

Features

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

Applications

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

Beneficts

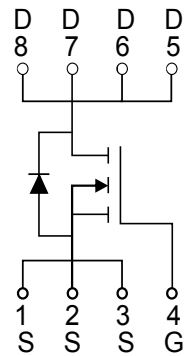
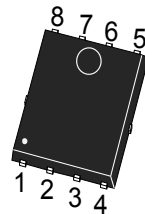
- High robustness and reliability
- Increases maximum current capability
- Low power loss, high power density
- Easy paralleling

Product Summary

V_{DS}	30V
$R_{DS(on)@10V \text{ typ}}$	1.15m Ω
I_D	190A



PDFN5060-8L



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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	190	A
Pulsed Drain Current	I_{DM}	760	A
Maximum Power Dissipation	P_D	89	W
Single pulse avalanche energy	E_{AS}	88	mJ
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	$^\circ\text{C}$

EAS condition : $T_J=25^\circ\text{C}, V_D=24\text{V}, V_G=10\text{V}, L=0.1\text{mH}, R_g=25\Omega, I_{AS}=42\text{A}$

Thermal Characteristic

Parameter	Symbol	Limit	Unit
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	1.4	$^\circ\text{C/W}$
Thermal Resistance,Junction-to-Ambient	$R_{\theta JA}$	50	$^\circ\text{C/W}$



Electrical Characteristics (T_c=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{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						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} ,I _D =250μA	1.0	1.6	2.2	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =30A	-	1.15	1.45	mΩ
Forward Transconductance	g _{FS}	V _{DS} =5V,I _D =15A	-	40	-	S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =20V,V _{GS} =0V, F=1.0MHz	-	2930	-	pF
Output Capacitance	C _{oss}		-	1480	-	pF
Reverse Transfer Capacitance	C _{rss}		-	82	-	pF
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =20V,I _D =30A V _{GS} =10V,R _G =1.6Ω	-	17.4	-	nS
Turn-on Rise Time	t _r		-	4.1	-	nS
Turn-Off Delay Time	t _{d(off)}		-	52.8	-	nS
Turn-Off Fall Time	t _f		-	11.1	-	nS
Total Gate Charge	Q _g	V _{DS} =20V,I _D =30A , V _{GS} =10V	-	44.3	-	nC
Gate-Source Charge	Q _{gs}		-	8	-	nC
Gate-Drain Charge	Q _{gd}		-	5.9	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} =0V,I _S =30A	-	-	1.2	V
Diode Forward Current	I _S		-	-	190	A
Reverse Recovery Time	t _{rr}	TJ = 25°C, IF = 30A	-	85	-	nS
Reverse Recovery Charge	Q _{rr}	di/dt=100A/μs	-	34	-	nC



Typical Electrical and Thermal Characteristics (Curves)

Fig 1: Output Characteristics

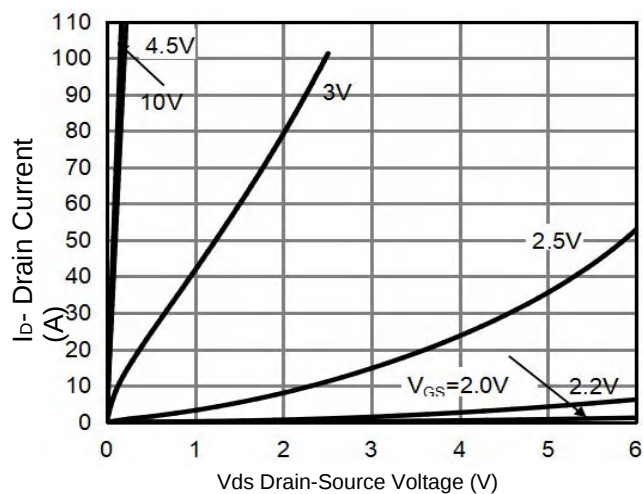


Fig 2: Transfer Characteristics

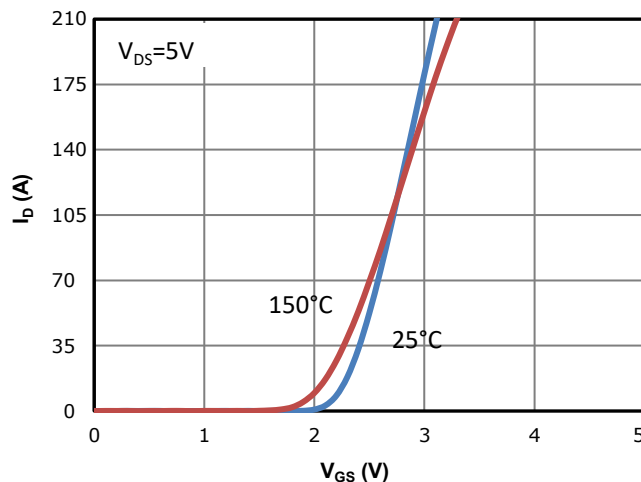


Fig 3: $R_{DS(on)}$ vs Drain Current and Gate Voltage

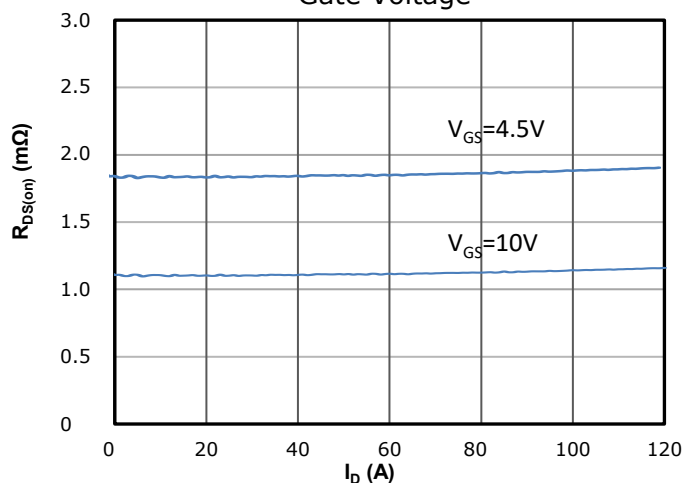


Fig 4: $R_{DS(on)}$ vs Gate Voltage

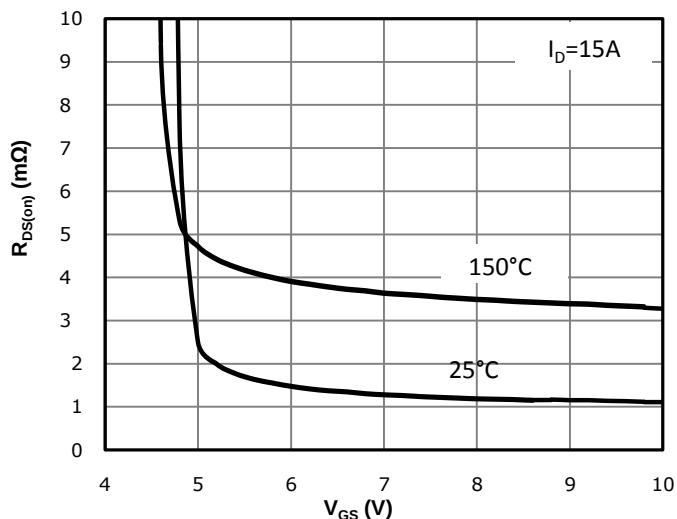


Fig 5: $R_{DS(on)}$ vs. Temperature

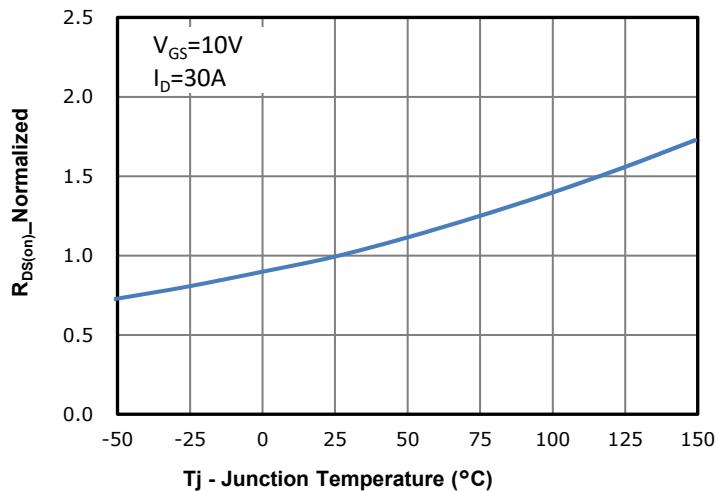


Fig 6: $V_{GS(th)}$ vs. Temperature

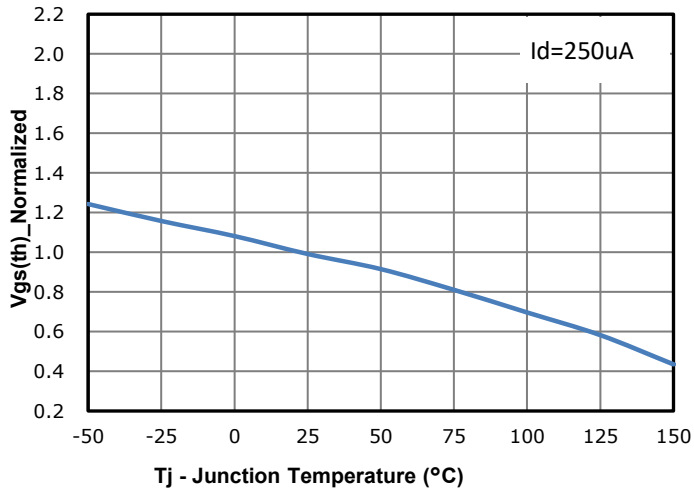


Fig 7: Gate Charge Characteristics

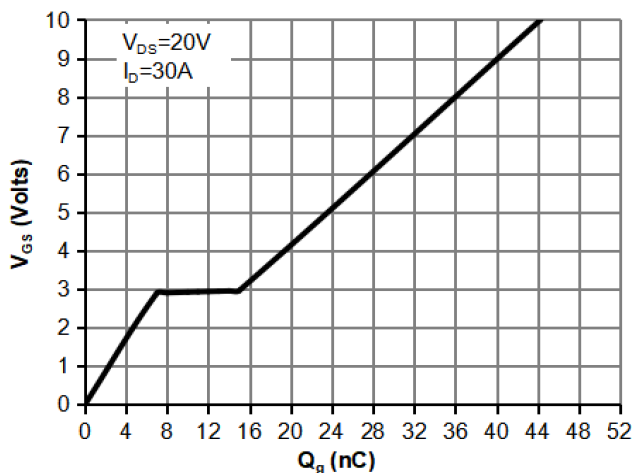


Fig 8: Capacitance Characteristics

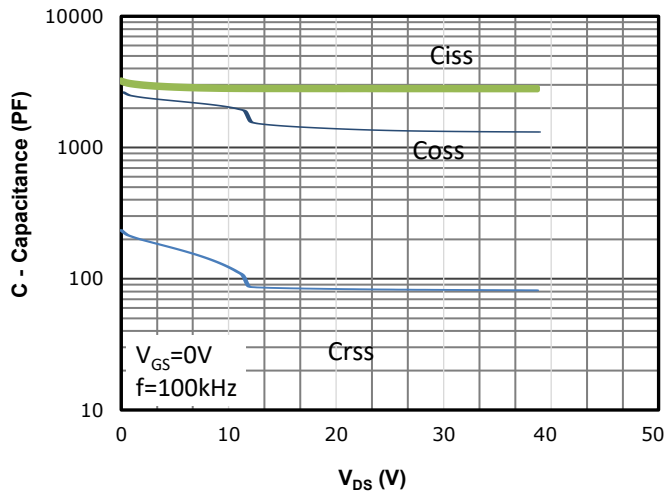


Fig 9: Power Dissipation

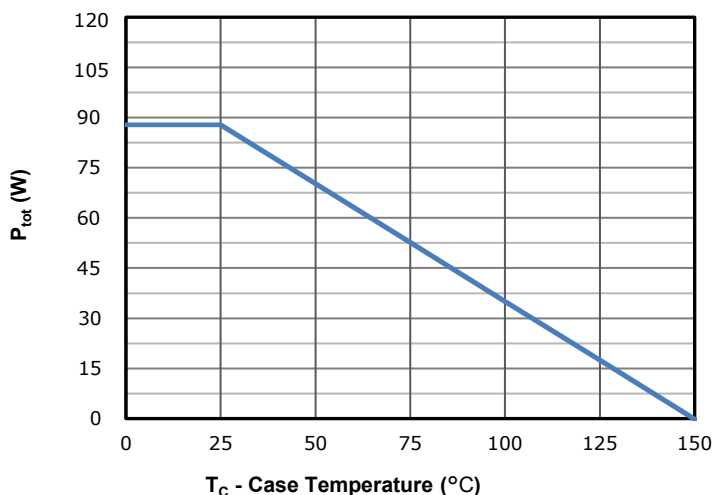


Fig 10: Drain Current Derating

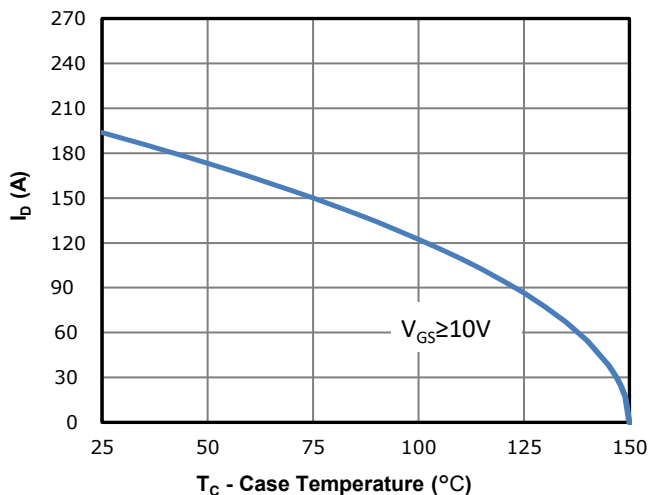


Fig 11: Safe Operation Area

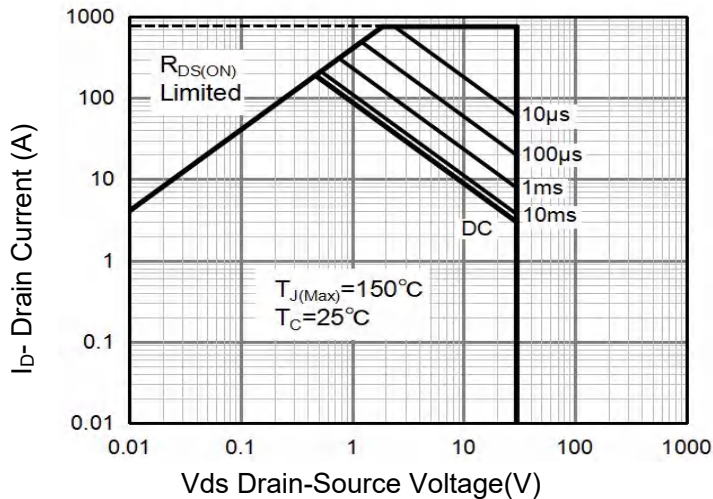
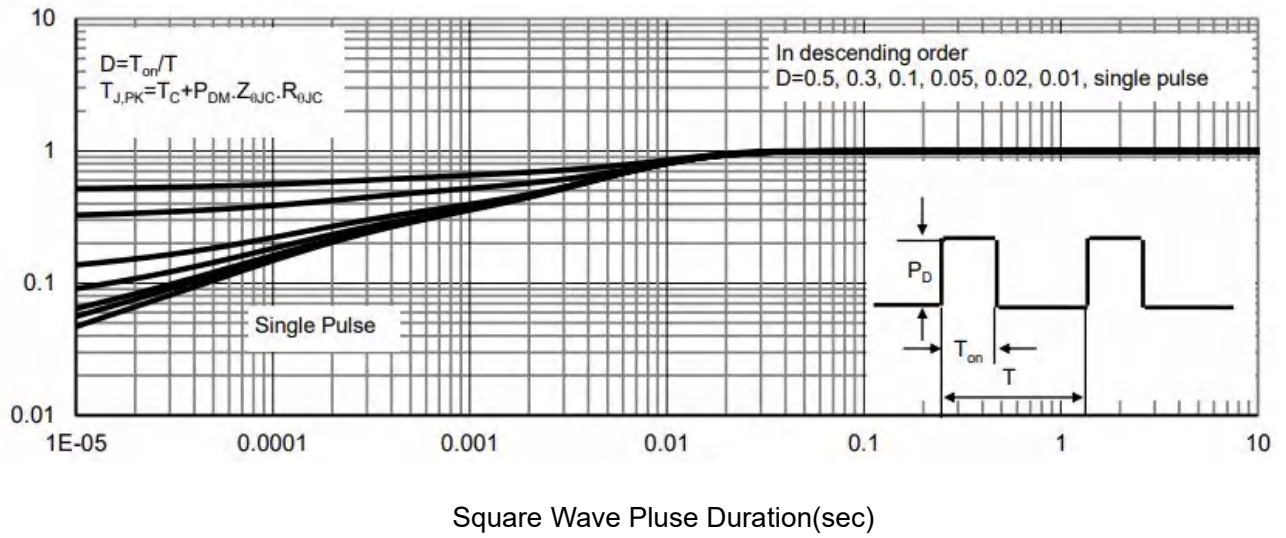
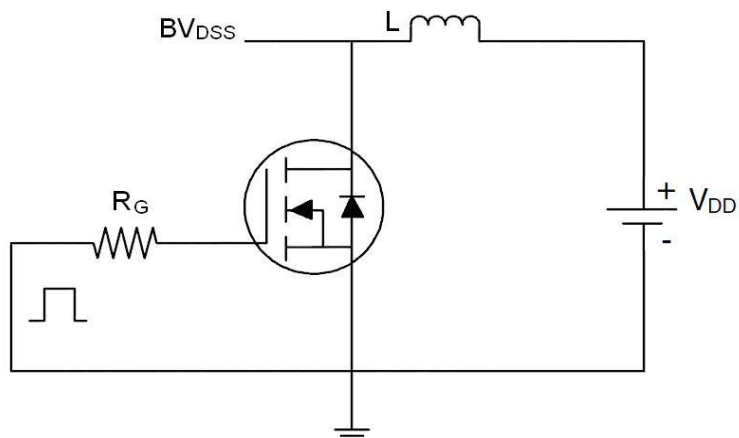


Fig 11: Normalized Maximum Transient Thermal Impedance

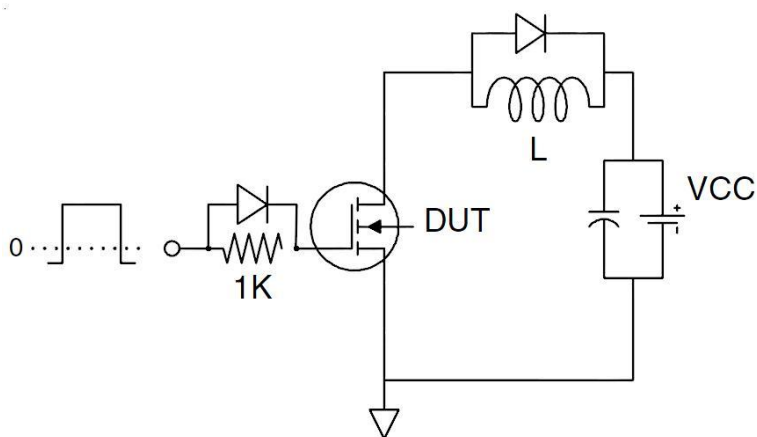


Test circuit

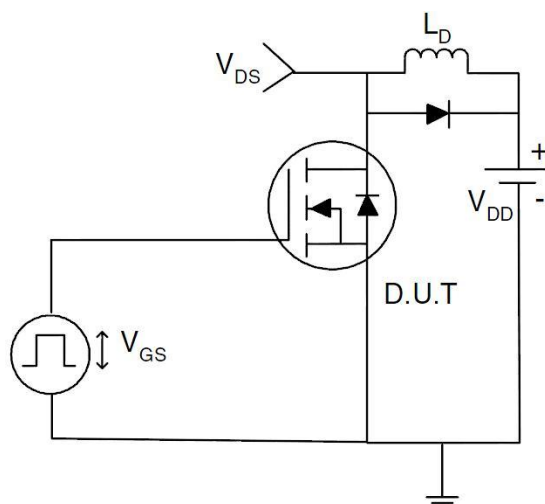
1) E_{AS} Test Circuit



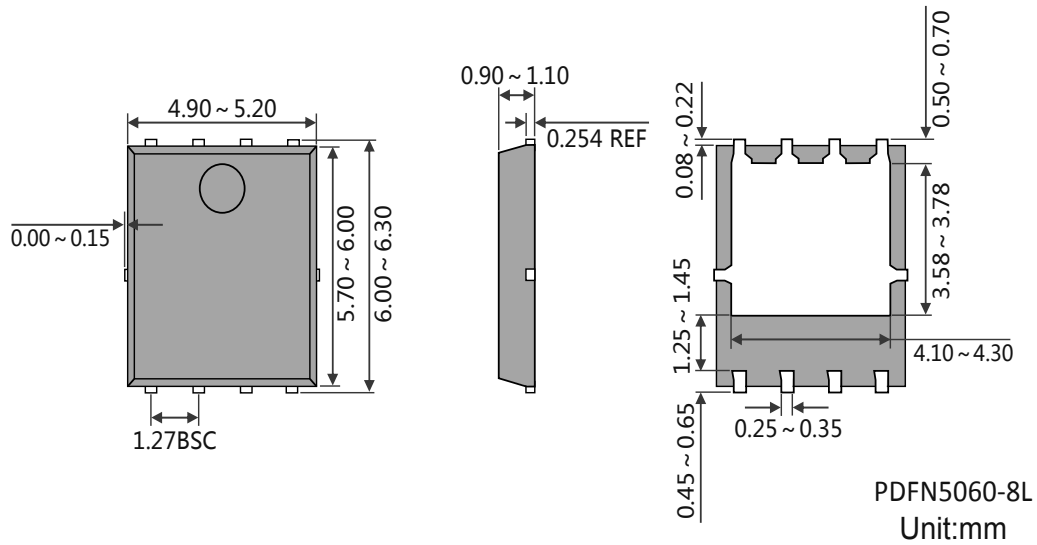
2) Gate Charge Test Circuit



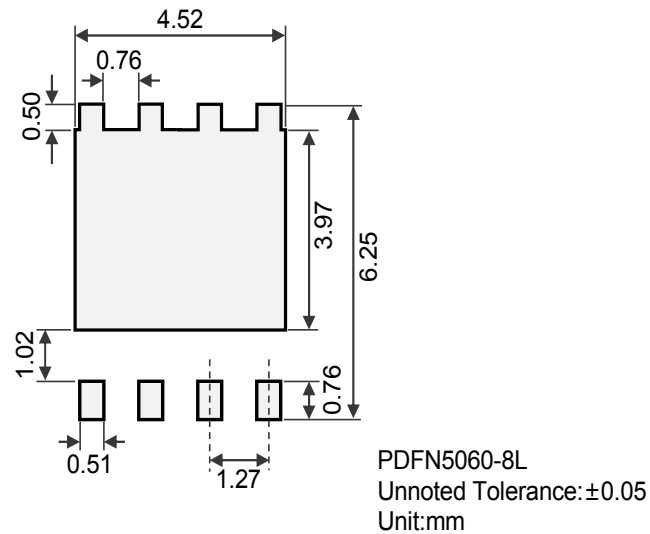
3) Switch Time Test Circuit



Package information



Suggested Solder Pad Layout



Marking Information

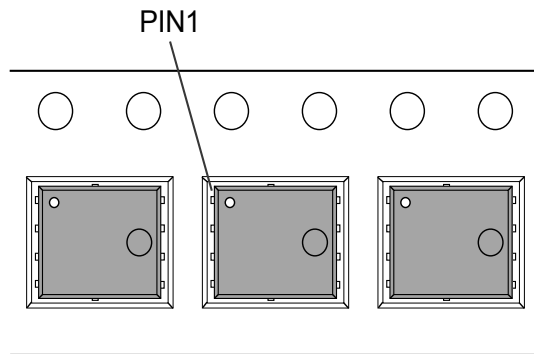


"MHCHXM" = Product Logo
 "Marking Code" = The Following
 "XXXX" = Date Code Marking

Marking Code	Part Number
S30N15LNA	HXMS30N15LNA



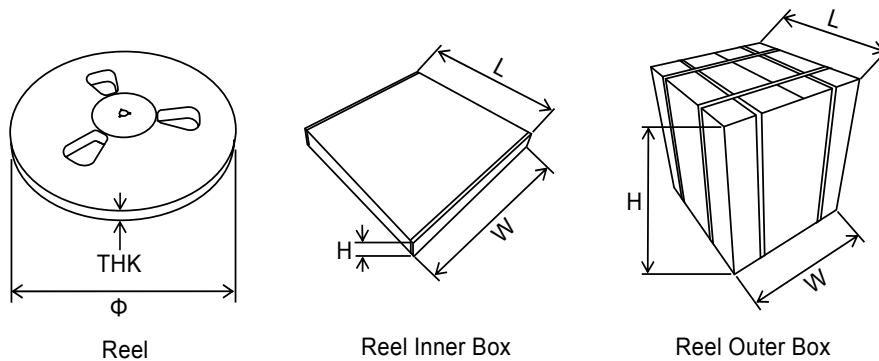
The Orientation Of The Product In The Carrier Tape



Packing Information

Packaging	Part Number	Quantity(pcs)	Size(mm)
Reel	Reel	5000	$\Phi 330 \times \text{THK}15$
	Inner Box	10000	$L355 \times W335 \times H48$
	Outer Box	80000	$L415 \times W375 \times H360$

Packaging:Reel



DISCLAIMER

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