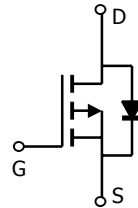
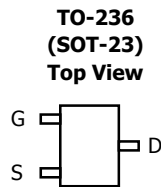


## AO3407 P-Channel Enhancement Mode Field Effect Transistor

<p><b>General Description</b></p> <p>The AO3407 uses advanced trench technology to provide excellent <math>R_{DS(ON)}</math> with low gate charge. This device is suitable for use as a load switch or in PWM applications.</p>	<p><b>Features</b></p> <p><math>V_{DS} (V) = -30V</math>  <math>I_D = -4.1 A</math>  <math>R_{DS(ON)} &lt; 52m\Omega (V_{GS} = -10V)</math>  <math>R_{DS(ON)} &lt; 87m\Omega (V_{GS} = -4.5V)</math></p>
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**Absolute Maximum Ratings  $T_A=25^\circ C$  unless otherwise noted**

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	$V_{DS}$	-30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current <sup>A</sup>	$T_A=25^\circ C$	-4.1	A
	$T_A=70^\circ C$	-3.5	
Pulsed Drain Current <sup>B</sup>	$I_{DM}$	-20	
Power Dissipation <sup>A</sup>	$T_A=25^\circ C$	1.4	W
	$T_A=70^\circ C$	1	
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to 150	$^\circ C$

**Thermal Characteristics**

Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Ambient <sup>A</sup>	$R_{\theta JA}$	65	90	$^\circ C/W$
Maximum Junction-to-Ambient <sup>A</sup>		Steady-State	85	
Maximum Junction-to-Lead <sup>C</sup>	$R_{\theta JL}$	43	60	$^\circ C/W$

Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>STATIC PARAMETERS</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	I <sub>D</sub> =-250μA, V <sub>GS</sub> =0V	-30			V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =-24V, V <sub>GS</sub> =0V T <sub>J</sub> =55°C			-1 -5	μA
I <sub>GSS</sub>	Gate-Body leakage current	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V			±100	nA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> I <sub>D</sub> =-250μA	-1	-1.8	-3	V
I <sub>D(ON)</sub>	On state drain current	V <sub>GS</sub> =-4.5V, V <sub>DS</sub> =-5V	-10			A
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =-10V, I <sub>D</sub> =-4.1A T <sub>J</sub> =125°C		40.5 57	52 73	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-3A		64	87	mΩ
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =-5V, I <sub>D</sub> =-4A	5.5	8.2		S
V <sub>SD</sub>	Diode Forward Voltage	I <sub>S</sub> =-1A, V <sub>GS</sub> =0V		-0.77	-1	V
I <sub>S</sub>	Maximum Body-Diode Continuous Current				-2.2	A
<b>DYNAMIC PARAMETERS</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V, V <sub>DS</sub> =-15V, f=1MHz		700		pF
C <sub>oss</sub>	Output Capacitance			120		pF
C <sub>rss</sub>	Reverse Transfer Capacitance			75		pF
R <sub>g</sub>	Gate resistance	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1MHz		10		Ω
<b>SWITCHING PARAMETERS</b>						
Q <sub>g</sub>	Total Gate Charge (10V)	V <sub>GS</sub> =-4.5V, V <sub>DS</sub> =-15V, I <sub>D</sub> =-4A		14.3		nC
Q <sub>g</sub>	Total Gate Charge (4.5V)			7		nC
Q <sub>gs</sub>	Gate Source Charge			3.1		nC
Q <sub>gd</sub>	Gate Drain Charge			3		nC
t <sub>D(on)</sub>	Turn-On DelayTime	V <sub>GS</sub> =-10V, V <sub>DS</sub> =-15V, R <sub>L</sub> =3.6Ω, R <sub>GEN</sub> =3Ω		8.6		ns
t <sub>r</sub>	Turn-On Rise Time			5		ns
t <sub>D(off)</sub>	Turn-Off DelayTime			28.2		ns
t <sub>f</sub>	Turn-Off Fall Time			13.5		ns
t <sub>rr</sub>	Body Diode Reverse Recovery Time	I <sub>F</sub> =-4A, dI/dt=100A/μs		27		ns
Q <sub>rr</sub>	Body Diode Reverse Recovery Charge	I <sub>F</sub> =-4A, dI/dt=100A/μs		15		nC

A: The value of R<sub>θJA</sub> is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with T<sub>A</sub>=25°C. The value in any a given application depends on the user's specific board design. The current rating is based on the t≤ 10s thermal resistance rating.

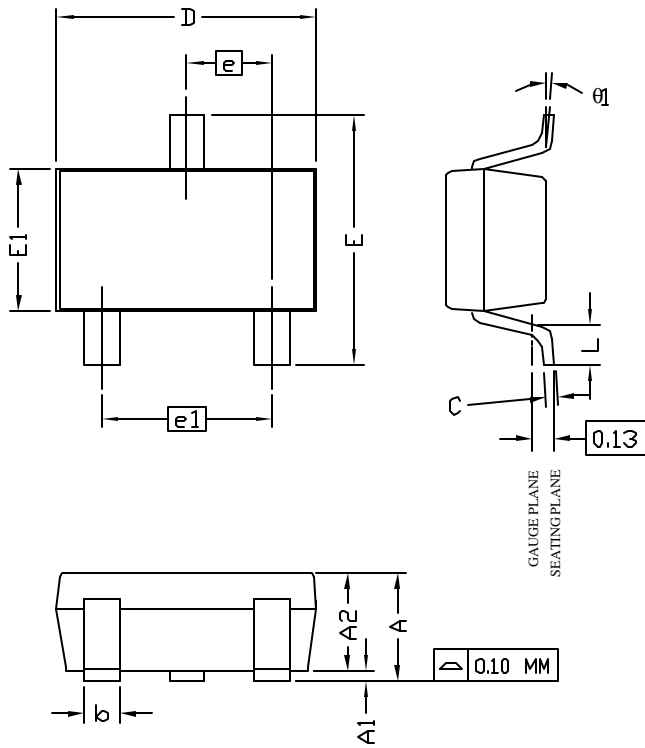
B: Repetitive rating, pulse width limited by junction temperature.

C. The R<sub>θJA</sub> is the sum of the thermal impedance from junction to lead R<sub>θJL</sub> and lead to ambient.

D. The static characteristics in Figures 1 to 6,12,14 are obtained using 80μs pulses, duty cycle 0.5% max.

E. These tests are performed with the device mounted on 1 in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with T<sub>A</sub>=25°C. The SOA curve provides a single pulse rating.

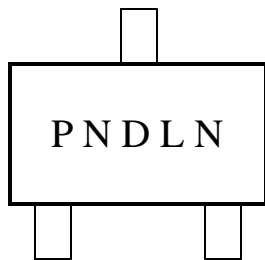
### SOT-23 Package Data



SYMBOLS	DIMENSIONS IN MILLIMETERS		
	MIN	NOM	MAX
A	1.00	—	1.25
A1	0.00	—	0.10
A2	1.00	1.10	1.15
b	0.35	0.40	0.50
C	0.10	0.15	0.25
D	2.80	2.90	3.04
E	2.60	2.80	2.95
E1	1.40	1.60	1.80
e	—	0.95 BSC	—
e1	—	1.90 BSC	—
L	0.40	—	0.60
θ1	1°	5°	8°

- NOTE:
1. LEAD FINISH: 150 MICRONS ( 3.8 um) MIN.  
THICKNESS OF Tin/Lead (SOLDER) PLATED ON LEAD
  2. TOLERANCE ±0.10 mm (4 mil) UNLESS OTHERWISE SPECIFIED
  3. COPLANARITY : 0.10 mm
  4. DIMENSION L IS MEASURED IN GAGE PLANE

PACKAGE MARKING DESCRIPTION

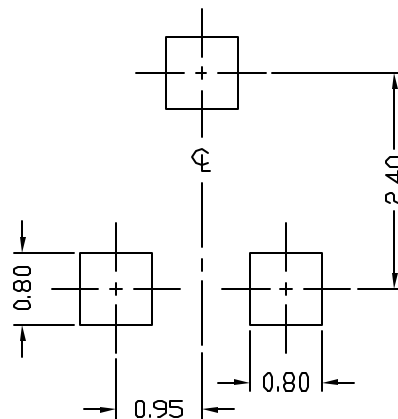


NOTE:  
 P N - PART NUMBER CODE.  
 D - YEAR AND WEEK CODE.  
 L N - ASSEMBLY LOT CODE, FAB AND ASSEMBLY LOCATION CODE.

SOT-23 PART NO. CODE

PART NO.	CODE
AO3407	A7

RECOMMENDATION OF LAND PATTERN



Rev.A