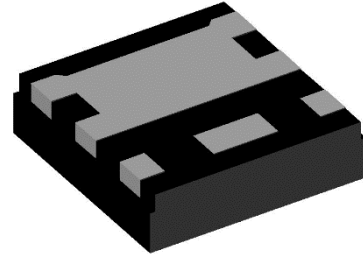


WNM3060

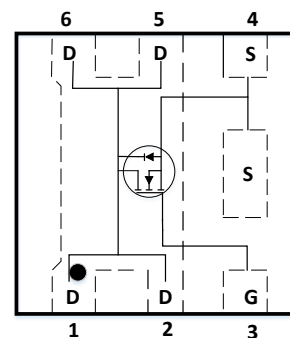
Single N-Channel, 30V, 14.3A, Power MOSFET

[Http://www.sh-willsemi.com](http://www.sh-willsemi.com)

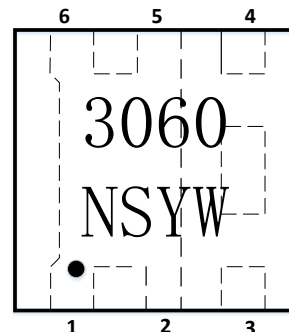
V _{DS} (V)	Typical R _{DS(on)} (mΩ)
30	4.4 @ V _{GS} =10V
	6.6 @ V _{GS} =4.5V



DFN2X2-6L



Pin configuration (Top view)



3060 = Device Code
 NS = Special Code
 Y = Year
 W = Week(A~z)

Marking

Description

The WNM3060 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 WNM3060 is Pb-free.

Features

- Trench Technology
- Supper high density cell design
- Excellent ON resistance
- Extremely Low Threshold Voltage
- Small package DFN2x2-6L

Applications

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

Order information

Device	Package	Shipping
WNM3060-6/TR	DFN2x2-6L	3000/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	$T_A=25^\circ\text{C}$	14.3	A
		$T_A=70^\circ\text{C}$	11.4	
Pulsed Drain Current ^c	I_{DM}	74	A	
Power Dissipation ^a	P_D	$T_A=25^\circ\text{C}$	1.9	W
		$T_A=70^\circ\text{C}$	1.2	
Operating Junction Temperature	T_J	-55 to 150	$^\circ\text{C}$	
Storage Temperature Range	T_{STG}	-55 to 150	$^\circ\text{C}$	

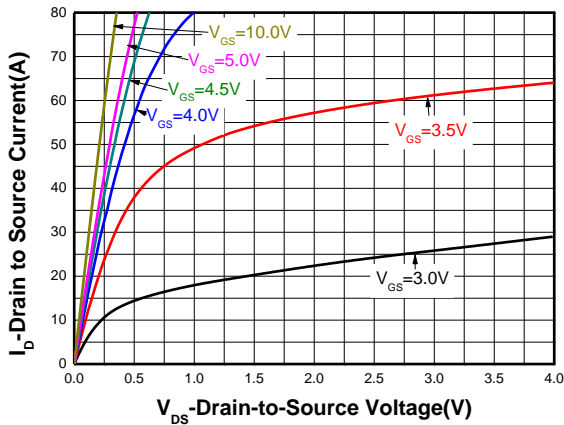
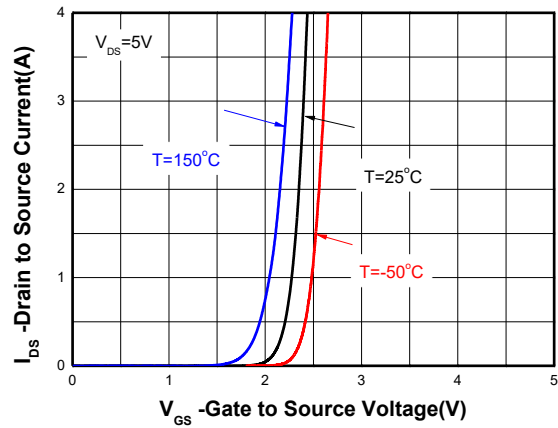
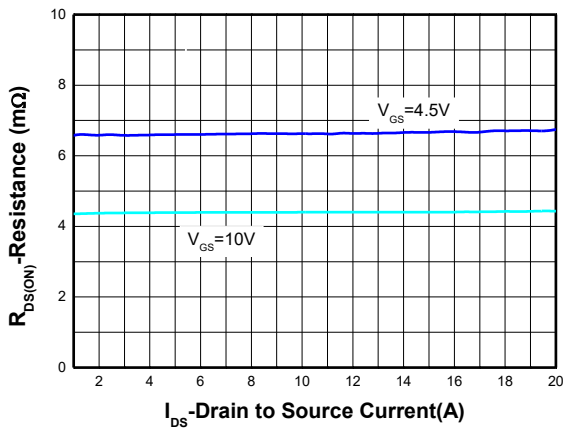
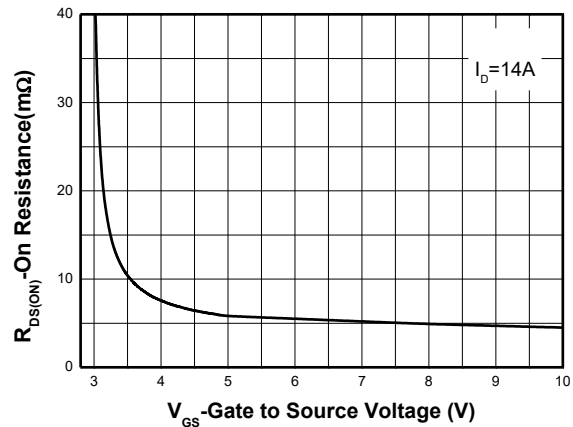
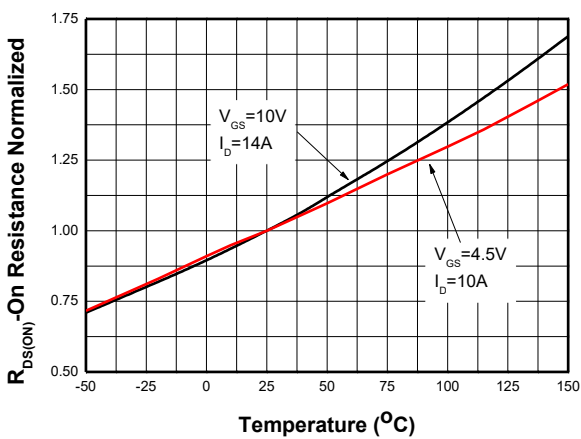
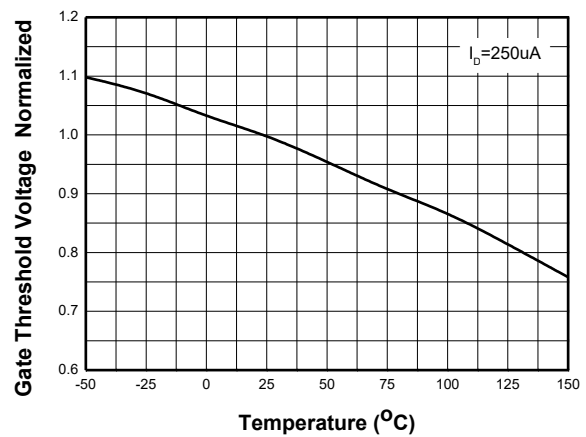
Thermal resistance ratings

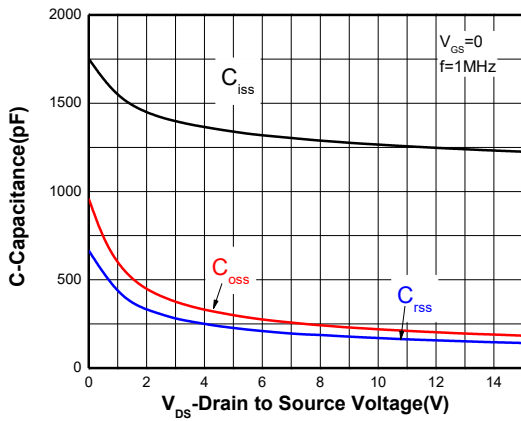
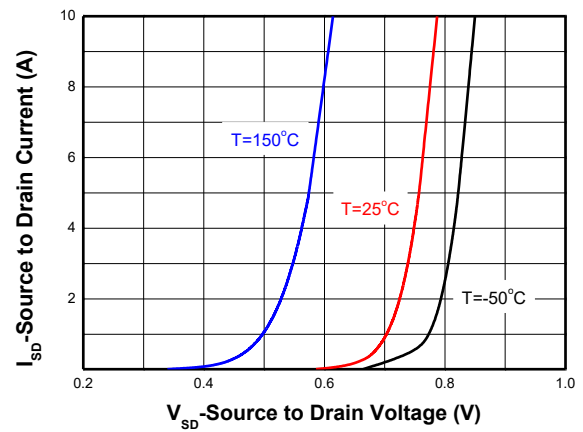
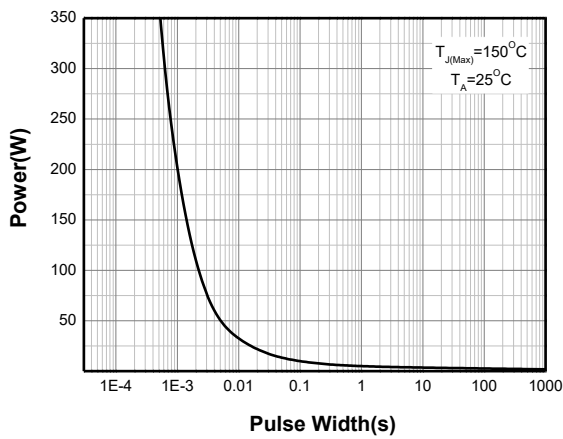
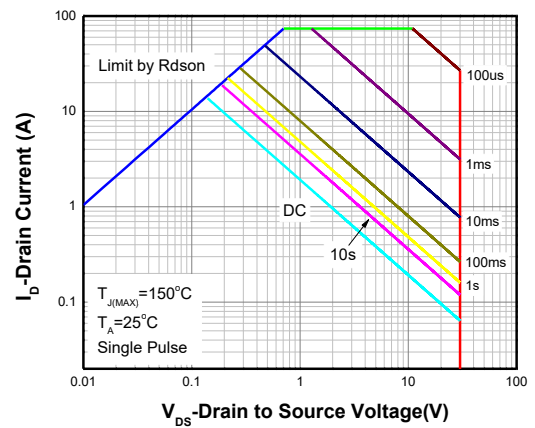
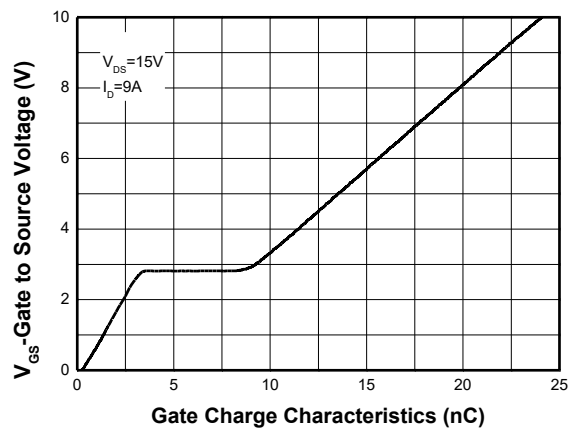
Single Operation					
Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance ^a	$t \leq 10 \text{ s}$	$R_{\theta JA}$	27	34	$^\circ\text{C/W}$
	Steady State		52	65	
Junction-to-Ambient Thermal Resistance ^b	$t \leq 10 \text{ s}$	$R_{\theta JA}$	82	103	
	Steady State		134	167	

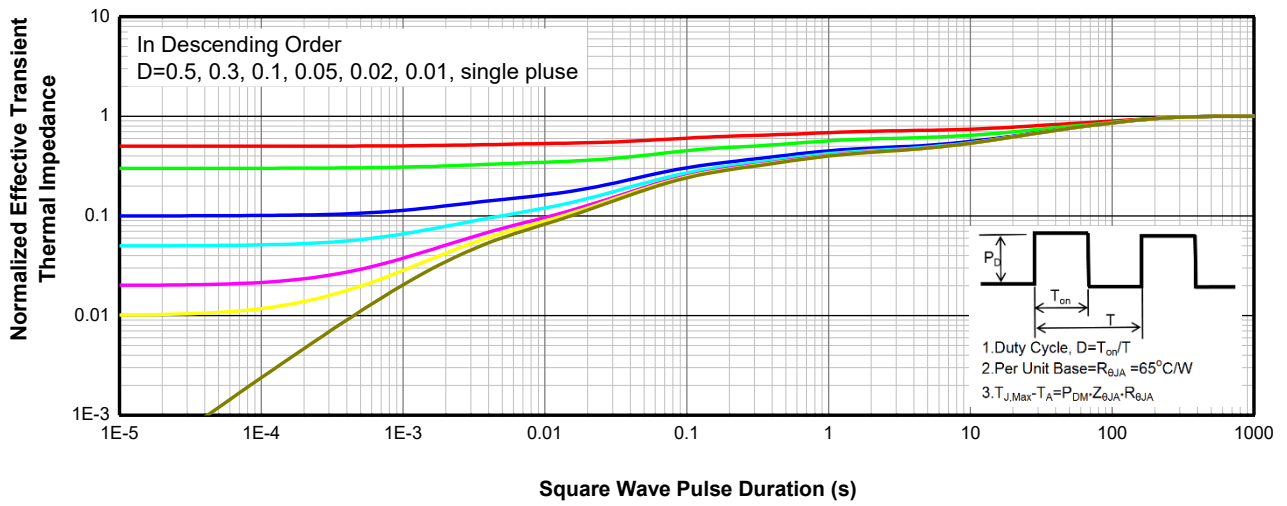
- a The value of $R_{\theta JA}$ is measured with the device mounted on 1-inch² (6.45cm²) with 2oz.(0.071mm thick) Copper pad on a 1.5*1.5 inch², 0.06-inch thick FR4 PCB, in a still air environment with $T_A = 25^\circ\text{C}$. The power dissipation P_D is based on $R_{\theta JA}$ value and the $T_{J(MAX)}=150^\circ\text{C}$. The value in any given application is determined by the user's specific board design, and the maximum temperature of 150°C may be used if the PCB allows it to.
- b The value of $R_{\theta JA}$ is measured with the device mounted on FR-4 minimum pad board, in a still air environment with $T_A = 25^\circ\text{C}$. The power dissipation P_D is based on $R_{\theta JA}$ value and the $T_{J(MAX)}=150^\circ\text{C}$. The value in any given application is determined by the user's specific board design, and the maximum temperature of 150°C may be used if the PCB allows it to.
- c Repetitive rating, ~10us pulse width, duty cycle ~1%, keep initial $T_J = 25^\circ\text{C}$, the maximum allowed junction temperature of 150°C .
- d The static characteristics are obtained using ~380us pulses, duty cycle ~1%..

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

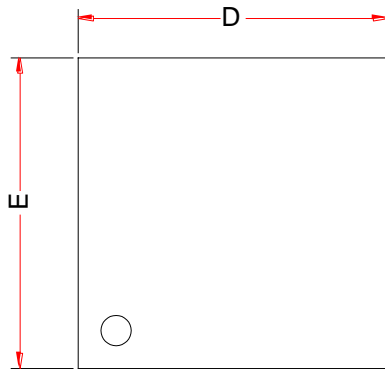
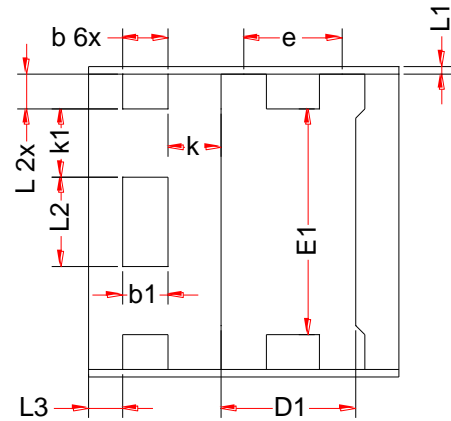
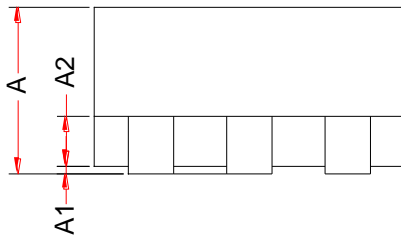
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0 V, I _D = 250uA	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 24V, V _{GS} = 0V			1	uA
Gate-to-source Leakage Current	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} = V _{DS} , I _D = 250uA	1.2	1.8	2.5	V
Drain-to-source On-resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 14A		4.4	5.7	mΩ
		V _{GS} = 4.5V, I _D = 10A		6.6	9.0	
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C _{ISS}	V _{GS} = 0 V, f = 1.0MHz, V _{DS} = 15 V		1225		pF
Output Capacitance	C _{OSS}			184		
Reverse Transfer Capacitance	C _{RSS}			142		
Gate resistance	R _g	F=1MHz		2.1		Ω
Total Gate Charge	Q _{G(TOT)}	V _{GS} = 10 V, V _{DS} = 15 V, I _D = 9 A		24		nC
Threshold Gate Charge	Q _{G(TH)}			2.1		
Gate-to-Source Charge	Q _{GS}			3.2		
Gate-to-Drain Charge	Q _{GD}			5.0		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	td(ON)	V _{GS} = 10 V, V _{DS} = 15 V, I _D = 9 A , R _G = 3 Ω		23.8		ns
Rise Time	tr			11.8		
Turn-Off Delay Time	td(OFF)			56.8		
Fall Time	tf			10.8		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V _{SD}	V _{GS} = 0 V, I _S = 1A		0.7	1.1	V

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

Output Characteristics ^d

Transfer Characteristics ^d

On-Resistance vs. Drain Current ^d

On-Resistance vs. Gate-to-Source Voltage ^d

On-Resistance vs. Junction Temperature ^d

Threshold Voltage vs. Temperature


Capacitance

Body Diode Forward Voltage^d

Single Pulse power

Safe Operating Power

Gate Charge Characteristics

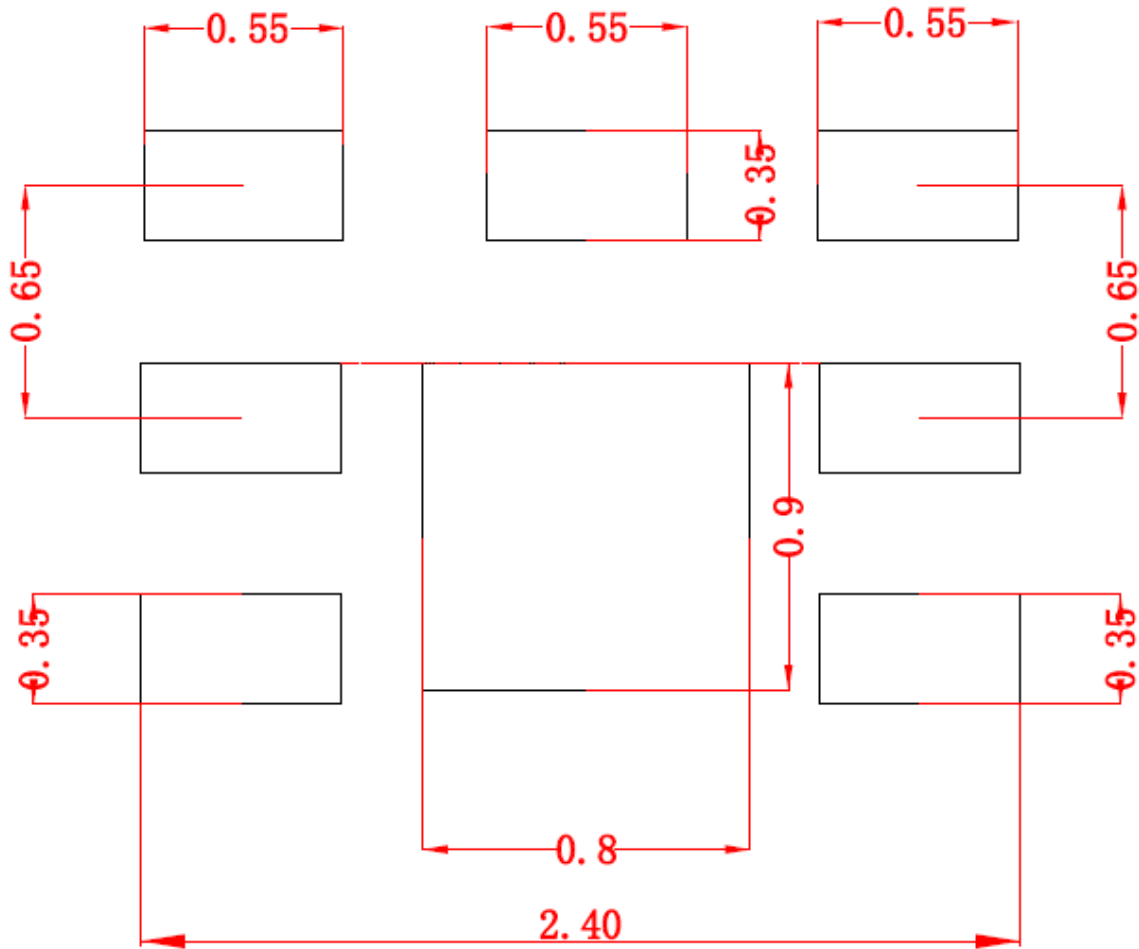


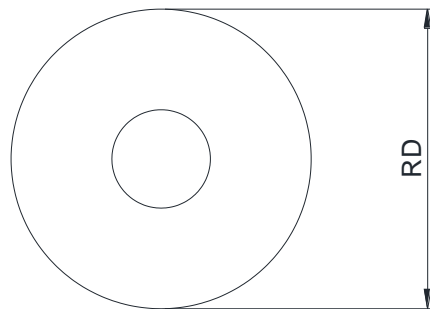
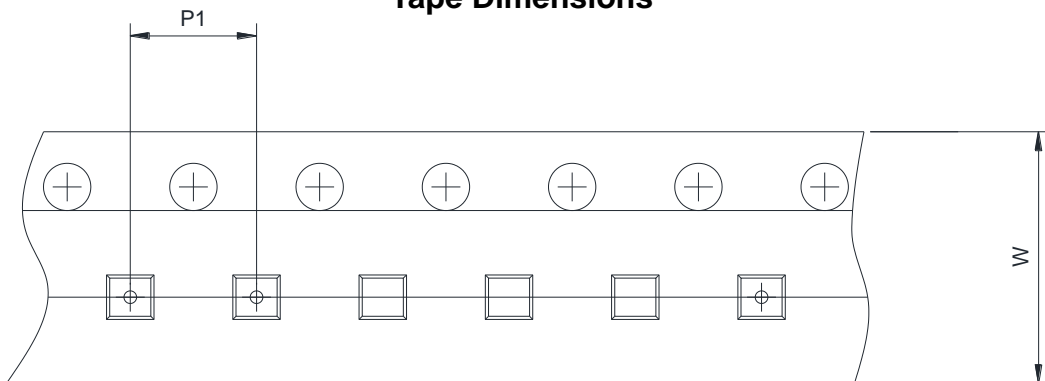
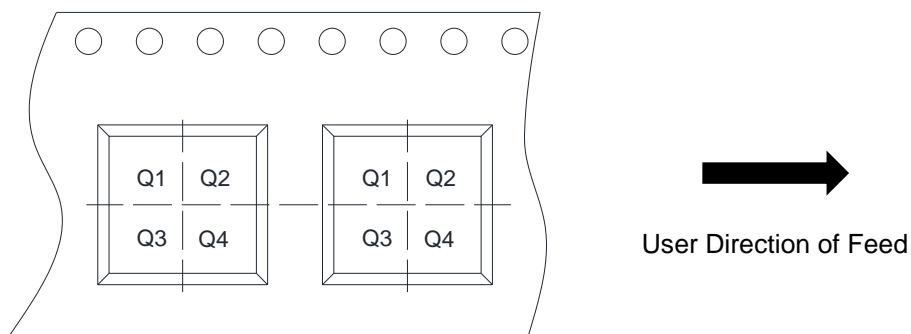
Transient Thermal Response (Junction-to-Ambient)

PACKAGE OUTLINE DIMENSIONS
DFN2x2-6L

TOP VIEW

BOTTOM VIEW

SIDE VIEW

Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.50	--	0.60
A1	--	--	0.005
A2	0.08	--	0.25
b	0.25	0.30	0.35
b1	0.25	0.30	0.35
D	1.95	2.05	2.15
D1	0.84	0.89	0.94
E	1.95	2.05	2.15
E1	1.45	1.50	1.55
e	0.65 BSC		
L	0.18	0.23	0.28
L1	0.01	0.05	0.09
L2	0.55	0.60	0.65
L3	0.225REF		
k	0.35REF		
k1	0.45REF		

RECOMMENDED LAND PATTERN (Unit: mm)



TAPE AND REEL INFORMATION
Reel Dimensions

Tape Dimensions

Quadrant Assignments For PIN1 Orientation In Tape


RD	Reel Dimension	<input checked="" type="checkbox"/> 7inch <input type="checkbox"/> 13inch
W	Overall width of the carrier tape	<input checked="" type="checkbox"/> 8mm <input type="checkbox"/> 12mm <input type="checkbox"/> 16mm
P1	Pitch between successive cavity centers	<input type="checkbox"/> 2mm <input checked="" type="checkbox"/> 4mm <input type="checkbox"/> 8mm
Pin1	Pin1 Quadrant	<input checked="" type="checkbox"/> Q1 <input type="checkbox"/> Q2 <input type="checkbox"/> Q3 <input type="checkbox"/> Q4