

General Description

The AAT9560 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.

The SC70JW-8 package was specially designed for maximum silicon die area with minimum package footprint. This enables new breakthroughs in power density with conventional surface mount technology. The SC70JW-8 has an innovative J-type pin design which allows its extra-wide body to fit directly onto the industry-standard SC70 footprint.

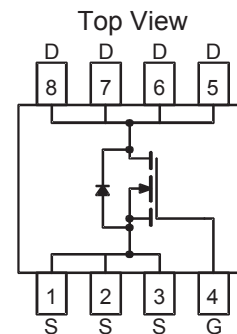
Applications

- Cellular & Cordless Telephones
- Battery-powered portable equipment
- Laptop computers
- Hand held computers
- Digital cameras
- DC/DC converters

Features

- $V_{DS(MAX)} = 30V$
- $I_{D(MAX)} = 6.6A @ 25^{\circ}C$
- Low $R_{DS(ON)}$:
 - $24 m\Omega @ V_{GS} = 10V$
 - $40 m\Omega @ V_{GS} = 4.5V$

SC70JW-8 Package



Absolute Maximum Ratings ($T_A=25^{\circ}C$ 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 @ $T_J=150^{\circ}C$ ¹	$T_A = 25^{\circ}C$	± 6.6	A
		$T_A = 70^{\circ}C$	± 5.2	
I_{DM}	Pulsed Drain Current	± 32		
I_S	Continuous Source Current (Source-Drain Diode) ¹	1.5		
P_D	Maximum Power Dissipation ¹	$T_A = 25^{\circ}C$	1.7	W
		$T_A = 70^{\circ}C$	1.0	
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 to 150	$^{\circ}C$	

Thermal Characteristics

Symbol	Description	Typ	Max	Units
$R_{\theta JA}$	Junction-to-Ambient steady state ¹	100	120	$^{\circ}C/W$
$R_{\theta JA2}$	Junction-to-Ambient $t < 5$ seconds ¹	61	73.5	
$R_{\theta JF}$	Junction-to-Foot ¹	33	40	

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 =6.6A		18	24	mΩ
		V _{GS} =4.5V, I _D =5.1A		30	40	
I _{D(ON)}	On-State Drain Current ²	V _{GS} =10V, V _{DS} =5V (Pulsed)	32			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} =24V, T _J =70°C			5	
g _{fs}	Forward Transconductance ²	V _{DS} =5V, I _D =6.6A		12		S
Dynamic Characteristics ³						
Q _G	Total Gate Charge	V _{DS} =15V, I _D =12.5A, V _{GS} =5V		8.6	13	nC
Q _{GT}	Total Gate Charge	V _{DS} =15V, I _D =12.5A, V _{GS} =10V		16	24	nC
Q _{GS}	Gate-Source Charge	V _{DS} =15V, I _D =12.5A, V _{GS} =10V		2.5		nC
Q _{GD}	Gate-Drain Charge	V _{DS} =15V, I _D =12.5A, V _{GS} =10V		2.8		nC
t _{D(ON)}	Turn-ON Delay	V _{DD} =15V, V _{GS} =10V, R _D =2.8Ω, R _G =6Ω		2.5		ns
t _R	Turn-ON Rise Time	V _{DD} =15V, V _{GS} =10V, R _D =2.8Ω, R _G =6Ω		2.6		ns
t _{D(OFF)}	Turn-OFF Delay	V _{DD} =15V, V _{GS} =10V, R _D =2.8Ω, R _G =6Ω		12		ns
t _F	Turn-OFF Fall Time	V _{DD} =15V, V _{GS} =10V, R _D =2.8Ω, R _G =6Ω		5.7		ns
Source-Drain Diode Characteristics						
V _{SD}	Source-Drain Forward Voltage ²	V _{GS} =0, I _S =6.6A			1.3	V
I _S	Continuous Diode Current ²				1.5	A

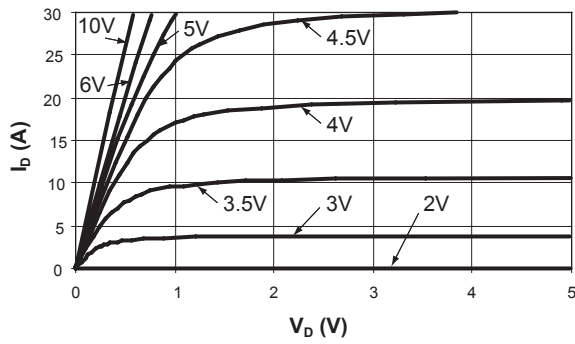
Notes:

- 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 many applications. R_{θJF} + R_{θFA} = R_{θJA} where the foot thermal reference is defined as the normal solder mounting surface of the device's leads. R_{θJF} is guaranteed by design, however R_{θCA} is determined by the PCB design. Actual maximum continuous current is limited by the application's design.
- Pulse test: Pulse Width = 300 μs
- Guaranteed by design. Not subjected to production testing.

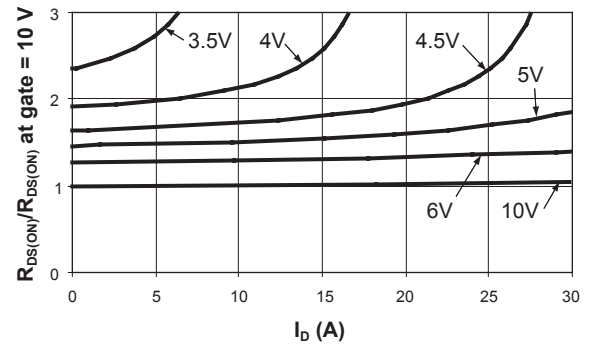
Typical Characteristics

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

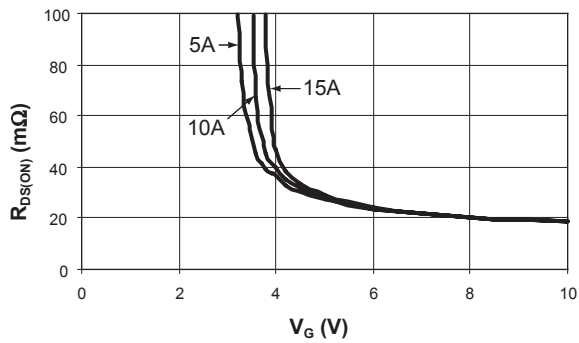
Forward Characteristics



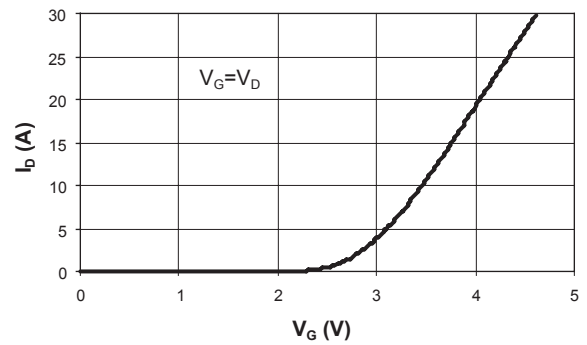
Normalized $R_{DS(ON)}$



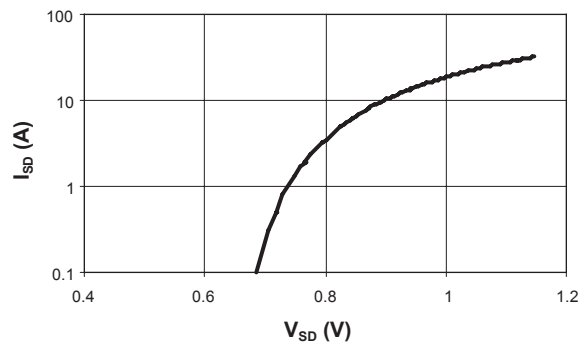
$R_{DS(ON)}$ vs. V_G



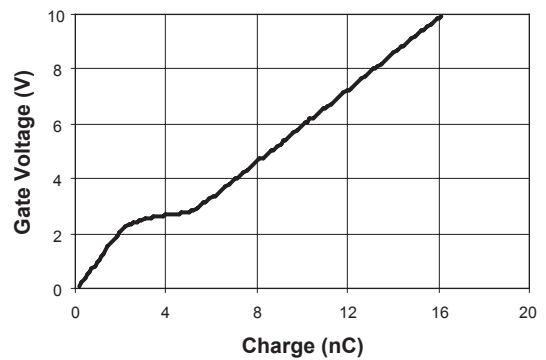
Transfer



Source to Drain Voltage



Gate Charge Characteristics



Ordering Information

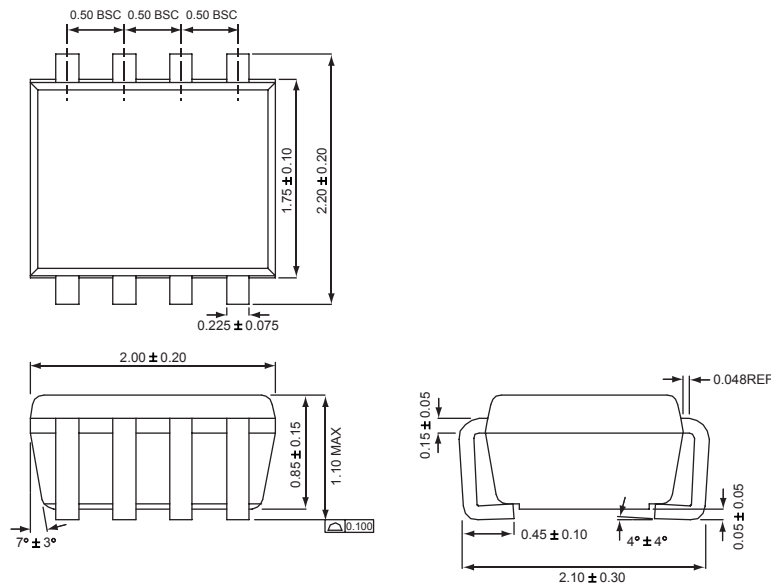
Package	Marking ¹	Part Number (Tape and Reel)
SC70JW-8	CKXYY	AAT9560IJS-T1

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

Note 1: XYY = assembly and date code.

Package Information

SC70JW-8



All dimensions in millimeters.

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