

General Description

The AAT7357 is a low threshold dual P-channel MOSFET designed for the battery, cell phone, and PDA markets. Using AnalogicTech's ultra-high-density MOSFET process and space-saving, small-outline, J-lead package, performance superior to that normally found in a TSSOP-8 footprint has been squeezed into the footprint of a TSOPJW-8 package.

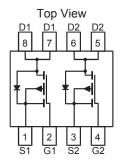
Applications

- Battery Packs
- Battery-Powered Portable Equipment
- · Cellular and Cordless Telephones

Features

- Drain-Source Voltage (max): -20V
- Contiunous Drain Current¹ (max) = -5A @ 25°C
- Low On-Resistance:
 - 39mΩ @ V_{GS} = -4.5V
 - 63mΩ @ V_{GS} = -2.5V

Dual TSOPJW-8 Package



Absolute Maximum Ratings

 $T_A = 25$ °C, unless otherwise noted.

Symbol	Description		Value	Units	
V_{DS}	Drain-Source Voltage		-20	V	
V_{GS}	Gate-Source Voltage		±12	V	
I _D	Continuous Drain Current @ T _J = 150°C¹	T _A = 25°C	±5		
		T _A = 70°C	±4	Α	
I _{DM}	Pulsed Drain Current ²		±12	A	
I _S	Continuous Source Current (Source-Drain Diode) ¹		-1.3		
P _D	Maximum Power Dissipation ¹	T _A = 25°C	1.6	W	
	Maximum Power Dissipation	T _A = 70°C	1.0		
T_J	Operating Junction Temperature Range		-55 to 150	°C	
T _{STG}	Storage Temperature Range		-55 to 150	°C	

Thermal Characteristics¹

Symbol	Description	Тур	Max	Units	
$R_{\theta JA}$	Junction-to-Ambient Steady State, One FET On	115	140	°C/W	
$R_{\theta JA2}$	Junction-to-Ambient t<5 Seconds	64	78	°C/W	
$R_{\theta JF}$	Junction-to-Foot	60	72	°C/W	

^{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. $R_{\theta JF} + R_{\theta FA} = R_{\theta JA}$ where the foot thermal reference is defined as the normal solder mounting surface of the device's leads. $R_{\theta JF}$ is guaranteed by design; however, $R_{\theta CA}$ is determined by the PCB design. Actual maximum continuous current is limited by the application's design.

^{2.} Pulse test: Pulse Width = 300µs.



Electrical Characteristics

 $T_{.1}$ = 25°C, unless otherwise noted.

Symbol	Description	Conditions	Min	Тур	Max	Units
DC Charac	DC Characteristics					
BV _{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = -250\mu A$	-20			V
R _{DS(ON)}	Drain-Source On-Resistance ¹	$V_{GS} = -4.5V, I_{D} = -5A$		30	39	mΩ
		$V_{GS} = -2.5V, I_{D} = -4A$		49	63	11152
I _{D(ON)}	On-State Drain Current ¹	V_{GS} = -4.5V, V_{DS} = -5V (pulsed)	-12			Α
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS} = V_{DS}, I_{D} = -250 \mu A$	-0.6			V
I_{GSS}	Gate-Body Leakage Current	$V_{GS} = \pm 12V$, $V_{DS} = 0V$			±100	nA
1	Drain-Source Leakage Current	$V_{GS} = 0V$, $V_{DS} = -20V$			-1	μА
I _{DSS}		$V_{GS} = 0V, V_{DS} = -16V, T_{J} = 70^{\circ}C^{2}$			-5	
g_{fs}	Forward Transconductance ¹	$V_{DS} = -5V$, $I_D = -5A$		12		S
Dynamic Characteristics ²						
Q_G	Total Gate Charge	V_{DS} = -10V, R_{D} = 2.0 Ω , V_{GS} = -4.5V		14		
Q_{GS}	Gate-Source Charge	V_{DS} = -10V, R_{D} = 2.0 Ω , V_{GS} = -4.5V		3.5		nC
Q_{GD}	Gate-Drain Charge	V_{DS} = -10V, R_{D} = 2.0 Ω , V_{GS} = -4.5V		5.6		
t _{D(ON)}	Turn-On Delay	V_{DS} = -10V, R_{D} = 2.0 Ω , V_{GS} = -4.5V, R_{G} = 6 Ω		12		
t_R	Turn-On Rise Time	V_{DS} = -10V, R_{D} = 2.0 Ω , V_{GS} = -4.5V, R_{G} = 6 Ω		20		ns
t _{D(OFF)}	Turn-Off Delay	V_{DS} = -10V, R_{D} = 2.0 Ω , V_{GS} = -4.5V, R_{G} = 6 Ω		33		115
t _F	Turn-Off Fall Time	V_{DS} = -10V, R_{D} = 2.0 Ω , V_{GS} = -4.5V, R_{G} = 6 Ω		40		
Source-Dr	Source-Drain Diode Characteristics					
V _{SD}	Source-Drain Forward Voltage ¹	$V_{GS} = 0, I_{S} = -5A$			-1.2	V
I _S	Continuous Diode Current ³				-1.3	Α

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^{1.} Pulse test: Pulse Width = 300µs.

^{2.} Guaranteed by design. Not subject to production testing.

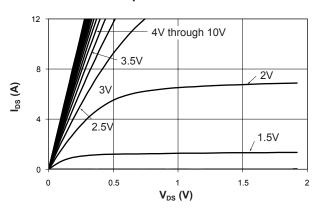
^{3.} Based on thermal dissipation from junction to ambient while mounted on a 1" x 1" PCB with optimized layout. A 5-second pulse on a 1" x 1" PCB approximates testing a device mounted on a large multi-layer PCB as in most applications. $R_{\theta JF} + R_{\theta FA} = R_{\theta JA}$ where the foot thermal reference is defined as the normal solder mounting surface of the device's leads. $R_{\theta JF}$ is guaranteed by design; however, $R_{\theta CA}$ is determined by the PCB design. Actual maximum continuous current is limited by the application's design.



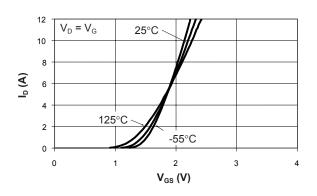
Typical Characteristics

 T_J = 25°C, unless otherwise noted.

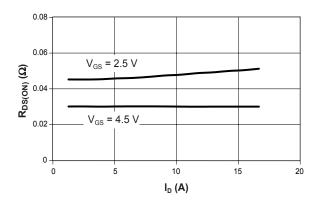
Output Characteristics



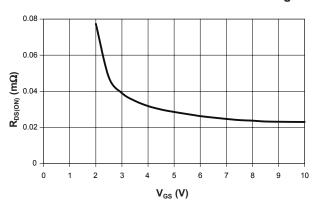
Transfer Characteristics



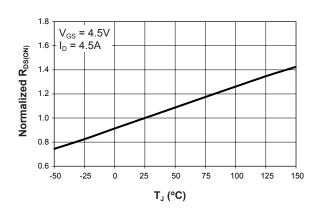
On-Resistance vs. Drain Current



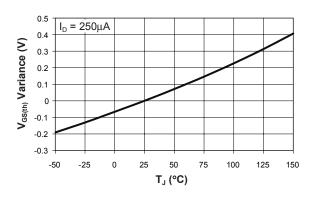
On-Resistance vs. Gate to Source Voltage



On-Resistance vs. Junction Temperature



Threshold Voltage

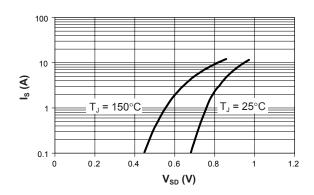




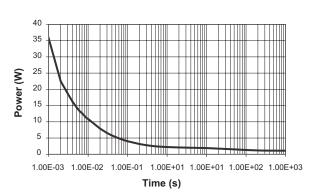
Typical Characteristics

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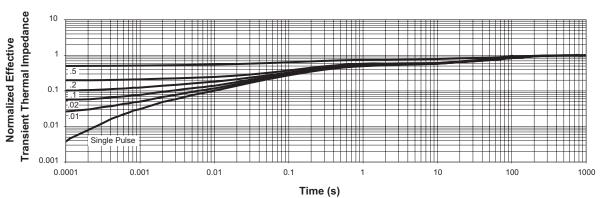
Source-Drain Diode Forward Voltage



Single Pulse Power, Junction to Ambient



Transient Thermal Response, Junction to Ambient



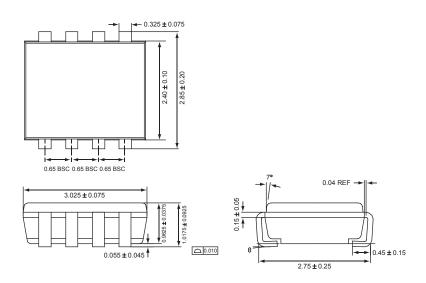


Ordering Information

Package	Marking ¹	Part Number (Tape and Reel) ²
TSOPJW-8	NBXYY	AAT7357ITS-T1

Package Information

TSOPJW-8



All dimensions in millimeters.

^{1.} XYY = assembly and date code.

^{2.} Sample stock is generally held on part numbers listed in BOLD.



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