ON Semiconductor

Is Now



To learn more about onsemi™, please visit our website at
www.onsemi.com

onsemi and onsemi and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi** product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner. Other names and brands may be claimed as the property of others.

MOSFET – Power, Single N-Channel, DFNW8

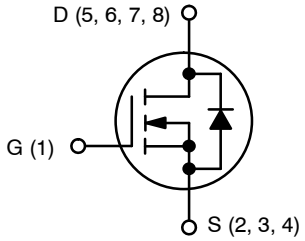
150 V, 6.4 mΩ, 128 A

NVMTS6D0N15MC

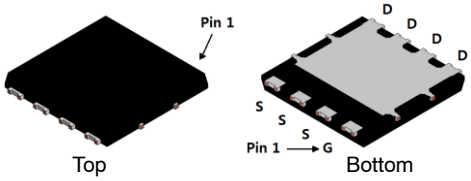
ON Semiconductor®

www.onsemi.com

$V_{(BR)DSS}$	$R_{DS(ON)}$ MAX	I_D MAX
150 V	6.4 mΩ @ 10 V	128 A



N–CHANNEL MOSFET



DFNW8 8.3x8.4, 2P
PQFN88
CASE 507AP

Features

- Small Footprint (8x8 mm) for Compact Design
- Low $R_{DS(on)}$ to Minimize Conduction Losses
- Low Q_G and Capacitance to Minimize Driver Losses
- AEC–Q101 Qualified and PPAP Capable
- These Devices are Pb–Free, Halogen Free/BFR Free and are RoHS Compliant

MAXIMUM RATINGS (T_J = 25°C unless otherwise noted)

Symbol	Parameter			Value	Unit
V_{DSS}	Drain–to–Source Voltage			150	V
V_{GS}	Gate–to–Source Voltage			±20	V
I_D	Continuous Drain Current $R_{\theta JC}$ (Note 2)	Steady State	T_C = 25°C	128	A
P_D	Power Dissipation $R_{\theta JC}$ (Note 2)			237	W
I_D	Continuous Drain Current $R_{\theta JC}$ (Note 2)	Steady State	T_C = 100°C	90	A
P_D	Power Dissipation $R_{\theta JC}$ (Note 2)			119	W
I_D	Continuous Drain Current $R_{\theta JA}$ (Notes 1, 2)	Steady State	T_A = 25°C	18	A
P_D	Power Dissipation $R_{\theta JA}$ (Notes 1, 2)			5	W
I_D	Continuous Drain Current $R_{\theta JA}$ (Notes 1, 2)	Steady State	T_A = 100°C	13	A
P_D	Power Dissipation $R_{\theta JA}$ (Notes 1, 2)			2.4	W
I_{DM}	Pulsed Drain Current	T_A = 25°C, t_p = 10 μs		900	A
T_J, T_{stg}	Operating Junction and Storage Temperature Range			–55 to 175	°C
I_S	Source Current (Body Diode)			198	A
E_{AS}	Single Pulse Drain–to–Source Avalanche Energy (I_L = 10.2 A_{pk})			2376	mJ
T_L	Lead Temperature Soldering Reflow for Soldering Purposes (1/8″ from case for 10 s)			260	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. Surface–mounted on FR4 board using 1 in^2 pad size, 1 oz Cu pad.
2. The entire application environment impacts the thermal resistance values shown, they are not constants and are only valid for the particular conditions noted

MARKING DIAGRAM



6D0N15MC = Specific Device Code
A = Assembly Location
WL = Wafer Lot Code
Y = Year Code
W = Work Week Code

ORDERING INFORMATION

Device	Package	Shipping†
NVMTS6D0N15MC	DFNW8 PQFN88 (Pb–Free)	3000 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

© Semiconductor Components Industries, LLC, 2020

THERMAL RESISTANCE RATINGS

Symbol	Parameter	Max	Unit
$R_{\theta JC}$	Junction−to−Case − Steady State (Note 2)	0.63	°C/W
$R_{\theta JA}$	Junction−to−Ambient − Steady State (Note 2)	31.6	

ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted)

Symbol	Parameter	Test Condition		Min	Typ	Max	Unit
OFF CHARACTERISTICS							
$V_{(BR)DSS}$	Drain−to−Source Breakdown Voltage	V_{GS} = 0 V, I_D = 250 μA		150	–	–	V
$V_{(BR)DSS}$ / T_J	Drain−to−Source Breakdown Voltage Temperature Coefficient	I_D = 250 μA, ref to 25°C		–	58.67	–	mV/°C
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS} = 0 V, V_{DS} = 120 V	T_J = 25°C	–	–	1	μA
			T_J = 125°C	–	–	10	μA
I_{GSS}	Gate−to−Source Leakage Current	V_{DS} = 0 V, V_{GS} = ±20 V		–	–	±100	nA
ON CHARACTERISTICS (Note 3)							
$V_{GS(TH)}$	Gate Threshold Voltage	V_{GS} = V_{DS}, I_D = 379 μA		2.5	3.6	4.5	V
$V_{GS(TH)}$ / T_J	Negative Threshold Temperature Coefficient	I_D = 250 μA, ref to 25°C		–	−9.14	–	mV/°C
$R_{DS(on)}$	Drain−to−Source On Resistance	V_{GS} = 10 V, I_D = 69 A		–	4.6	6.4	mΩ
g_{FS}	Forward Transconductance	V_{DS} = 5 V, I_D = 69 A		–	127	–	S
R_G	Gate−Resistance	T_A = 25°C		–	1.1	–	Ω
CHARGES & CAPACITANCES							
C_{ISS}	Input Capacitance	V_{GS} = 0 V, f = 1 MHz, V_{DS} = 75V		–	4815	–	pF
C_{OSS}	Output Capacitance			–	1482	–	
C_{RSS}	Reverse Transfer Capacitance			–	9.7	–	
$Q_{G(TOT)}$	Total Gate Charge	V_{GS} = 10 V, V_{DS} = 75 V, I_D = 69 A		–	58	–	nC
$Q_{G(TH)}$	Threshold Gate Charge			–	34	–	
Q_{GS}	Gate−to−Source Charge			–	26	–	
Q_{GD}	Gate−to−Drain Charge			–	8	–	
Q_{OSS}	Output Charge	V_{GS} = 0 V, V_{DS} = 75 V		–	173	–	nC
SWITCHING CHARACTERISTICS, VGS = 10 V (Note 3)							
$t_{d(ON)}$	Turn−On Delay Time	V_{GS} = 10 V, V_{DS}=75 V, I_D = 69 A, R_G = 6 Ω		–	30	–	ns
t_r	Rise Time			–	7	–	
$t_{d(OFF)}$	Turn−Off Delay Time			–	38	–	
t_f	Fall Time			–	6	–	
DRAIN−SOURCE DIODE CHARACTERISTICS							
V_{SD}	Forward Diode Voltage	V_{GS} = 0 V, I_S = 69 A	T_J = 25°C	–	0.87	1.2	V
			T_J = 125°C	–	0.70	–	
t_{RR}	Reverse Recovery Time	V_{GS} = 0 V, dI_S/dt = 100 A/μs, I_S = 69 A		–	72	–	ns
t_a	Charge Time			–	49	–	
t_b	Discharge Time			–	23	–	
Q_{RR}	Reverse Recovery Charge			–	125	–	nC

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

3. Switching characteristics are independent of operating junction temperatures

TYPICAL CHARACTERISTICS

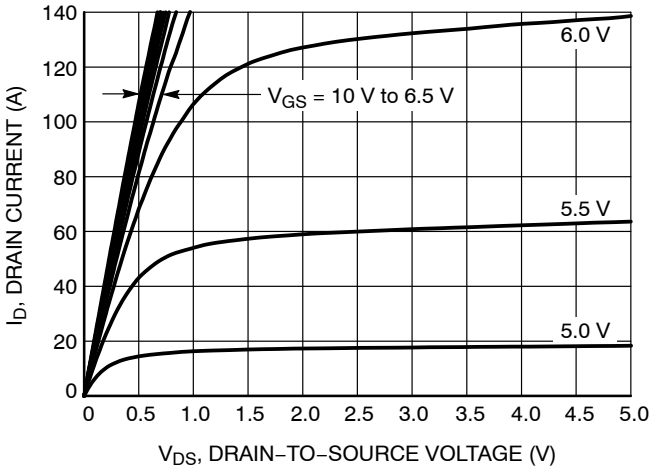


Figure 1. On−Region Characteristics

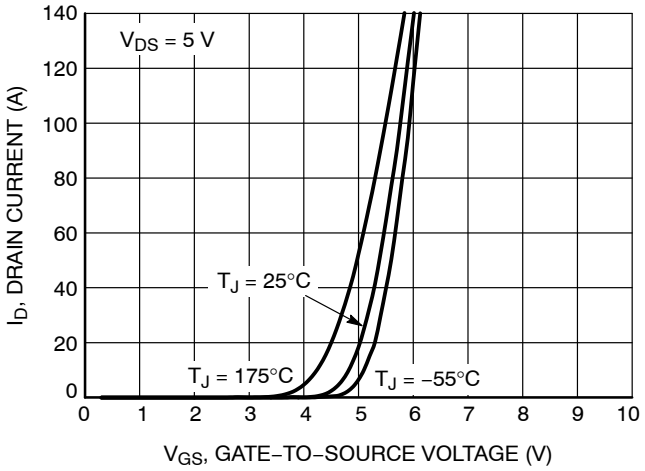


Figure 2. Transfer Characteristics

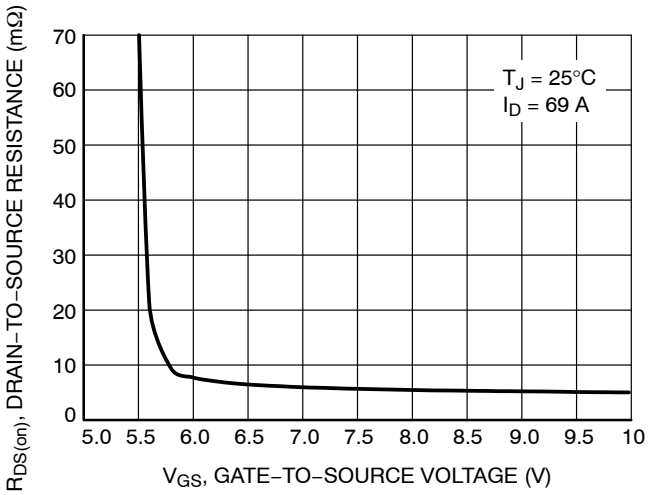


Figure 3. On−Resistance vs. Gate−to−Source Voltage

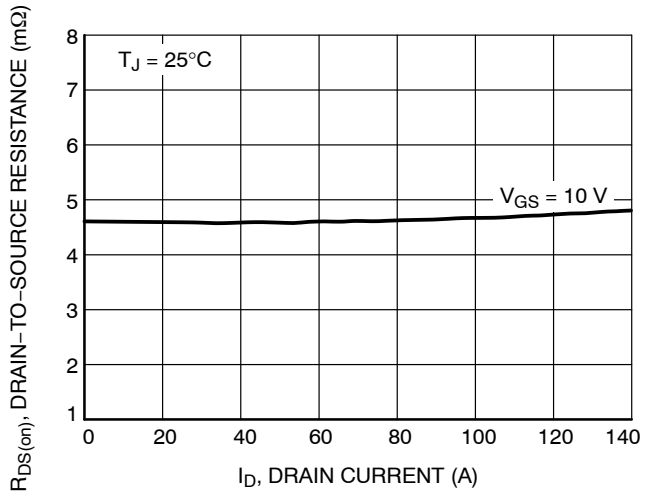


Figure 4. On−Resistance vs. Drain Current and Gate Voltage

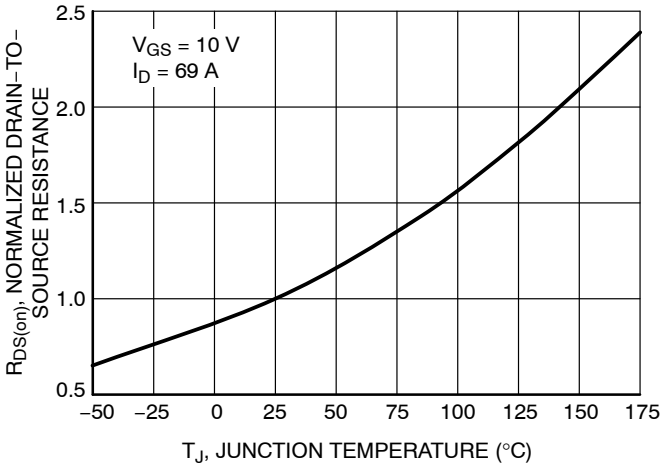


Figure 5. On−Resistance Variation with Temperature

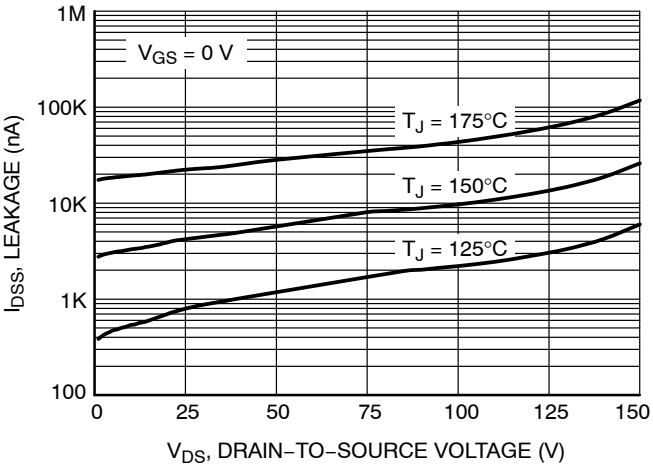


Figure 6. Drain−to−Source Leakage Current vs. Voltage

TYPICAL CHARACTERISTICS

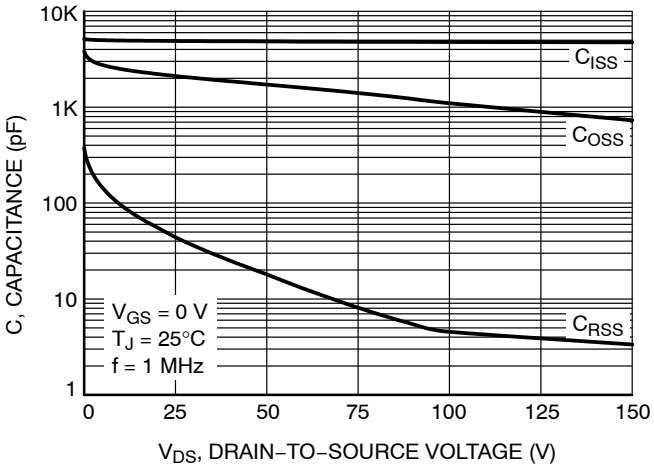


Figure 7. Capacitance Variation

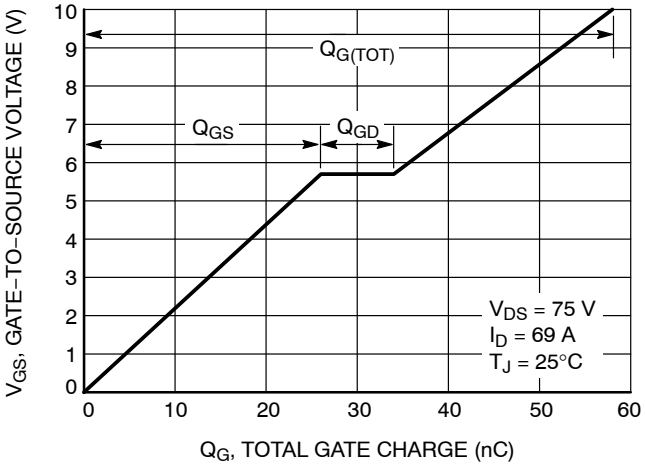


Figure 8. Gate−to−Source and Drain−to−Source Voltage vs. Total Charge

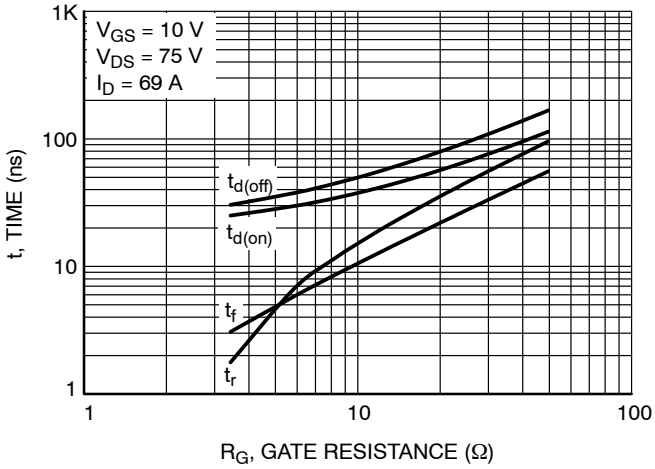


Figure 9. Resistive Switching Time Variation vs. Gate Resistance

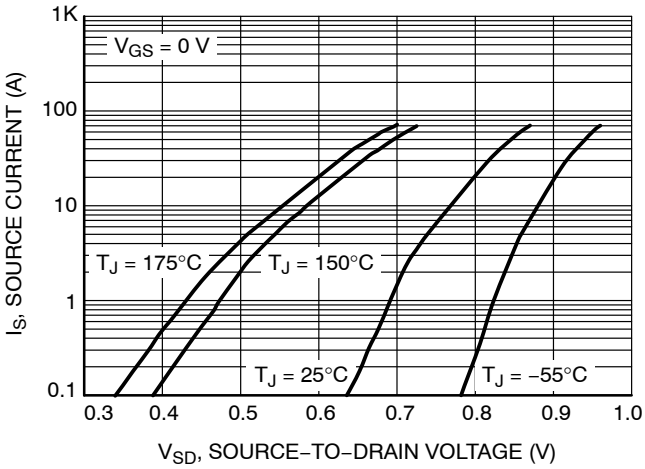


Figure 10. Diode Forward Voltage vs. Current

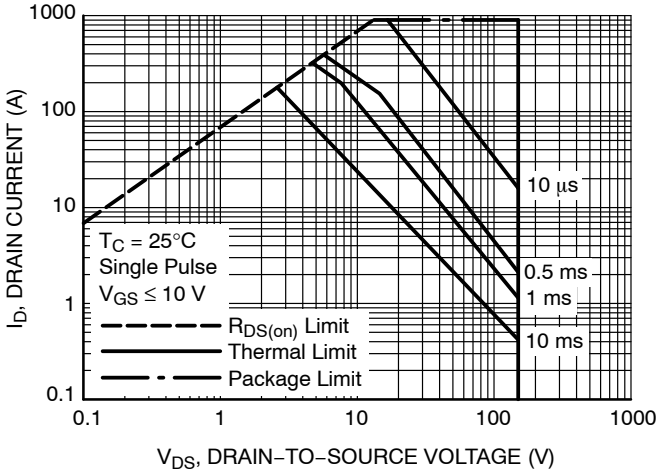


Figure 11. Safe Operating Area

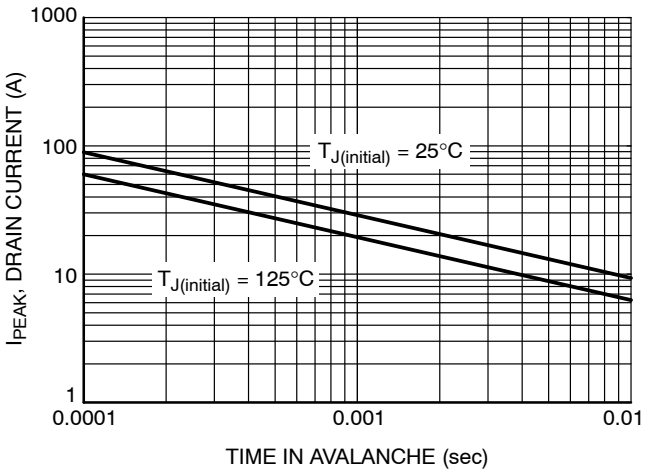


Figure 12. I_{PEAK} vs. Time in Avalanche

TYPICAL CHARACTERISTICS

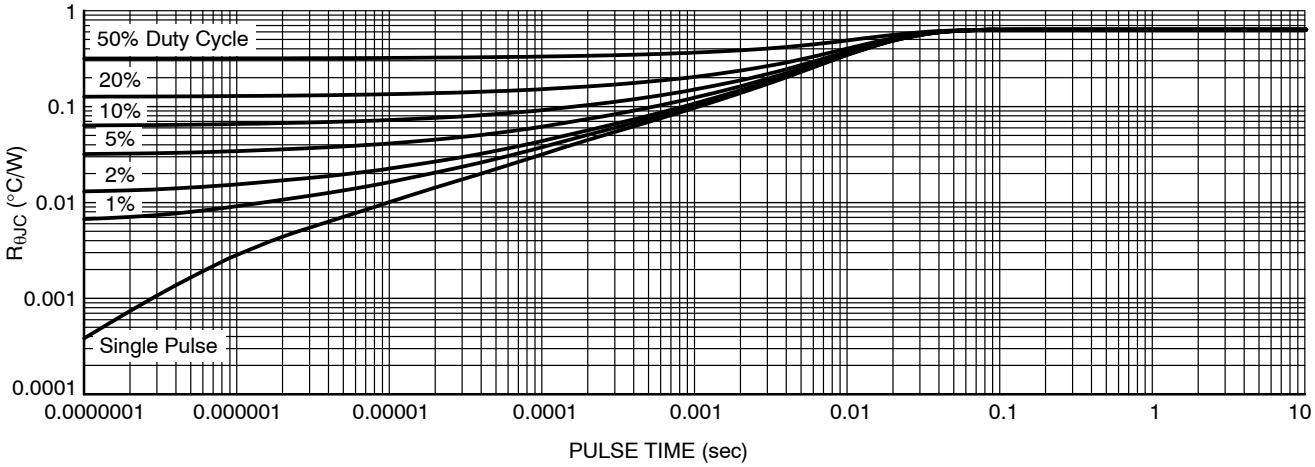
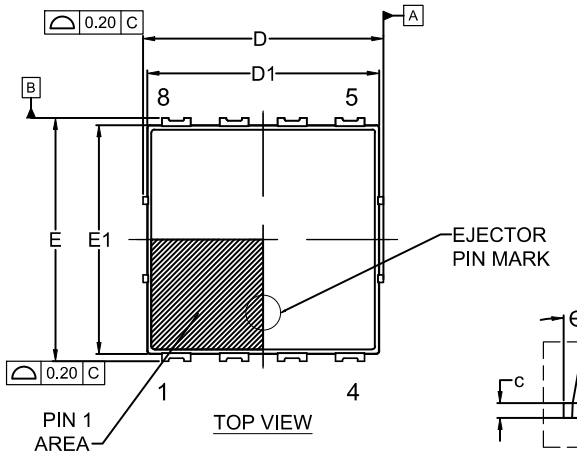


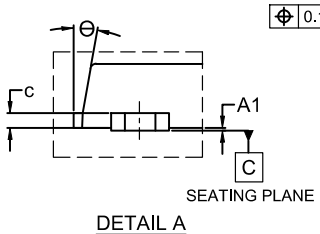
Figure 13. Thermal Characteristics

PACKAGE DIMENSIONS

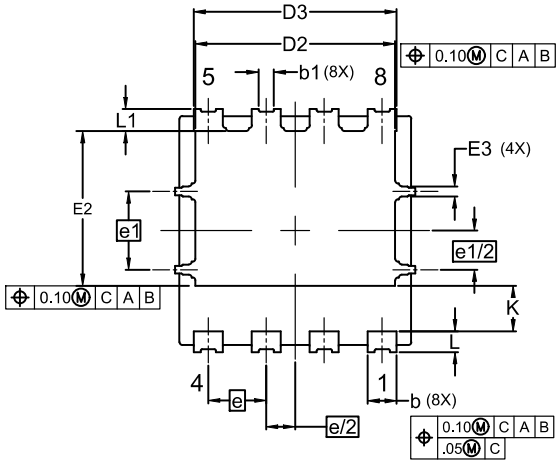
DFNW8 8.3x8.4, 2P
CASE 507AP
ISSUE A

DATE 14 AUG 2018

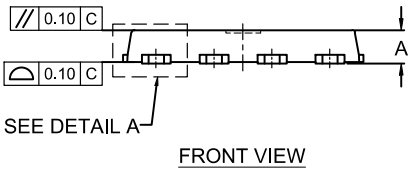




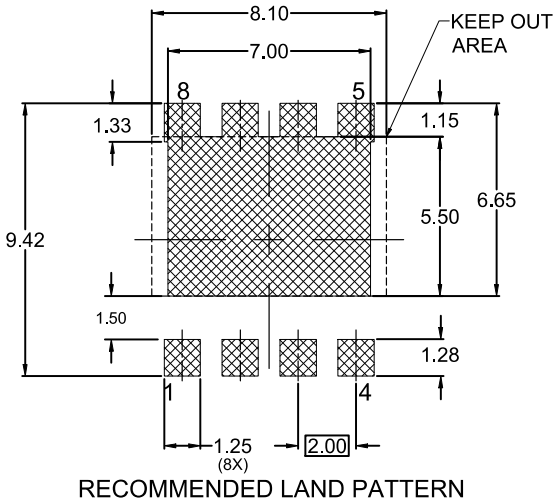
DETAIL A
SCALE: 2X



BOTTOM VIEW



FRONT VIEW



RECOMMENDED LAND PATTERN

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2009.
2. CONTROLLING DIMENSION: MILLIMETERS
3. COPLANARITY APPLIES TO THE EXPOSED PADS AS WELL AS THE TERMINALS.
4. DIMENSIONS D1 AND E1 DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.
5. SEATING PLANE IS DEFINED BY THE TERMINALS. "A1" IS DEFINED AS THE DISTANCE FROM THE SEATING PLANE TO THE LOWEST POINT ON THE PACKAGE BODY.

DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	1.00	1.10	1.20
A1	0.00	---	0.05
b	0.90	1.00	1.10
b1	0.43	0.53	0.63
c	0.23	0.28	0.33
D	8.20	8.30	8.40
D1	7.90	8.00	8.10
D2	6.80	6.90	7.00
D3	6.90	7.00	7.10
E	8.30	8.40	8.50
E1	7.80	7.90	8.00
E2	5.24	5.34	5.44
E3	0.25	0.35	0.45
e	2.00 BSC		
e/2	1.00 BSC		
e1	2.70 BSC		
e1/2	1.35 BSC		
K	1.50	1.57	1.70
L	0.64	0.74	0.84
L1	0.67	0.77	0.87
Θ	0°	---	12°

ON Semiconductor and ON are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of ON Semiconductor's product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent−Marking.pdf. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using ON Semiconductor products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by ON Semiconductor. "Typical" parameters which may be provided in ON Semiconductor data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. ON Semiconductor does not convey any license under its patent rights nor the rights of others. ON Semiconductor products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use ON Semiconductor products for any such unintended or unauthorized application, Buyer shall indemnify and hold ON Semiconductor and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that ON Semiconductor was negligent regarding the design or manufacture of the part. ON Semiconductor is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Email Requests to: orderlit@onsemi.com

ON Semiconductor Website: www.onsemi.com

TECHNICAL SUPPORT
North American Technical Support:
Voice Mail: 1 800−282−9855 Toll Free USA/Canada
Phone: 011 421 33 790 2910

Europe, Middle East and Africa Technical Support:
Phone: 00421 33 790 2910
For additional information, please contact your local Sales Representative

◊

ENTEGRECİ

Bu belge www.entegreci.com üzerinden sunulmaktadır.

Elektronik komponent tedarikinde Entegreci

Entegreci, Eskişehir merkezli, Türkiye geneline satış yapan bir elektronik komponent mağazasıdır. Entegreler (IC), mikrodenetleyiciler, transistörler, diyotlar, pasif elemanlar, konnektörler, modüller ve geliştirme kartları tek adetten seri üretim adetlerine kadar satılır. Ürün sayfalarında güncel stok durumunu, fiyatı ve datasheet bağlantısını bulabilirsiniz.

Parça koduyla arama

Üretici parça numarasını yazın; stok ve fiyatı hemen görün.

www.entegreci.com

Ürün kategorileri

Entegreden kapasitöre tüm elektronik komponent kategorileri.

Kategorilere göz atın

Üreticiler

Aradığınız üreticinin ürünlerini tek sayfada inceleyin.

Üreticileri görün

Toplu alım ve teklif

Listede olmayan ya da yüksek adetli parçalar için teklif isteyin.

Teklif isteyin

www.entegreci.com | **destek@entegreci.com** | **0850 305 90 34**

Entegreci is an online electronic components store based in Türkiye. Search by manufacturer part number to see stock, prices and datasheets for integrated circuits, microcontrollers, transistors, passive components and connectors, or request a quote for parts that are not listed.

Bu sayfa Entegreci tarafından eklenmiştir. Belgenin önceki sayfaları asıl yayıncısına aittir ve içeriği değiştirilmemiştir; en güncel sürüm için belgenin yayıncısına başvurun.