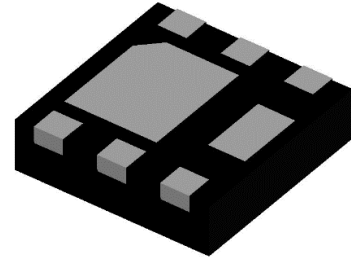


SNM0310R5DA

Single N-Channel, 30V, 9.6A, Power MOSFET

<http://www.sitcores.com/>

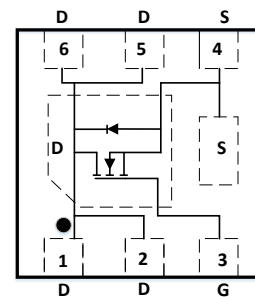
V_{DS} (V)	Max. $R_{DS(on)}$ (m Ω)
30	10.5 @ $V_{GS}=10V$
	14.0 @ $V_{GS}=4.5V$



Description

The SNM0310R5DA 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 SNM0310R5DA is in compliance with RoHS.

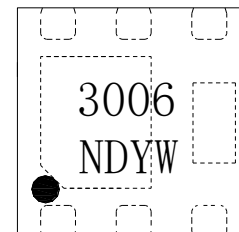
DFN2X2-6L



Pin configuration (Top view)

Features

- Trench Technology
- Supper high density cell design
- Low ON resistance
- Package DFN2X2-6L
- MSL1



3006 =Device Code
 ND =Special Code
 Y =Year
 W =Week(A~z)

Marking

Applications

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

Order information

Device	Package	Shipping
SNM0310R5DA-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	$T_A=25^{\circ}\text{C}$ 9.6	A
		$T_A=70^{\circ}\text{C}$ 7.7	
Pulsed Drain Current ^c	I_{DM}	82	A
Power Dissipation ^a	P_D	$T_A=25^{\circ}\text{C}$ 1.67	W
		$T_A=70^{\circ}\text{C}$ 1.07	
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

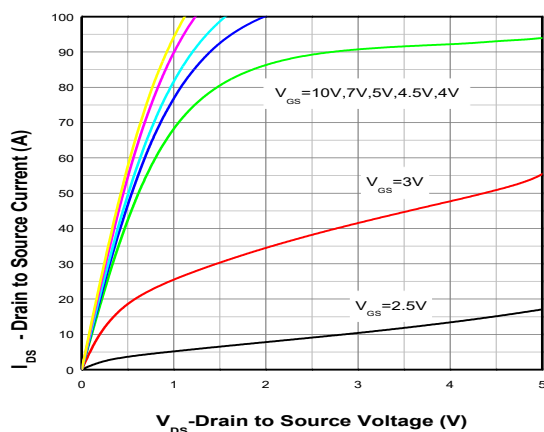
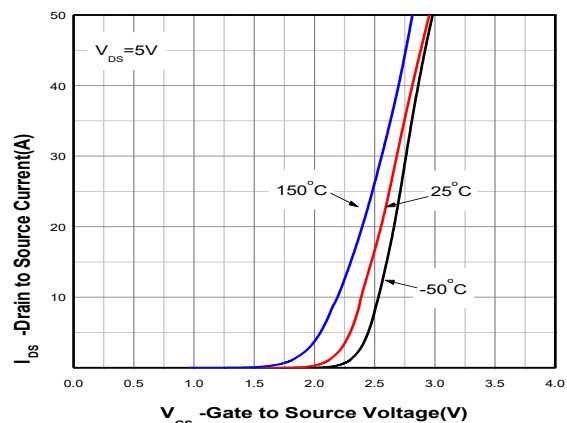
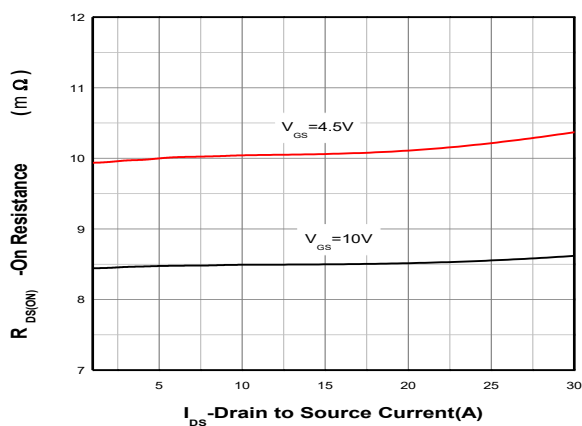
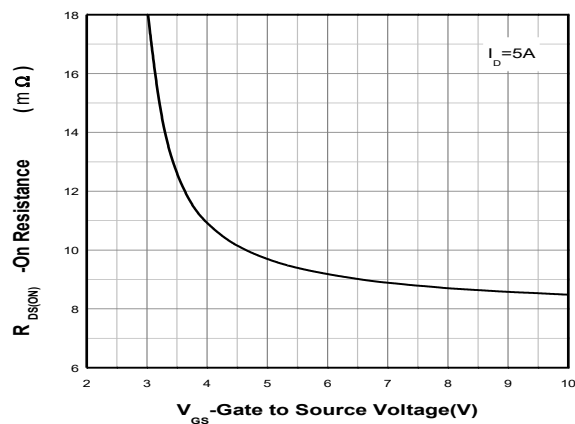
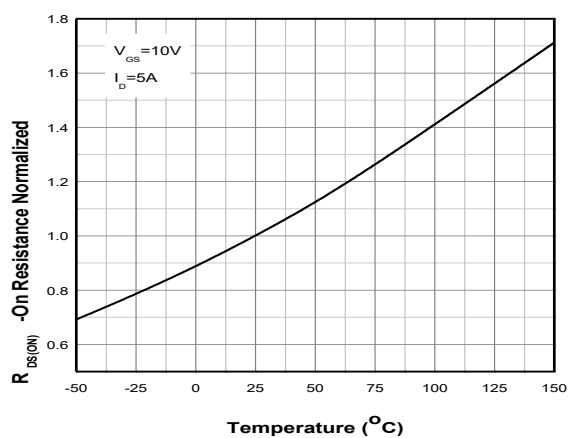
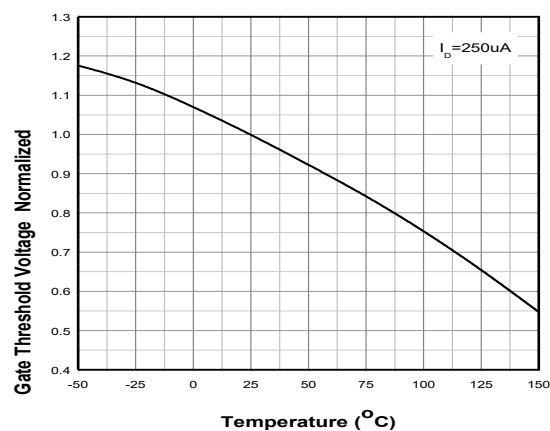
Single Operation					
Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance ^a	$t \leq 10\text{ s}$	$R_{\theta JA}$	34.0	42.5	$^{\circ}\text{C/W}$
	Steady State		60.0	75.0	

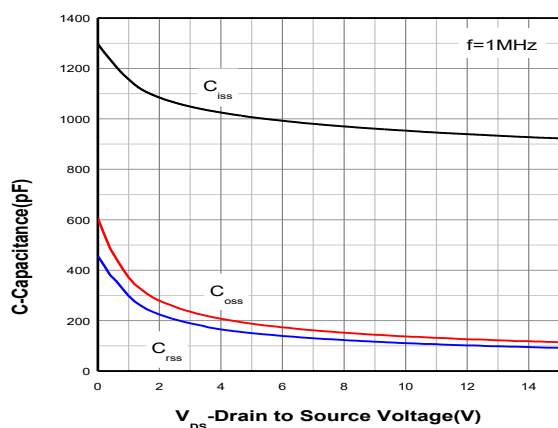
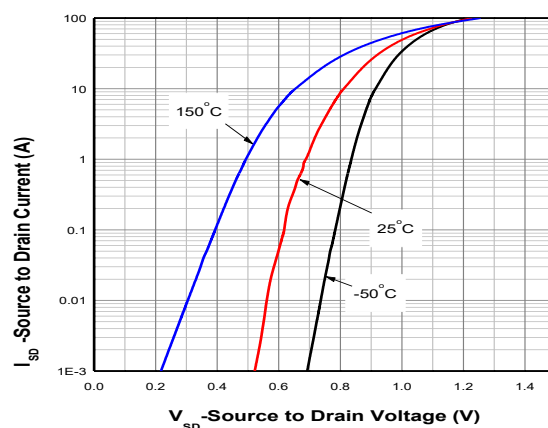
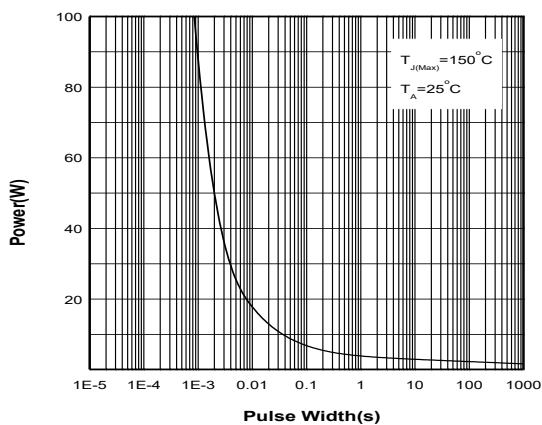
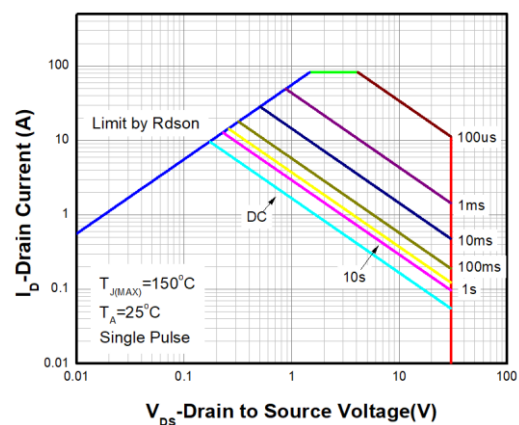
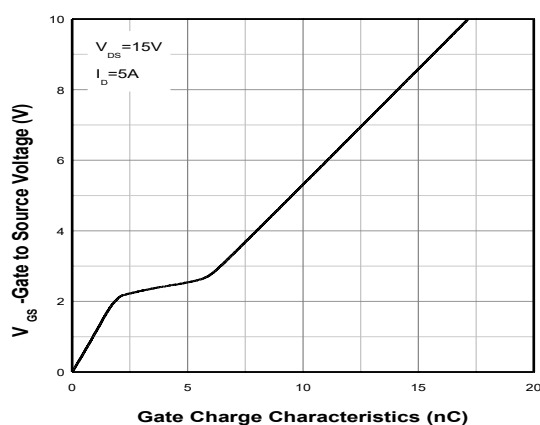
Note:

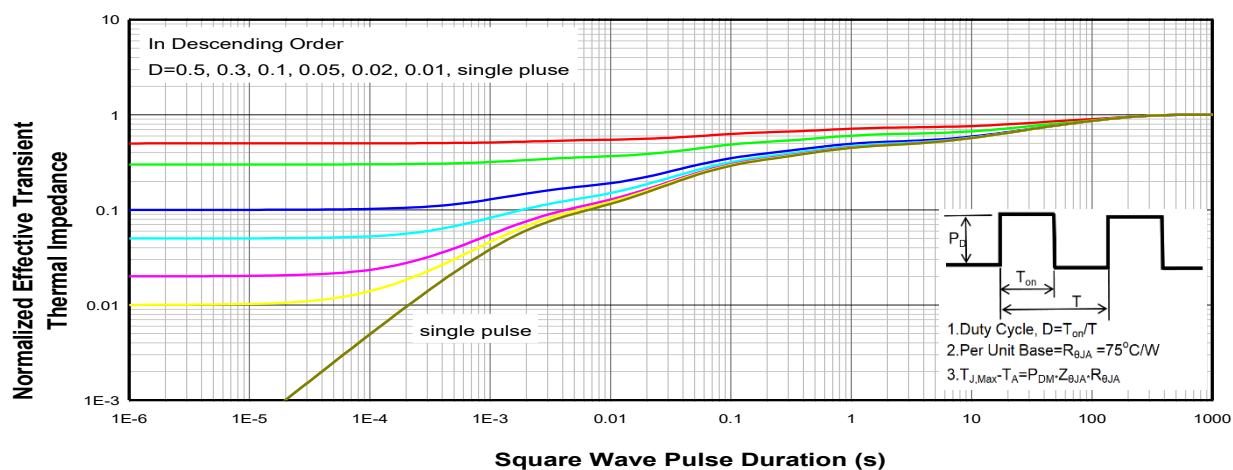
- a FR-4 board (38mm X 38mm X t1.6mm, 70um Copper) partially covered with copper (645mm² area)
- b Repetitive rating, ~10us pulse width, duty cycle ~1%, keep initial $T_J = 25^{\circ}\text{C}$, the maximum allowed junction temperature of 150°C .
- c The static characteristics are obtained using ~380us pulses, duty cycle ~1%.
- d The parameter is not subject to production test – verified by design / characterization.

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

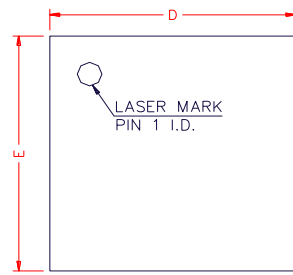
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0 V, I _D = 250uA	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 24V, V _{GS} = 0V			1	uA
Gate-to-source Leakage Current	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} = V _{DS} , I _D = 250uA	1.1	1.6	2.1	V
Drain-to-source On-resistance °	R _{DS(on)}	V _{GS} = 10V, I _D = 5A		8.5	10.5	mΩ
		V _{GS} = 4.5V, I _D = 5A		10.0	14.0	
CHARGES, CAPACITANCES AND GATE RESISTANCE ^d						
Input Capacitance	C _{ISS}	V _{GS} = 0 V,f = 1.0MHz, V _{DS} = 15 V		925		pF
Output Capacitance	C _{OSS}			115		
Reverse Transfer Capacitance	C _{RSS}			92		
Total Gate Charge	Q _{G(TOT)}	V _{GS} =10V, V _{DD} = 15V, I _D =5 A		17.2		nC
Total Gate Charge	Q _{G(TOT)}	V _{GS} =4.5V, V _{DD} = 15V, I _D =5 A		8.7		
Gate-to-Source Charge	Q _{GS}	V _{GS} = 10V,V _{DD} = 15V, I _D =5 A		2.2		
Gate-to-Drain Charge	Q _{GD}			3.4		
Gate Resistance	R _g	f=1MHz		2.1		
SWITCHING CHARACTERISTICS ^d						
Turn-On Delay Time	td(ON)	V _{GS} = 10V,V _{DD} = 15V, I _D = 5A , R _G =6Ω		4.7		ns
Rise Time	tr			24.4		
Turn-Off Delay Time	td(OFF)			17.0		
Fall Time	tf			17.7		
Body Diode Reverse Recovery Time	trr	I _F = 5A, dI/dt=100A/μs		11.5		ns
Body Diode Reverse Recovery Charge	Qrr	I _F = 5A, dI/dt=100A/μs		3.9		nC
BODY DIODE CHARACTERISTICS						
Forward Voltage °	V _{SD}	V _{GS} = 0 V, I _S = 1A		0.7	1.2	V
Maximum Continuous Current	I _S				2.4	A

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

Output Characteristics ^c

Transfer Characteristics ^c

On-Resistance vs. Drain Current ^c

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

On-Resistance vs. Junction Temperature ^c

Threshold Voltage vs. Temperature

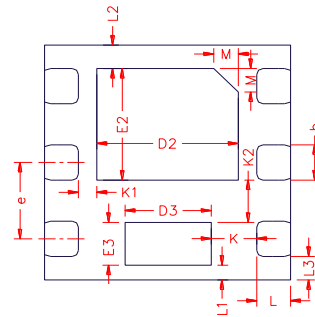

Capacitance

Body Diode Forward Voltage ^c

Single Pulse power

Safe Operating Area

Gate Charge Characteristics



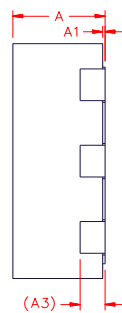
Transient Thermal Response (Junction-to- Ambient)

PACKAGE OUTLINE DIMENSIONS
DFN2x2-6L


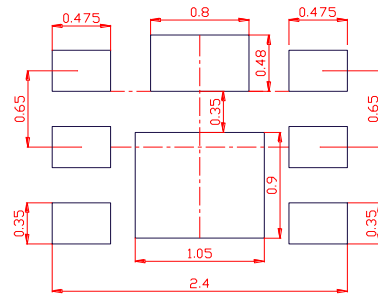
TOP VIEW



BOMTTOM VIEW

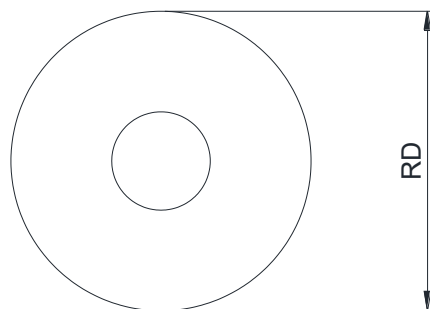
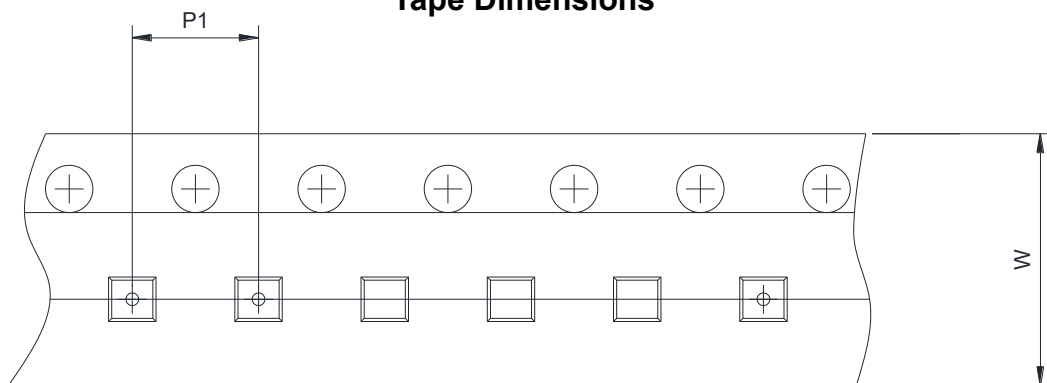
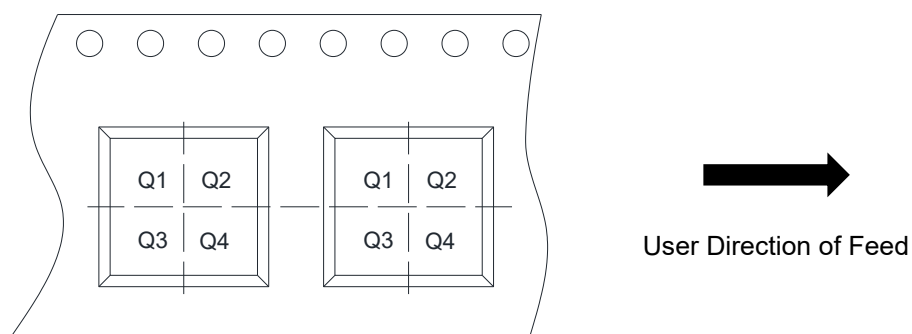


SIDE VIEW



RECOMMENDED LAND PATTERN(unit : mm)

Symbol	Dimensions in Millimeters		
	Min.	Nom	Max.
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
A3	0.203REF		
b	0.25	0.30	0.35
D	1.95	2.00	2.05
E	1.95	2.00	2.05
D2	1.05	1.15	1.25
E2	0.85	0.95	1.05
D3	0.60	0.70	0.80
E3	0.265	0.370	0.470
e	0.55	0.65	0.75
K	0.37Ref		
K1	0.15Ref		
K2	0.36Ref		
L	0.225	0.275	0.325
L1	0.120Ref		
L2, L3, M	0.20Ref		

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