General Description

The AAT7126 30V N-Channel Power MOSFET is a member of AnalogicTech™'s TrenchDMOS™ product family. Using the ultra-high density proprietary TrenchDMOS technology, this product demonstrates high power handling and small size.

Features

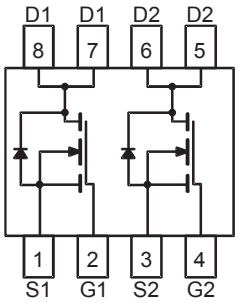
- $V_{DS(MAX)}$ = 30V
- $I_{D(MAX)}$ [1] = 6.8A @ 25°C
- Low $R_{DS(ON)}$:
  - 26 mΩ @V_{GS} = 10V
  - 41 mΩ @ V_{GS} = 4.5V

Applications

- Battery-powered portable equipment
- Laptop computers
- Desktop computers
- DC/DC converters

Dual SOP-8 Package

Top View



Preliminary Information

Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

Symbol	Description		Value	Units
V_{DS}	Drain-Source Voltage		30	V
V_{GS}	Gate-Source Voltage		±20	
I_D	Continuous Drain Current @ T_J=150°C [1]	T_A = 25°C	±6.8	A
		T_A = 70°C	±5.4	
I_{DM}	Pulsed Drain Current		±24	
I_S	Continuous Source Current (Source-Drain Diode) [1]		1.7	
P_D	Maximum Power Dissipation [1]	T_A = 25°C	2.0	W
		T_A = 70°C	1.25	
T_J, T_{STG}	Operating Junction and Storage Temperature Range		-55 to 150	°C

Thermal Characteristics

Symbol	Description	Value	Units
$R_{\theta JA}$	Typical Junction-to-Ambient steady state, one FET on	100	°C/W
$R_{\theta JA2}$	Industry Standard Junction-to-Ambient Figure, t < 10 sec.	62.5	°C/W
$R_{\Theta JC}$	Typical Junction-to-Case, one FET on	35	°C/W

Electrical Characteristics (T_J=25°C unless otherwise noted)

Symbol	Description	Conditions	Min	Typ	Max	Units
DC Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250µA	30			V
$R_{DS(ON)}$	Drain-Source ON-Resistance [2]	V_{GS}=10V, I_D=6.8A		19.5	26	mΩ
		V_{GS}=4.5V, I_D=5.4A		32	41	
$I_{D(ON)}$	On-State Drain Current [2]	V_{GS}=10V ,V_{DS}=5V (Pulsed)	24			A
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS}, I_D=250µA	1.0			V
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V, V_{DS}=0V			±100	nA
I_{DSS}	Drain Source Leakage Current	V_{GS}=0V,V_{DS}=30V			1	µA
		V_{GS}=0V,V_{DS}=30V, T_J=70°C			5	
g_{fs}	Forward Transconductance [2]	V_{DS}=5V, I_D=6.8A		14		S
Dynamic Characteristics [3]						
Q_G	Total Gate Charge	V_{DS}=15V, I_D=6.8A, V_{GS}=5V		8.6	13	nC
Q_{GT}	Total Gate Charge	V_{DS}=15V, I_D=6.8A, V_{GS}=10V		16	24	nC
Q_{GS}	Gate-Source Charge	V_{DS}=15V, I_D=6.8A, V_{GS}=10V		2.5		nC
Q_{GD}	Gate-Drain Charge	V_{DS}=15V, I_D=6.8A, V_{GS}=10V		2.8		nC
$t_{D(ON)}$	Turn-ON Delay	V_{DD}=15V, V_{GS}=10V, R_D=3Ω, R_G=6Ω		3		ns
t_R	Turn-ON Rise Time	V_{DD}=15V, V_{GS}=10V, R_D=3Ω, R_G=6Ω		3		ns
$t_{D(OFF)}$	Turn-OFF Delay	V_{DD}=15V, V_{GS}=10V, R_D=3Ω, R_G=6Ω		12		ns
t_F	Turn-OFF Fall Time	V_{DD}=15V, V_{GS}=10V, R_D=3Ω, R_G=6Ω		6		ns
Source-Drain Diode Characteristics						
V_{SD}	Source-Drain Forward Voltage [2]	V_{GS}=0, I_S=1.7A			1.2	V
I_S	Continuous Diode Current				1.7	A

Note 1: Mounted on 1” x 1” FR4 Copper Board, 10 sec pulse width.

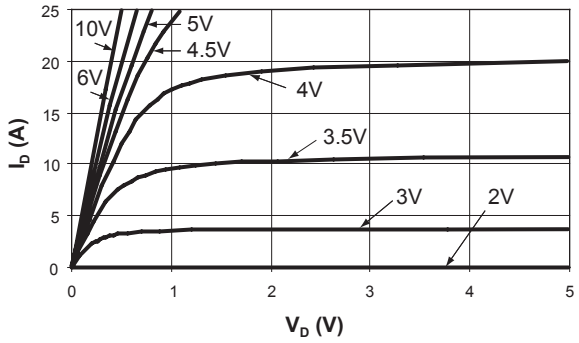
Note 2: Pulse test: pulse width = 300µs

Note 3: Guaranteed by design. Not subjected to production testing.

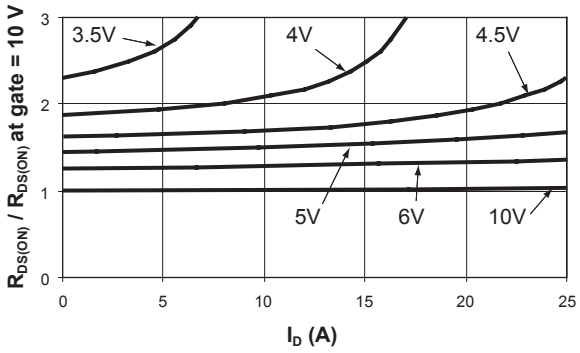
Typical Characteristics

(T_J = 25ºC unless otherwise noted)

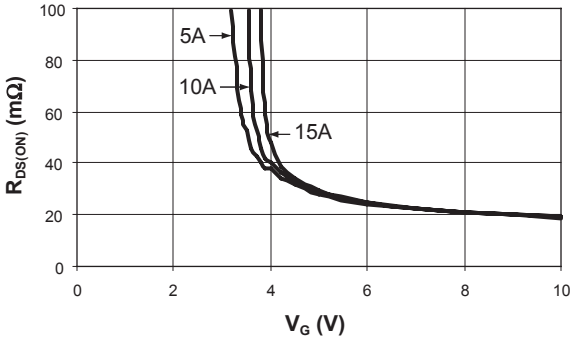
Forward Characteristics



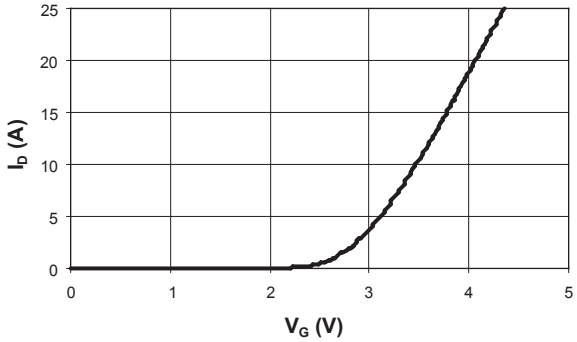
Normalized $R_{DS(ON)}$



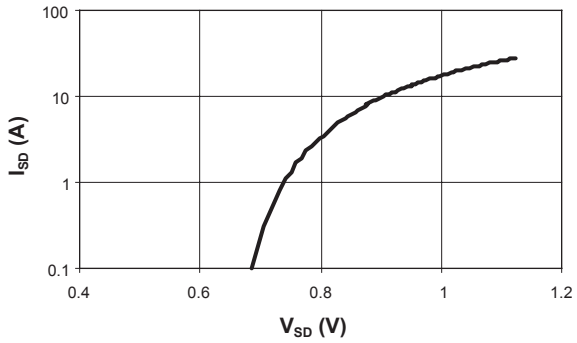
$R_{DS(ON)}$ vs. V_G



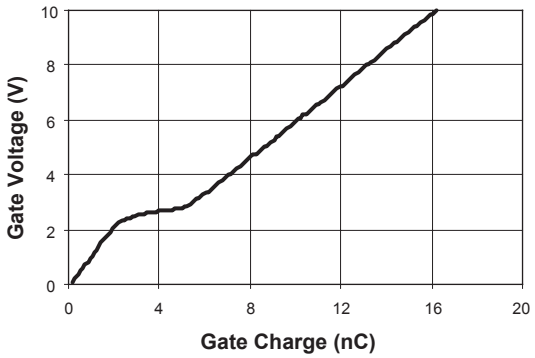
Transfer



Source to Drain Voltage



Gate Charge Characteristics



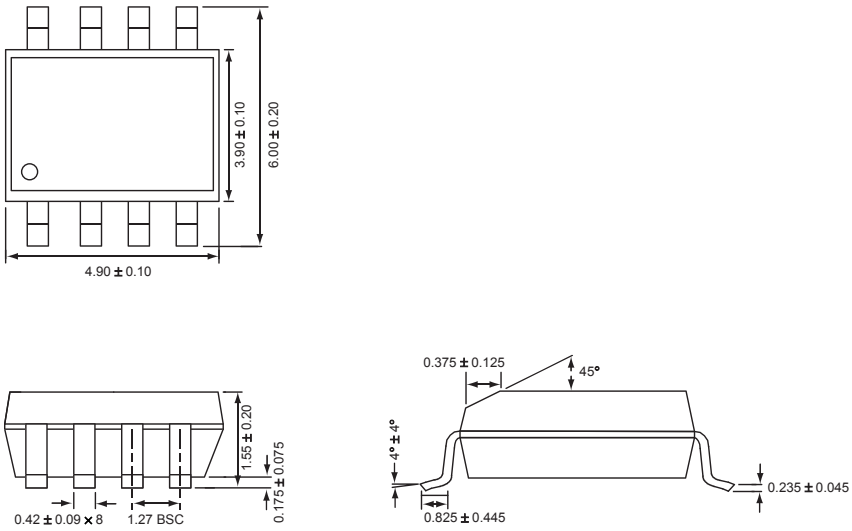
Ordering Information

Package	Marking	Part Number (Tape and Reel)
SOP-8	7126	**AAT7126IAS-T1**

Note: Sample stock is generally held on all part numbers listed in **BOLD**.

Package Information

SOP-8



All dimensions in millimeters.

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