

1. Description

The AOD407(ES) is P-Channel enhancement MOS Field Effect Transistor. Using advanced trench technology and design to provide excellent RDS(ON) with low gate charge. Device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product AOD407(ES) is Pb-free.

2. Features

- -60V, $R_{DS(ON)}=80m\Omega(Typ.) @V_{GS}=-10V$
- $R_{DS(ON)}=100m\Omega(Typ.) @V_{GS}=-4.5V$
- High density cell design for low RDS(on)
- Material: Halogen free
- Reliable and rugged
- Avalanche Rated
- Low leakage current

3. Applications

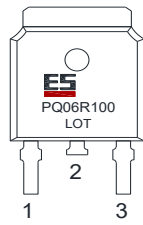
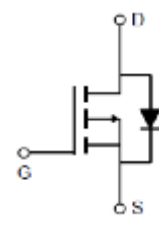
- PWM applications 100% UIS TESTED
- Load switch
- Power management in portable/desktop PCs
- DC/DC conversion

4. Ordering Information

Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
AOD407(ES)	TO-252	PQ06R100/LOT	Halogen free	Tape & Reel	2,500 PCS	UL 94V-0	13 inches

Table-1 Ordering information

5. Pin Configuration and Functions

Pin	Function	Outline	Circuit Diagram
1	Gate	Note b 	
3	Source		
2	Drain		

6. Specification

Absolute Maximum Rating & Thermal Characteristics

Ratings at 25 °C ambient temperature unless otherwise specified.

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	BV_{DSS}	-60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	$T_C=25^{\circ}C$	-14
		$T_C=100^{\circ}C$	-8.4
Total Power Dissipation	P_D	36	W
Pulsed Drain Current	I_{DM}	-56	A
Avalanche Current, Single Pulsed(L=0.5mH)	I_{AS}	-8.5	A
Avalanche Energy, Single Pulsed ^a	E_{AS}	18	mJ
Operating Junction Temperature	T_J	-55 to 150	°C
Storage Temperature Range	T_{stg}	-55 to 150	°C

Thermal resistance ratings

Single Operation			
Parameter	Symbol	Value	Unit
Junction-to-Case Thermal Resistance	$R_{\theta JC}$	3.5	°C/W

Notes:

a: EAS condition: $T_J=25^{\circ}C$, $V_{DD}=-30V$, $V_{GS}=-10V$, $L=0.5mH$, $R_G=25\Omega$.

b: This diagram is only an electrical schematic, and the actual pin size is based on POD.

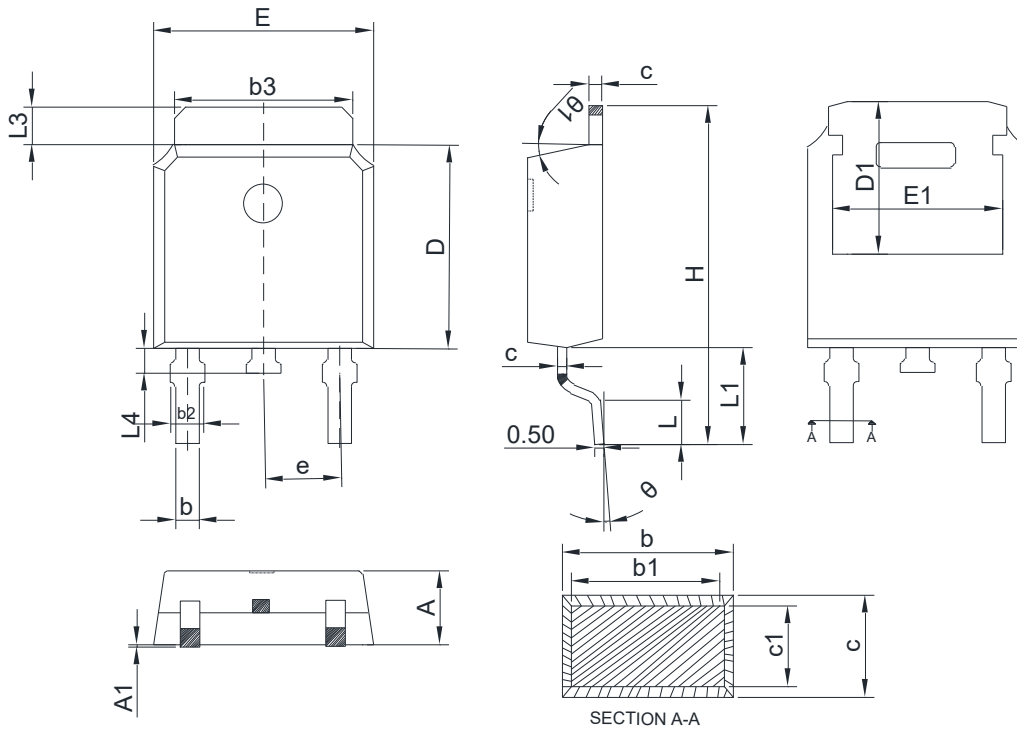
Electrical Characteristics

At TA = 25°C unless otherwise specified

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-60			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{GS}=0V, V_{DS}=-60V$			-1	μA
Gate-to-source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS}=V_{DS}, I_D=-250\mu A$	-1.1	-1.7	-2.4	V
Drain-to-source On-resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-2.5A$		80	104	m Ω
		$V_{GS}=-4.5V, I_D=-2A$		100	130	
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C_{ISS}	$V_{GS}=0V, V_{DS}=-25V$ $f=1MHz$		978		pF
Output Capacitance	C_{OSS}			51		
Reverse Transfer Capacitance	C_{RSS}			39		
Total Gate Charge	$Q_{G(TOT)}$	$V_{GS}=0$ to $-10V,$ $V_{DS}=-30V, I_D=-5A$		18		nC
Gate-to-Source Charge	Q_{GS}			4		
Gate-to-Drain Charge	Q_{GD}			5.2		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	$t_{d(ON)}$	$V_{GS}=-10V, V_{DD}=-30V$ $I_D=-5A, R_G=3\Omega$		9		ns
Rise Time	t_r			15		
Turn-Off Delay Time	$t_{d(OFF)}$			33		
Fall Time	t_f			12		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	$V_{GS}=0V, I_{SD}=-2.5A$			-1.2	V

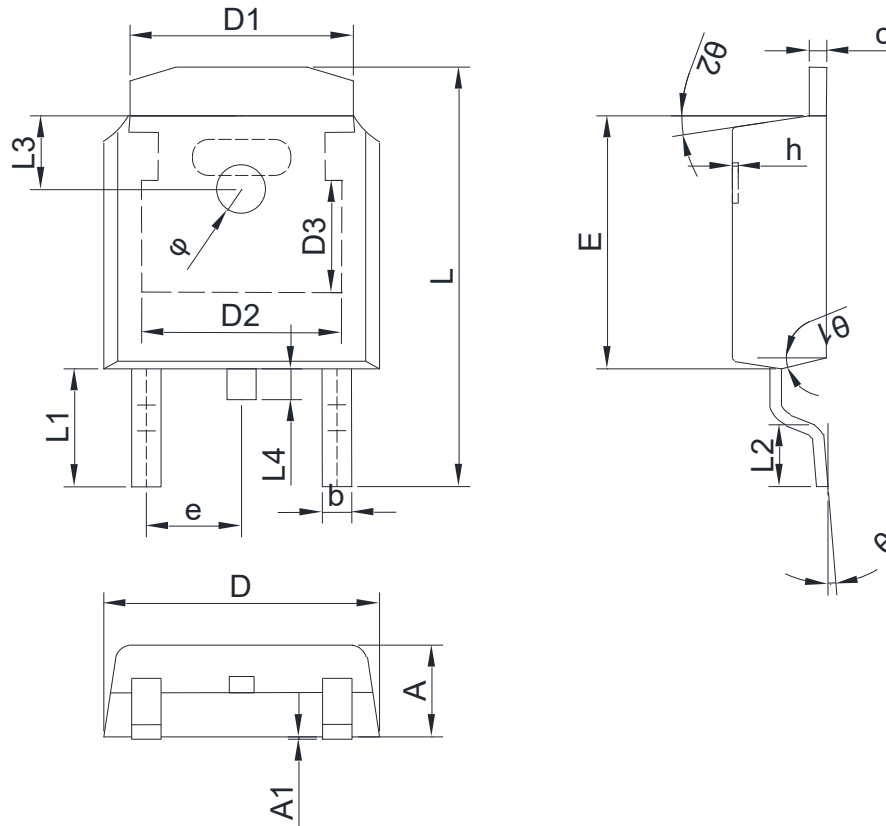
8. Dimension (TO-252)

POD A(Q)



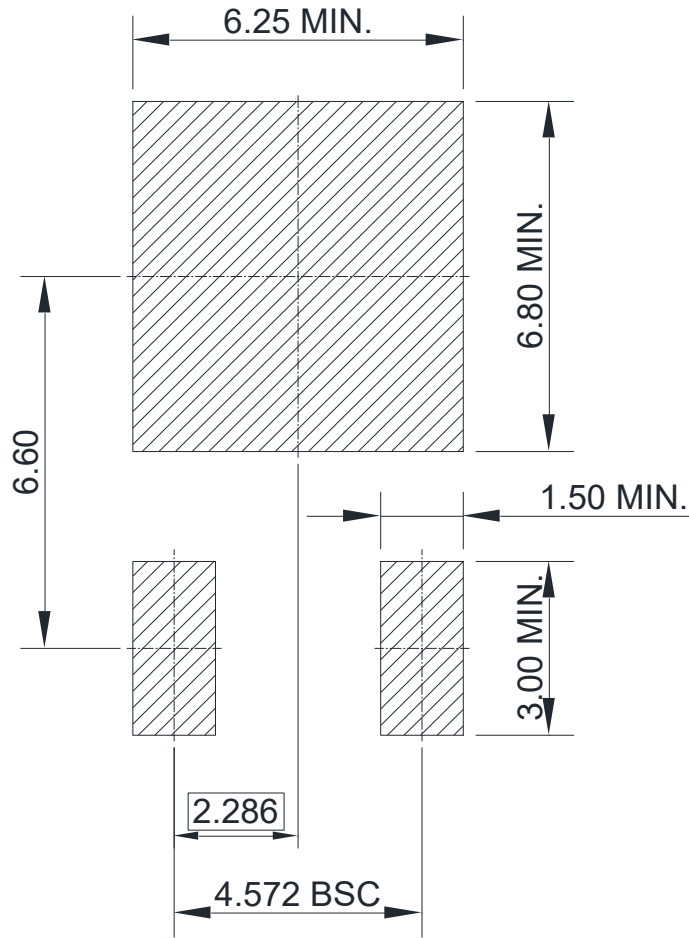
COMMON DIMENSIONS CUNITS MEASURE=MILLIMETER							
SYMBOL	MIN	TYP	MAX	SYMBOL	MIN	TYP	MAX
A	2.20	2.30	2.40	D1	5.21	-	-
A1	0.00	-	0.12	E	6.50	6.60	6.70
b	0.65	-	0.89	E1	4.32	-	-
b1	0.64	0.76	0.79	H	9.70	9.95	10.20
b2	0.76	0.86	1.10	L	1.40	1.50	1.60
b3	5.20	5.33	5.46	L1	2.84REF		
c	0.48	-	0.60	e	2.29BSC		
c1	0.47	0.51	0.55	θ	0°	-	10°
D	6.00	6.10	6.20	θ_1	0°	-	15°
L3	0.90	-	1.27	L4	0.60	0.80	1.00

POD B(X)



COMMON DIMENSIONS CUNITS MEASURE=MILLIMETER							
SYMBOL	MIN	TYP	MAX	SYMBOL	MIN	TYP	MAX
A	2.200	2.300	2.400	h	0.000	0.100	0.200
A1	0.000		0.127	L	9.900	10.100	10.300
b	0.640	0.690	0.740	L1	2.888 REF		
c(电镀后)	0.460	0.520	0.580	L2	1.400	1.550	1.700
D	6.500	6.600	6.700	L3	1.600 REF		
D1	5.334 REF			L4	0.600	0.800	1.000
D2	4.826 REF			φ	1.100	1.200	1.300
D3	3.166 REF			θ	0°		8°
E	6.000	6.100	6.200	θ1	9° TYP		
e	2.286 TYP			θ2	9° TYP		

9. Recommended Soldering Footprint



DIMENSIONS: MILLIMETERS

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