

Features

- Trench Power Technology
- Low $R_{DS(ON)}$
- Low Gate Charge
- Optimized for Fast-switching Applications

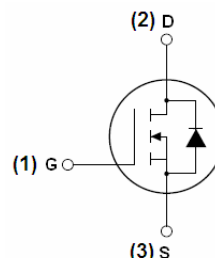
Applications

- Synchronous Rectification in DC/DC and AC/DC Converters
- Isolated DC/DC Converters in Telecom and Industrial

Product Summary



V_{DS}	68	V
$R_{DS(on), Typ @ V_{GS}=10V}$	8.0	mΩ
I_D	80	A



Absolute Maximum Ratings $T_C = 25^\circ\text{C}$, unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-Source Voltage ($V_{GS} = 0V$)	V_{DSS}	68	V
Continuous Drain Current	I_D	80	A
		49	
Pulsed Drain Current (note1)	I_{DM}	320	A
Gate-Source Voltage	V_{GSS}	± 20	V
Single Pulse Avalanche Energy (note2)	E_{AS}	79	mJ
Avalanche Current	I_{AS}	23	A
Power Dissipation (note3)	P_D	120	W
		60	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55~+175	$^\circ\text{C}$

Thermal Resistance

Parameter	Symbol	Value	Unit
		TO-220	
Thermal Resistance, Junction-to-Case	R_{thJC}	1.24	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Ambient	R_{thJA}	62	

Specifications T _J = 25°C, unless otherwise noted						
Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	68	--	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 68V, V _{GS} = 0V, T _J = 25°C	--	--	1	μA
		V _{DS} = 68V, V _{GS} = 0V, T _J = 100°C	--	--	25	
Gate-Source Leakage	I _{GSS}	V _{GS} = ±20V	--	--	±100	nA
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	2	2.8	4	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 30A	--	8.0	10.8	mΩ
Forward Transconductance	g _{fs}	V _{DS} = 10V, I _D = 30A	17.1	--	--	S
Dynamic						
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 34V, f = 1.0MHz	--	3400	--	pF
Output Capacitance	C _{oss}		--	1049	--	
Reverse Transfer Capacitance	C _{rss}		--	546	--	
Total Gate Charge	Q _g	V _{DD} = 34V, I _D = 50A, V _{GS} = 10V	--	70	--	nC
Gate-Source Charge	Q _{gs}		--	20	--	
Gate-Drain Charge	Q _{gd}		--	17	--	
Turn-on Delay Time	t _{d(on)}	V _{DD} = 34V, I _D = 50A, R _G = 2.5Ω	--	8	--	ns
Turn-on Rise Time	t _r		--	7	--	
Turn-off Delay Time	t _{d(off)}		--	40	--	
Turn-off Fall Time	t _f		--	15	--	
Drain-Source Body Diode Characteristics						
Continuous Body Diode Current	I _S	T _C = 25°C	--	--	80	A
Pulsed Diode Forward Current	I _{SM}		--	--	320	
Body Diode Voltage	V _{SD}	T _J = 25°C, I _{SD} = 30A, V _{GS} = 0V	--	--	1.2	V
Reverse Recovery Time	t _{rr}	I _F = 30A, di _F /dt = 100A/μs	--	30	--	ns
Reverse Recovery Charge	Q _{rr}		--	45	--	nC

Notes

1. Repetitive Rating: Pulse Width limited by maximum junction temperature
2. $I_{AS} = 42.5A, L = 0.3mH, V_{DD} = 50V, R_G = 25\Omega$, Starting $T_J = 25^{\circ}\text{C}$
3. The power dissipation PD is based on $T_J(\text{MAX}) = 175^{\circ}\text{C}$, using junction-to-case thermal resistance.

Typical Characteristics $T_J = 25^\circ\text{C}$, unless otherwise noted

Figure 1. Output Characteristics

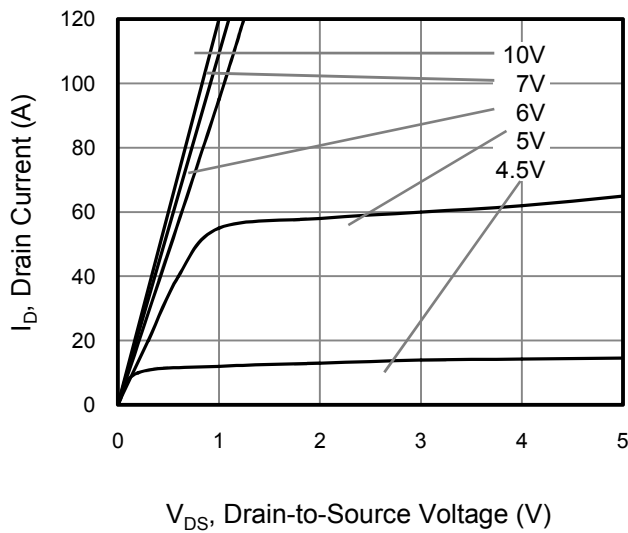


Figure 2. Transfer Characteristics

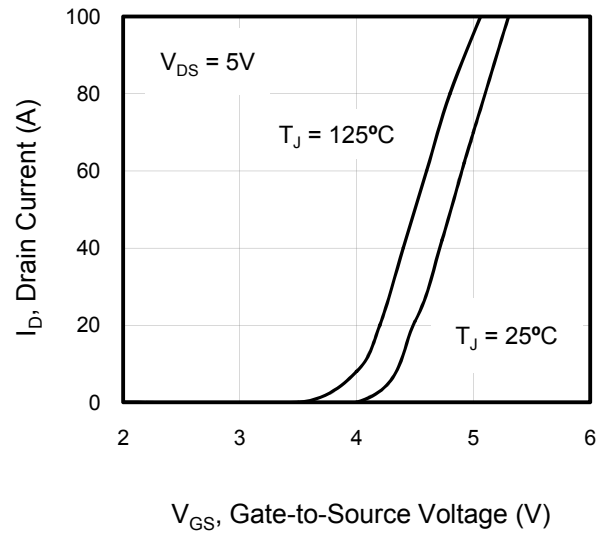


Figure 3. On-Resistance vs. Drain Current

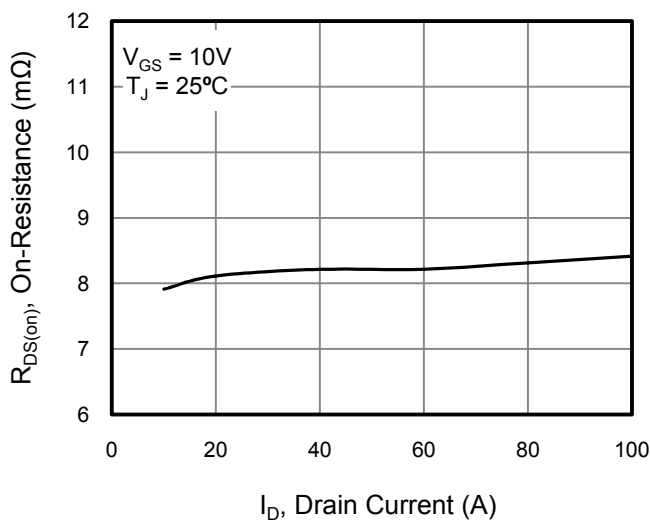


Figure 4. Capacitance

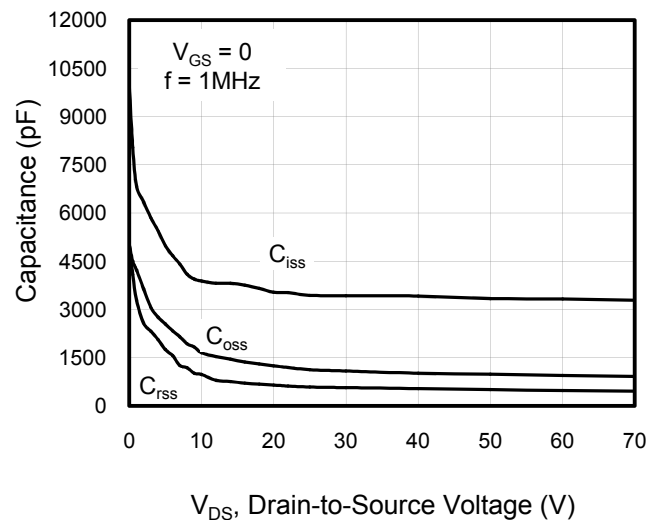


Figure 5. Gate Charge

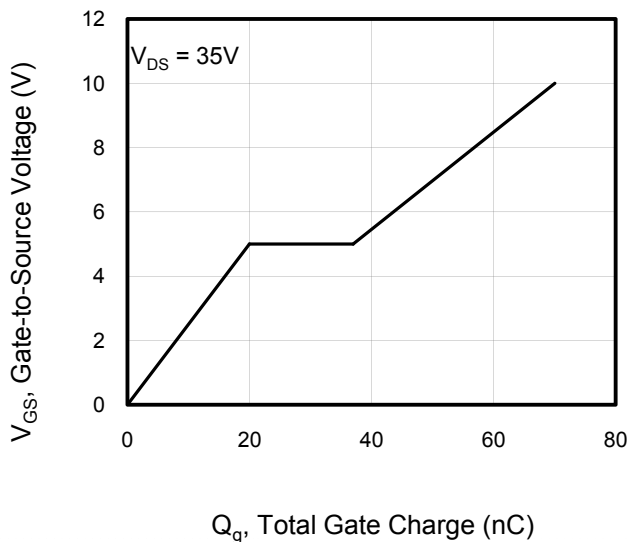
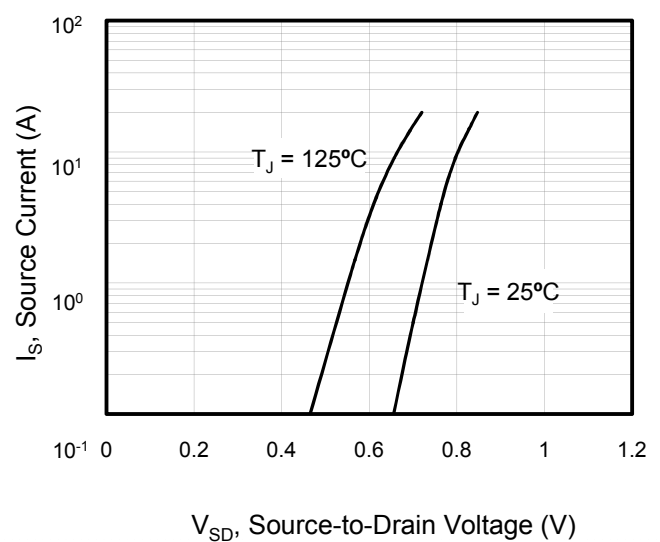


Figure 6. Body Diode Forward Voltage



Typical Characteristics $T_J = 25^\circ\text{C}$, unless otherwise noted

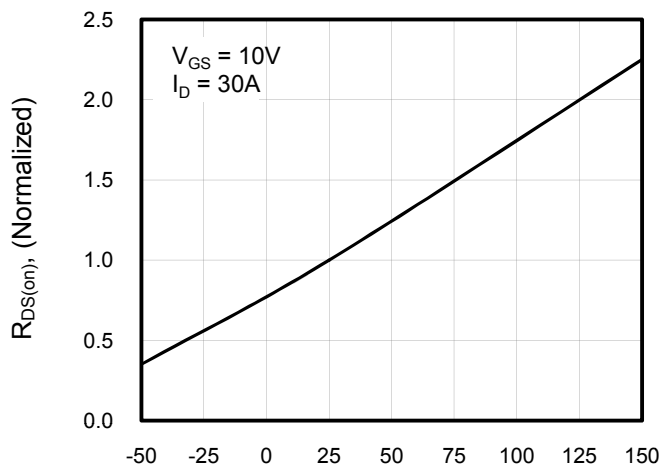
Figure 7. On-Resistance vs. Temperature

 T_J , Junction Temperature ($^\circ\text{C}$)

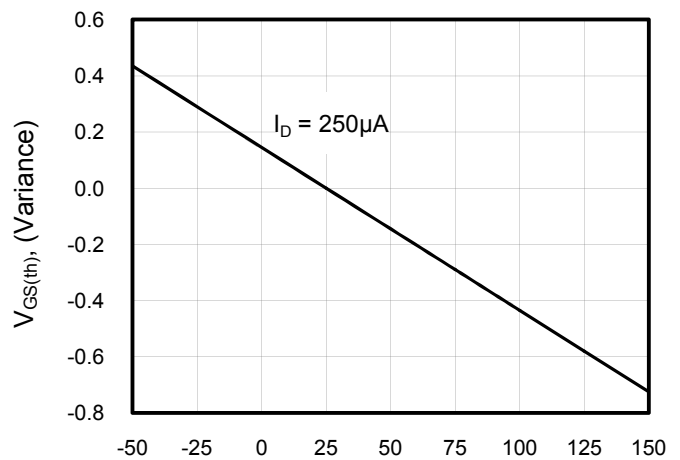
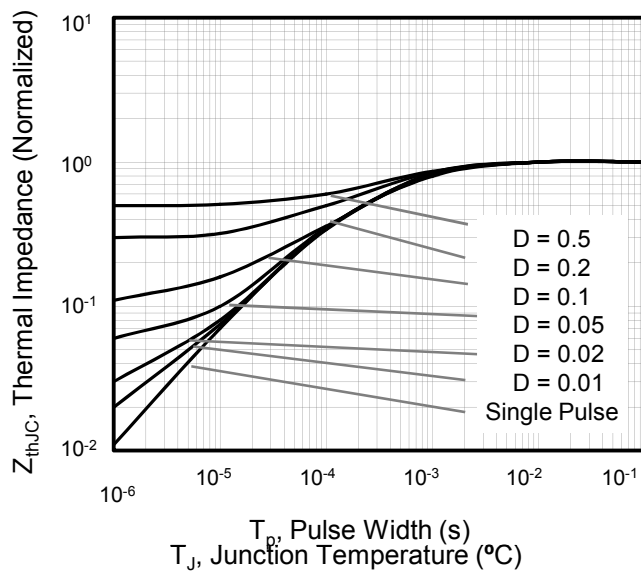
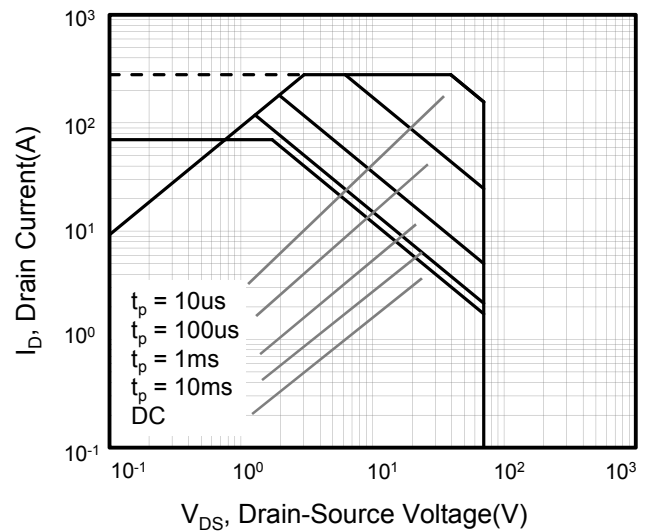
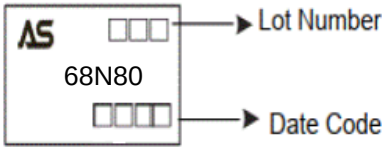
Figure 8. Threshold Voltage vs. Temperature

 T_J , Junction Temperature ($^\circ\text{C}$)

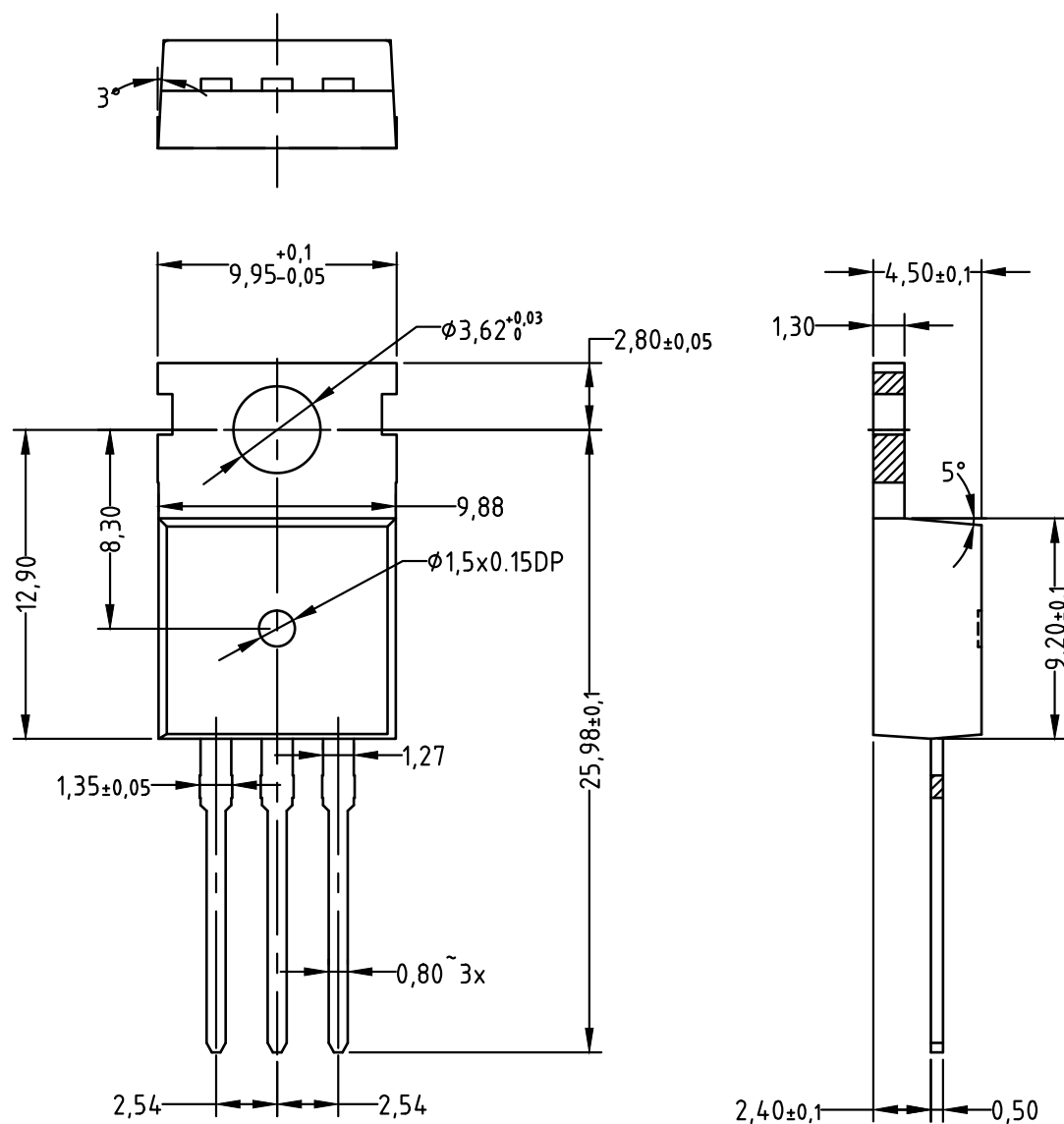
Figure 9. Transient Thermal Impedance

Figure 10. Safe Operation Area


Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASDM68N80P-T	68N80	TO-220	Tube	50/Tube

PACKAGE	MARKING
TO-220	 The diagram shows a TO-220 package with the following markings: - AS (ASDsemi logo) 68N80 (part number) - Lot Number (indicated by two empty boxes) - Date Code (indicated by four empty boxes)

TO-220



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