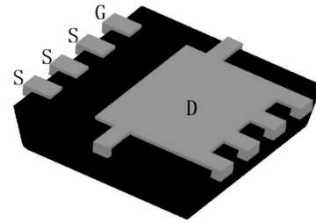


WNM3057B

Single N-Channel, 30V, 80A, Power MOSFET

<http://www.omnivision-group.com/>

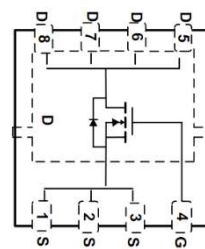
V_{DS} (V)	Max. $R_{DS(on)}$ (m Ω)
30	4.4 @ $V_{GS}=10V$
	6.3 @ $V_{GS}=4.5V$



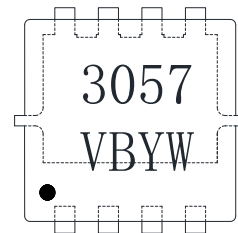
Descriptions

The WNM3057B is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. This device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product WNM3057B is in compliance with RoHS.

PDFN3333-8L



Pin configuration (Top view)



Features

- Trench Technology
- Supper high density cell design
- Excellent ON resistance
- Extremely Low Threshold Voltage
- Small package PDFN3333-8L

3057 = Device Code
VB = Special Code
Y = Year
W = Week(A~z)

Applications

- DC/DC converters
- Power supply converters circuit
- Load/Power Switching for portable device

Marking

Order information

Device	Package	Shipping
WNM3057B-8/TR	PDFN3333-8L	5000/Tape&Reel

Absolute Maximum ratings

Parameter	Symbol	Maximum	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current	I_D	$T_C=25^{\circ}\text{C}$ 80	A
		$T_C=100^{\circ}\text{C}$ 51	A
Pulsed Drain Current ^c	I_{DM}	220	A
Continuous Drain Current ^d	I_{DSM}	$T_A=25^{\circ}\text{C}$ 25	A
		$T_A=70^{\circ}\text{C}$ 20	
Avalanche Energy $L=0.3\text{mH}$	E_{AS}	66	mJ
Power Dissipation ^b	P_D	$T_C=25^{\circ}\text{C}$ 50	W
		$T_C=100^{\circ}\text{C}$ 20	
Power Dissipation ^{a,d}	P_{DSM}	$T_A=25^{\circ}\text{C}$ 4.9	W
		$T_A=70^{\circ}\text{C}$ 3.1	
Operating Junction Temperature	T_J	-55 to 150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 to 150	$^{\circ}\text{C}$

Thermal resistance ratings

Single Operation					
Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance ^a	$t \leq 10\text{ s}$	$R_{\theta JA}$	20.5	25.5	$^{\circ}\text{C/W}$
	Steady State		45.0	56.0	
Junction-to-Case Thermal Resistance	Steady State	$R_{\theta JC}$	2.0	2.5	

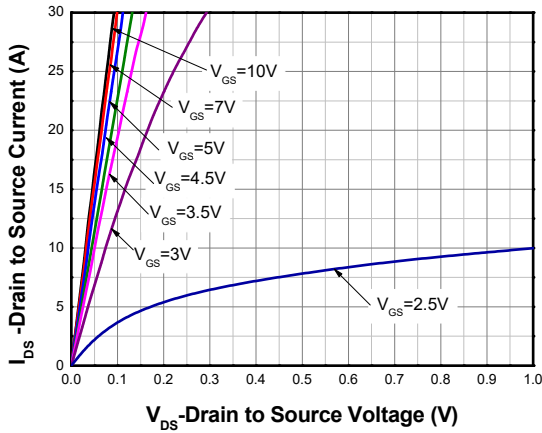
Note:

- FR-4 board (38mm X 38mm X t1.6mm, 70um Copper) partially covered with copper (645mm² area).
- The power dissipation P_D is based on $T_{J(MAX)}=150^{\circ}\text{C}$, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heat sinking is used.
- Repetitive rating, ~10us pulse width, duty cycle ~1%, keep initial $T_J = 25^{\circ}\text{C}$, the maximum allowed junction temperature of 150°C .
- The power dissipation P_D is based on Junction-to-Ambient thermal resistance $R_{\theta JA}$ $t \leq 10\text{s}$ value and the $T_{J(MAX)}=150^{\circ}\text{C}$.
- The static characteristics are obtained using ~380us pulses, duty cycle ~1%.

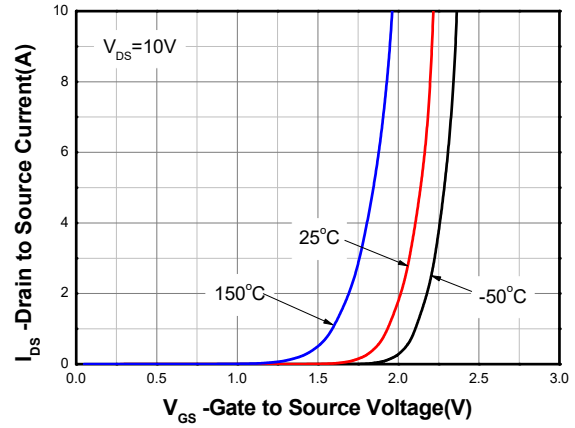
Electronics Characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0 V, I _D = 250uA	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 24V, V _{GS} = 0V			1	uA
Gate-to-source Leakage Current	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} = V _{DS} , I _D = 250uA	1.2	1.7	2.5	V
Drain-to-source On-resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 20A		3.5	4.4	mΩ
		V _{GS} = 4.5V, I _D = 16A		4.7	6.3	
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C _{ISS}	V _{GS} = 0 V, f = 1.0MHz, V _{DS} = 15 V		1493		pF
Output Capacitance	C _{OSS}			303		
Reverse Transfer Capacitance	C _{RSS}			189		
Gate Resistance	R _g	F=1.0MHz		3.5		Ω
Total Gate Charge	Q _{G(TOT)}	V _{GS} = 10 V, V _{DS} = 15 V, I _D = 20 A		32.5		nC
Threshold Gate Charge	Q _{G(TH)}			2.9		
Gate-to-Source Charge	Q _{GS}			5.5		
Gate-to-Drain Charge	Q _{GD}			5.3		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	td(ON)	V _{GS} = 10 V, V _{DS} = 15 V, I _D = 20 A , R _G = 6Ω		11.3		ns
Rise Time	tr			15.5		
Turn-Off Delay Time	td(OFF)			56.4		
Fall Time	tf			14.8		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V _{SD}	V _{GS} = 0 V, I _S = 1A		0.7	1.2	V

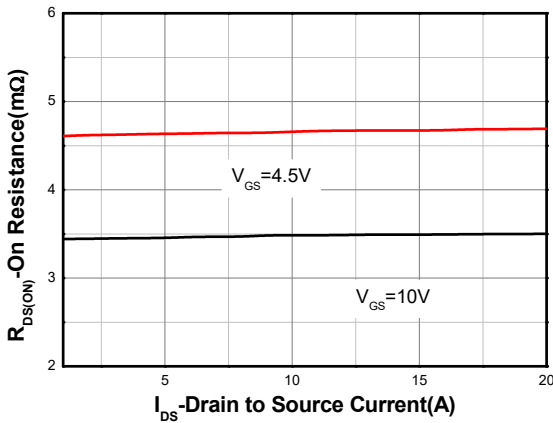
Typical Characteristics (Ta=25°C, unless otherwise noted)



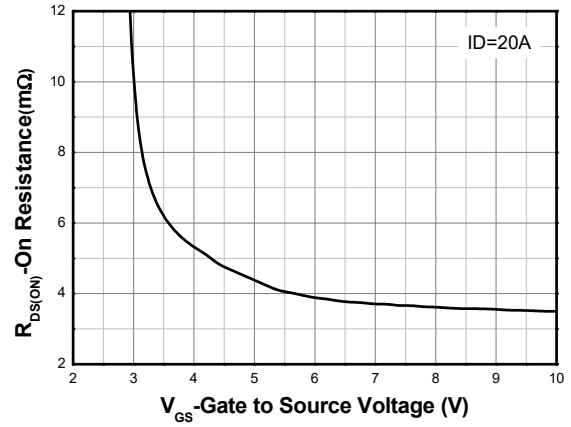
Output Characteristics °



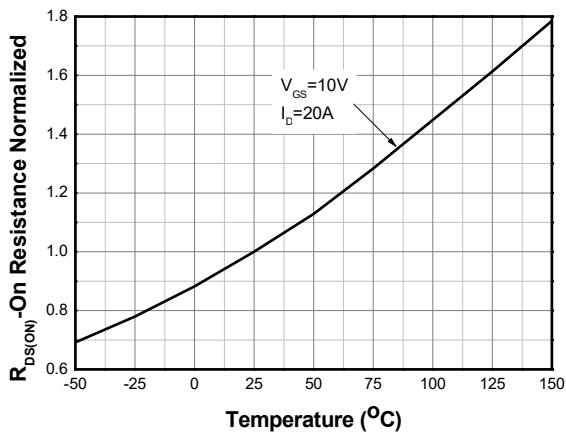
Transfer Characteristics °



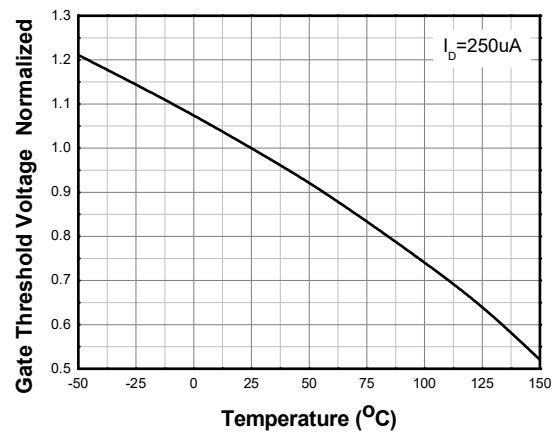
On-Resistance vs. Drain Current °



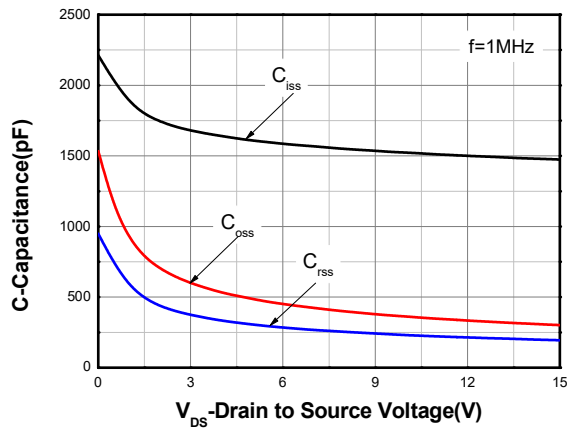
On-Resistance vs. Gate to Source Voltage °



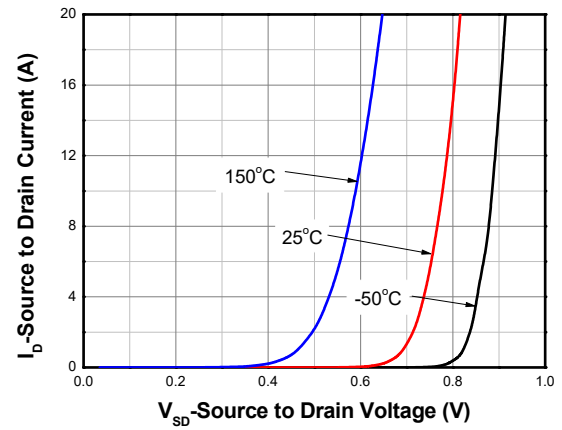
On-Resistance vs. Junction Temperature °



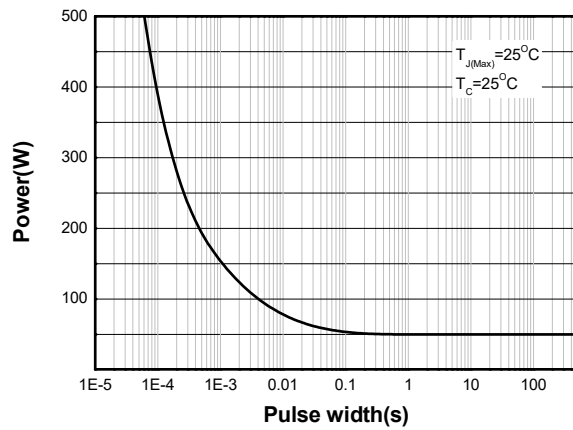
Threshold Voltage vs. Temperature



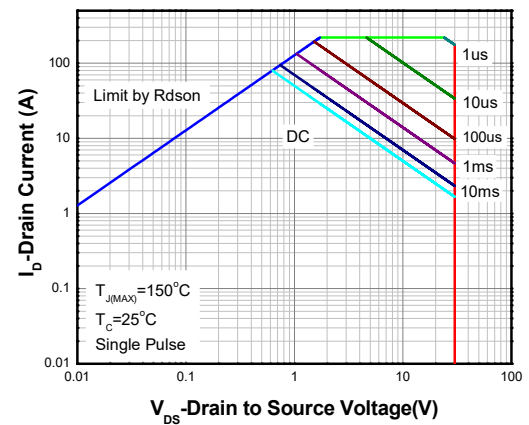
Capacitance



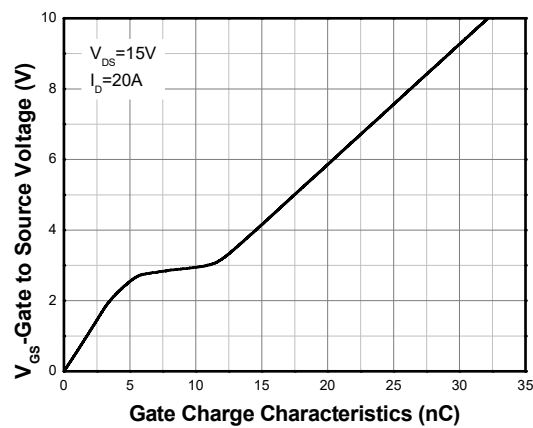
Body Diode Forward Voltage^e



Single pulse power

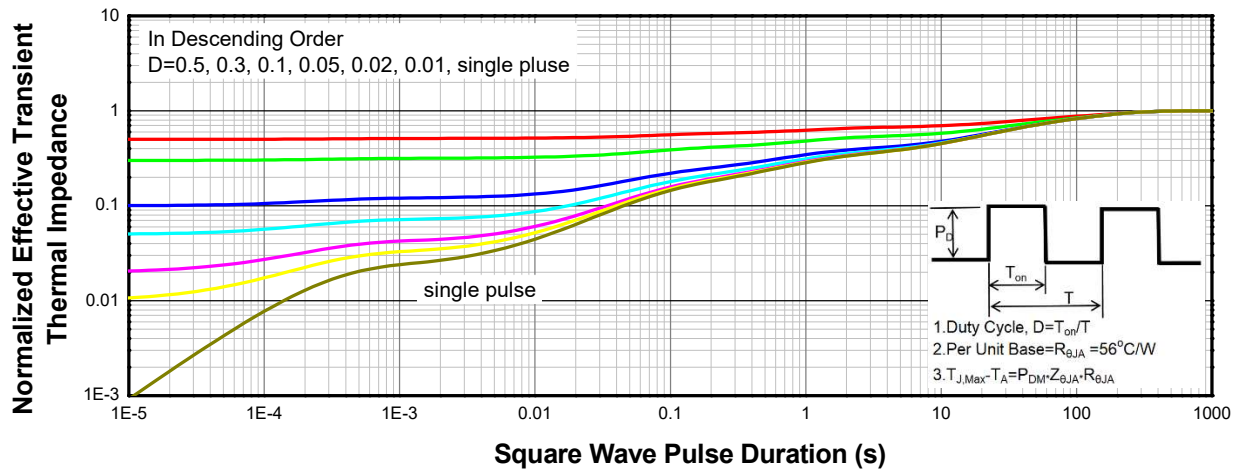


Safe operating power

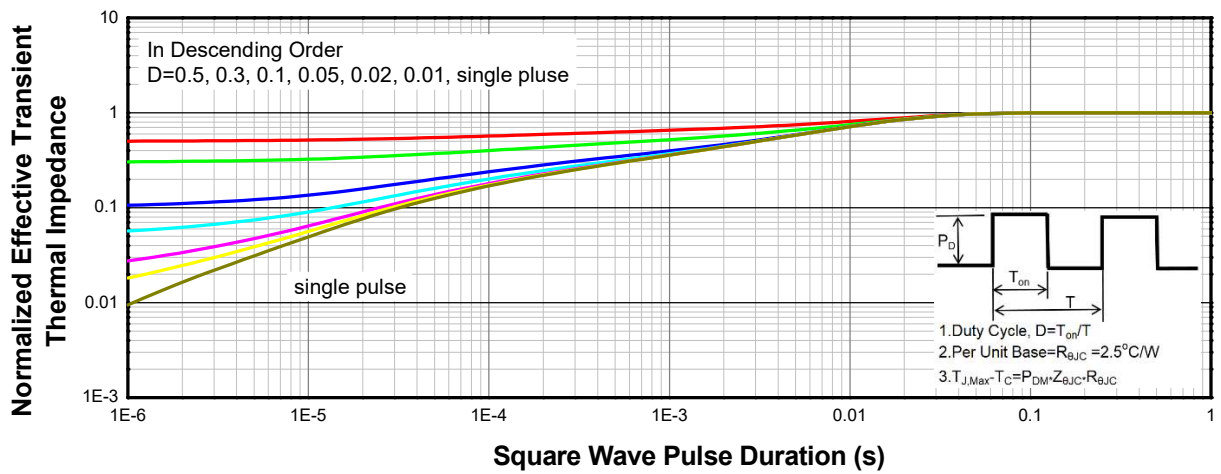


Gate Charge Characteristics

Transient thermal response (Junction-to-Ambient)

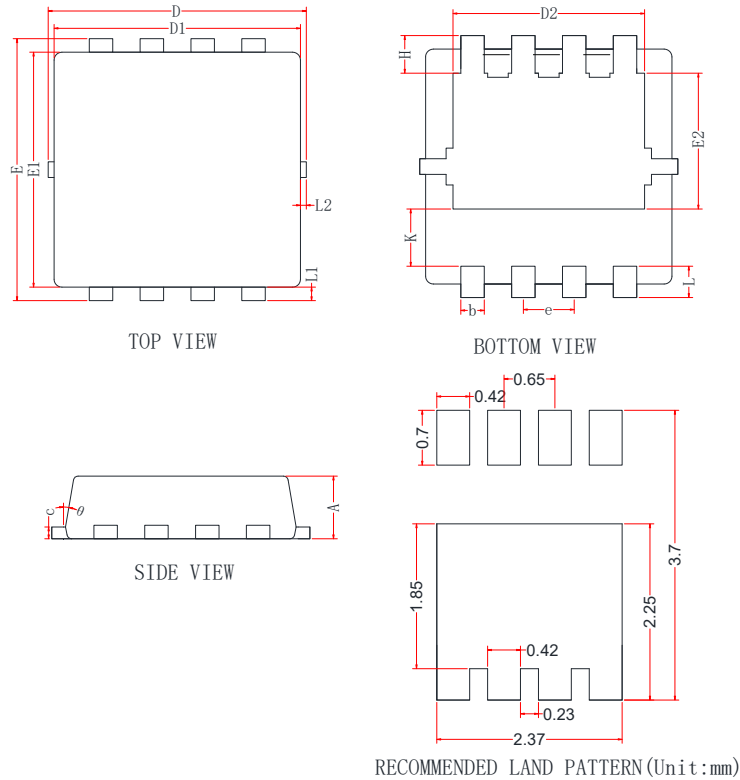


Transient thermal response (Junction-to-Case)



PACKAGE OUTLINE DIMENSIONS

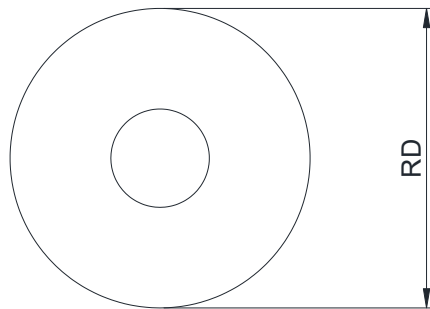
PDFN3333-8L



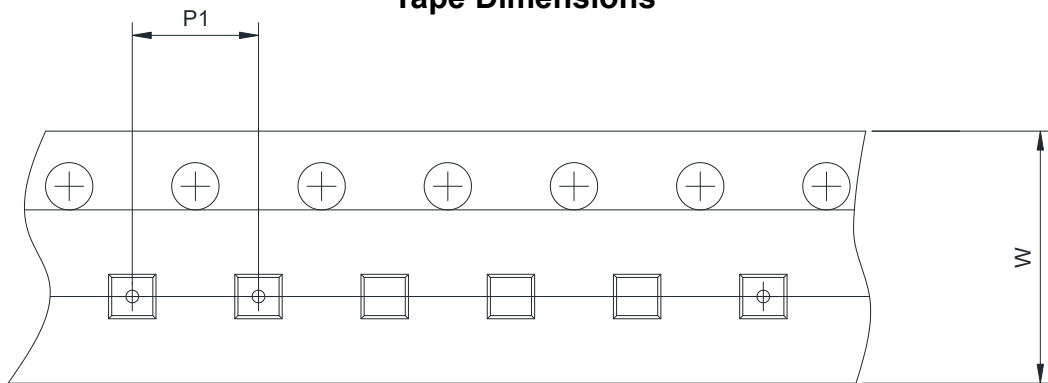
Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.70	0.80	0.90
b	0.25	0.30	0.39
c	0.14	0.15	0.25
D	3.20	3.30	3.40
D1	3.00	3.15	3.30
D2	2.35	2.45	2.55
e	0.55	0.65	0.75
E	3.25	3.35	3.45
E1	2.85	3.00	3.15
E2	1.63	1.73	1.84
H	0.33	0.48	0.63
K	0.58	0.68	0.79
L	0.30	0.40	0.50
L1	0.05	0.15	0.25
L2	-	-	0.15
θ	8 °	10 °	12 °

TAPE AND REEL INFORMATION

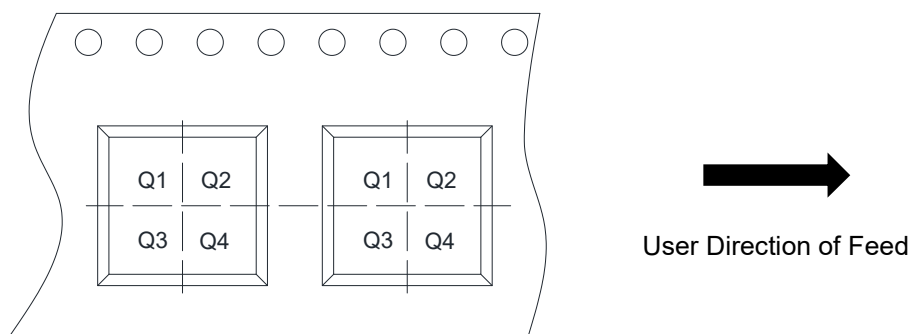
Reel Dimensions



Tape Dimensions



Quadrant Assignments For PIN1 Orientation In Tape



RD	Reel Dimension	☐ 7inch	☒ 13inch
W	Overall width of the carrier tape	☐ 8mm	☒ 12mm ☐ 16mm
P1	Pitch between successive cavity centers	☐ 2mm	☐ 4mm ☒ 8mm
Pin1	Pin1 Quadrant	☒ Q1	☐ Q2 ☐ Q3 ☐ Q4