

N-Channel Super Junction Power MOSFET

General Description

The series of devices use advanced super junction technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. This super junction MOSFET fits the industry's AC-DC SMPS requirements for PFC, AC/DC power conversion, and industrial power applications.

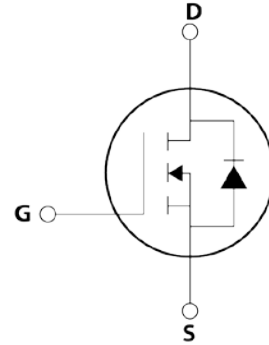
Features

- New technology for high voltage device
- Low on-resistance and low conduction losses
- Small package
- Ultra Low Gate Charge cause lower driving requirements
- 100% Avalanche Tested
- ROHS compliant

Application

- Power factor correction (PFC)
- Switched mode power supplies (SMPS)
- Uninterruptible Power Supply (UPS)

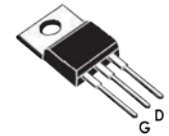
V_{DS}	650	V
$R_{DS(ON) MAX}$	180	$m\Omega$
I_L	21	A



Schematic diagram

Package Marking And Ordering Information

Device	Device Package	Marking
AMS65R180	Marking	65R180



TO-220

Table 1. Absolute Maximum Ratings

($T_c=25^\circ\text{C}$)	Symbol	AMS65R180	Unit
Parameter	V_{DS}	650	V
Drain-Source Voltage ($V_{GS}=0V$)	V_{GS}	± 30	V
Gate-Source Voltage ($V_{DS}=0V$)			
Continuous Drain Current at $T_c=25^\circ\text{C}$	$I_{D(DC)}$	21	A
Continuous Drain Current at $T_c=100^\circ\text{C}$	$I_{D(DC)}$	13.2	A
Pulsed drain current (Note 1)	$I_{DM(pluse)}$	63	A
Maximum Power Dissipation ($T_c=25^\circ\text{C}$)	P_D	200	W
Derate above 25°C		1.6	W/ $^\circ\text{C}$
Single pulse avalanche energy (Note 2)	E_{AS}	690	mJ
Avalanche current (Note 1)	I_{AR}	7	A
Repetitive Avalanche energy, t_{rr} limited by T_{jmax}	E_{AR}	1	mJ

Tel. 1-973-377-9566 Fax. 1-973-377-3078

133 Kings Road
 Madison, New Jersey 07940
 United States of America

www.americanmicrosemi.com

2016 American Microsemiconductor, Inc.®

Specifications are subject to change without notice

American Microsemiconductor, Inc. reserves right to make changes to the product specifications and data in this document without notice. American Microsemiconductor, Inc. disclaims all and any warranty and liability arising out of use or application of any product. No license, express or implied to any intellectual property rights is granted by this document. Unless otherwise expressly indicated, American Microsemiconductor, Inc. products are not designed, tested or authorized for use in life-saving, medical, aircraft navigation, communication, air traffic control and weapons systems, nor in applications where their failure may result in death, personal injury and/or property damage.

Document Page 1 of 2

Revised 05/2016

DEKRA Certification Inc.
 AS9100C and ISO 9001:2008
 Certificate No. 131519.01



Parameter	Symbol	AMS65R180	Unit
Drain Source voltage slope, $V_{DS} \leq 480$ V,	dv/dt	50	V/ns
Reverse diode dv/dt, $V_{DS} \leq 480$ V, $I_{SD} < I_D$	dv/dt	15	V/ns
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55...+150	°C

* limited by maximum junction temperature

Table 2. Thermal Characteristic

Parameter	Symbol	KW65R180	Unit
Thermal Resistance, Junction-to-Case (Maximum)	R_{thJC}	0.62	°C/W
Thermal Resistance, Junction-to-Ambient (Maximum)	R_{thJA}	62.5	°C/W

Table 3. Electrical Characteristics (TA=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
On/off states						
Drain-Source Breakdown Voltage	BV_{DS}	$V_{GS}=0V, I_D=250\mu A$	650			V
Zero Gate Voltage Drain Current ($T_C=25^\circ C$)	I_{DSS}	$V_{GS}=650V, V_{DS}=0V$		0.05	1	μA
Zero Gate Voltage Drain Current ($T_C=125^\circ C$)	I_{DSS}	$V_{GS}=650V, V_{DS}=0V$			100	μA
Gate-Body Leakage Current	I_{GB}	$V_{GS}=\pm 30V, V_{DS}=0V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.5	3	3.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=10.5A$		150	180	m Ω
Dynamic Characteristics						
Forward Transconductance	g_{fs}	$V_{GS}=20V, I_D=10.5A$		17.5		S
Input Capacitance	C_{iss}	$V_{GS}=50V, V_{DS}=0V,$ $F=1.0MHz$		1950		PF
Output Capacitance	C_{oss}			150		PF
Reverse Transfer Capacitance	C_{rss}			5		PF
Total Gate Charge	Q_g	$V_{DS}=480V, I_D=21A, V_{GS}=10V$		45	70	nC
Gate-Source Charge	Q_{gs}			9		nC
Gate-Drain Charge	Q_{gd}			18		nC
Intrinsic gate resistance	R_g	$f=1$ MHz open drain		1		Ω
Switching times						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=380V, I_D=11A,$ $R_g=4\Omega, V_{GS}=10V$		11		nS
Turn-on Rise Time	t_r			6		nS
Turn-Off Delay Time	$t_{d(off)}$			61	100	nS
Turn-Off Fall Time	t_f			4.5	12	nS
Source- Drain Diode Characteristics						
Source-drain current (Body Diode)	I_{SD}	$T_J=25^\circ C$			21	A
Pulsed Source-drain current (Body Diode)	I_{SDM}				63	A
Forward on voltage	V_{SD}	$T_J=25^\circ C, I_{SD}=21A, V_{GS}=0V$		0.9	1.3	V
Reverse Recovery Time	t_{rr}	$T_J=25^\circ C, I_{SD}=21A, di/dt=100A/\mu s$		310		nS
Reverse Recovery Charge	Q_{rr}			5		μC
Peak Reverse Recovery Current	I_{rrm}			28		A

Notes 1. Repetitive Rating: Pulse width limited by maximum junction temperature

2. $T_J=25^\circ C, V_{DD}=50V, V_G=10V, R_G=25\Omega$

Tel. 1-973-377-9566 Fax. 1-973-377-3078

133 Kings Road

Madison, New Jersey 07940

United States of America

www.americanmicrosemi.com

2016 American Microsemiconductor, Inc.®

Specifications are subject to change without notice

American Microsemiconductor, Inc. reserves right to make changes to the product specifications and data in this document without notice. American Microsemiconductor, Inc. disclaims all and any warranty and liability arising out of use or application of any product. No license, express or implied to any intellectual property rights is granted by this document. Unless otherwise expressly indicated, American Microsemiconductor, Inc. products are not designed, tested or authorized for use in life-saving, medical, aircraft navigation, communication, air traffic control and weapons systems, nor in applications where their failure may result in death, personal injury and/or property damage.

Document Page 2 of 2

Revised 05/2016

DEKRA Certification Inc.
AS9100C and ISO 9001:2008
Certificate No. 131519.01

