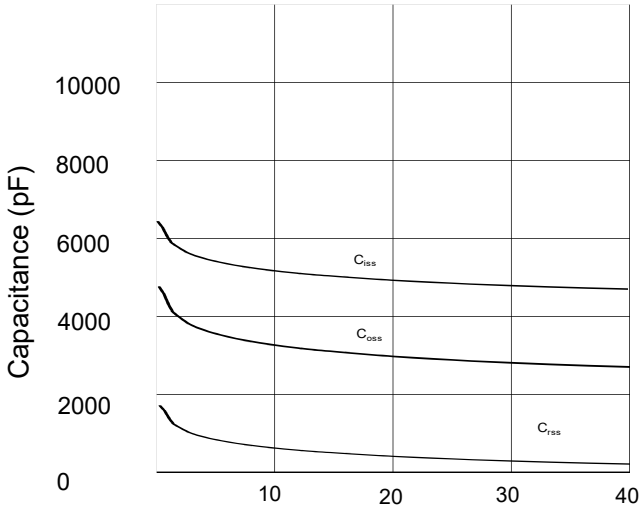


Figure 7 Capacitance vs Vds

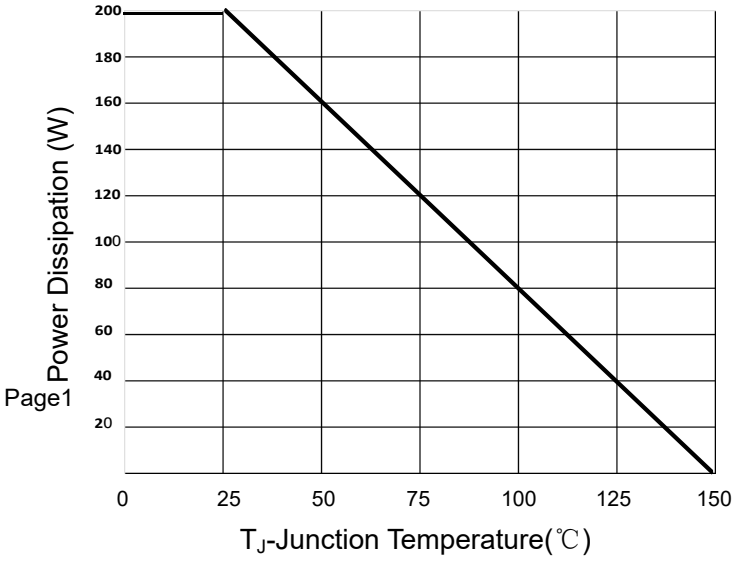


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Figure 9 Power De-rating

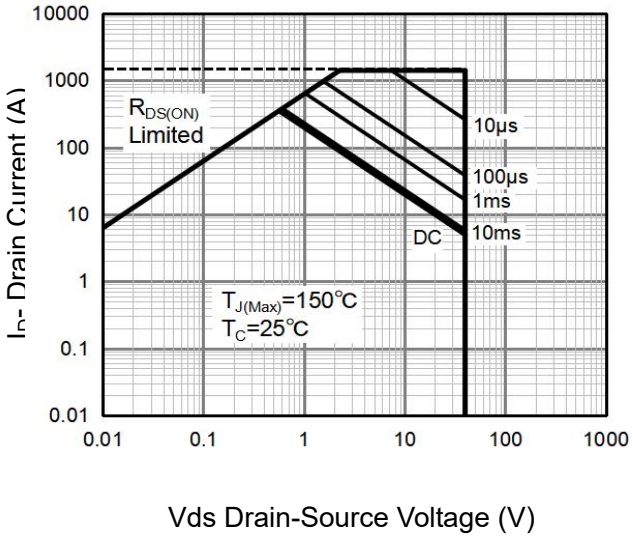


Figure 8 Safe Operation Area

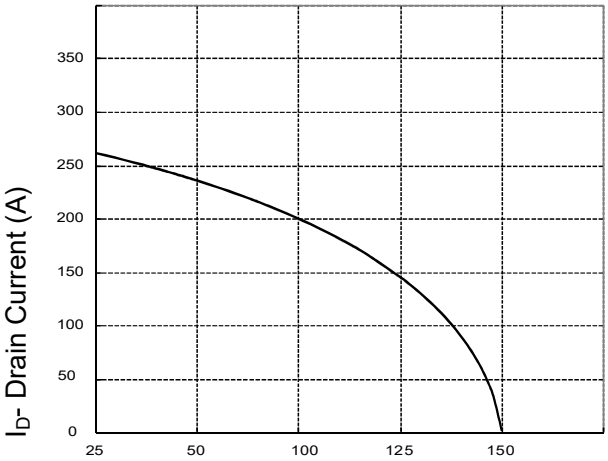


Figure 10 Current De-rating

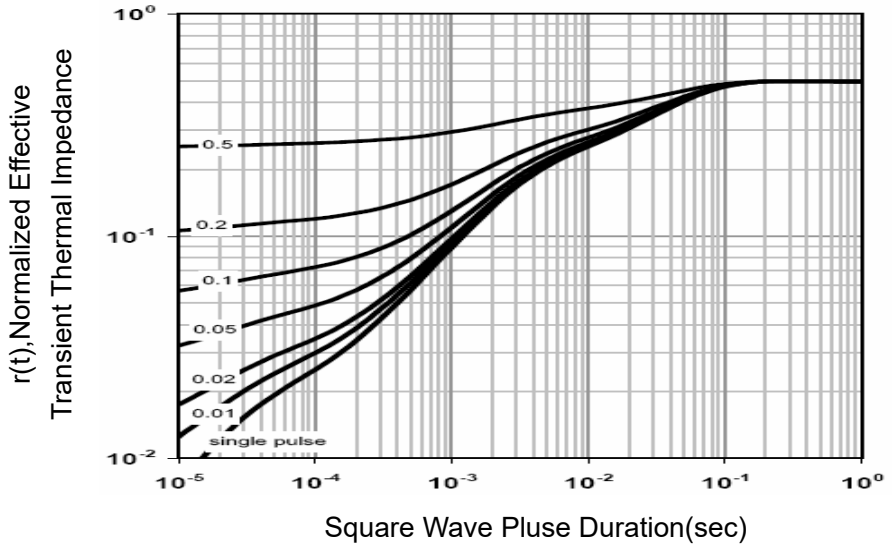
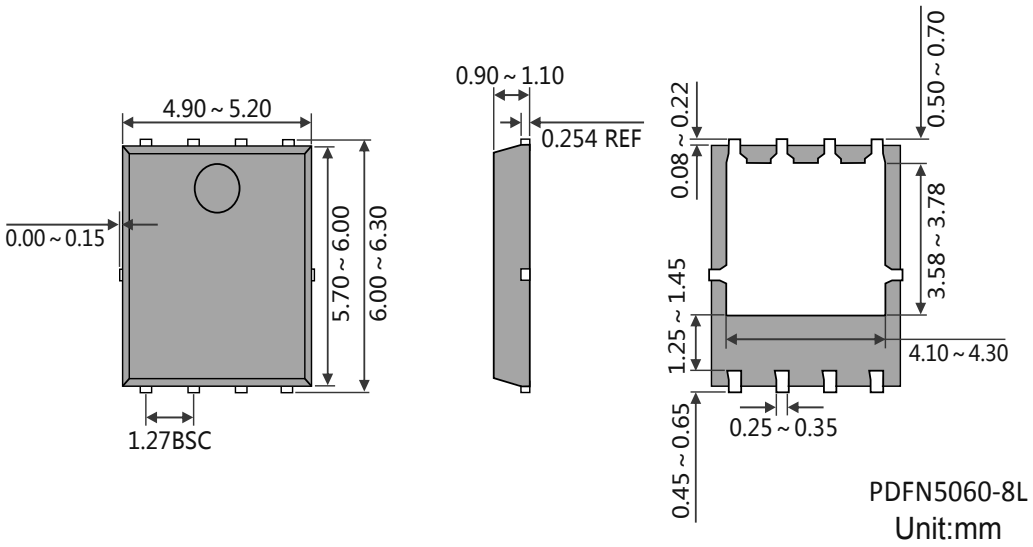


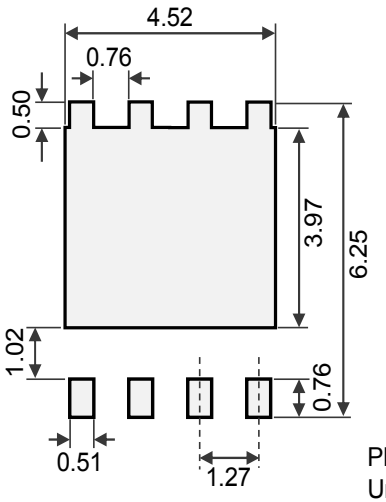
Figure 11 Normalized Maximum Transient Thermal Impedance

Package Outline Dimensions



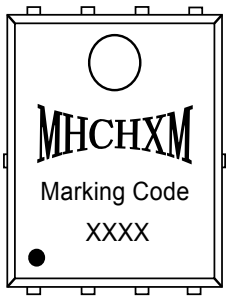
PDFN5060-8L
Unit:mm

Suggested Solder Pad Layout



PDFN5060-8L
Unnoted Tolerance:±0.05
Unit:mm

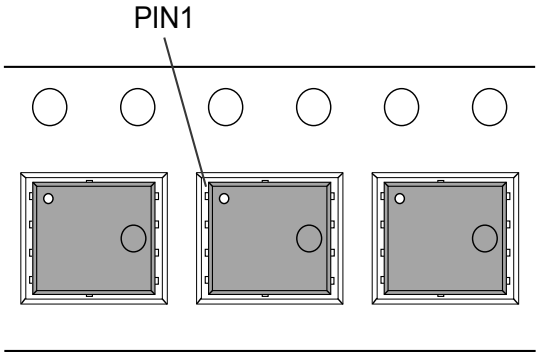
Marking Information



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

Marking Code	Part Number
S40N11HNA	HXMS40N11HNA

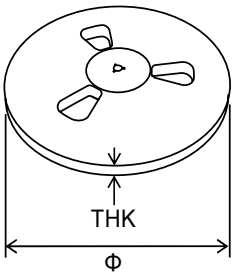
The Orientation Of The Product In The Carrier Tape



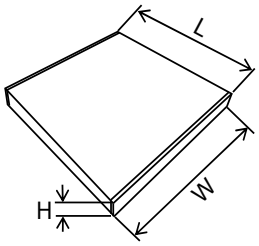
Packing Information

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

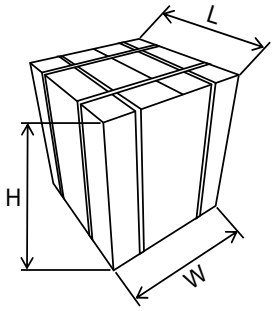
Packaging:Reel



Reel



Reel Inner Box



Reel Outer Box

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