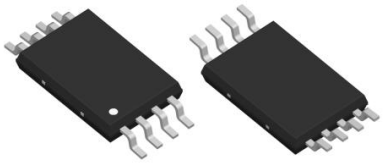
WNMD2172

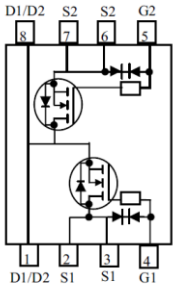
Dual N-Channel, 20V, 7.0A, Power MOSFET

Http//:www.sh-willsemi.com

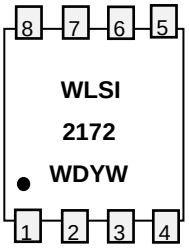
V_{DS} (V)	Typical Rds(on) (mΩ)
20	12.5@ V_{GS}=10V
	13@ V_{GS}=4.5V
	13.5@ V_{GS}=3.8V
	14.5@ V_{GS}=3.1V
	15.5 @ V_{GS}=2.5V
	19.5@ V_{GS}=1.8V
ESD Protected	



TSSOP-8L



Pin configuration (Top view)



WLSI = Willsemi
2172 = Device Code
WD =Special Code
Y = Year
W = Week

Marking

Descriptions

The WNMD2172 is Dual 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 WNMD2172 is Pb-free and Halogen-free.

Features

- Trench Technology
- Supper high density cell design
- Excellent ON resistance for higher DC current
- Extremely Low Threshold Voltage
- Small package TSSOP-8L

Applications

- Driver for Relay, Solenoid, Motor, LED etc.
- DC-DC converter circuit
- Power Switch
- Load Switch
- Charging

Order information

Device	Package	Shipping
WNMD2172-8/TR	TSSOP-8L	3000/Reel&Tape

Absolute Maximum ratings

Parameter		Symbol	10 S	Steady State	Unit
Drain-Source Voltage		V_{DS}	20		V
Gate-Source Voltage		V_{GS}	±12		
Continuous Drain Current [a]	T_A=25°C	I_D	7.0	5.9	A
	T_A=70°C		5.6	4.7	
Maximum Power Dissipation [a.]	T_A=25°C	P_D	1.4	1.0	W
	T_A=70°C		0.9	0.6	
Continuous Drain Current [b]	T_A=25°C	I_D	6.2	5.6	A
	T_A=70°C		5.0	4.5	
Maximum Power Dissipation [b]	T_A=25°C	P_D	1.1	0.9	W
	T_A=70°C		0.7	0.5	
Pulsed Drain Current [c]		I_{DM}	30		A
Operating Junction Temperature		T_J	-55~+150		°C
Lead Temperature		T_L	260		°C
Storage Temperature Range		T_{stg}	-55 to 150		°C

Thermal resistance ratings

Single Operation					
Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance [a]	t ≤ 10 s	$R_{\theta JA}$	66	87	°C/W
	Steady State		90	120	
Junction-to-Ambient Thermal Resistance [b]	t ≤ 10 s	$R_{\theta JA}$	84	108	
	Steady State		110	135	
Junction-to-Case Thermal Resistance	Steady State	$R_{\theta JC}$	54	71	

a Surface mounted on FR-4 Board using 1 square inch pad size, 1oz copper;.

b Surface mounted on FR-4 board using minimum pad size, 1oz copper;.

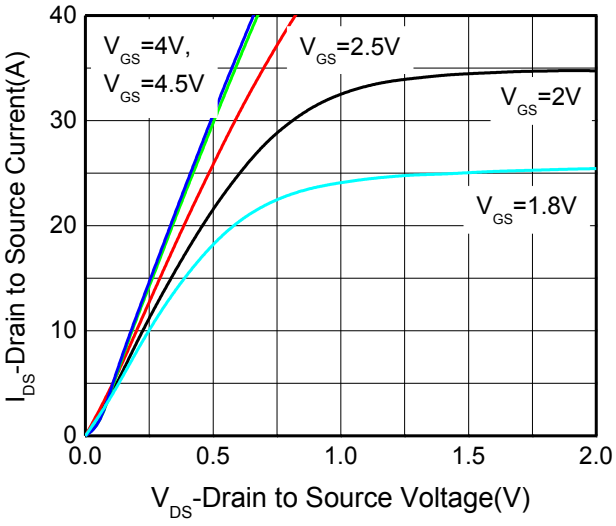
c Repetitive rating, pulse width limited by junction temperature, t_p=10μs, Duty Cycle=1%

d Maximum junction temperature T_J=150°C;.

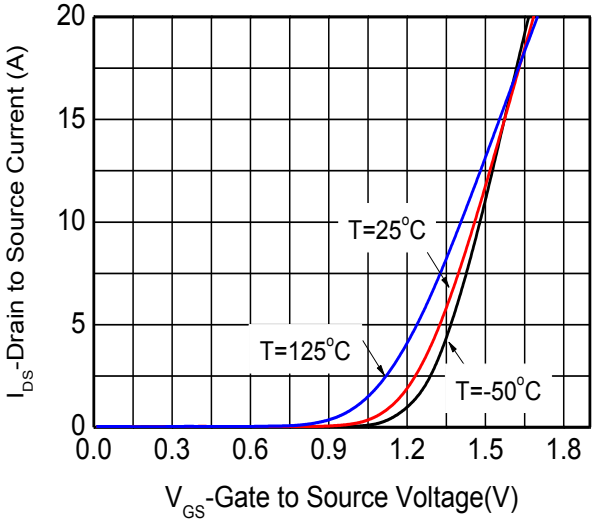
Electronics Characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0 V, I_D = 250uA	20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =16 V, V_{GS} = 0V			1	uA
Gate-to-source Leakage Current	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±10V			±10	uA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS}, I_D = 250uA	0.4	0.7	1.0	V
Drain-to-source On-resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 7.0A	8	12.5	16	mΩ
		V_{GS} = 4.5V, I_D = 7.0A	9	13	17	
		V_{GS} = 3.8V, I_D = 6.5A	9.5	13.5	18	
		V_{GS} = 3.1V, I_D = 6.5A	10	14.5	19	
		V_{GS} = 2.5V, I_D = 6.5A	11.5	15.5	21	
		V_{GS} = 1.8V, I_D = 5.0A	13	19.5	28	
Forward Transconductance	g_{FS}	V_{DS} = 5.0 V, I_D = 7.0A		18		S
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C_{ISS}	V_{GS} = 0 V, f = 1.0 MHz, V_{DS} = 10 V		1371		pF
Output Capacitance	C_{OSS}			185		
Reverse Transfer Capacitance	C_{RSS}			172		
Total Gate Charge	$Q_{G(TOT)}$	V_{GS} = 4.5 V, V_{DD} = 10 V, I_D = 4.8 A		18.9		nC
Threshold Gate Charge	$Q_{G(TH)}$			1.3		
Gate-to-Source Charge	Q_{GS}			2.8		
Gate-to-Drain Charge	Q_{GD}			6.4		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	td(ON)	V_{GS} = 4.5 V, V_{DD} = 6 V, I_D=4.8A, R_G=6 Ω		29		ns
Rise Time	tr			35		
Turn-Off Delay Time	td(OFF)			260		
Fall Time	tf			125		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	V_{GS} = 0 V, I_S = 1.0A		0.65	1.5	V

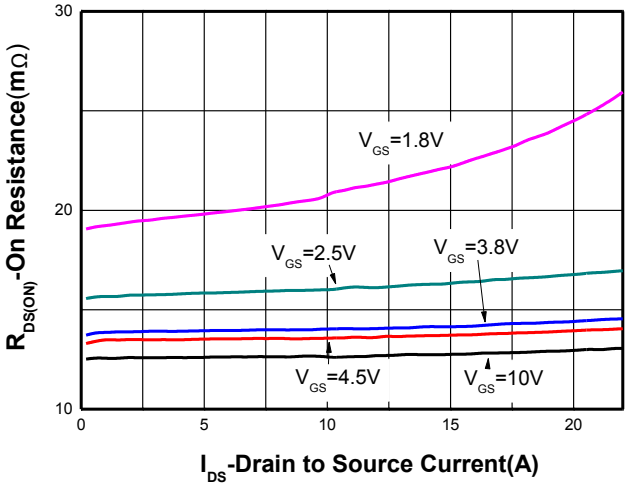
Typical Characteristics (Ta=25°C, unless otherwise noted)



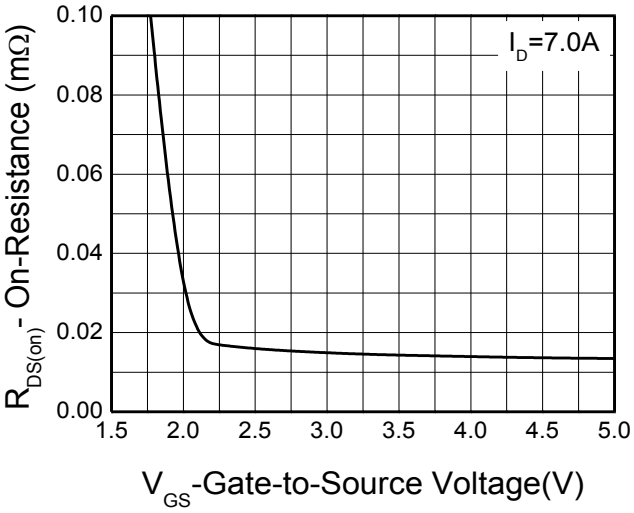
Output characteristics



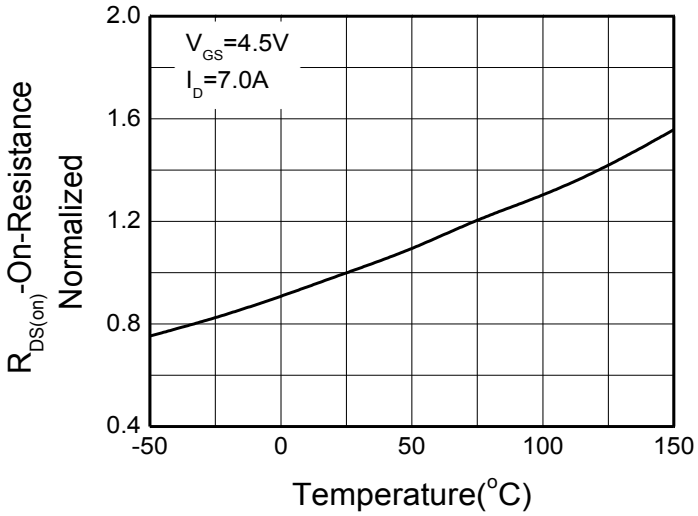
Transfer characteristics



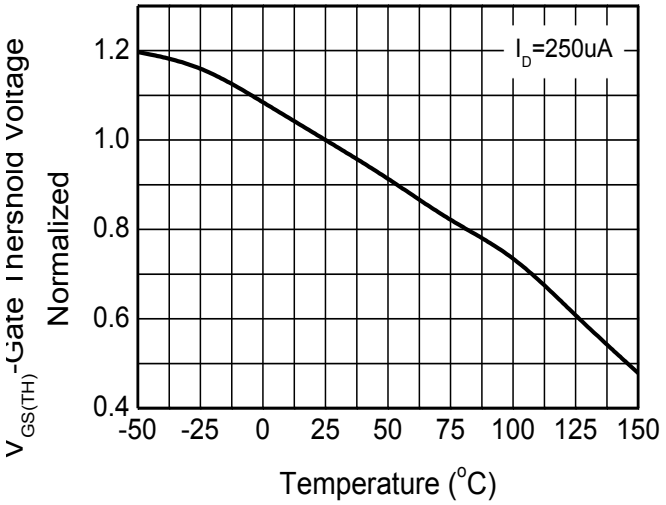
On-Resistance vs. Drain current



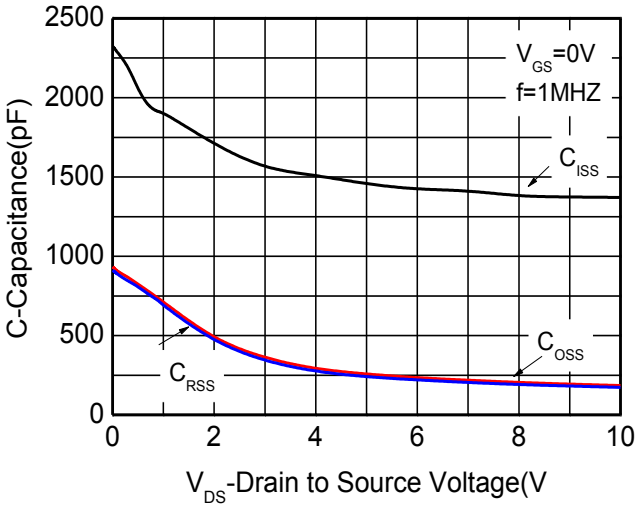
On-Resistance vs. Gate-to-Source voltage



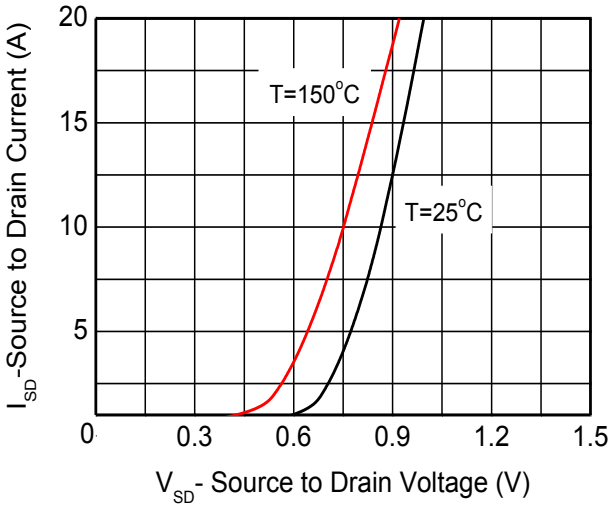
On-Resistance vs. Junction temperature



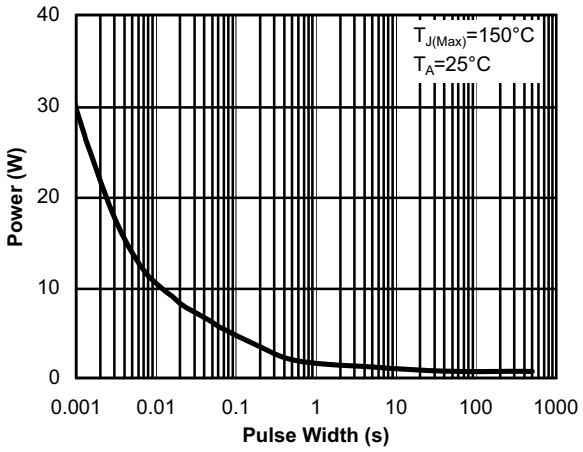
Threshold voltage vs. Temperature



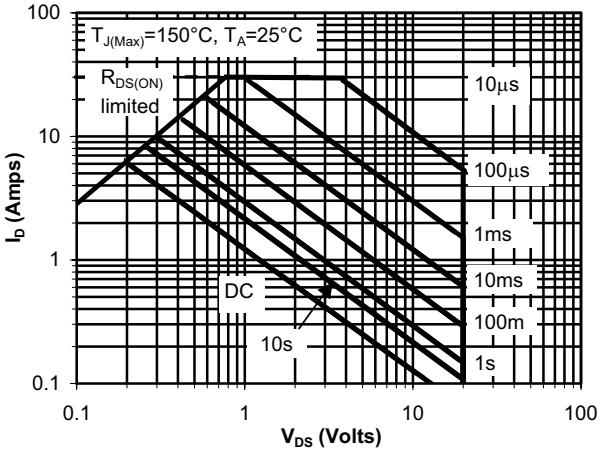
Capacitance



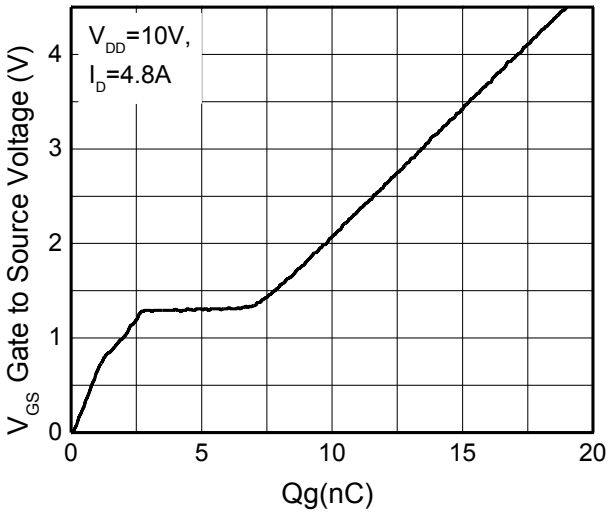
Body diode forward voltage



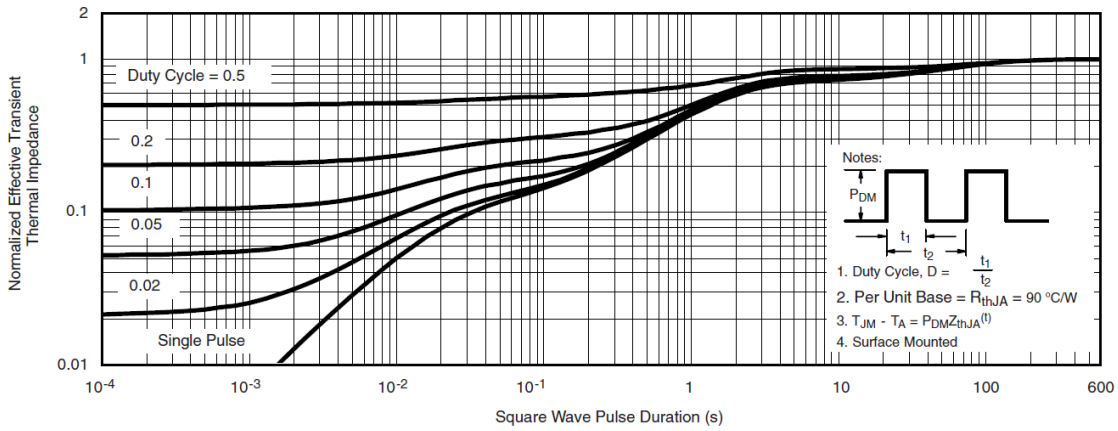
Single pulse power



Safe operating power(Note.e)



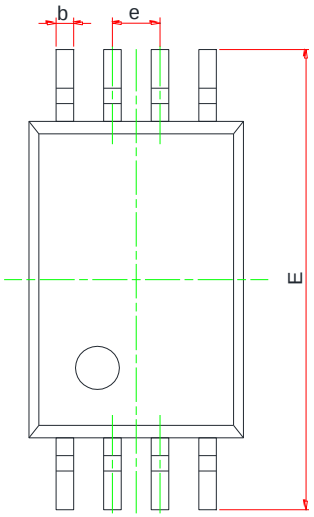
Gate Charge Characteristics



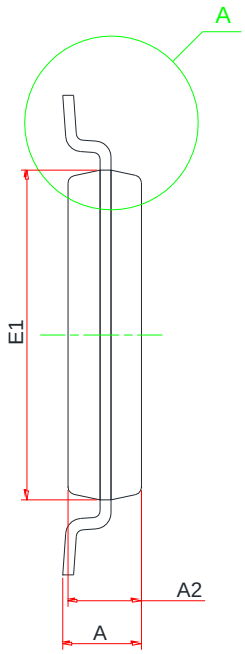
Transient thermal response (Junction-to-Ambient)

PACKAGE OUTLINE DIMENSIONS

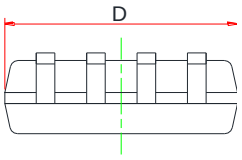
TSSOP-8L



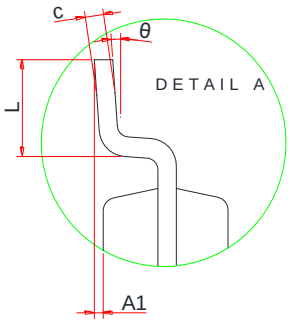
TOP VIEW



SIDE VIEW



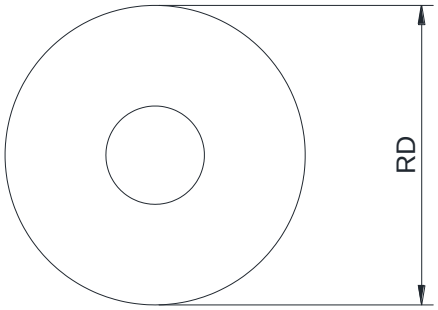
SIDE VIEW



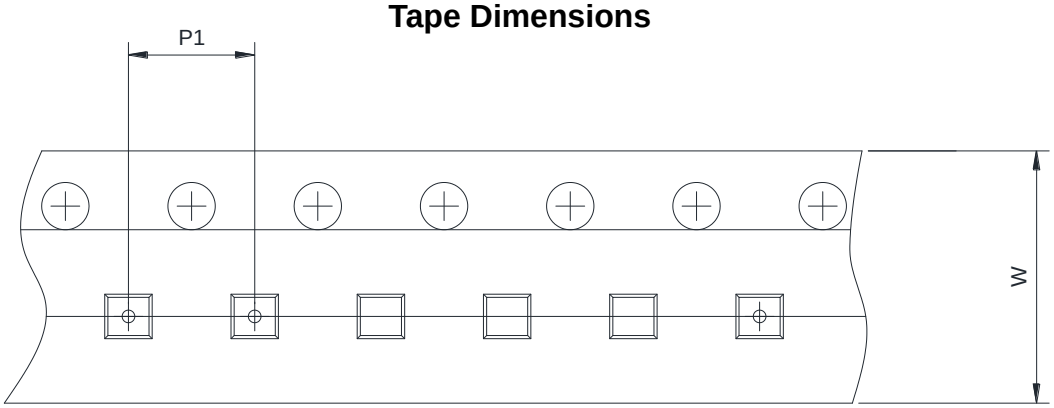
Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	-	-	1.20
A1	-	-	0.15
A2	0.80	-	1.05
b	0.19	-	0.30
c	0.09	-	0.20
D	2.83	-	3.10
E1	4.30	4.40	4.50
E	6.20	6.40	6.60
e	0.65 BSC		
L	0.45	0.60	0.75
θ	0 °	-	8 °

TAPE AND REEL INFORMATION

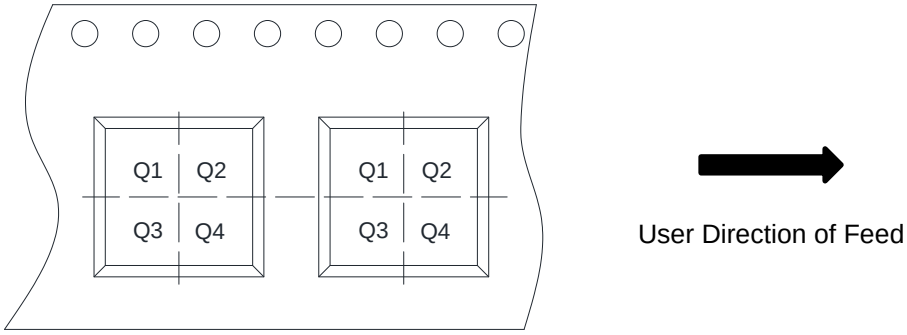
Reel Dimensions



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