DATA SHEET
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MOSFET – Power, Single N-Channel, PQFN8 5x6

150 V, 11.5 mΩ, 78 A

NTMFS011N15MC

Features

- Small Footprint (5 x 6 mm) for Compact Design
- Low $R_{DS(on)}$ to Minimize Conduction Losses
- Low Q_G and Capacitance to Minimize Driver Losses
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

Typical Applications

- Synchronous Rectification
- AC-DC and DC-DC Power Supplies
- AC-DC Adapters (USB PD) SR
- Load Switch

MAXIMUM RATINGS (T_J = 25 °C, Unless otherwise specified)

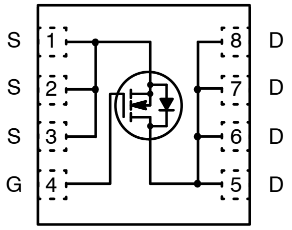
Parameter			Symbol	Value	Unit
Drain-to-Source Breakdown Voltage			$V_{(BR)DSS}$	150	V
Gate-to-Source Voltage			V_{GS}	±20	V
Continuous Drain Current $R_{\theta JC}$ (Note 2)	Steady State	T_C = 25 °C	I_D	78	A
Power Dissipation $R_{\theta JC}$ (Note 2)			P_D	147	W
Continuous Drain Current $R_{\theta JA}$ (Note 1, 2)	Steady State	T_A = 25 °C	I_D	10.7	A
Power Dissipation $R_{\theta JA}$ (Note 1, 2)			P_D	2.7	W
Pulsed Drain Current	T_A = 25 °C, t_p = 250 μs		I_{DM}	259	A
Operating Junction and Storage Temperature			T_J, T_{stg}	−55 to +150	°C
Source Current (Body Diode)			I_S	133	A
Single Pulse Drain-to-Source Avalanche Energy (I_{AV} = 39 A, L = 0.1 mH)			E_{AS}	76.1	mJ
Lead Temperature Soldering Reflow for Soldering Purposes (1/8” from case for 10 s)			T_L	300	°C

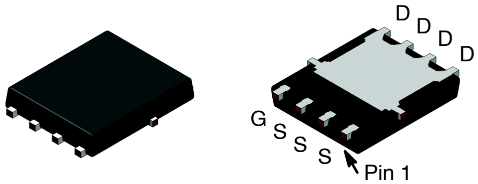
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

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.

$V_{(BR)DSS}$	$R_{DS(ON)}$ MAX	I_D MAX
150 V	11.5 mΩ @ 10 V	35 A
	13.2 mΩ @ 8 V	18 A

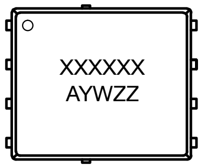
N-Channel MOSFET





PQFN8 5x6, 1.27P
(Power 56)
CASE 483AE

MARKING DIAGRAM



A = Assembly Location
Y = Year
W = Work Week
ZZ = Lot Traceability

ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

THERMAL CHARACTERISTICS

Symbol	Parameter	Max	Unit
$R_{\theta JC}$	Junction-to-Case – Steady State (Note 5)	0.85	°C/W
$R_{\theta JA}$	Junction-to-Ambient – Steady State (Note 5)	46	

ORDERING INFORMATION

Device	Device Marking	Package	Shipping (Qty / Packing)†
NTMFS011N15MC	NTMFS011N15MC	PQFN8 5x6, 1.27 P (Power 56) (Pb-Free/Halogen 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.

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

Symbol	Parameter	Test Conditions		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			85		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			100	
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 = 194 μA		2.5	3.35	4.5	V
$V_{GS(TH)}$ / T_J	Negative Threshold Temperature Coefficient	I_D = 250 μA, ref to 25 °C			−7.2		mV/°C
$R_{DS(on)}$	Drain-to-Source On Resistance	V_{GS} = 10 V, I_D = 35 A			9.0	11.5	mΩ
		V_{GS} = 8 V, I_D = 18 A			9.7	13.2	
g_{FS}	Forward Transconductance	V_{DS} = 10 V, I_D = 18 A			96	116	S
R_G	Gate-Resistance	T_A = 25 °C			0.9	1.1	Ω
CHARGES & CAPACITANCES							
C_{ISS}	Input Capacitance	V_{GS} = 0 V, f = 1 MHz, V_{DS} = 75 V			2478	3592	pF
C_{OSS}	Output Capacitance				728	1092	
C_{RSS}	Reverse Transfer Capacitance				7.9	15	
$Q_{G(TOT)}$	Total Gate Charge	V_{GS} = 8 V, V_{DS} = 75 V, I_D = 35 A			30.6	46	nC
$Q_{G(TOT)}$	Total Gate Charge	V_{GS} = 10 V, V_{DS} = 75 V, I_D = 35 A			30.7	46	
Q_{GS}	Gate-to-Source Charge				12.8		
Q_{SW}	Switching Charge				9.4		
Q_{GD}	Gate-to-Drain Charge				4.5		
Q_{OSS}	Output Charge	V_{GS} = 0 V, V_{DD} = 75 V			95		
V_{GP}	Plateau Voltage	V_{GS} = 10 V, V_{DS} = 75 V, I_D = 35 A			5.1		V
SWITCHING CHARACTERISTICS (Note 3)							
$t_{d(ON)}$	Turn-On Delay Time	V_{GS} = 10 V, V_{DS} = 75 V, I_D = 35 A, R_G = 6 Ω			19.8		ns
t_r	Rise Time				4.7		
$t_{d(OFF)}$	Turn-Off Delay Time				25.5		
t_f	Fall Time				4.0		

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

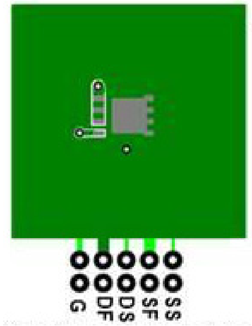
Symbol	Parameter	Test Conditions		Min	Typ	Max	Unit
DRAIN-SOURCE DIODE CHARACTERISTICS							
V_{SD}	Forward Diode Voltage	V_{GS} = 0 V, I_S = 35 A	T_J = 25 °C		0.869		V
			T_J = 125 °C		0.725		
t_{RR}	Reverse Recovery Time	V_{GS} = 0 V, dI_S/dt = 300 A/μs, I_S = 35 A			48.8		ns
Q_{RR}	Reverse Recovery Charge				227		nC
t_{RR}	Reverse Recovery Time	V_{GS} = 0 V, dI_S/dt = 1000 A/μs, I_S = 35 A			36.4		ns
Q_{RR}	Reverse Recovery Charge				407		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.

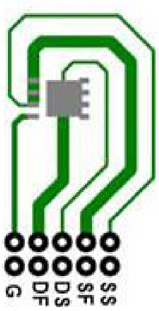
3. Switching characteristics are independent of operating junction temperatures.

NOTES:

4. $R_{\theta JA}$ is determined with the device mounted on a 1 in^2 pad 2 oz copper pad on a 1.5 x 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) 116 °C/W when mounted on a minimum pad of 2 oz copper.

5. Pulse Test: Pulse Width < 300 μs, Duty cycle < 2.0%.
6. E_{AS} of 196 mJ is based on starting T_J = 25 °C; L = 3 mH, I_{AS} = 12.7 A, V_{DD} = 100 V, V_{GS} = 15 V. 100% tested at L = 0.1 mH, I_{AS} = 41 A.
7. Pulsed I_D please refer to Fig 11 SOA graph for more details.
8. Computed continuous current limited to Max Junction Temperature only, actual continuous current will be limited by thermal & electro-mechanical application board design.

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

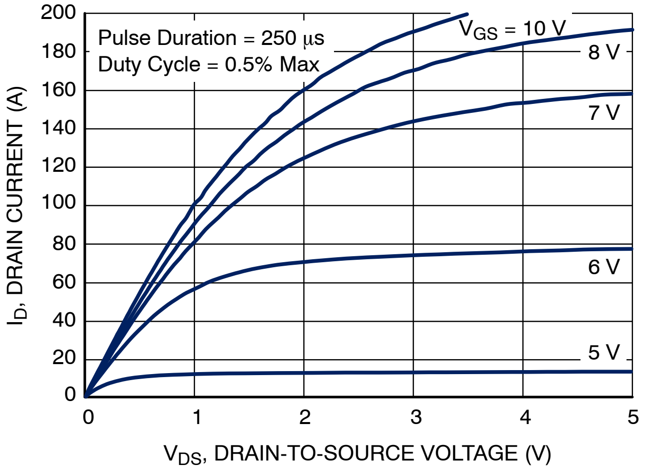


Figure 1. On-Region Characteristics

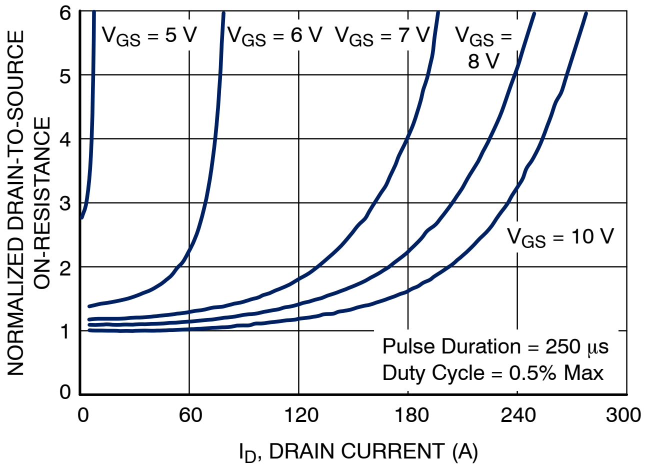


Figure 2. Normalized On-Resistance vs. Drain Current and Gate Voltage

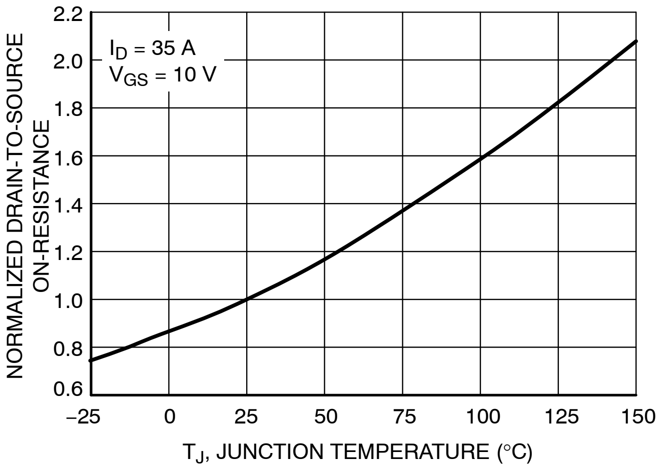


Figure 3. Normalized On-Resistance vs. Junction Temperature

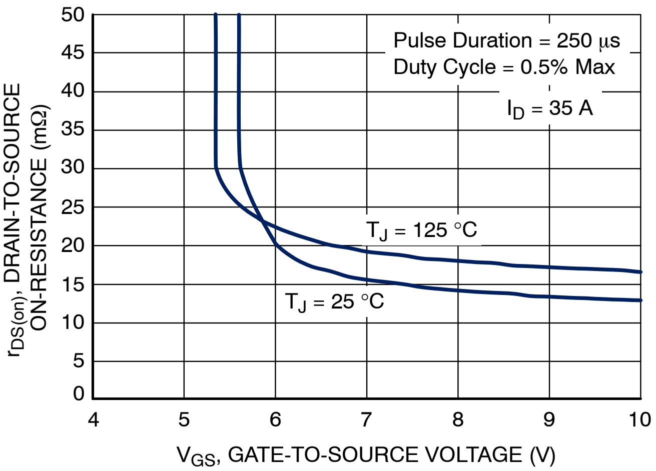


Figure 4. On-Resistance vs. Gate-to-Source Voltage

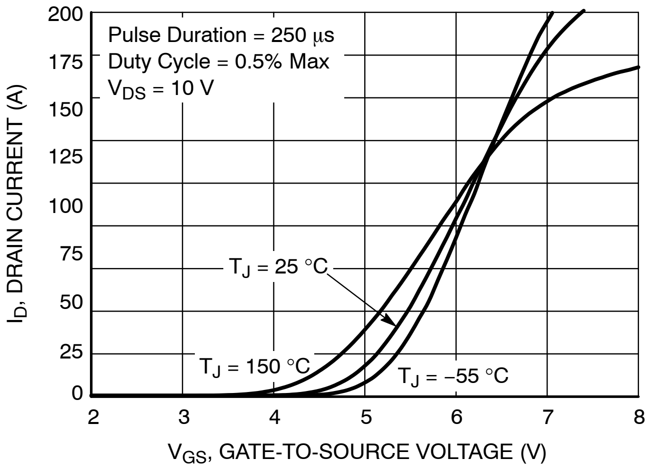


Figure 5. Transfer Characteristics

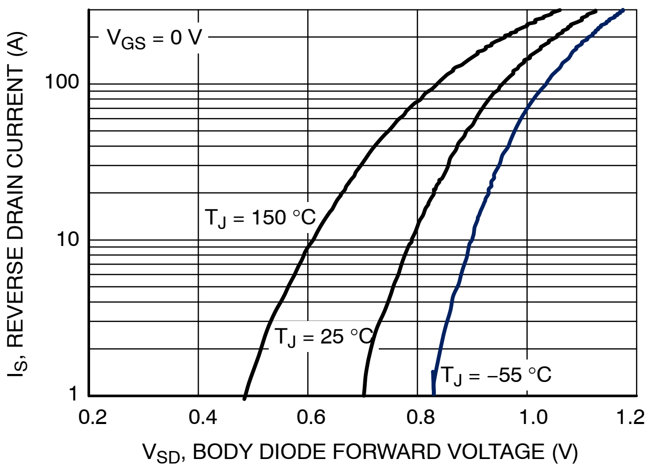


Figure 6. Source-to-Drain Diode Forward Voltage vs. Source Current

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

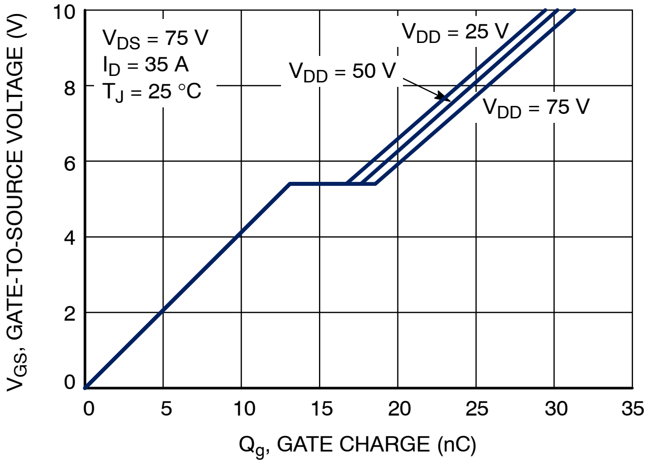


Figure 7. Gate Charge Characteristics

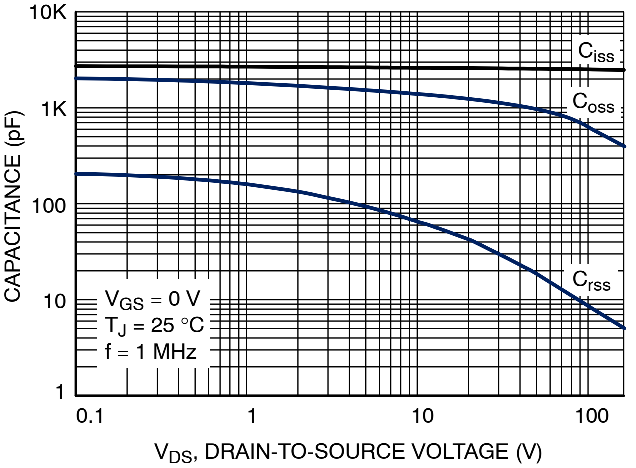


Figure 8. Capacitance vs. Drain-to-Source Voltage

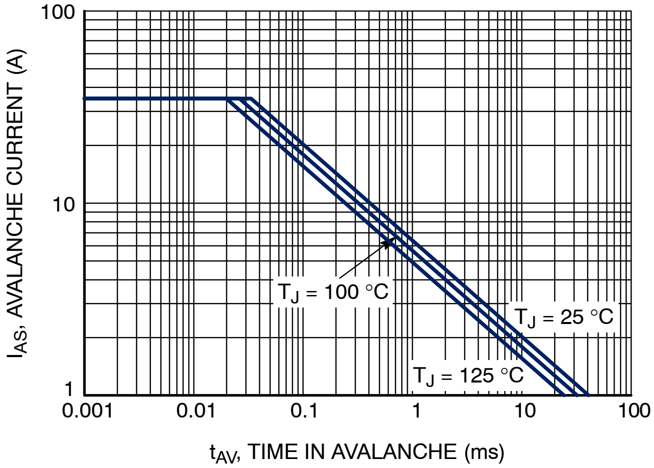


Figure 9. Unclamped Inductive Switching Capability

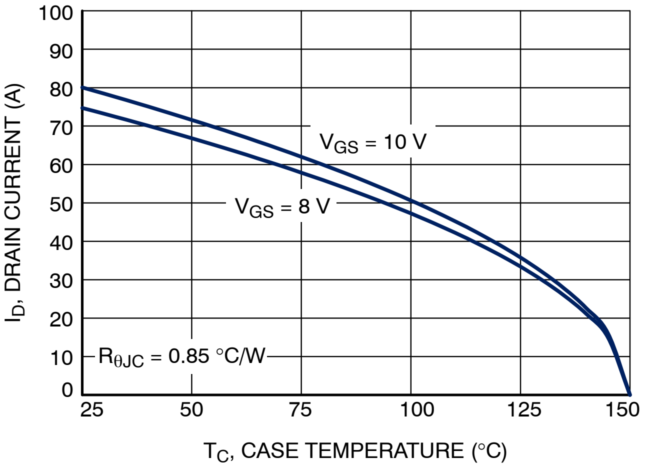


Figure 10. Maximum Continuous Drain Current vs. Case Temperature

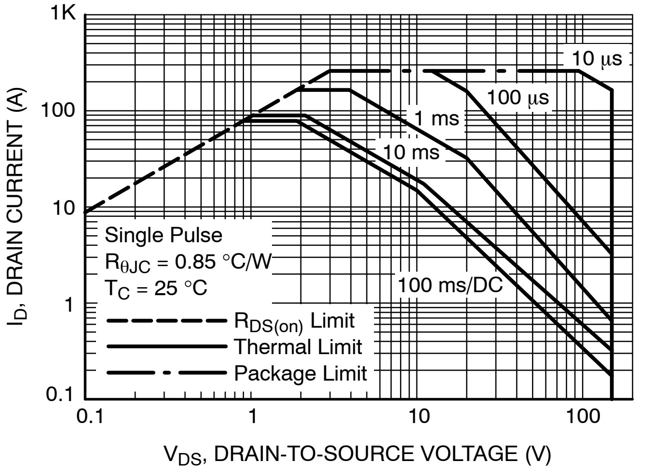


Figure 11. Forward Bias Safe Operating Area

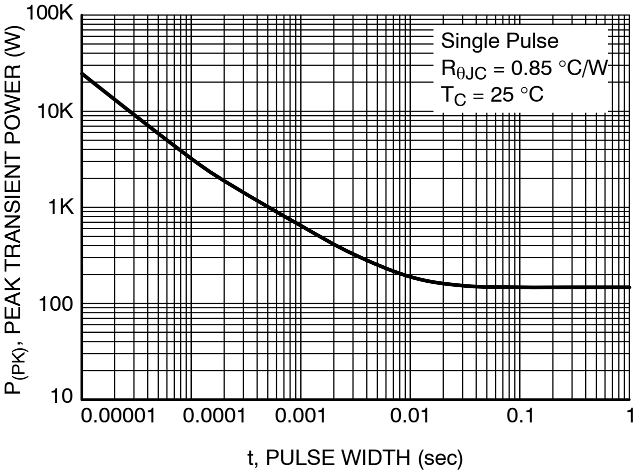


Figure 12. Single Pulse Maximum Power Dissipation

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

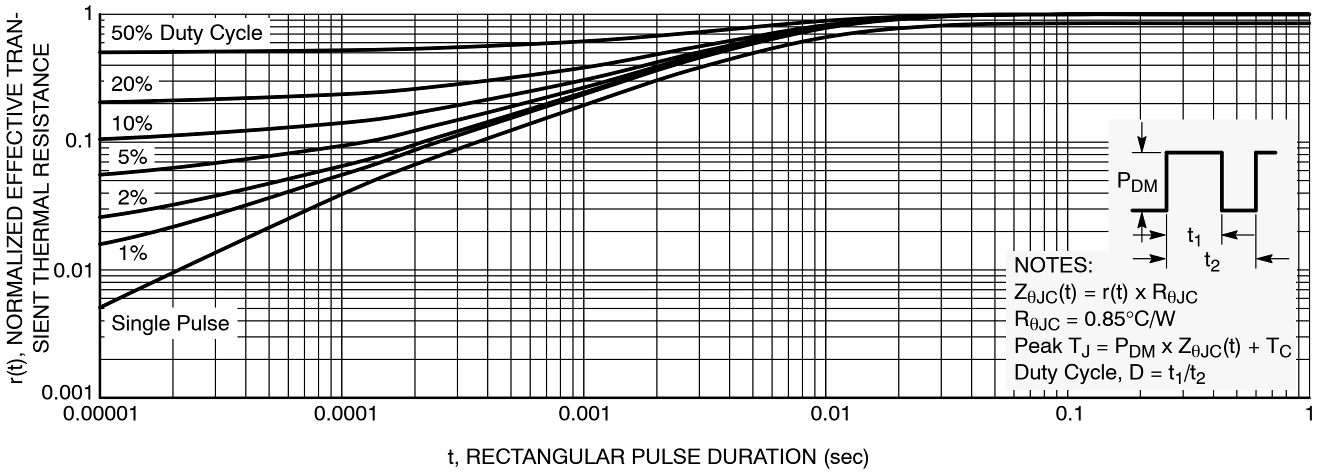
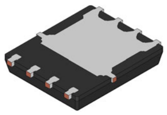


Figure 13. Junction-to-Case Transient Thermal Response Curve

REVISION HISTORY

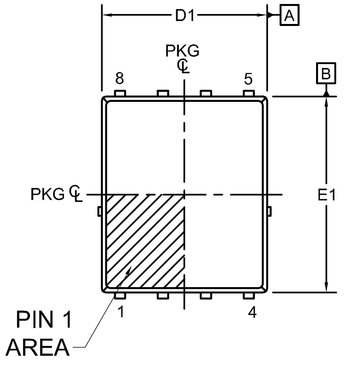
Revision	Description of Changes	Date
2	Document rebranded to **onsemi** format.	11/5/2025

This document has undergone updates prior to the inclusion of this revision history table. The changes tracked here only reflect updates made on the noted approval dates.

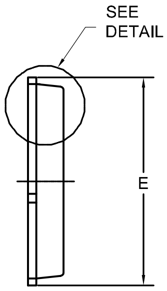


PQFN8 5X6, 1.27P
CASE 483AE
ISSUE C

DATE 21 JAN 2022

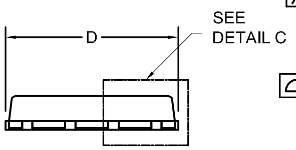


TOP VIEW

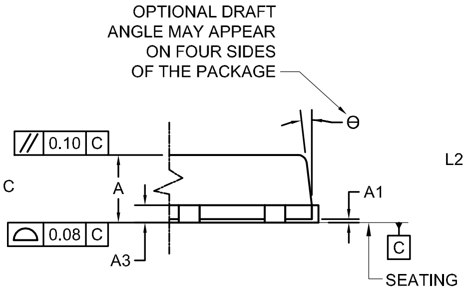


NOTES:

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.
6. IT IS RECOMMENDED TO HAVE NO TRACES OR VIAS WITHIN THE KEEP OUT AREA.

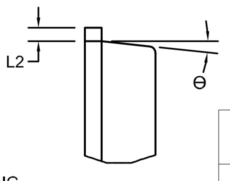


SIDE VIEW



DETAIL C

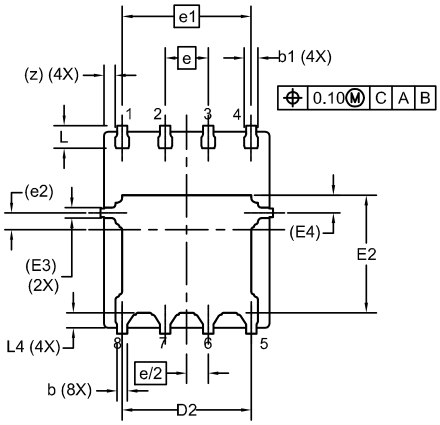
SCALE: 2:1



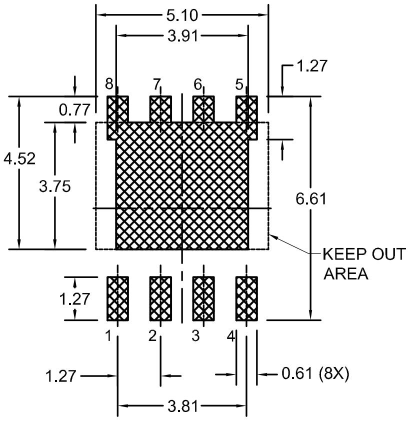
DETAIL B

SCALE: 2:1

DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.90	1.00	1.10
A1	0.00	-	0.05
b	0.21	0.31	0.41
b1	0.31	0.41	0.51
A3	0.15	0.25	0.35
D	4.90	5.00	5.20
D1	4.80	4.90	5.00
D2	3.61	3.82	3.96
E	5.90	6.15	6.25
E1	5.70	5.80	5.90
E2	3.38	3.48	3.78
E3	0.30 REF		
E4	0.52 REF		
e	1.27 BSC		
e/2	0.635 BSC		
e1	3.81 BSC		
e2	0.50 REF		
L	0.51	0.66	0.76
L2	0.05	0.18	0.30
L4	0.34	0.44	0.54
z	0.34 REF		
Θ	0°	-	12°



BOTTOM VIEW



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