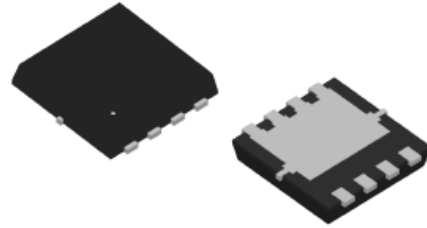
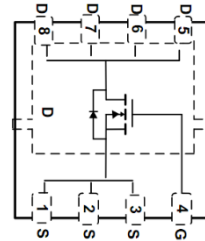


**WNM3040**
**Single N-Channel, 30V, 19A, Power MOSFET**
[Http://www.sh-willsemi.com](http://www.sh-willsemi.com)

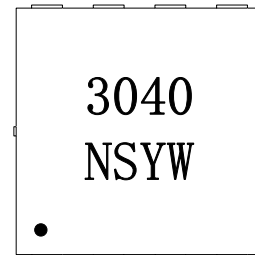
$V_{DS}$ (V)	Typical $R_{DS(on)}$ (m $\Omega$ )
30	12.0 @ $V_{GS}=10V$
	17.5 @ $V_{GS}=4.5V$


**Descriptions**

The WNM3040 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 WNM3040 is Pb-free.

**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



3040 =Device Code  
 NS = Special Code  
 Y = Year  
 W = Week(A~z)

**Marking**
**Applications**

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

**Order information**

Device	Package	Shipping
WNM3040-8/TR	PDFN3333-8L	3000/Tape&Reel

**Absolute Maximum ratings**

Parameter	Symbol	Maximum	Unit	
Drain-Source Voltage	$V_{DS}$	30	V	
Gate-Source Voltage	$V_{GS}$	$\pm 20$		
Continuous Drain Current <sup>d</sup>	$I_D$	$T_C=25^\circ\text{C}$	19	A
		$T_C=100^\circ\text{C}$	15	A
Pulsed Drain Current <sup>c</sup>	$I_{DM}$	67	A	
Continuous Drain Current	$I_{DSM}$	$T_A=25^\circ\text{C}$	13	A
		$T_A=70^\circ\text{C}$	10	
Avalanche Energy $L=0.3\text{mH}$	$E_{AS}$	12	mJ	
Power Dissipation <sup>b</sup>	$P_D$	$T_C=25^\circ\text{C}$	14	W
		$T_C=100^\circ\text{C}$	6	
Power Dissipation <sup>a</sup>	$P_{DSM}$	$T_A=25^\circ\text{C}$	4.0	W
		$T_A=70^\circ\text{C}$	2.6	
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**

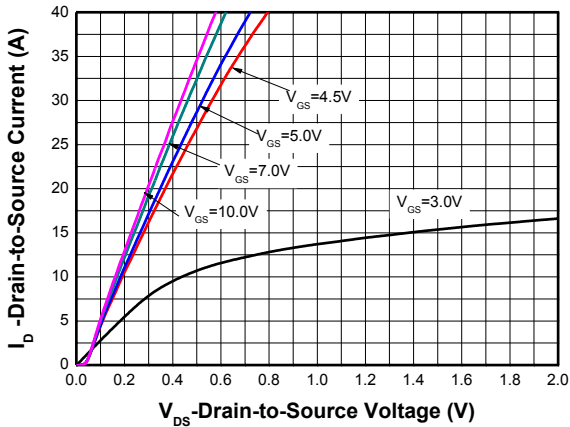
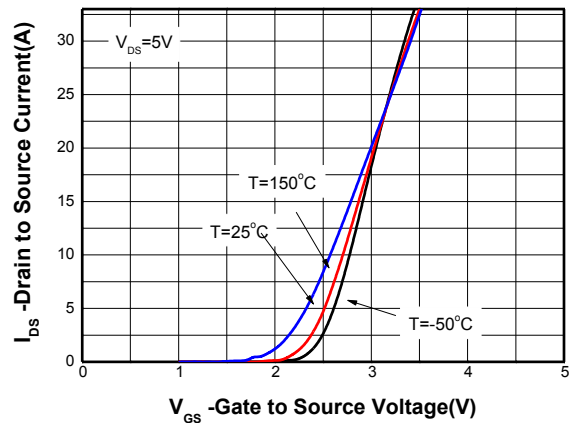
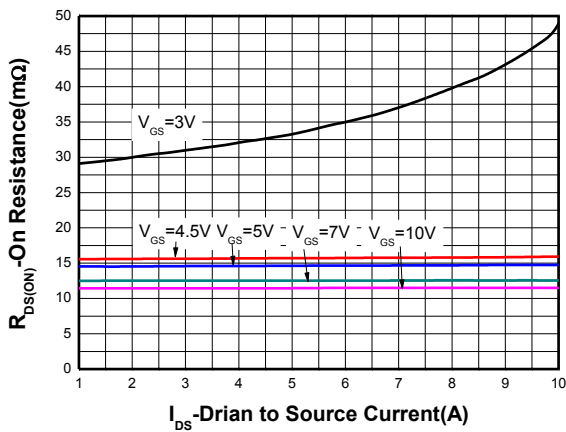
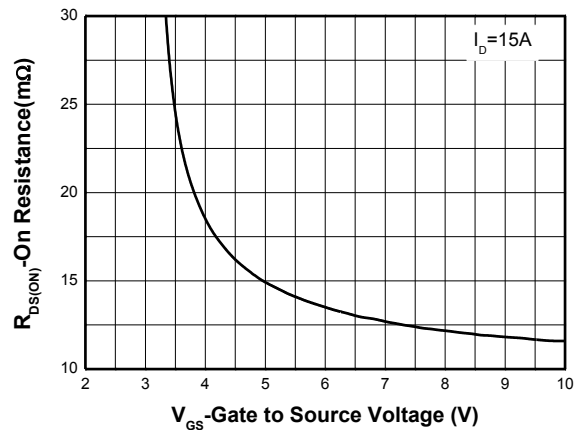
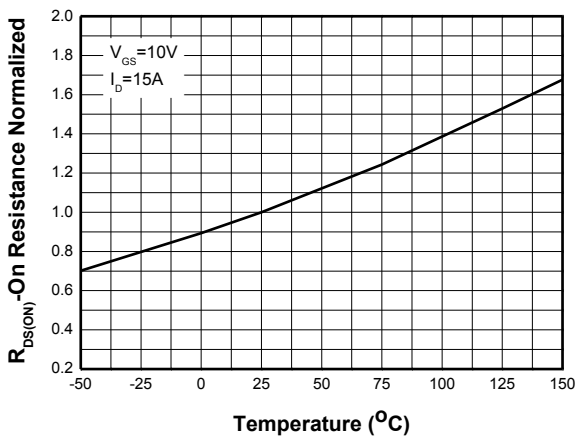
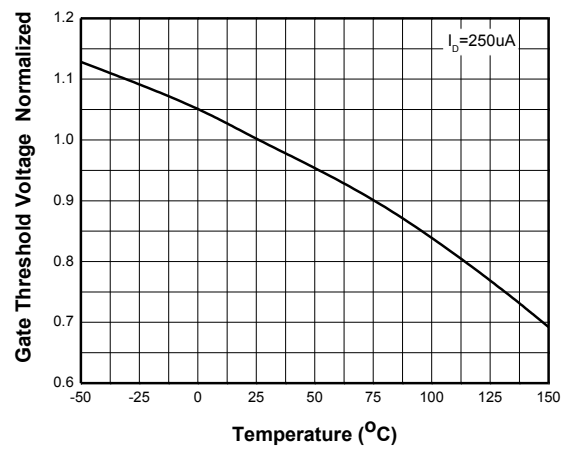
Single Operation					
Parameter	Symbol	Typical	Maximum	Unit	
Junction-to-Ambient Thermal Resistance <sup>a</sup>	$R_{\theta JA}$	$t \leq 10\text{ s}$	25	31	$^\circ\text{C/W}$
		Steady State	51	64	
Junction-to-Case Thermal Resistance	$R_{\theta JC}$	7.2	9		

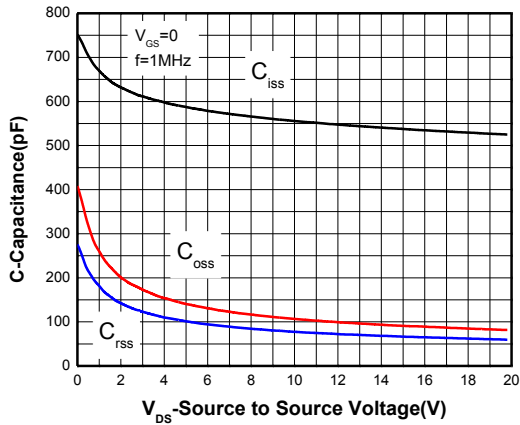
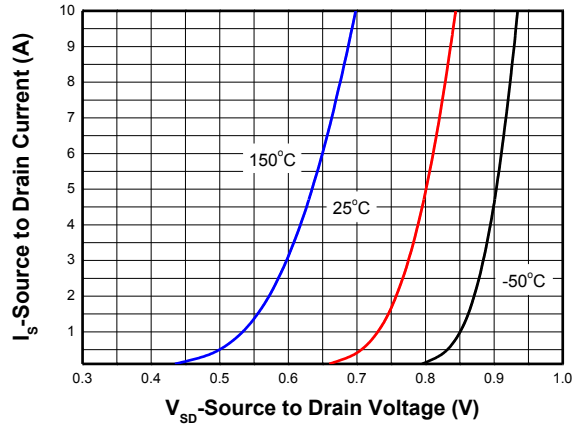
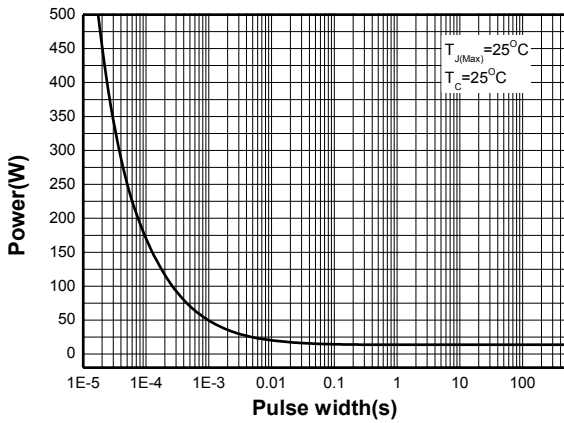
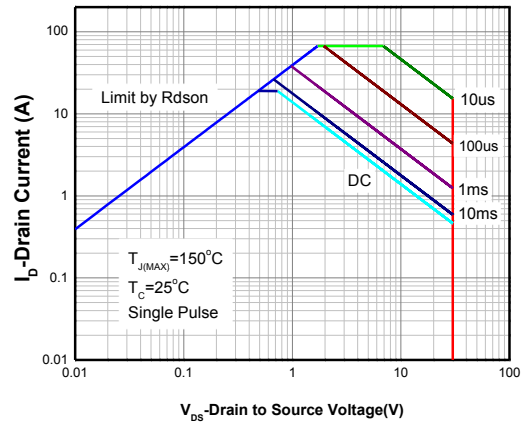
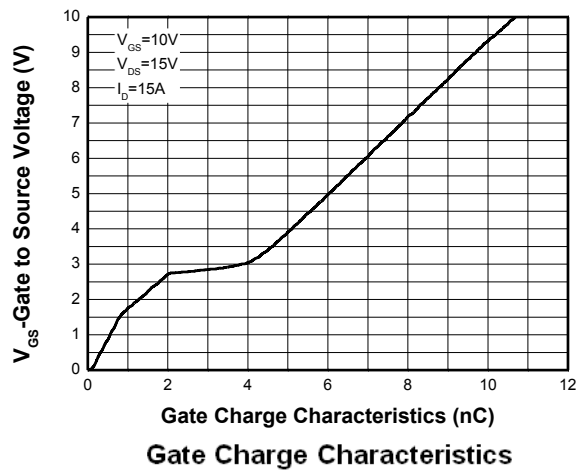
**Note:**

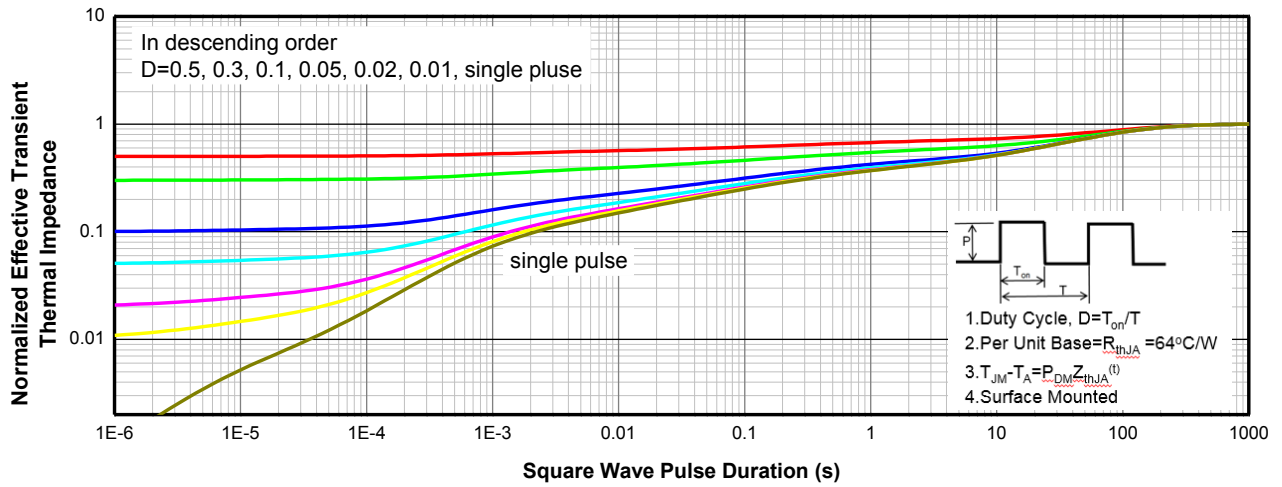
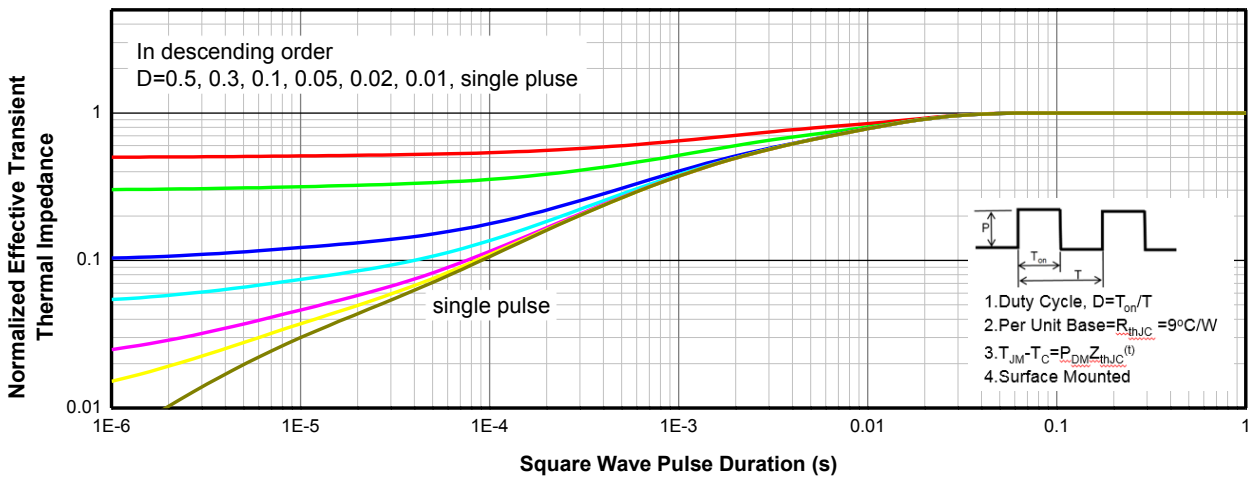
- a The value of  $R_{\theta JA}$  is measured with the device mounted on 1-inch<sup>2</sup> (6.45cm<sup>2</sup>) with 2oz.(0.071mm thick) Copper pad on a 1.5\*1.5 inch<sup>2</sup>, 0.06-inch thick FR4 PCB, in a still air environment with  $T_A = 25^\circ\text{C}$ . The power dissipation  $P_{DSM}$  is based on  $R_{\theta JA} t \leq 10\text{s}$  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.
- b 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.
- c Repetitive rating, ~10us pulse width, duty cycle ~1%, keep initial  $T_J = 25^\circ\text{C}$ , the maximum allowed junction temperature of  $150^\circ\text{C}$ .
- d The maximum current rating by source bonding technology.
- e The static characteristics are obtained using ~380us pulses, duty cycle ~1%.

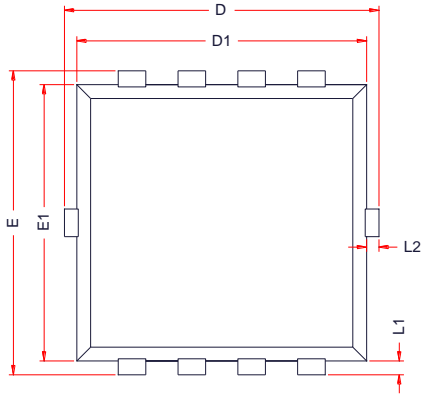
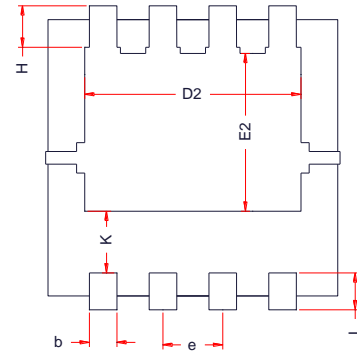
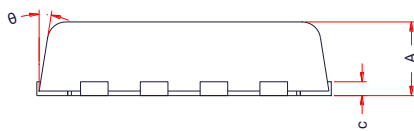
**Electronics Characteristics (Ta=25°C, unless otherwise noted)**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>						
Drain-to-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> = 0 V, I <sub>D</sub> = 250uA	30			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 24V, V <sub>GS</sub> = 0V			1	uA
Gate-to-source Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ±20V			±100	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>GS</sub> = V <sub>DS</sub> , I <sub>D</sub> = 250uA	1.2	1.7	2.5	V
Drain-to-source On-resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 10A		12.0	15.0	mΩ
		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 8A		17.5	24.5	
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> = 5V, I <sub>D</sub> = 15A		9		S
<b>CHARGES, CAPACITANCES AND GATE RESISTANCE</b>						
Input Capacitance	C <sub>ISS</sub>	V <sub>GS</sub> = 0 V, f = 1.0MHz, V <sub>DS</sub> = 15 V		540		Pf
Output Capacitance	C <sub>OSS</sub>			95		
Reverse Transfer Capacitance	C <sub>RSS</sub>			68		
Gate Resistance	R <sub>g</sub>	F=1MHZ		1.4		Ω
Total Gate Charge	Q <sub>G(TOT)</sub>	V <sub>GS</sub> = 10 V, V <sub>DS</sub> = 15 V, I <sub>D</sub> = 15 A		10.6		nC
Threshold Gate Charge	Q <sub>G(TH)</sub>			1		
Gate-to-Source Charge	Q <sub>GS</sub>			1.9		
Gate-to-Drain Charge	Q <sub>GD</sub>			2.1		
<b>SWITCHING CHARACTERISTICS</b>						
Turn-On Delay Time	td(ON)	V <sub>GS</sub> = 10 V, V <sub>DS</sub> = 15 V, R <sub>L</sub> =1 Ω , R <sub>G</sub> =3Ω		4		ns
Rise Time	tr			17		
Turn-Off Delay Time	td(OFF)			18		
Fall Time	tf			9		
<b>BODY DIODE CHARACTERISTICS</b>						
Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> = 0 V, I <sub>S</sub> = 1A		0.7	1.2	V

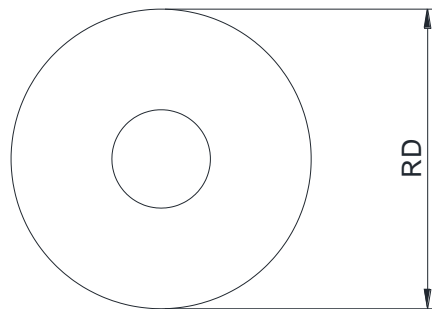
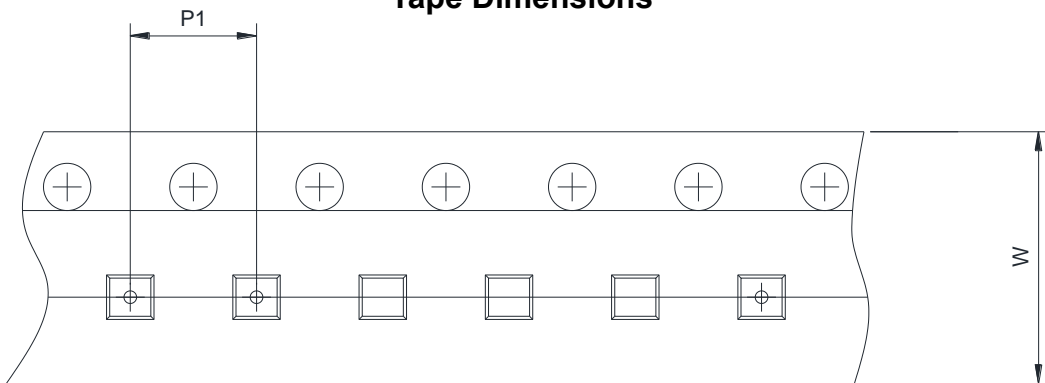
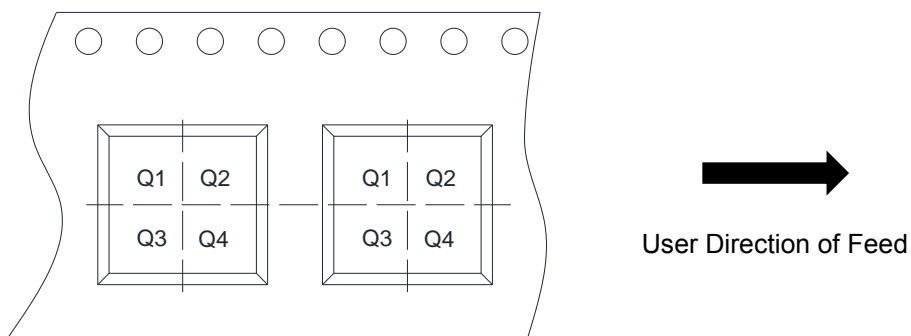
**Typical Characteristics (Ta=25°C, unless otherwise noted)**

**Output Characteristics <sup>e</sup>**

**Transfer Characteristics <sup>e</sup>**

**On-Resistance vs. Drain Current <sup>e</sup>**

**On-Resistance vs. Gate-to-Source Voltage <sup>e</sup>**

**On-Resistance vs. Junction Temperature <sup>e</sup>**

**Threshold Voltage vs. Temperature**


**Capacitance**

**Body Diode Forward Voltage<sup>e</sup>**

**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**

**TOP VIEW**

**BOTTOM VIEW**

**SIDE VIEW**

Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.70	0.80	0.90
b	0.25	0.30	0.35
c	0.14	0.15	0.20
D	3.10	3.30	3.50
D1	3.05	3.15	3.25
D2	2.35	2.45	2.55
e	0.55	0.65	0.75
E	3.10	3.30	3.50
E1	2.90	3.00	3.10
E2	1.64	1.74	1.84
H	0.32	0.42	0.52
K	0.59	0.69	0.79
L	0.25	0.40	0.55
L1	0.10	0.15	0.20
L2	-	-	0.15
$\theta$	8°	10°	12°

**TAPE AND REEL INFORMATION**
**Reel Dimensions**

**Tape Dimensions**

**Quadrant Assignments For PIN1 Orientation In Tape**


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