

Features

- GaN-on-Silicon E-mode HEMT technology
- Very low gate charge
- Ultra-low on resistance
- Very small footprint

Applications

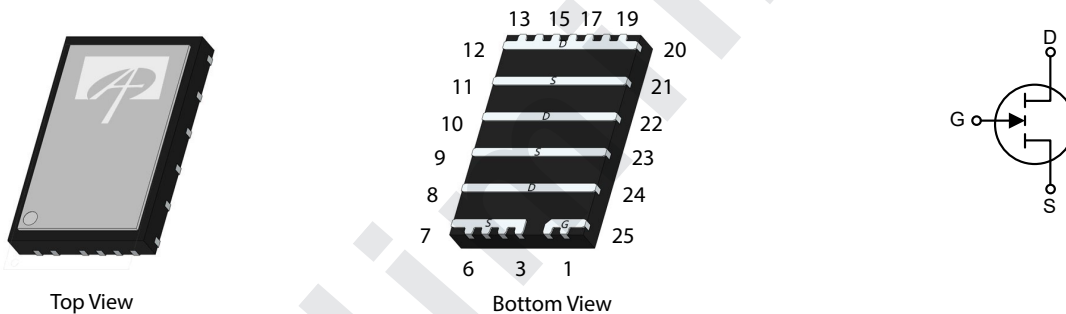
- High frequency DC-DC converter
- Point of Load
- RF envelope tracking
- PC charger
- Mobile power bank
- Motor driver

Product Summary at $T_J = 25^\circ\text{C}$

$V_{DS, \text{max}}$	100V
$R_{DS(\text{on}), \text{max}} @ V_{GS} = 6\text{V}$	1.8m Ω
$Q_{g, \text{typ}} @ V_{DS} = 50\text{V}$	22nC
$I_{D, \text{pulse}}$	60A
$Q_{OSS} @ V_{DS} = 50\text{V}$	320nC
$Q_{rr} @ V_{DS} = 50\text{V}$	125nC



Pin Configuration



Pin Information

Pin	Pin Description	Pin Function
1, 2, 25	Gate	Driver Gate
3-7, 9, 11, 21, 23	Source	Source
8, 10, 12-20, 22, 24	Drain	Power Drain

Ordering Information

Ordering Part Number	Package Type	Form	Shipping Quantity
AOSE018V10GA1	En-FCQFN 4x6	Tape and Reel	1500

Contact local sales office for full product datasheet.

Absolute Maximum Ratings

($T_J = 25^\circ\text{C}$, unless otherwise noted)

Symbol	Parameter	Max	Units
V_{DS}	Drain-to-Source Voltage (Continuous)	100	V
$V_{DS(tr)}$	Drain-to-Source Voltage (up to 300,000 5ms pulse at 150°C)	120	V
I_D	Continuous Current ($T_A = 25^\circ\text{C}$)	100	A
	Pulsed ($T_A = 25^\circ\text{C}$, $T_{Pulse} = 100\mu\text{s}$)	320	A
V_{GS}	Gate-to-Source Voltage	6	V
	Gate-to-Source Voltage	-4	V
T_J	Operating Temperature	-40 to 150	$^\circ\text{C}$
T_{STG}	Storage Temperature	-40 to 150	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Typ	Note	Units
$R_{\theta JC}$	Thermal Resistance Junction-to-Case	0.24	-	$^\circ\text{C/W}$
$R_{\theta JB}$	Thermal Resistance Junction-to-Board	1.31	-	$^\circ\text{C/W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient ⁽¹⁾	56.63	-	$^\circ\text{C/W}$
T_{sold}	Maximum Reflow Soldering Temperature	260	MSL3	$^\circ\text{C}$

Note:

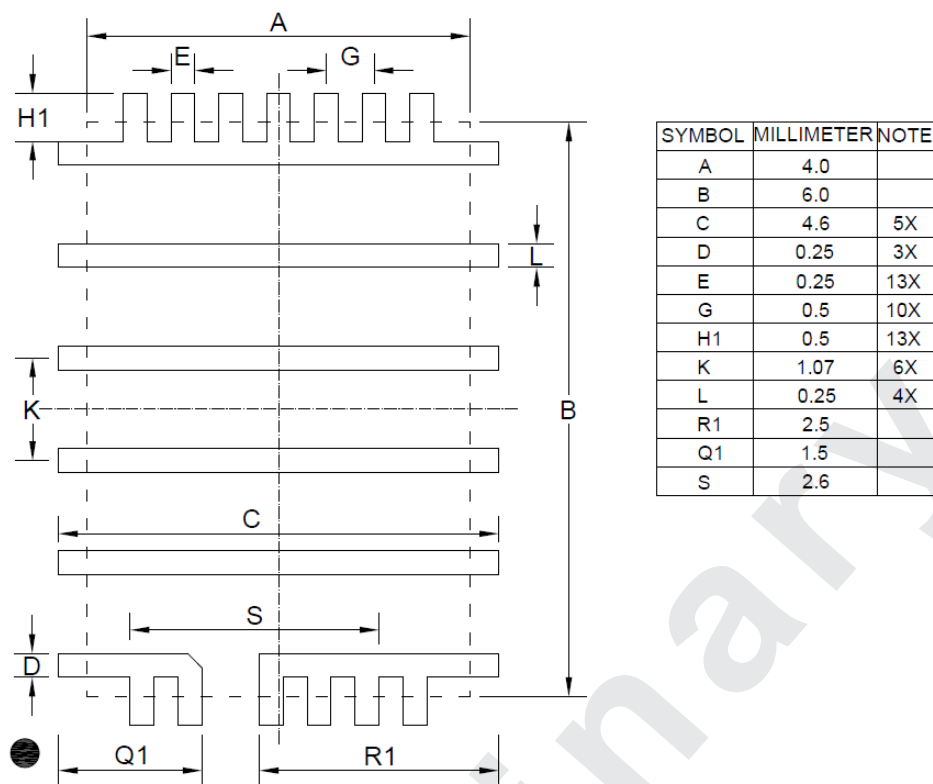
1. $R_{\theta JA}$ is determined with the device mounted on one square inch of copper pad, single layer 2 oz copper on FR4 board.

Electrical Characteristics

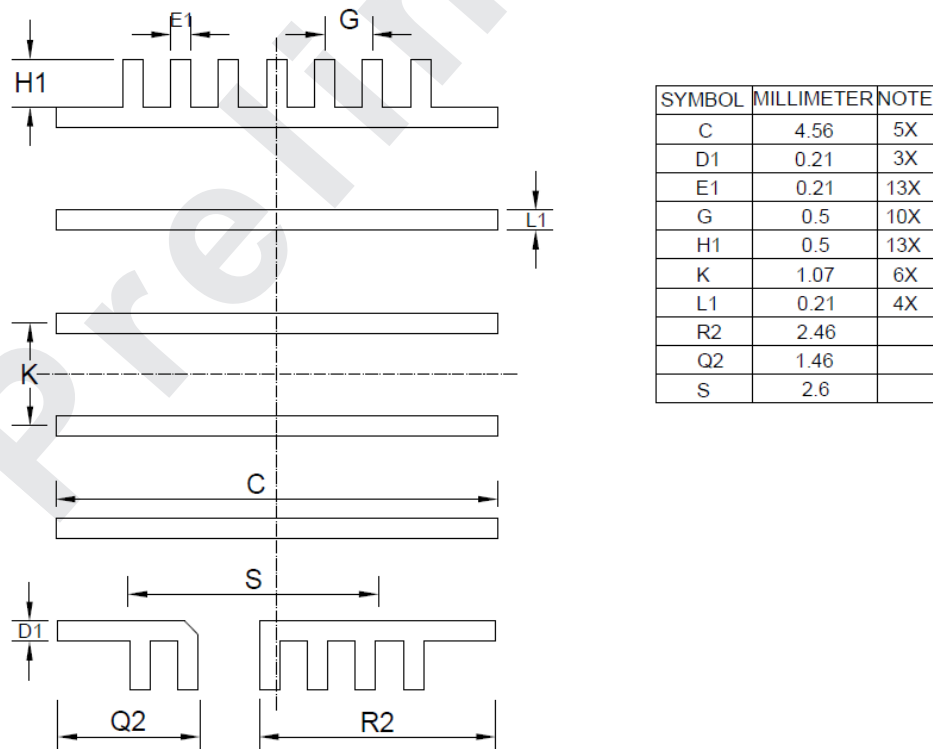
($T_J = 25^\circ\text{C}$, unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Static Characteristics						
B_{VDSS}	Drain-to-Source Voltage	$V_{GS} = 0V, I_D = 900\mu\text{A}$	100	-	-	V
I_{DSS}	Drain Source Leakage	$V_{GS} = 0V, V_{DS} = 80V$	-	9.5	93	μA
I_{GSS}	Gate-to-Source Forward Leakage	$V_{GS} = 5V$	-	2.8	55	μA
	Gate-to-Source Reverse Leakage	$V_{GS} = -4V$	-	0.3	1.2	μA
$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 21\text{mA}$	0.8	1.1	2.5	V
$R_{DS(ON)}$	Drain-Source On-state Resistance	$V_{GS} = 5V, I_D = 40A$	-	1.4	1.8	$\text{m}\Omega$
V_{SD}	Source-Drain Forward Voltage	$I_S = 0.5A, V_{GS} = 0V$	-	1.5	-	V
Dynamic Characteristics						
C_{ISS}	Input Capacitance	$V_{GS} = 0V, V_{DS} = 50V$	-	2500	-	pF
C_{OSS}	Output Capacitance	$V_{GS} = 0V, V_{DS} = 50V$	-	1100	-	
C_{RSS}	Reverse Transfer Capacitance	$V_{GS} = 0V, V_{DS} = 50V$	-	19	-	
$C_{OSS(ER)}$	Energy Related COSS	$V_{GS} = 0V, V_{DS} = 0V \text{ to } 50V$	-	1700	-	
$C_{OSS(TR)}$	Time Related COSS	$V_{GS} = 0V, V_{DS} = 0V \text{ to } 50V$	-	2500	-	
R_G	Gate Resistance	$f = 5 \text{ MHz, open drain}$	-	1.8	-	Ω
Q_G	Total Gate Charge	$V_{GS} = 5V, V_{DS} = 50V, I_D = 40A$	-	22	-	nC
Q_{GS}	Gate to Source Charge	$V_{DS} = 50V, I_D = 40A$	-	4.5	-	
Q_{GD}	Gate to Drain Charge	$V_{DS} = 50V, I_D = 40A$	-	4.5	-	
$Q_{G(TH)}$	Gate Charge at Threshold	$V_{DS} = 50V, I_D = 40A$	-	2.5	-	
Q_{OSS}	Output Charge	$V_{GS} = 0V, V_{DS} = 50V$	-	125	-	

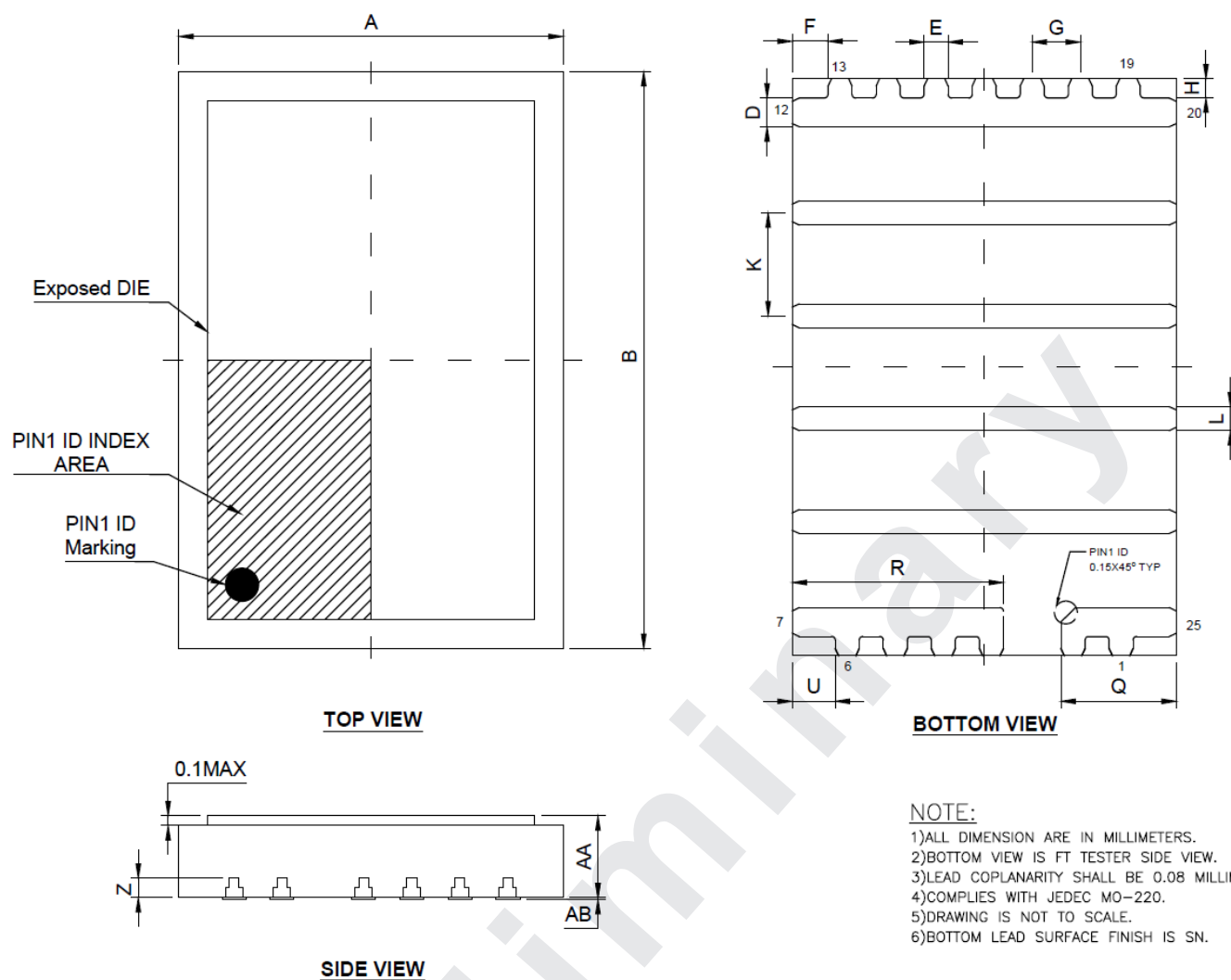
Recommended PCB Footprint



Recommended Stencil Drawing

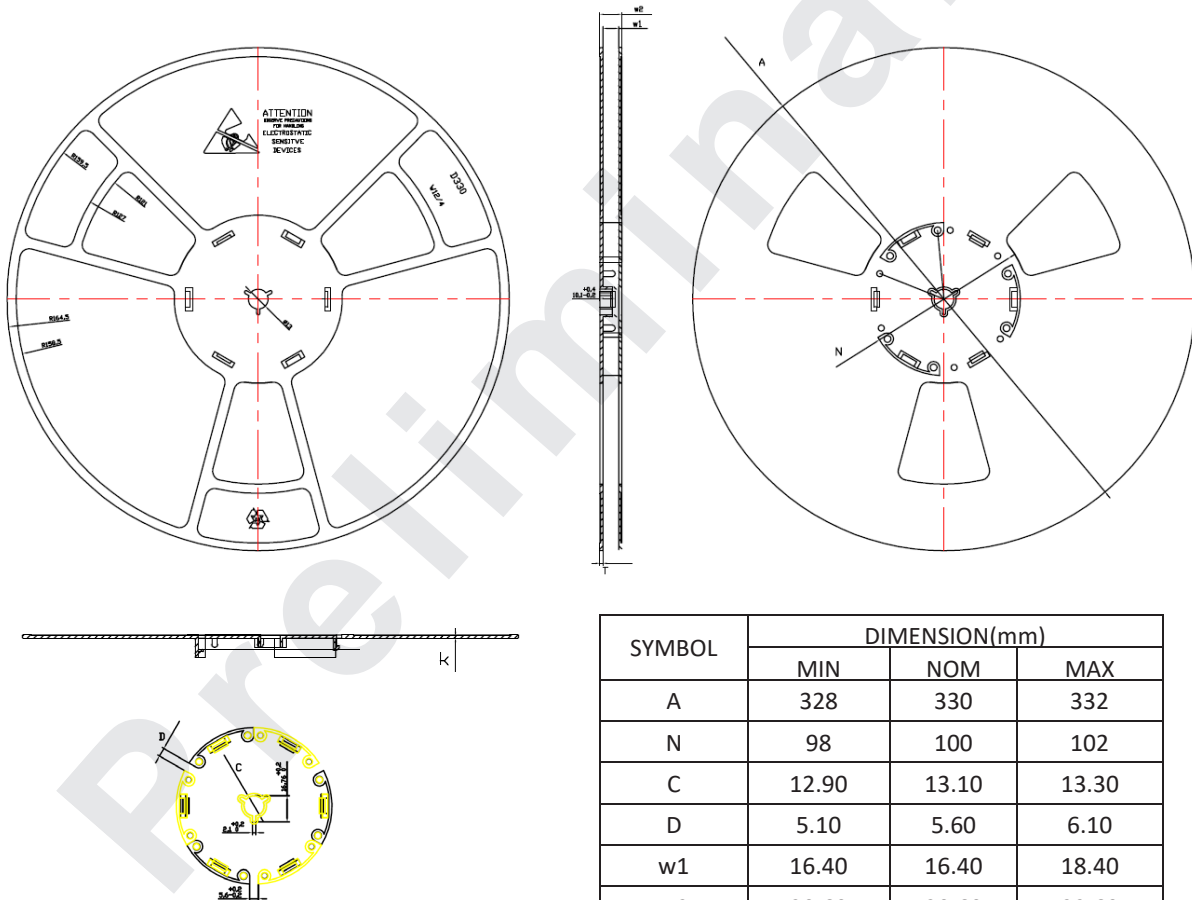
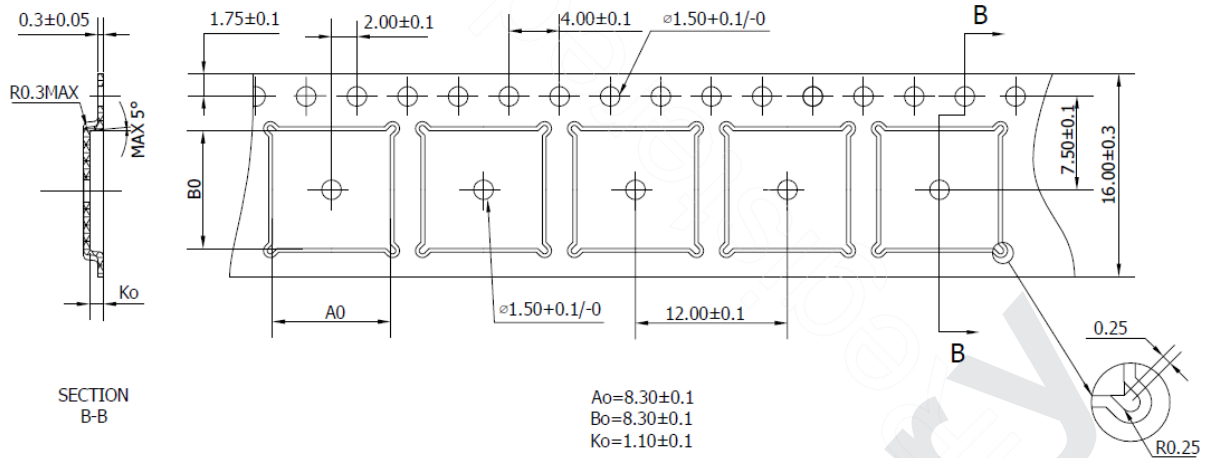


Package Dimensions, QFN4x6-25L

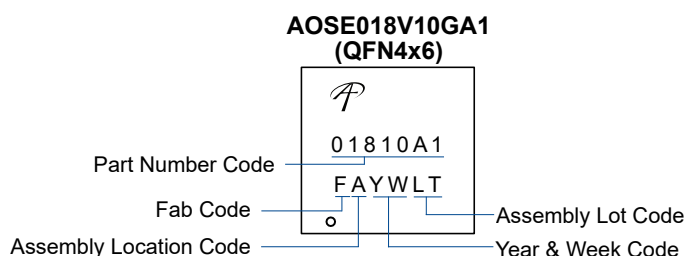


SYMBOL	MILLIMETER			NOTE
	MIN	NOM	MAX	
A	3.9	4.0	4.1	
B	5.9	6.0	6.1	
D	0.20	0.25	0.30	3X
E	0.20	0.25	0.30	13X
F	0.375 REF			2X
G	0.5 BASIC			10X
H	0.2 REF			3X
K	1.07 BASIC			6X
L	0.20	0.25	0.30	4X
Q	1.1	1.2	1.3	
R	2.1	2.2	2.3	
U	0.45 REF			2X
Z	0.203 REF			
AA	0.75	0.85	0.95	
AB	0.00	0.02	0.05	

Tape and Reel Dimensions, QFN4x6-25L



Part Marking



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