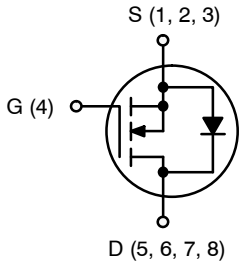
MOSFET – N-Channel Shielded Gate POWERTRENCH®

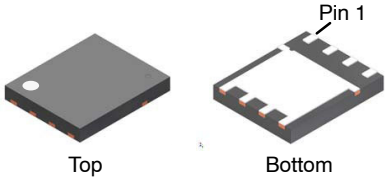
150 V, 85 A, 8.8 mΩ

FDMS8D8N15C

V_{DS}	$R_{DS(ON)}$ MAX	I_D MAX
150 V	8.8 mΩ @ 10 V	85 A
	9.4 mΩ @ 8 V	



N-CHANNEL MOSFET



Power 56
(PQFN8)
CASE 483AF

General Description

This N-Channel MV MOSFET is produced using **onsemi**'s advanced POWERTRENCH process that incorporates Shielded Gate technology. This process has been optimized to minimize on−state resistance and yet maintain superior switching performance with best in class soft body diode.

Features

- Shielded Gate MOSFET Technology
- Max $r_{DS(on)}$ = 8.8 mΩ at V_{GS} = 10 V, I_D = 45 A
- Max $r_{DS(on)}$ = 9.4 mΩ at V_{GS} = 8 V, I_D = 22.5 A
- Low Qrr, Soft Recovery Body Diode
- Lowers Switching Noise/EMI
- MSL1 Robust Package Design
- 100% UIL Tested
- These Devices are Pb−Free and are RoHS Compliant

Applications

- Primary DC−DC MOSFET
- Synchronous Rectifier in DC−DC and AC−DC
- Motor Drive
- Solar

ORDERING INFORMATION

See detailed ordering and shipping information on page 3 of this data sheet.

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

Symbol	Parameter	Value	Unit
V_{DS}	Drain−to−Source Voltage	150	V
V_{GS}	Gate−to−Source Voltage	±20	V
I_D	Drain Current: Continuous, T_C = 25°C (Note 5) Continuous, T_C = 100°C (Note 5) Continuous, T_A = 25°C (Note 1a) Pulsed (Note 4)	 85 54 12.2 340	A
E_{AS}	Single Pulse Avalanche Energy (Note 3)	102	mJ
P_D	Power Dissipation: T_C = 25°C T_A = 25°C (Note 1a)	 132 2.7	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	−55 to +150	°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.

© Semiconductor Components Industries, LLC, 2018

THERMAL CHARACTERISTICS

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction−to−Case	0.95	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction−to−Ambient (Note 1a)	46	

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

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
BV_{DSS}	Drain−to−Source Breakdown Voltage	I_D = 250 μA, V_{GS} = 0 V	150			V
$\Delta BV_{DSS}/\Delta T_J$	Breakdown Voltage Temperature Coefficient	I_D = 250 μA, referenced to 25°C		86		mV/°C
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 120 V, V_{GS} = 0 V			1	μA
I_{GSS}	Gate−to−Source Leakage Current	V_{GS} = ±20 V, V_{DS} = 0 V			±100	nA
ON CHARACTERISTICS						
$V_{GS(th)}$	Gate−to−Source Threshold Voltage	V_{GS} = V_{DS}, I_D = 250 μA	2.5	3.5	4.5	V
$\Delta V_{GS(th)}/\Delta T_J$	Gate−to−Source Threshold Voltage Temperature Coefficient	I_D = 250 μA, referenced to 25°C		−7.9		mV/°C
$r_{DS(on)}$	Static Drain−to−Source On Resistance	V_{GS} = 10 V, I_D = 45 A		7.0	8.8	mΩ
		V_{GS} = 8 V, I_D = 22.5 A		7.6	9.4	
		V_{GS} = 10 V, I_D = 45 A, T_J = 125°C		12.8	16.1	
g_{FS}	Forward Transconductance	V_{DS} = 10 V, I_D = 45 A		120	216	S
DYNAMIC CHARACTERISTICS						
C_{iss}	Input Capacitance	V_{DS} = 75 V, V_{GS} = 0 V, f = 1 MHz		3132	3600	pF
C_{oss}	Output Capacitance			927	1160	pF
C_{rss}	Reverse Transfer Capacitance			5.3	9.3	pF
R_g	Gate Resistance			0.73	1.2	Ω
SWITCHING CHARACTERISTICS						
$t_{d(on)}$	Turn−On Delay Time	V_{DD} = 75 V, I_D = 45 A, V_{GS} = 10 V, R_{GEN} = 6 Ω		23	40	ns
t_r	Rise Time			19	38	ns
$t_{d(off)}$	Turn−Off Delay Time			30	49	ns
t_f	Fall Time			5	10	ns
Q_g	Total Gate Charge	V_{GS} = 0 V to 10 V, V_{DD} = 75 V, I_D = 45 A		38	50	nC
Q_{gs}	Gate−to−Source Charge	V_{DD} = 75 V, I_D = 45 A		16.4		nC
Q_{gd}	Gate−to−Drain “Miller” Charge	V_{DD} = 75 V, I_D = 45 A		5.7		nC
Q_{oss}	Output Charge	V_{DD} = 75 V, V_{GS} = 0 V		101		nC

Share Feedback
Your Opinion Matters

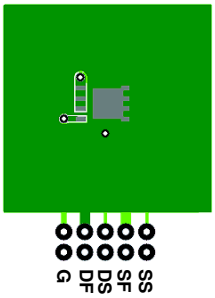
ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted) (continued)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
DRAIN-SOURCE DIODE CHARACTERISTICS						
V_{SD}	Source−to−Drain Diode Forward Voltage	V_{GS} = 0 V, I_S = 2.2 A (Note 2)		0.73	0.98	V
		V_{GS} = 0 V, I_S = 45 A (Note 2)		0.88	1.0	
t_{rr}	Reverse Recovery Time	I_F = 45 A, di/dt = 100 A/μs		68	86	ns
Q_{rr}	Reverse Recovery Charge			108	172	nC
t_{rr}	Reverse Recovery Time	I_F = 45 A, di/dt = 1000 A/μs		39	50	ns
Q_{rr}	Reverse Recovery Charge			495	748	nC

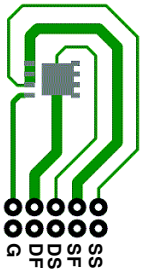
Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

NOTES:

1. $R_{\theta JA}$ is determined with the device mounted on a 1 in^2 pad 2 oz copper pad on a 1.5 × 1.5 in. board of FR−4 material. $R_{\theta CA}$ is determined by the user's board design.



a) 46°C/W when mounted on a 1 in^2 pad of 2 oz copper.



b) 115°C/W when mounted on a minimum pad of 2 oz copper.

2. Pulse Test: Pulse Width < 300 μs, Duty cycle < 2.0%.
3. E_{AS} of 102 mJ is based on starting T_J = 25°C; N-ch: L = 0.1 mH, I_{AS} = 45.2 A, V_{DD} = 100 V, V_{GS} = 15 V. 100% tested at L = 0.1 mH, I_{AS} = 45.2 A.
4. Pulsed Id please refer to Figure 11 SOA graph for more details. (Note: the final number may change pending results on device characterization).
5. Computed continuous current limited to Max Junction Temperature only, actual continuous current will be limited by thermal & electro-mechanical application board design.

PACKAGE MARKING AND ORDERING INFORMATION

Device	Marking	Package	Reel Size	Tape Width	Quantity
FDMS8D8N15C	FDMS8D8N15C	Power 56 (PQFN8) (Pb-Free / Halogen Free)	13″	12 mm	3000 units

Share Feedback
Your Opinion Matters

TYPICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted.)

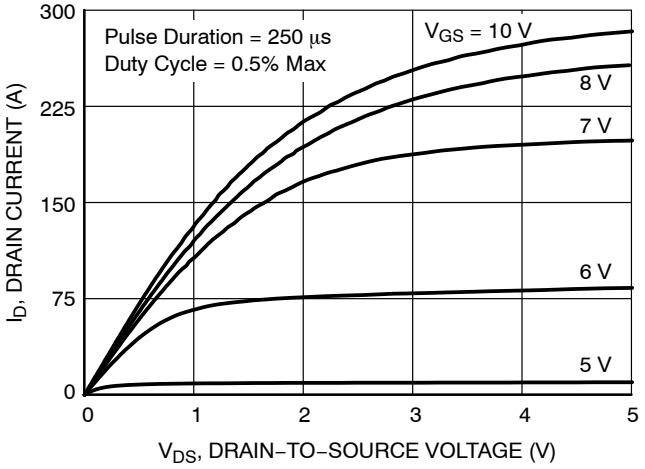


Figure 1. On−Region Characteristics

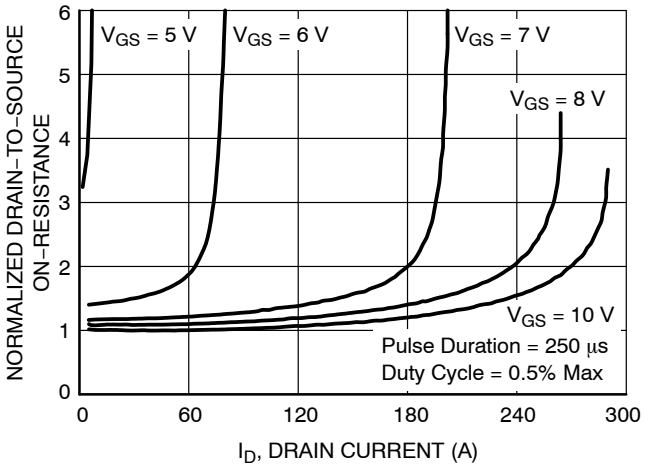


Figure 2. Normalized On−Resistance vs. Drain Current and Gate Voltage

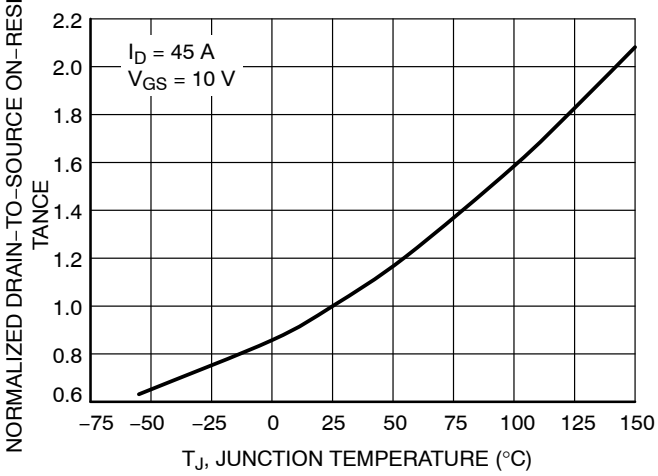


Figure 3. Normalized On−Resistance vs. Junction Temperature

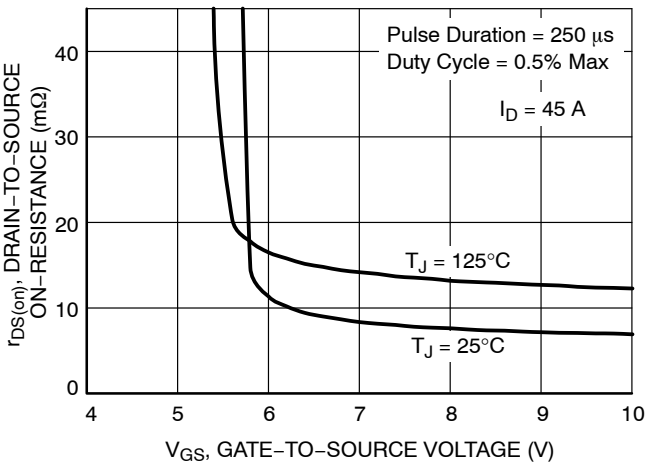


Figure 4. On−Resistance vs. Gate−to−Source Voltage

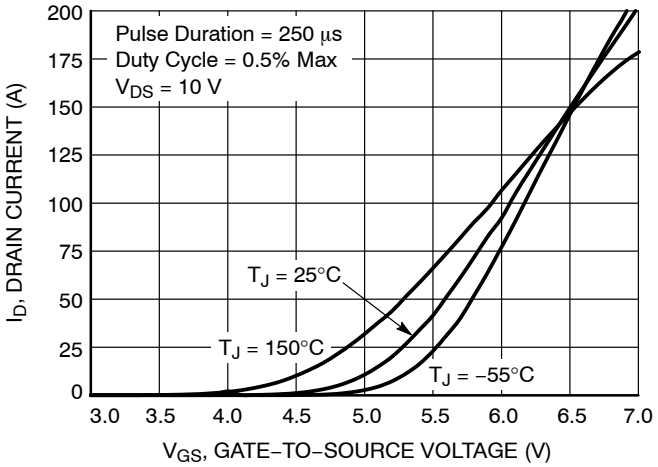


Figure 5. Transfer Characteristics

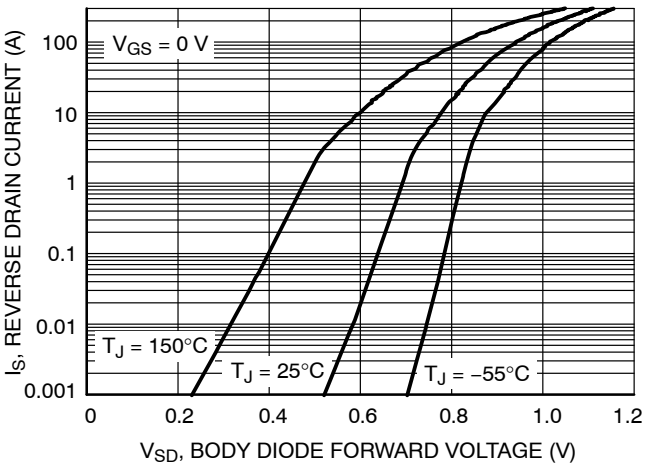


Figure 6. Source−to−Drain Diode Forward Voltage vs. Source Current

Share Feedback
Your Opinion Matters

TYPICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted.)

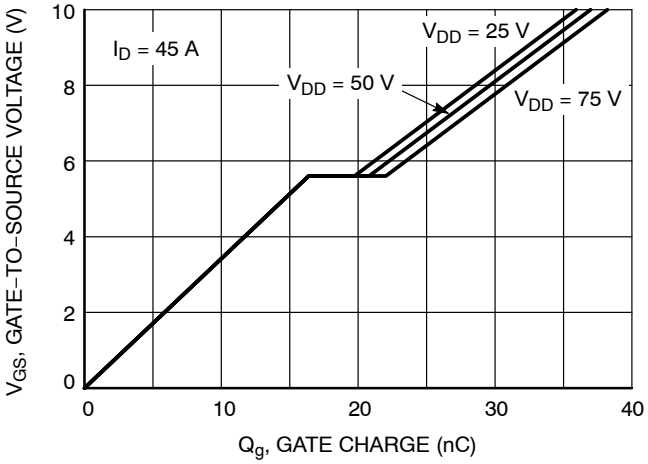


Figure 7. Gate Charge Characteristics

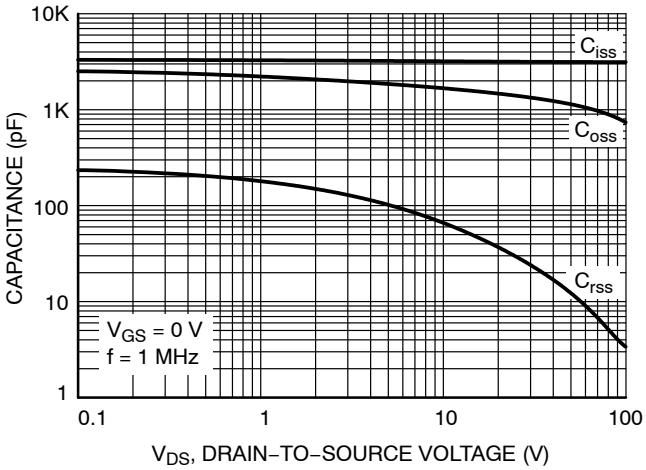


Figure 8. Capacitance vs. Drain−to−Source Voltage

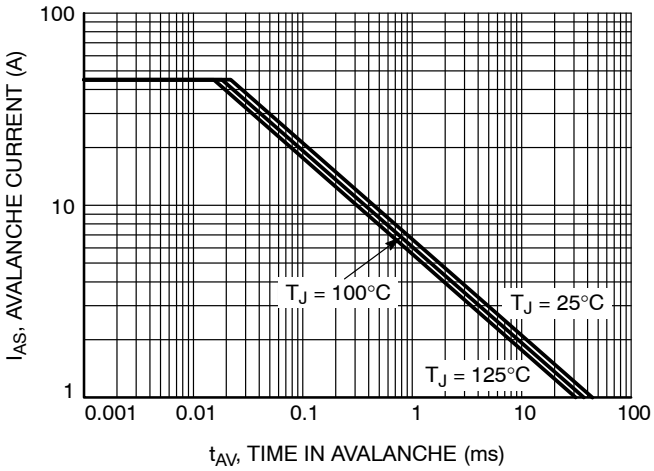


Figure 9. Unclamped Inductive Switching Capability

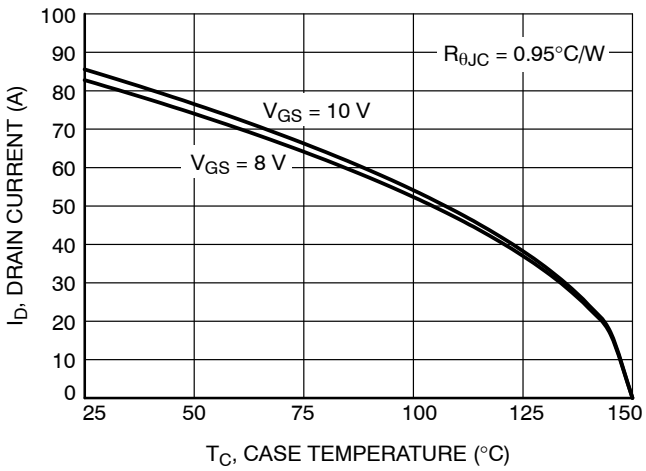


Figure 10. Maximum Continuous Drain Current vs. Case Temperature

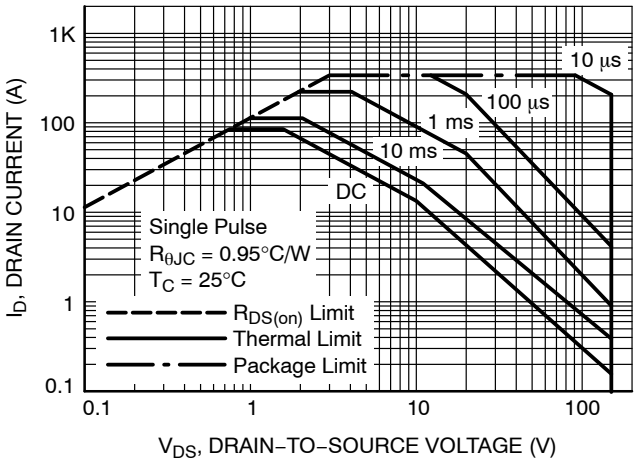


Figure 11. Forward Bias Safe Operating Area

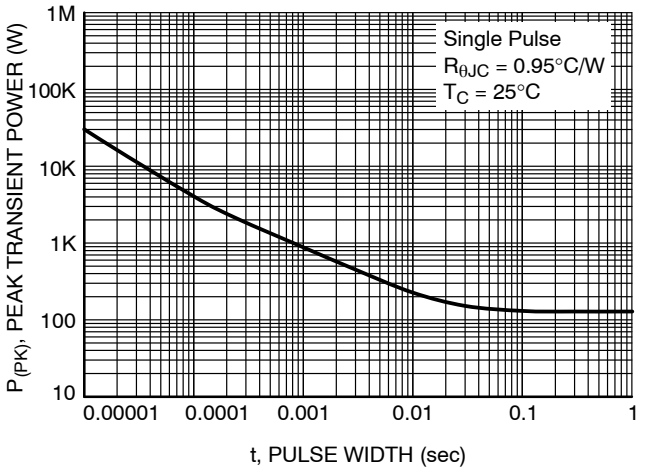


Figure 12. Single Pulse Maximum Power Dissipation

Share Feedback
Your Opinion Matters

TYPICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted.)

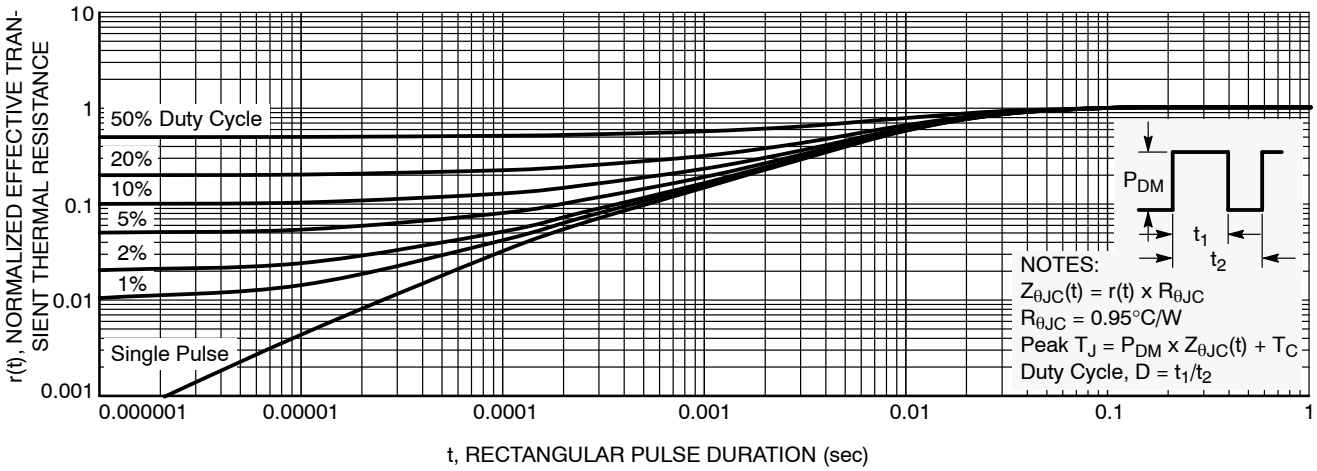
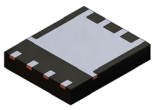


Figure 13. Junction−to−Case Transient Thermal Response Curve

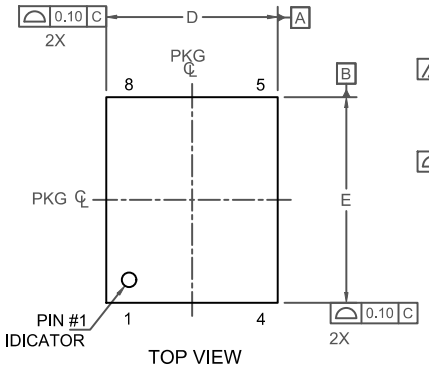
POWERTRENCH is a registered trademark of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries.

Share Feedback
Your Opinion Matters

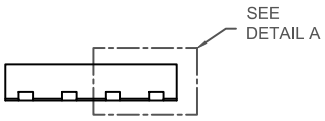


PQFN8 5X6, 1.27P
CASE 483AF
ISSUE A

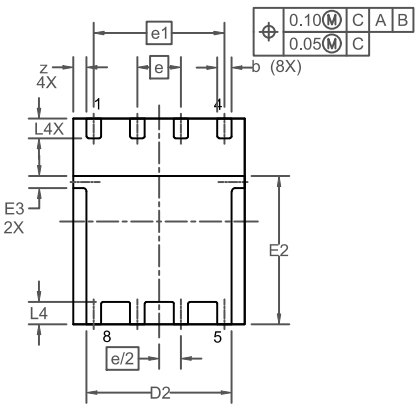
DATE 06 JUL 2021



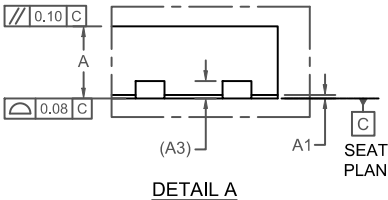
TOP VIEW



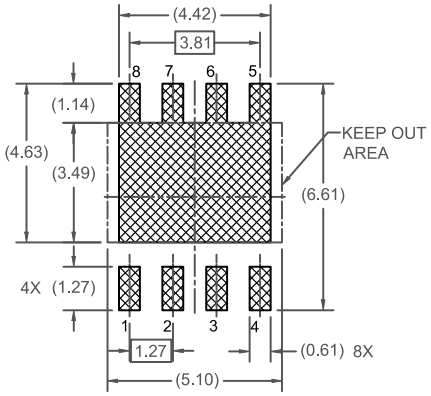
SIDE VIEW



BOTTOM VIEW



DETAIL A
SCALE: 2:1



LAND PATTERN
RECOMMENDATION

*FOR ADDITIONAL INFORMATION ON OUR PB-FREE STRATEGY AND SOLDERING DETAILS, PLEASE DOWNLOAD THE ON SEMICONDUCTOR SOLDERING AND MOUNTING TECHNIQUES REFERENCE MANUAL, SOLDERRM/D.

NOTES: UNLESS OTHERWISE SPECIFIED

A) PACKAGE STANDARD REFERENCE: JEDEC MO-240, ISSUE A, VAR. AA,
B) ALL DIMENSIONS ARE IN MILLIMETERS.
C) DIMENSIONS DO NOT INCLUDE BURRS OR MOLD FLASH. MOLD FLASH OR BURRS DOES NOT EXCEED 0.10MM.
D) DIMENSIONING AND TOLERANCING PER ASME Y14.5M-2009.
E) IT IS RECOMMENDED TO HAVE NO TRACES OR VIAS WITHIN THE KEEP OUT AREA.

DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.90	1.00	1.10
A1	0.00	-	0.05
A3	0.20 REF.		
b	0.37	0.42	0.47
D	4.90	5.00	5.10
D2	4.13	4.23	4.33
E	5.90	6.00	6.10
E2	4.23	4.33	4.43
E3	0.35 REF.		
e	1.27 BSC		
e/2	0.635 BSC		
e1	3.81 BSC		
L	0.52	0.57	0.62
L4	0.55	0.65	0.75
z	0.38 REF		

DOCUMENT NUMBER:	**98AON13656G**	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
DESCRIPTION:	**PQFN8 5X6, 1.27P**	**PAGE 1 OF 1**

onsemi and onsemi are trademarks of Semiconductor Components Industries, LLC dba **onsemi** or its subsidiaries in the United States and/or other countries. **onsemi** reserves the right to make changes without further notice to any products herein. **onsemi** makes no warranty, representation or guarantee regarding the 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. **onsemi** does not convey any license under its patent rights nor the rights of others.

© Semiconductor Components Industries, LLC, 2016

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**'s 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.

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:
Technical Library: www.onsemi.com/design/resources/technical−documentation
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support
For additional information, please contact your local Sales Representative at www.onsemi.com/support/sales

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.