

Features

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

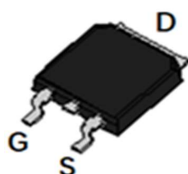
Applications

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

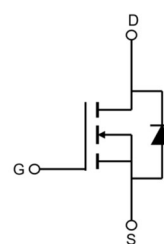
Product Summary



V_{DS}	68	V
$R_{DS(on), Typ@ V_{GS}=10 V}$	7.7	m Ω
I_D	80	A



TO-252



Schematic Diagram

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	$T_C = 25^\circ\text{C}$ 80	A
		$T_C = 100^\circ\text{C}$ 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	$T_C = 25^\circ\text{C}$ 120	W
		$T_C = 100^\circ\text{C}$ 60	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55~+175	$^\circ\text{C}$

Thermal Resistance

Parameter	Symbol	Value	Unit
		TO-252	
Thermal Resistance, Junction-to-Case	R_{thJC}	1.4	$^\circ\text{C/W}$
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	--	4	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 30A	--	7.7	9.5	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	--	3360	--	pF
Output Capacitance	C _{oss}		--	1037	--	
Reverse Transfer Capacitance	C _{rss}		--	540	--	
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 $T_J(MAX) = 175^{\circ}\text{C}$, using junction-to-case thermal resistance.

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

Figure 1. Output Characteristics

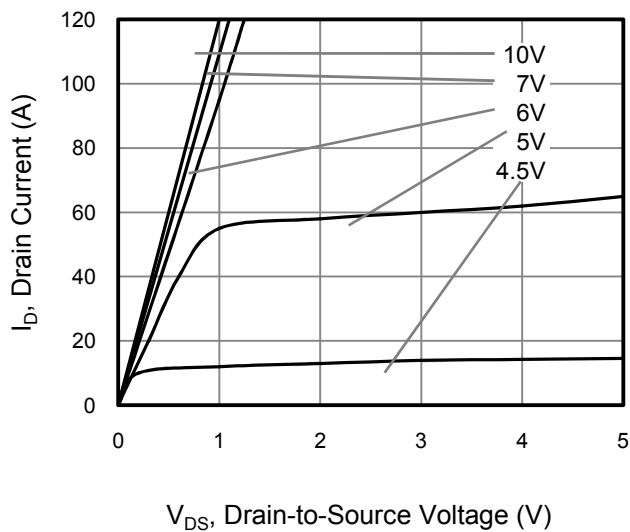


Figure 2. Transfer Characteristics

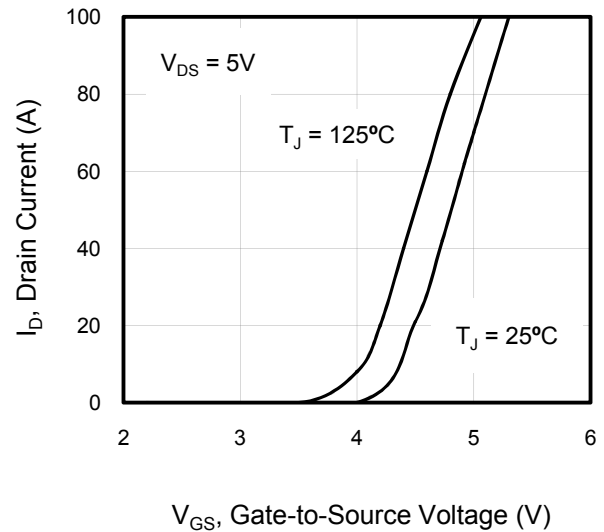


Figure 3. On-Resistance vs. Drain Current

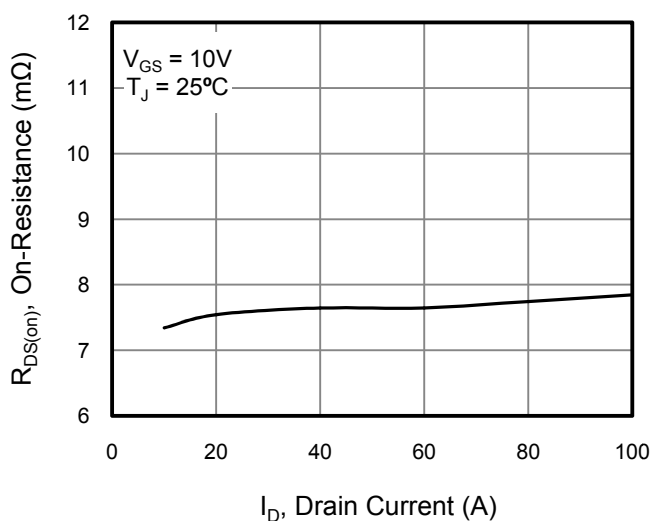


Figure 4. Capacitance

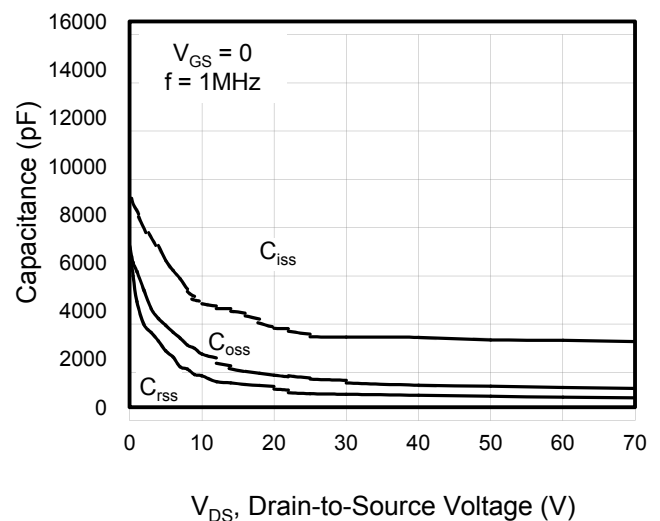


Figure 5. Gate Charge

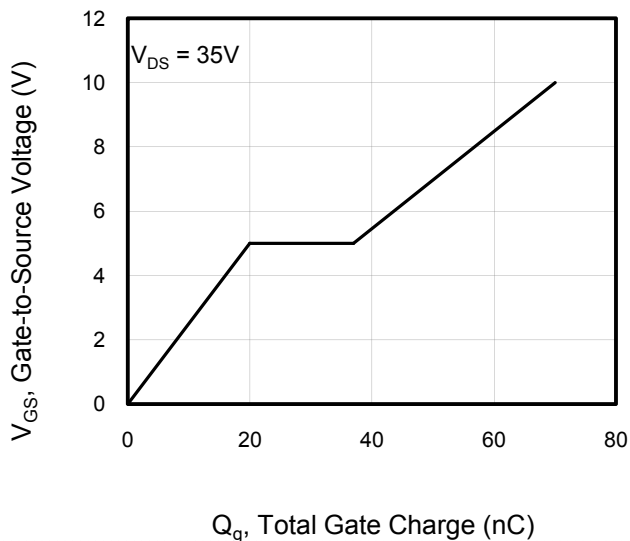
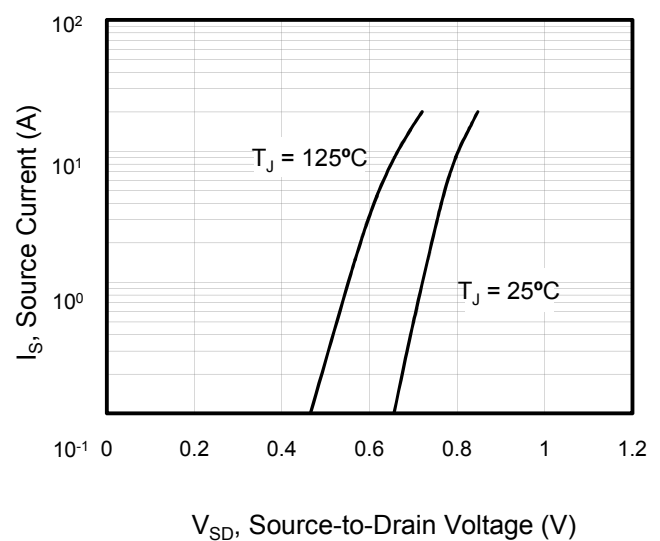
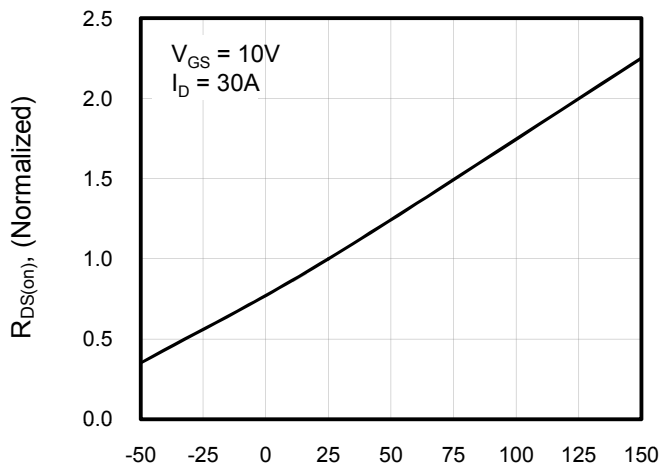


Figure 6. Body Diode Forward Voltage



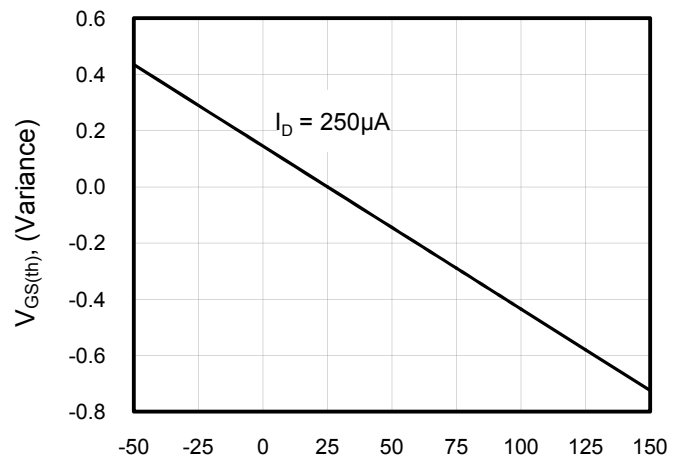
Typical Characteristics $T_J = 25^\circ\text{C}$, unless otherwise noted

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

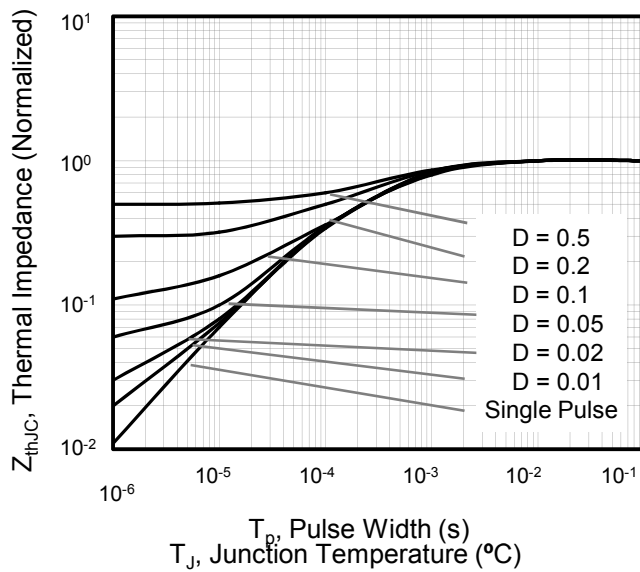
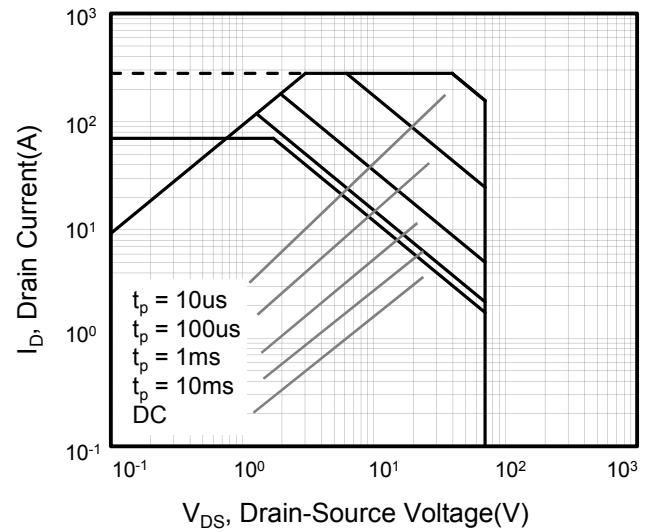
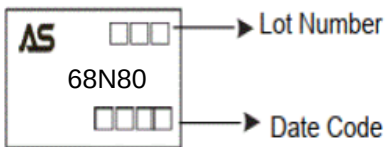


Figure 10. Safe Operation Area

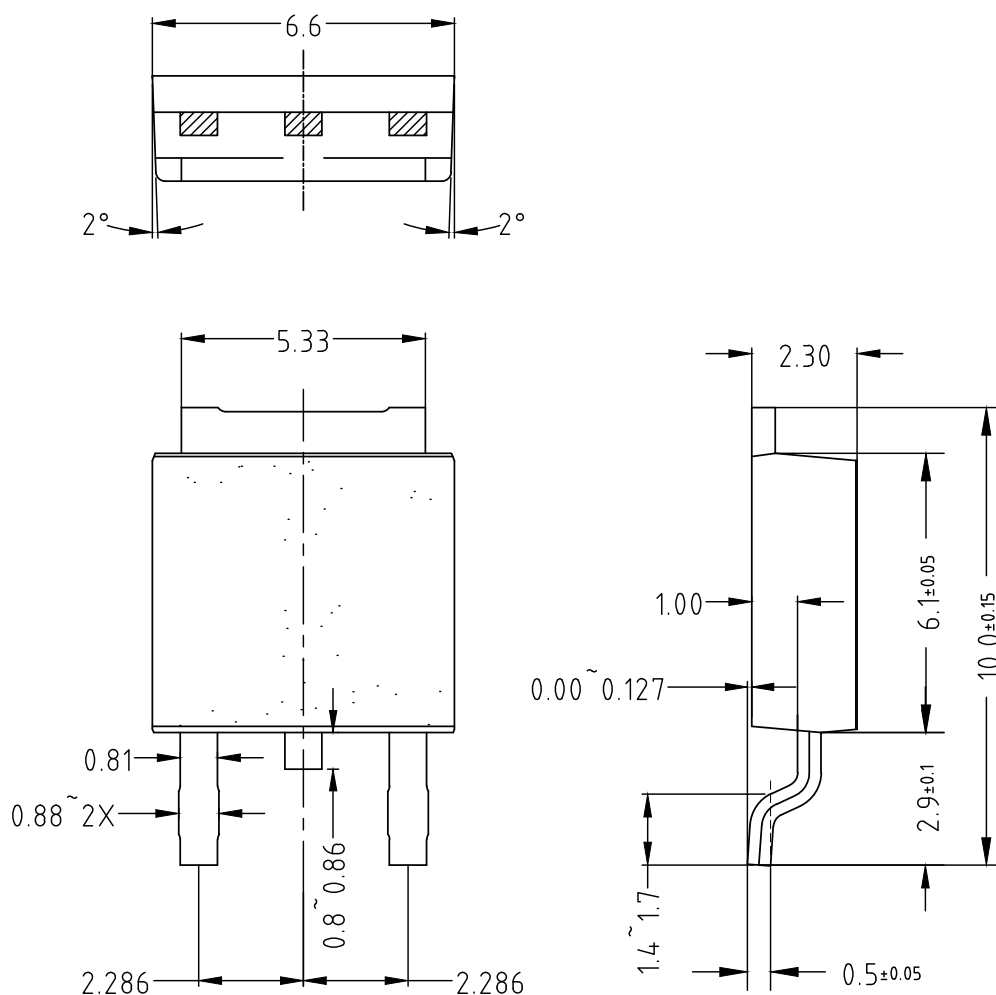


Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASDM68N80KQ-R	68N80	TO-252	Tape&Reel	2500/Reel

PACKAGE	MARKING
TO-252	 The diagram shows a rectangular marking area on a TO-252 package. It contains the ASDsemi logo (AS) on the left. To the right of the logo are two rows of four small squares each. An arrow points from the top row of squares to the text 'Lot Number'. Another arrow points from the bottom row of squares to the text 'Date Code'. The text '68N80' is printed in the center between the two rows of squares.

TO-252



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