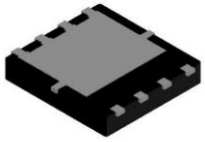
SNM084R0DNA

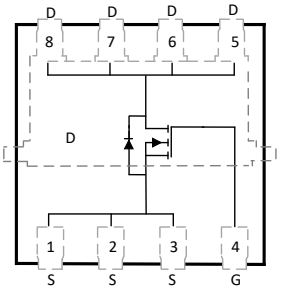
Single N-Channel, 80V, 93A, Power MOSFET

http://www.sitcores.com/

V_{DS} (V)	Max. $R_{DS(on)}$ (mΩ)
80	4.0@ V_{GS}=10V
	6.7@ V_{GS}=6V



PDFN5X6-8L



Description

The SNM084R0DNA 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 SNM084R0DNA is Pb-free.

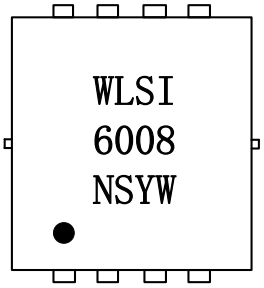
Features

- Trench Technology
- Supper high density cell design
- Low ON resistance
- Package PDFN5X6-8L

Applications

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

Pin configuration (Top view)



WLSI = Company (Group) Code
6008 = Device Code
NS = Special Code
Y = Year
W = Week(A~z)

Marking

Order information

Device	Package	Shipping
SNM084R0DNA-8/TR	PDFN5X6-8L	5000/Tape&Reel

Absolute Maximum ratings

Parameter		Symbol	Maximum	Unit
Drain-Source Voltage		V_{DS}	80	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current [d]	T_C=25°C	I_D	93	A
	T_C=100°C		59	A
Pulsed Drain Current [c]		I_{DM}	275	A
Continuous Drain Current	T_A=25°C	I_{DSM}	30	A
	T_A=70°C		24	
Avalanche Energy L=0.3mH		E_{AS}	158	mJ
Power Dissipation [b]	T_C=25°C	P_D	63	W
	T_C=100°C		25	
Power Dissipation [a]	T_A=25°C	P_{DSM}	6.3	W
	T_A=70°C		4.0	
Operating Junction Temperature		T_J	-55 to 150	°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	$R_{\theta JA}$	16	20	°C/W
	Steady State		41	50	
Junction-to-Case Thermal Resistance	Steady State	$R_{\theta JC}$	1.5	2.1	

Note:

a FR-4 board (38mm X 38mm X t1.6mm, 70um Copper) partially covered with copper (645mm^2 area).

b The power dissipation P_D is based on $T_{J(MAX)}$=150°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.

c Repetitive rating, ~10us pulse width, duty cycle ~1%, keep initial T_J =25°C, the maximum allowed junction temperature of 150°C.

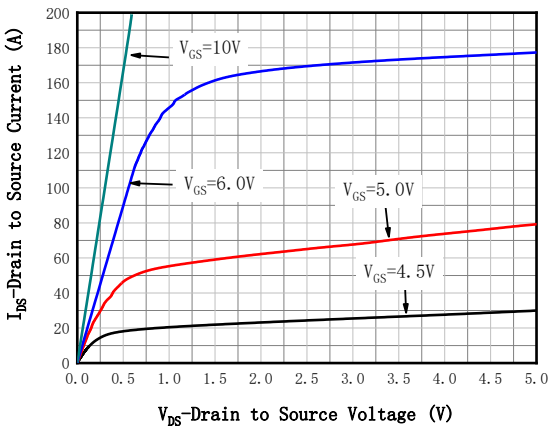
d The maximum current rating by source bonding technology.

e The static characteristics are obtained using ~380us pulses, duty cycle ~1%.

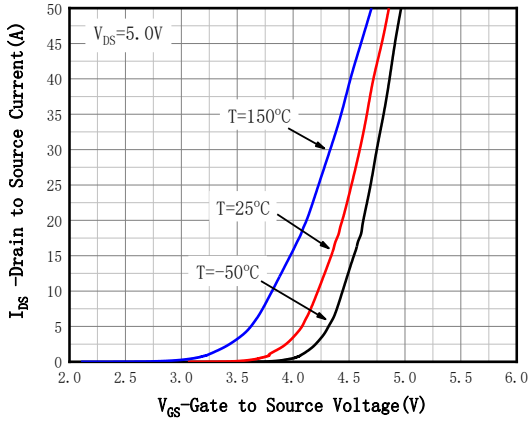
Electronics Characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0 V, I_D = 250uA	80			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =80V, 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	2	3	4	V
Drain-to-source On-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D = 15A		3.1	4.0	mΩ
Drain-to-source On-resistance	$R_{DS(on)}$	V_{GS} =6V, I_D = 10A		4.6	6.7	mΩ
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C_{ISS}	V_{GS} = 0V, f = 1.0MHz, V_{DS} = 40 V		2865		pF
Output Capacitance	C_{OSS}			755		
Reverse Transfer Capacitance	C_{RSS}			26.8		
Total Gate Charge	$Q_{G(TOT)}$	V_{GS} = 10 V, V_{DS} = 40V, I_D = 15A		49		nC
Threshold Gate Charge	$Q_{G(TH)}$			9.0		
Gate-to-Source Charge	Q_{GS}			12.5		
Gate-to-Drain Charge	Q_{GD}			13.0		
Gate Resistance	R_g	f=1MHz		1.1		Ω
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	td(ON)	V_{GS} = 10 V, V_{DS} = 40 V, R_G=4.7Ω,ID=15A		15.0		ns
Rise Time	tr			38.0		
Turn-Off Delay Time	td(OFF)			34.4		
Fall Time	tf			21.4		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	V_{GS} = 0 V, I_S = 1A		0.7	1.2	V

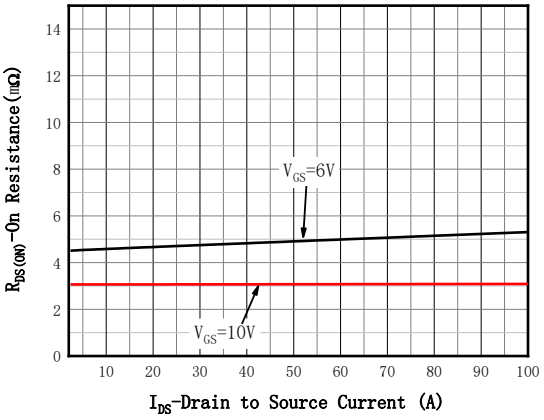
Typical Characteristics (Ta=25°C, unless otherwise noted)



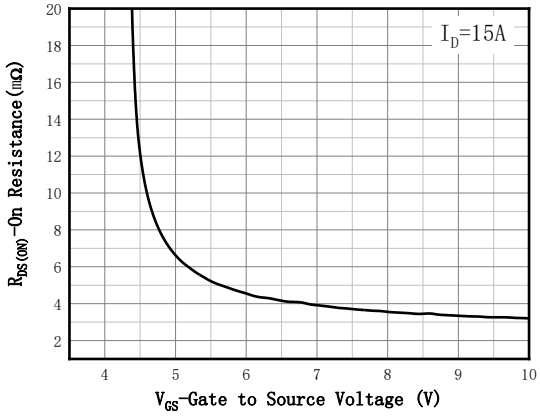
Output Characteristics



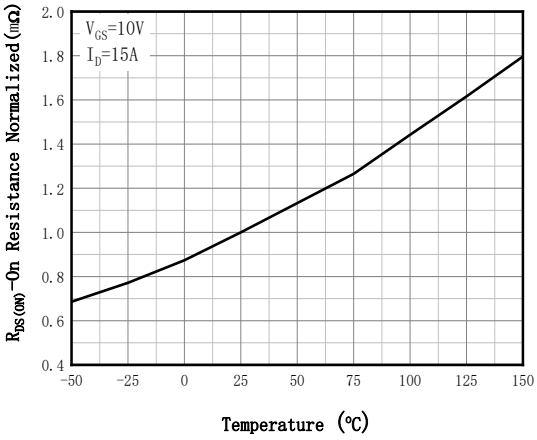
Transfer Characteristics



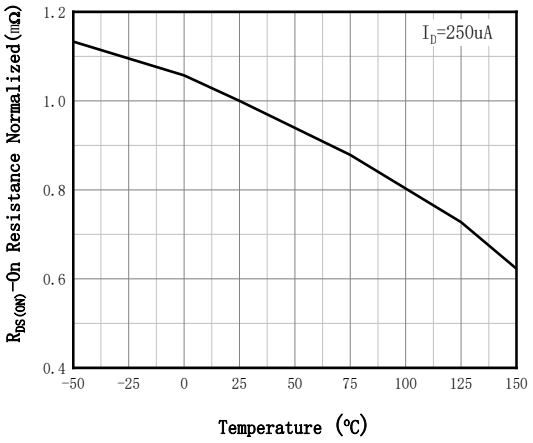
On-Resistance vs. Drain Current



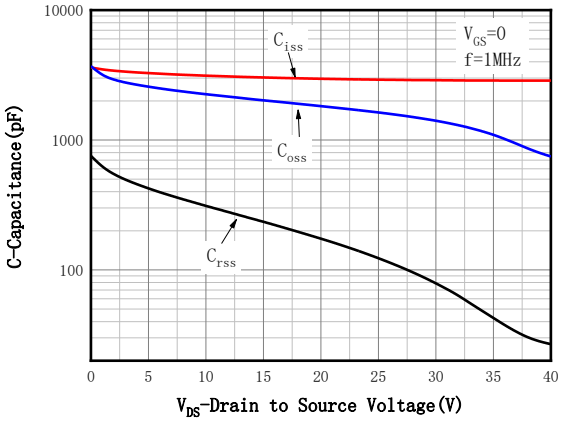
On-Resistance vs. Gate-to-Source Voltage



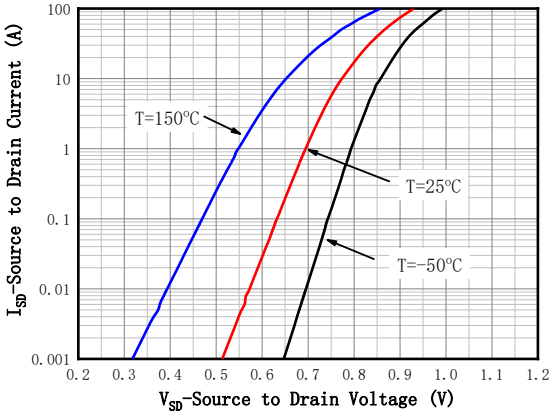
On-Resistance vs. Junction Temperature e



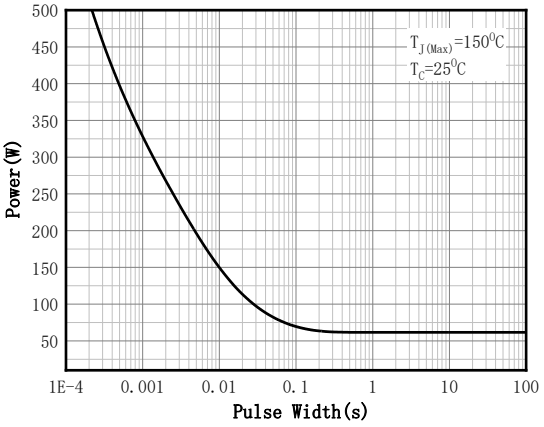
Threshold Voltage vs. Temperature



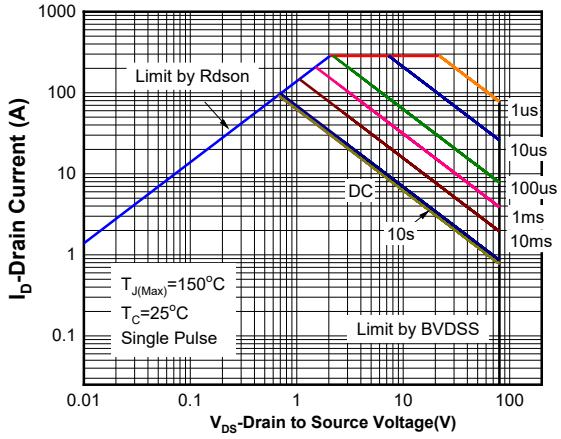
Capacitance



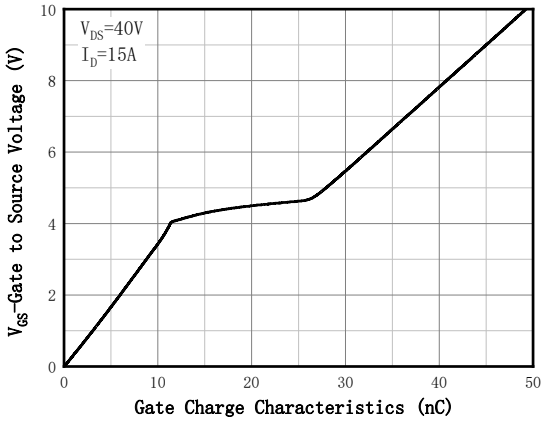
Body Diode Forward Voltage [e]



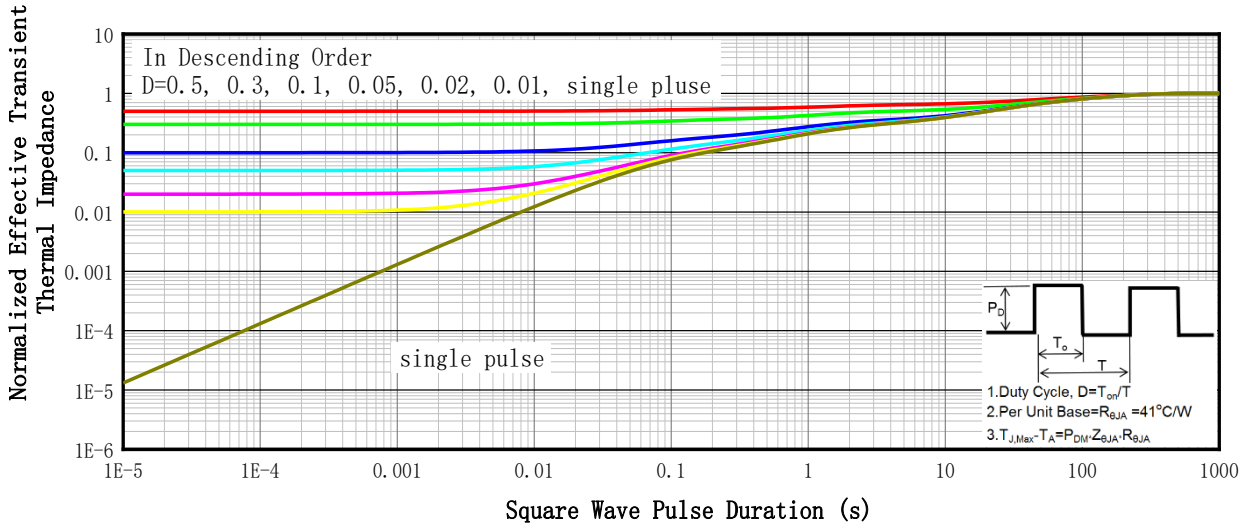
Single Pulse power



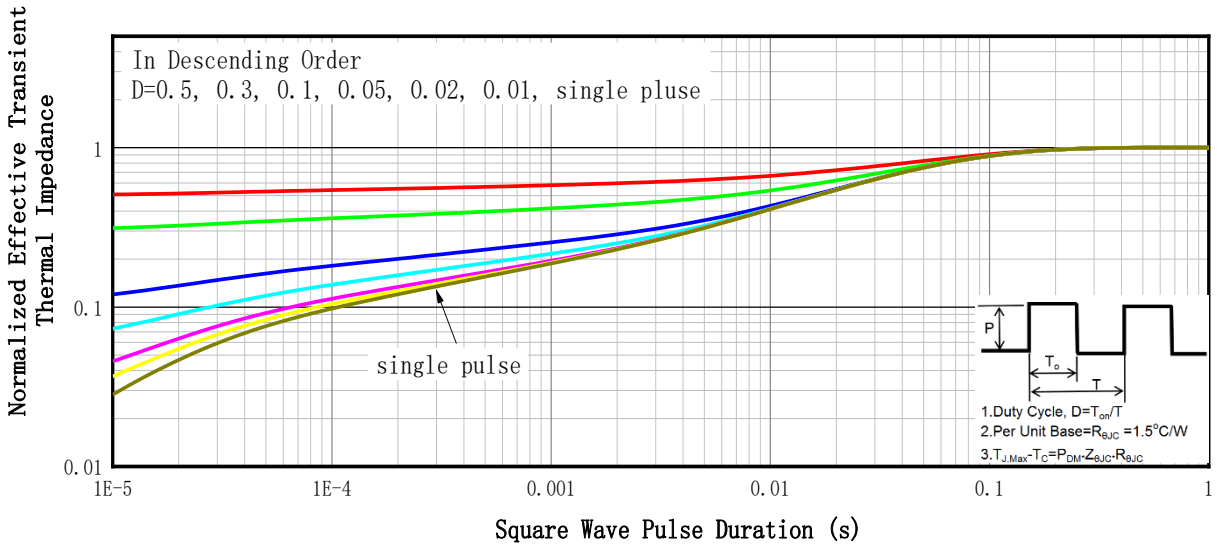
Safe Operating Power



Gate Charge Characteristics



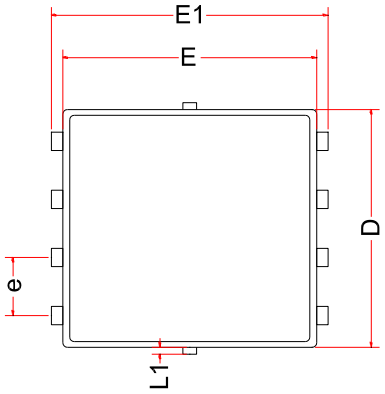
Transient Thermal Response (Junction-to- Ambient)



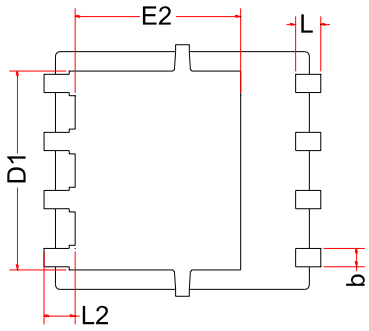
Transient Thermal Response (Junction-to-Case)

PACKAGE OUTLINE DIMENSIONS

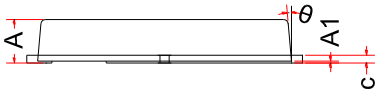
PDFN5X6-8L



TOP VIEW



BOTTOM VIEW

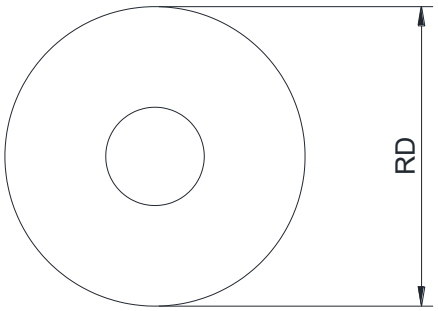


SIDE VIEW

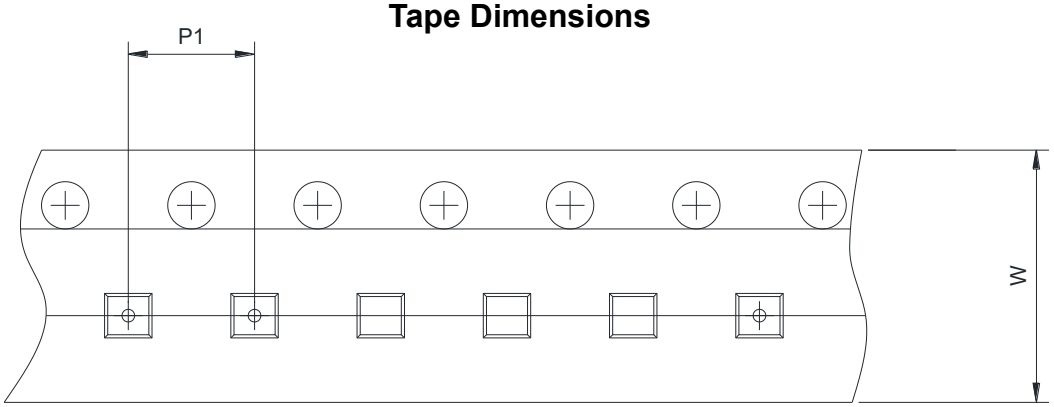
Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.85	0.95	1.00
A1	0.00	-	0.05
b	0.30	0.40	0.50
c	0.15	0.20	0.25
D	5.20BSC		
D1	4.35BSC		
E	5.55BSC		
E1	6.05BSC		
E2	3.62BSC		
e	1.27BSC		
L	0.45	0.55	0.65
L1	0.00	-	0.15
L2	0.68Ref		
θ	0°	-	10°

TAPE AND REEL INFORMATION

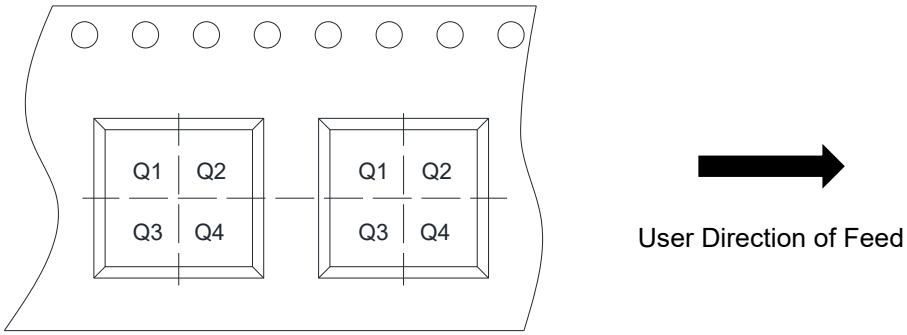
Reel Dimensions



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