



AAT8308

20V P-Channel Power MOSFET

General Description

The AAT8308 is a low threshold P Channel MOSFET designed for the battery, cell phone, and PDA markets. Using AnalogicTech™'s proprietary ultra-high density Trench technology, and space saving small outline J-lead package, performance superior to that normally found in a larger footprint has been squeezed into the area of a TSOP6 package.

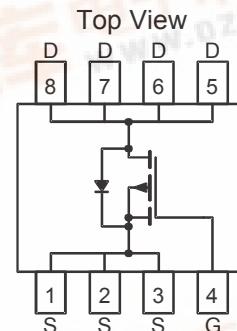
Applications

- Battery Packs
- Cellular & Cordless Telephones
- Battery-powered portable equipment
- Load Switches

Features

- $V_{DS(MAX)} = -20V$
- $I_{D(MAX)}^1 = -4.5A @ 25^\circ C$
- Low $R_{DS(ON)}$:
 - $60 m\Omega @ V_{GS} = -4.5V$
 - $110 m\Omega @ V_{GS} = -2.5V$

TSOPJW-8 Package



Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise noted)

Symbol	Description	Value	Units
V_{DS}	Drain-Source Voltage	-20	V
V_{GS}	Gate-Source Voltage	± 12	
I_D	Continuous Drain Current @ $T_J=150^\circ C$ ¹	$T_A = 25^\circ C$	A
		$T_A = 70^\circ C$	
I_{DM}	Pulsed Drain Current ²	± 24	A
I_S	Continuous Source Current (Source-Drain Diode) ¹	-1.3	
P_D	Maximum Power Dissipation ¹	$T_A = 25^\circ C$	W
		$T_A = 70^\circ C$	
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 to 150	°C

Thermal Characteristics

Symbol	Description	Typ	Max	Units
$R_{\theta JA}$	Junction-to-Ambient steady state ¹	92	112	°C/W
$R_{\theta JA2}$	Junction-to-Ambient $t < 5$ seconds ¹	50	62	°C/W
$R_{\theta JF}$	Junction-to-Foot ¹	33	40	°C/W

Advanced Information

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

Symbol	Description	Conditions	Min	Typ	Max	Units
DC Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0\text{V}$, $I_D=-250\mu\text{A}$	-20			V
$R_{DS(\text{ON})}$	Drain-Source ON-Resistance ²	$V_{GS}=-4.5\text{V}$, $I_D=-4.5\text{A}$		48	60	$\text{m}\Omega$
		$V_{GS}=-2.5\text{V}$, $I_D=-3.3\text{A}$		85	110	
$I_{D(\text{ON})}$	On-State Drain Current ²	$V_{GS}=-4.5\text{V}$, $V_{DS}=-5\text{V}$ (Pulsed)	-24			A
$V_{GS(\text{th})}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=-250\mu\text{A}$	-0.6			V
I_{GSS}	Gate-Body Leakage Current	$V_{GS}=\pm 12\text{V}$, $V_{DS}=0\text{V}$			± 100	nA
I_{DSS}	Drain Source Leakage Current	$V_{GS}=0\text{V}$, $V_{DS}=-20\text{V}$			-1	μA
		$V_{GS}=0\text{V}$, $V_{DS}=-16\text{V}$, $T_J=70^\circ\text{C}$ ³			-5	
g_{fs}	Forward Transconductance ²	$V_{DS}=-5\text{V}$, $I_D=-4.5\text{A}$		7		S
Dynamic Characteristics ³						
Q_G	Total Gate Charge	$V_{DS}=-10\text{V}$, $R_D=2.2\Omega$, $V_{GS}=-4.5\text{V}$		7.1		nC
Q_{GS}	Gate-Source Charge	$V_{DS}=-10\text{V}$, $R_D=2.2\Omega$, $V_{GS}=-4.5\text{V}$		1.8		
Q_{GD}	Gate-Drain Charge	$V_{DS}=-10\text{V}$, $R_D=2.2\Omega$, $V_{GS}=-4.5\text{V}$		2.9		
$t_{D(\text{ON})}$	Turn-ON Delay	$V_{DS}=-10\text{V}$, $V_{GS}=-4.5\text{V}$, $R_D=2.2\Omega$, $R_G=6\Omega$		TBD		ns
t_R	Turn-ON Rise Time	$V_{DS}=-10\text{V}$, $V_{GS}=-4.5\text{V}$, $R_D=2.2\Omega$, $R_G=6\Omega$		TBD		
$t_{D(\text{OFF})}$	Turn-OFF Delay	$V_{DS}=-10\text{V}$, $V_{GS}=-4.5\text{V}$, $R_D=2.2\Omega$, $R_G=6\Omega$		TBD		
t_F	Turn-OFF Fall Time	$V_{DS}=-10\text{V}$, $V_{GS}=-4.5\text{V}$, $R_D=2.2\Omega$, $R_G=6\Omega$		TBD		
Source-Drain Diode Characteristics						
V_{SD}	Source-Drain Forward Voltage ²	$V_{GS}=0$, $I_S=-4.5\text{A}$			-1.3	V
I_S	Continuous Diode Current ¹				-1.3	A

Note 1: Based on thermal dissipation from junction to ambient while mounted on a 1" x 1" PCB with optimized layout. A 5 second pulse on a 1" x 1" PCB approximates testing a device mounted on a large multi-layer PCB as in most applications. $R_{\theta, \text{JF}} + R_{\theta, \text{FA}} = R_{\theta, \text{JA}}$ where the foot thermal reference is defined as the normal solder mounting surface of the device's leads. $R_{\theta, \text{JF}}$ is guaranteed by design, however $R_{\theta, \text{CA}}$ is determined by the PCB design. Actual maximum continuous current is limited by the application's design.

Note 2: Pulse test: Pulse Width = 300 μs

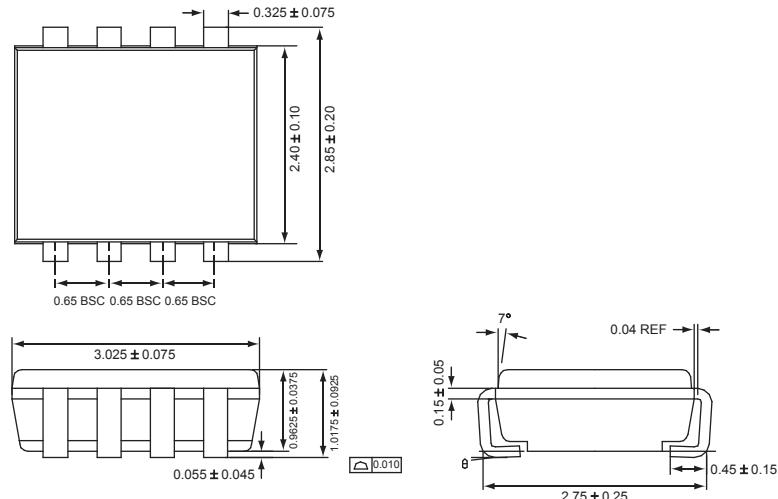
Note 3: Guaranteed by design. Not subject to production testing.

Ordering Information

Package	Marking	Part Number (Tape and Reel)
TSOPJW-8		AAT8308ITS-T1

Package Information

TSOPJW-8



All dimensions in millimeters.



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