HXMS60N50LNA

SGT N-Channel Enhancement Mode Field Effect Transistor

www.jshxm.com

Features

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

Applications

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

Beneficts

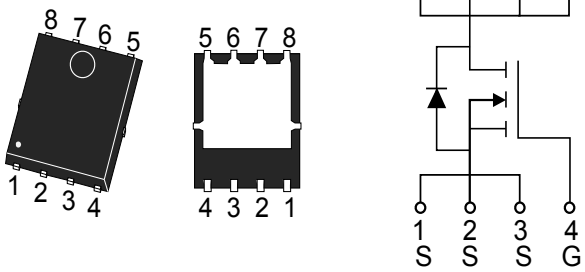
- High robustness and reliability
- Increases maximum current capability
- Low power loss, high power density
- Easy paralleling

Product Summary

V_{DS}	60V
$R_{DS(on)@10V\ MAX}$	5.0mΩ
I_D	80A

RoHS Reach

PDFN5060-8L



Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	60	V
Continuous drain current T_C = 25°C T_C = 100°C	I_D	80 55	A
Pulsed drain current (T_C = 25°C, t_p =100uS)	$I_{D\ pulse}$	360	A
Avalanche energy, single pulse (L=0.5mH，Vds=50V)	E_{AS}	121	mJ
Gate-Source voltage	V_{GS}	±20	V
P_D Power Dissipation T_C = 25°C	78		W
Operating junction and storage temperature	T_j , T_{stg}	-55...+150	°C
Soldering temperature, wave soldering only allowed at leads (1.6mm from case for 10s)	Tsold	260	°C

Thermal Resistance

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Thermal resistance, junction – case.	RthJC	-	-	1.6	°C/W	-

Electrical Characteristic (at Tj = 25 °C, unless otherwise specified)

Parameter	**Symbol**	**Value**			**Unit**	**Test Condition**
		min.	**typ.**	**max.**		
Static Characteristic						
Drain-source breakdown voltage	BV_{DSS}	60	-	-	V	V_{GS}=0V, I_D=250uA
Gate threshold voltage	$V_{GS(th)}$	1.2	-	2.5	V	V_{DS}=V_{GS},I_D=250uA
Zero gate voltage drain current	I_{DSS}	- -	0.02 -	1 100	μA	V_{DS}=60V,V_{GS}=0V T_j=25°C T_j=150°C
Gate-source leakage current	I_{GSS}	-	±10	±100	nA	V_{GS}=±20V,V_{DS}=0V
Drain-source on-state resistance	$R_{DS(on)}$	-	4.05	5.0	mΩ	Vgs=10V,Id=20A
		-	5.8	7.8	mΩ	Vgs=4.5V,Id=20A
Dynamic Characteristic						
Input Capacitance	C_{iss}	-	2140	-	pF	V_{GS}=0V, V_{DS}=25V, f=300KHz
Output Capacitance	C_{oss}	-	850	-		
Reverse Transfer Capacitance	C_{rss}	-	60	-		
Gate Total Charge	Q_G	-	30	-	nC	Vds=30V,Id=20 A ,Vgs=10V
Gate-Source charge	Q_{gs}	-	4.5	-		
Gate-Drain charge	Q_{gd}	-	5	-		
Turn-on delay time	$t_{d(on)}$	-	6.5	-	ns	V_{GS}=10V, V_{DD}=30V, R_{G_ext}=5Ω,I_D=20A
Rise time	t_r	-	8	-		
Turn-off delay time	$t_{d(off)}$	-	38	-		
Fall time	t_f	-	16	-		

Body Diode Characteristic

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Body Diode Forward Voltage	V_{SD}	-	0.77	1.2	V	V_{GS}=0V,I_{SD}=30A
Body Diode Continuous Forward Current	Is	-	-	90	A	TC = 25°C
Body Diode Pulsed Current	Is pulse	-	-	360	A	TC = 25°C
Body Diode Reverse Recovery Time	t_{rr}	-	39	-	ns	I_F=1A, diF/dt=100A/μs
Body Diode Reverse Recovery Charge	Q_{rr}	-	45	-	nC	

Typical Performance Characteristics

Figure 1: Output Characteristics

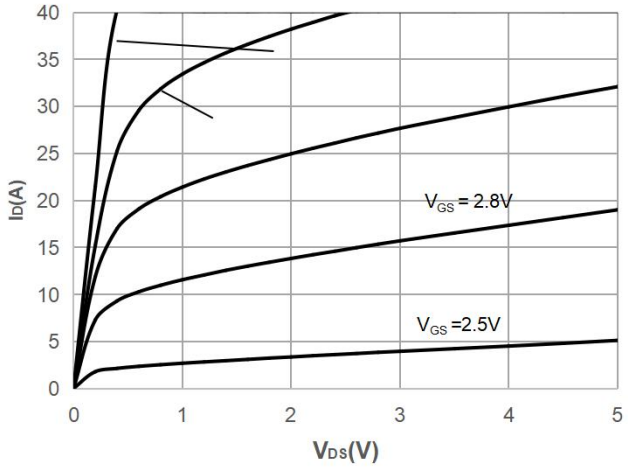


Figure 2: Typical Transfer Characteristics

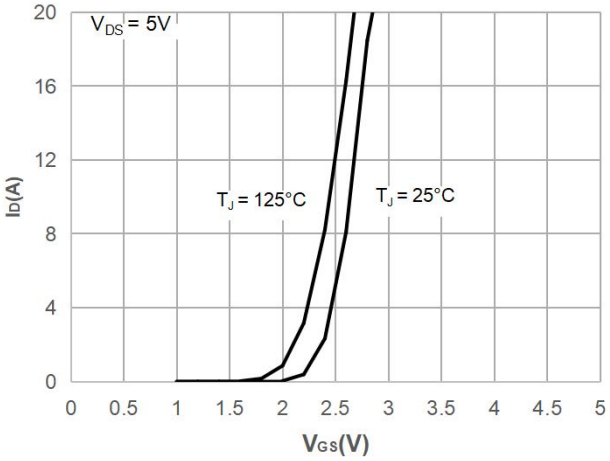


Figure 3: On-resistance vs. Drain Current

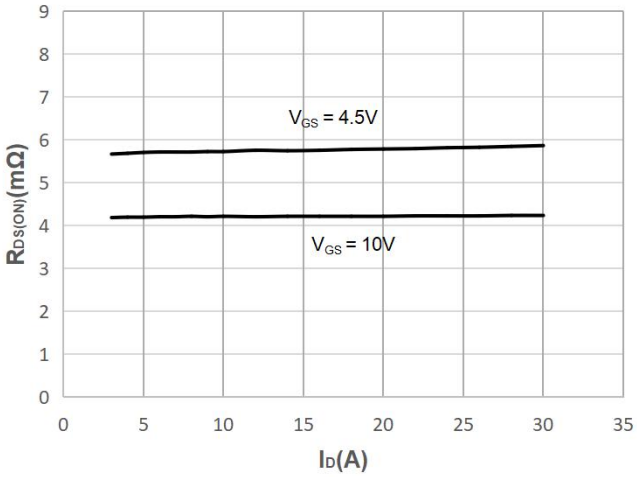


Figure 4: Body Diode Characteristics

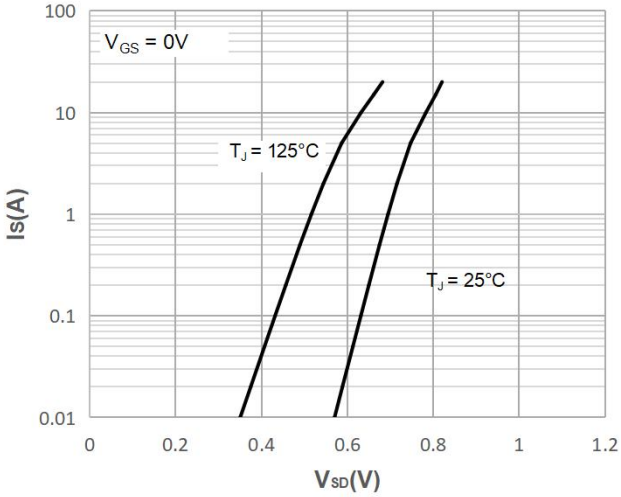


Figure 5: Gate Charge Characteristics

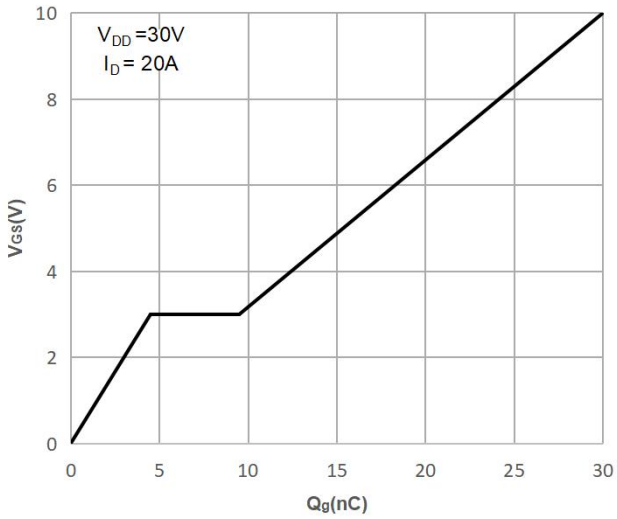


Figure 6: Capacitance Characteristics

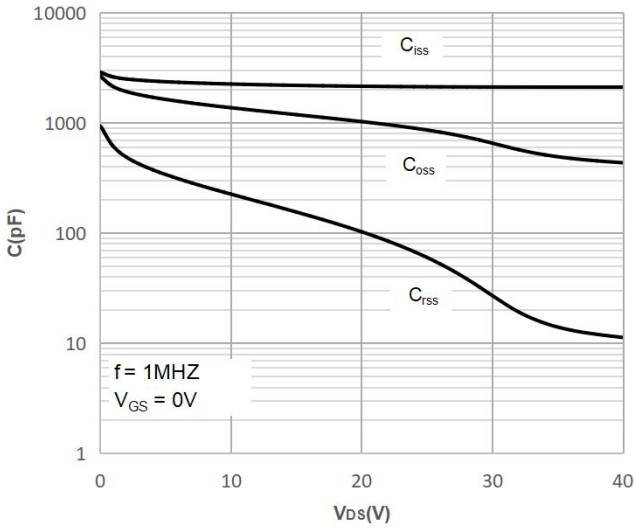


Figure 7: Normalized Breakdown voltage vs. Junction Temperature

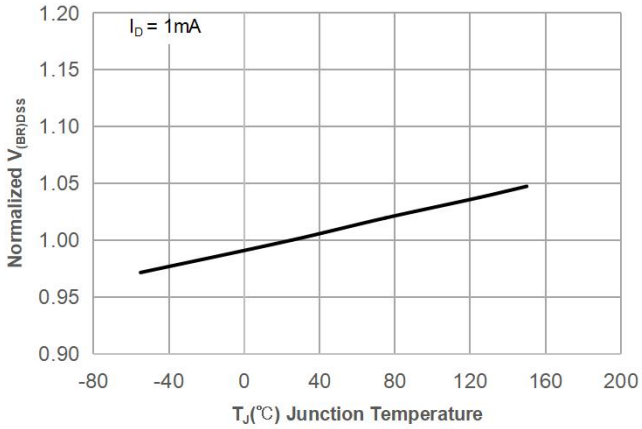


Figure 8: Normalized on Resistance vs. Junction Temperature

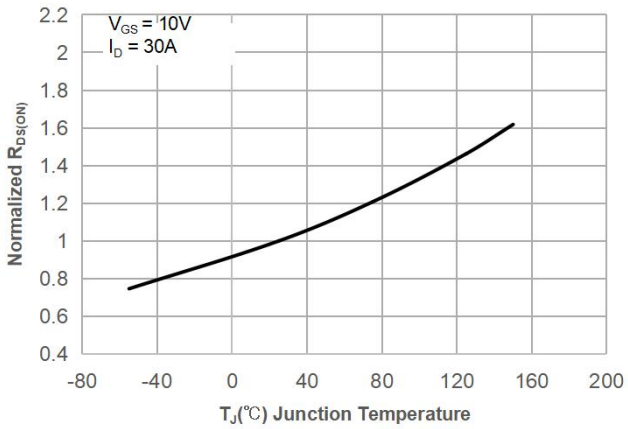


Figure 9: Maximum Safe Operating Area

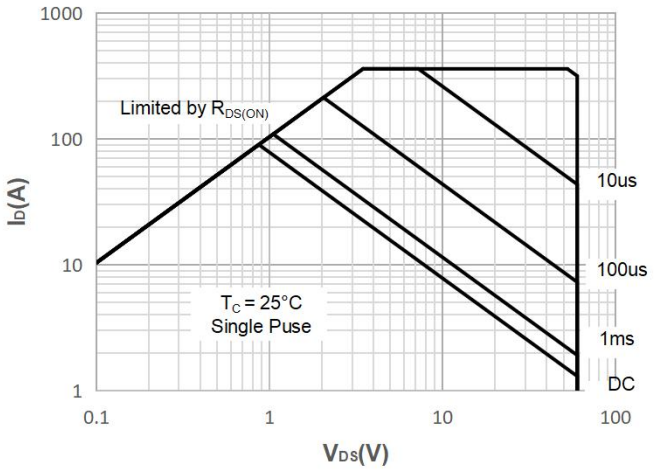


Figure 10: Maximum Continuous Drian Current vs. Case Temperature

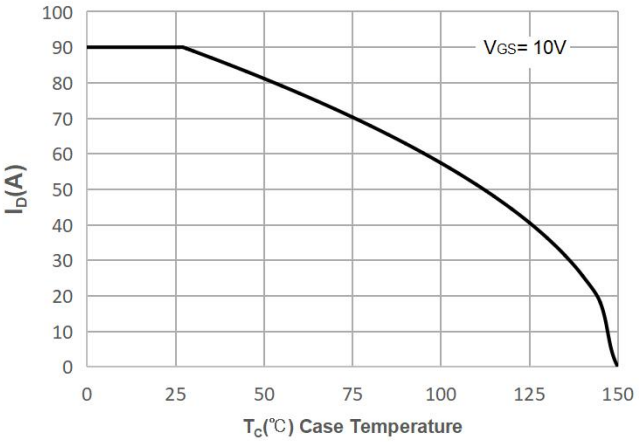


Figure 11: Normalized Maximum Transient Thermal Impedance

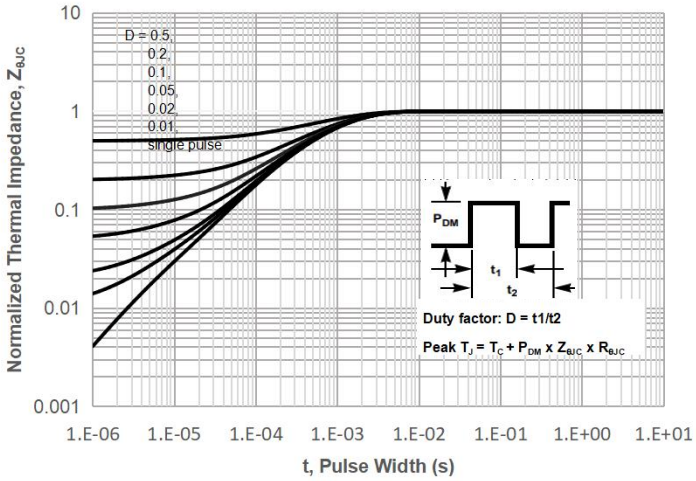
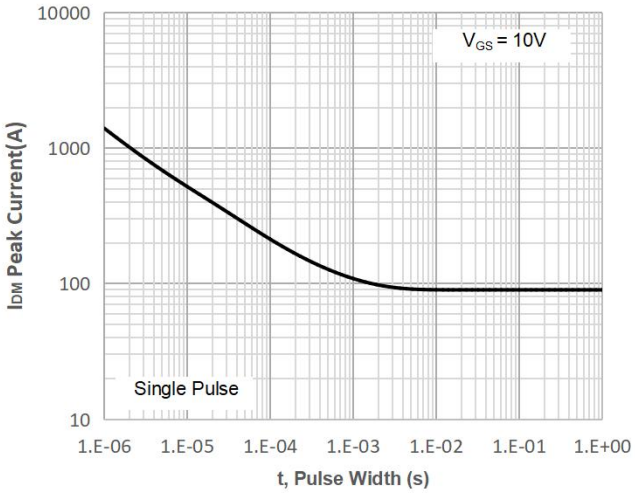
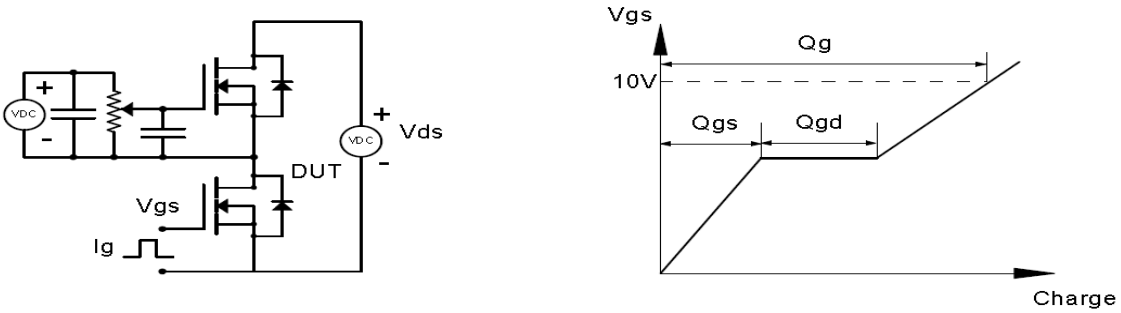


Figure 12: Peak Current Capacity

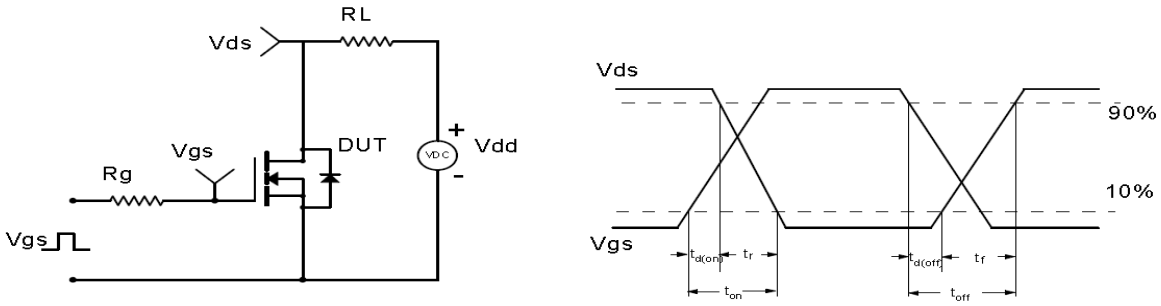


Test Circuit & Waveform

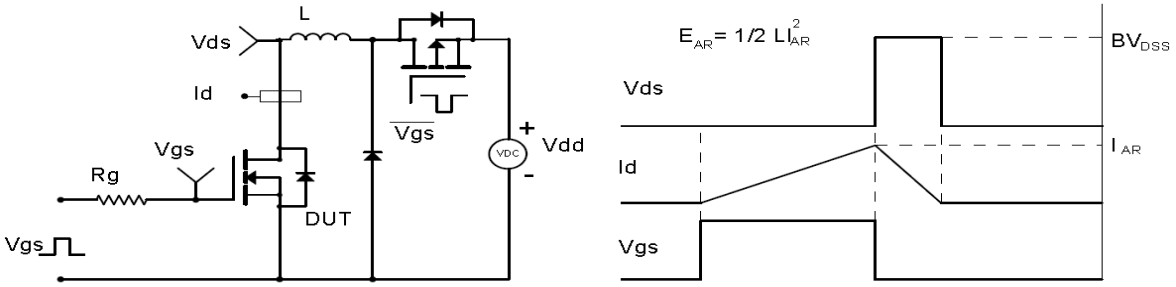
Gate Charge Test Circuit & Waveform



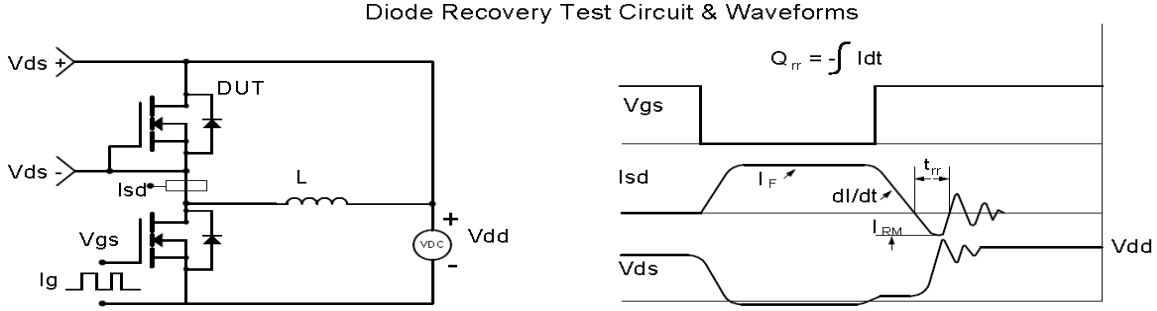
Resistive Switching Test Circuit & Waveforms



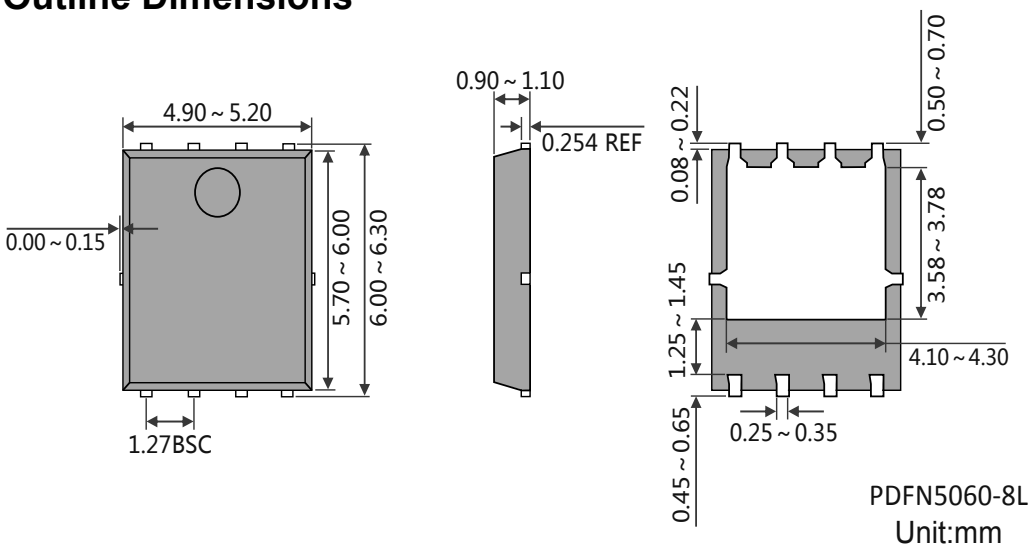
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms

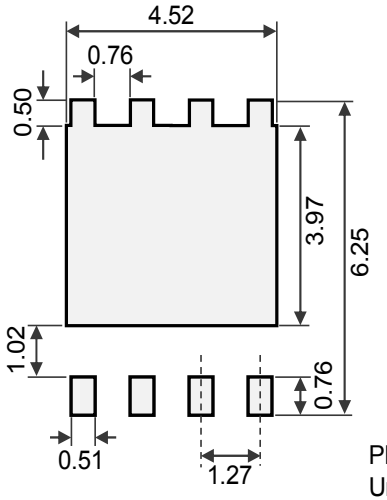


Package Outline Dimensions



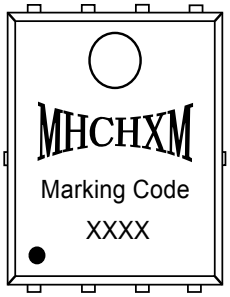
PDFN5060-8L
Unit:mm

Suggested Solder Pad Layout



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

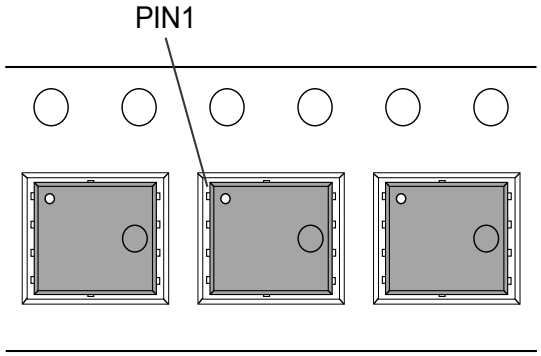
Marking Information



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

Marking Code	Part Number
S60N50LNA	HXMS60N50LNA

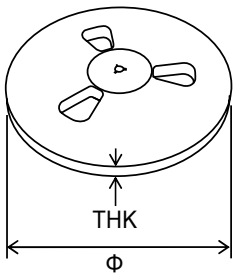
The Orientation Of The Product In The Carrier Tape



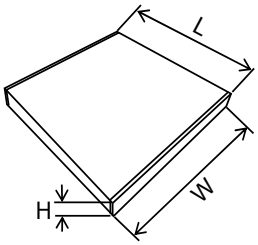
Packing Information

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

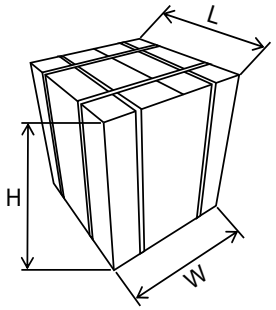
Packaging:Reel



Reel



Reel Inner Box



Reel Outer Box

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