

Features

- High Temperature, Humidity, and Bias Operation
- Ultra Low Loss
- High-Frequency Operation
- Zero Turn-off Tail Current from MOSFET
- Normally-off, Fail-safe Device Operation
- Ease of Paralleling
- AlN Substrate with Low Thermal Resistance
- Integrated NTC temperature sensor
- Copper Base Plate

Potential Applications

- High power converters
- Motor drives
- Servo drives
- UPS systems
- Wind turbines

Package 152mm x 62.5mm x 20.5mm

Part Number	Package	Marking
ASC1000N900MED	Econodual	ASC1000N900MED

Absolute Maximum Ratings ($T_C = 25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Unit
V_{DS}	Drain-Source Voltage			900	V
V_{GS}	Gate-Source Voltage	-4		+15	V
I_D	Drain Current(continuous) $V_{GS} = 20\text{V}$		1000		A
I_{DM}	Drain Current (10us pulsed)		2000		A
P_D	Power Dissipation $T_C = 25^{\circ}\text{C}$			960	W
T_C, T_{stg}	Operating and Storage Temperature Range	-40		+150	$^{\circ}\text{C}$
L_{Stray}	Stray Inductance			20	nH

Electrical Characteristics (T_C = 25°C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
BV _{DS}	Drain-source Breakdown Voltage	I _D =800uA, V _{GS} =0V	900			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =900V, V _{GS} =0V		8	800	uA
I _{GSS}	Gate-body Leakage Current	V _{GS} =-10/+20V, V _{DS} =0V		1	3	uA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D =240mA	1.7	2.4	3.5	V
R _{DS(on)}	Static Drain-source On Resistance	V _{GS} =15V, I _D =600A		1.3		mΩ
C _{iss}	Input Capacitance	V _{DS} =600V, V _{GS} =0V f=200KHz V _{AC} =25mV		45		nF
C _{oss}	Output Capacitance			3.5		
C _{rss}	Reverse Transfer Capacitance			120		pF
E _{on}	Turn-On Switching Energy	V _{DS} =600V, V _{GS} =-4/+15V I _D =800A, R _{G(ext)} =2.5Ω L=56uH, T _J =25°C		13.5		mJ
E _{off}	Turn-Off Switching Energy			8.3		mJ
Q _{GS}	Gate-Source Charge	V _{DD} =600V, V _{GS} =-4/+15V I _D =800A,		680		nC
Q _{GD}	Gate-Drain Charge			800		
Q _G	Total Gate Charge			2220		
t _{d(on)}	Turn-on delay time	V _{DD} =600V, V _{GS} =-4/+15V I _D =800A, R _{G(ext)} =2.5Ω		48		nS
t _r	Rise Time			17		
t _{d(off)}	Turn-off delay time			60		
t _f	Fall Time			14		
V _{sd}	Diode Forward voltage	I _f =560A, V _{GS} =-4V		4.6		V

Thermal Characteristics

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
R _{θJC}	Thermal Resistance, Junction-to-Case	T _C =90°C, P _D =150W		0.13		°C/W

Typical Performance

Figure 1. Output Characteristics

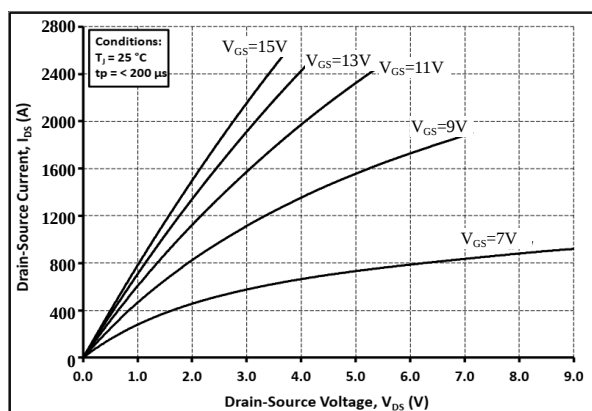


Figure 2. Normalized On-Resistance vs. Temperature

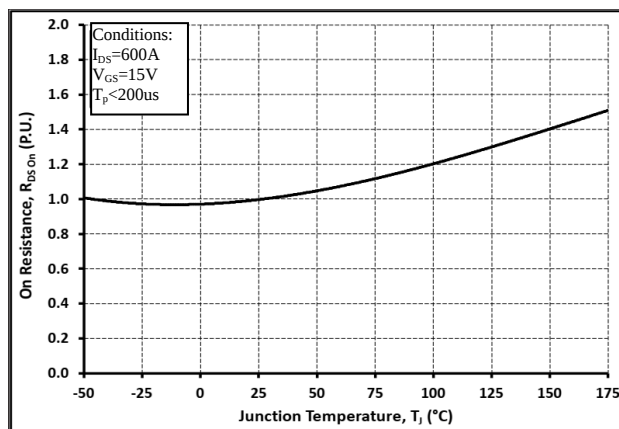


Figure 3. Threshold Voltage vs. Temperature

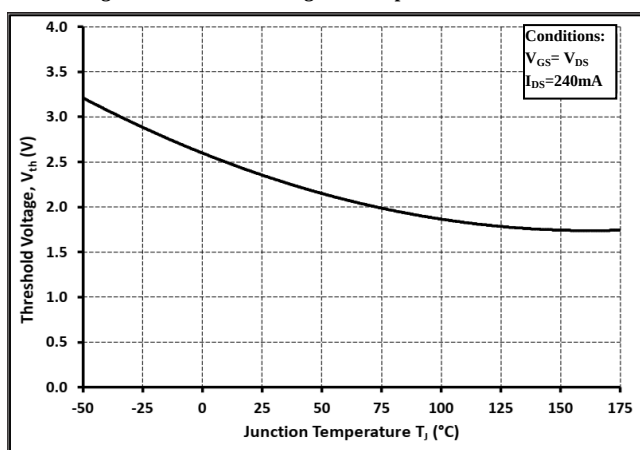


Figure 4. Transfer Characteristic for Various T_J

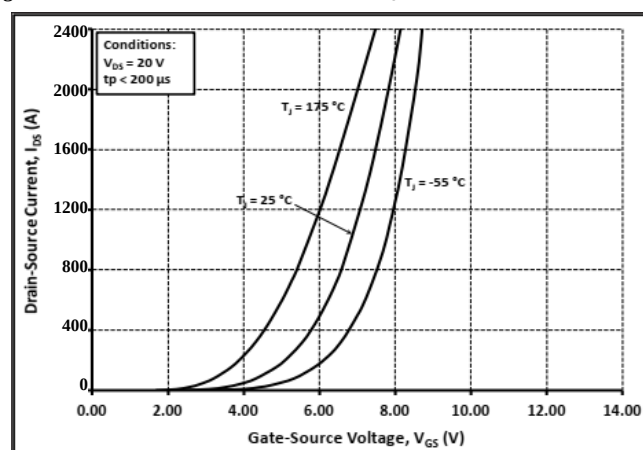


Figure 5. Diode Characteristic at 25°C

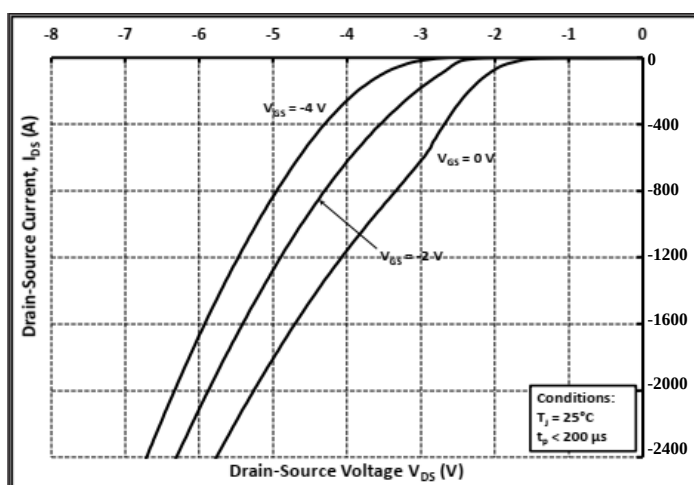


Figure 6. Typical Gate Charge Characteristics

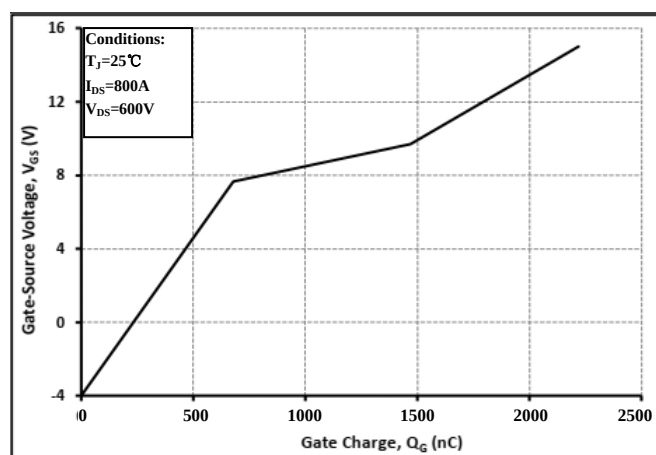


Figure 7. Typical Capacitances vs. Drain-Source Voltage

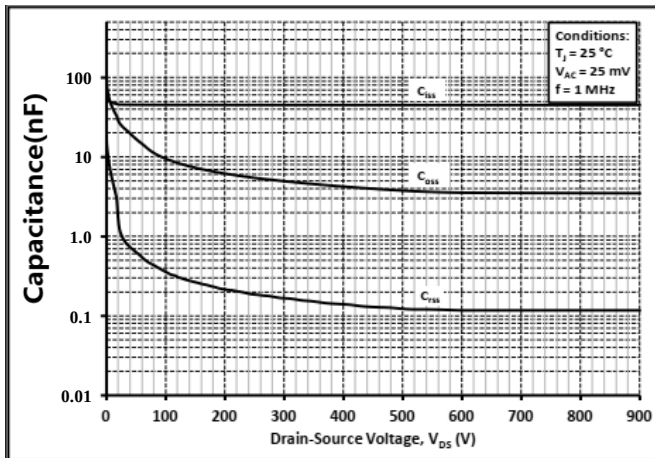


Figure 8. Resistive Switching Time Description

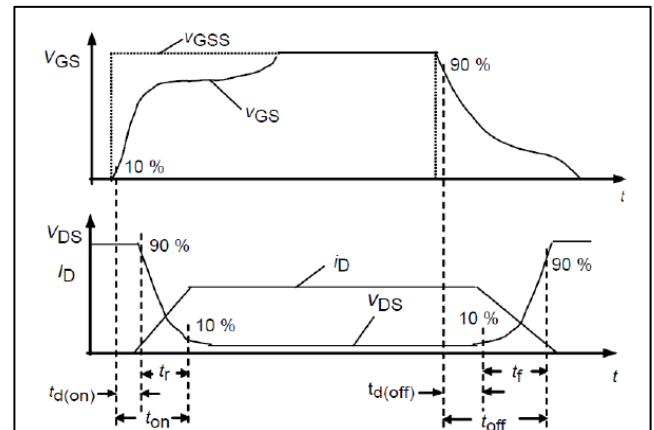


Figure 9. Safe Operating Area

