



Features

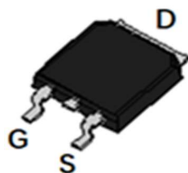
- Trench Power Technology
- Low $R_{DS(ON)}$
- Low Gate Charge
- Optimized for Fast-switching Applications

Applications

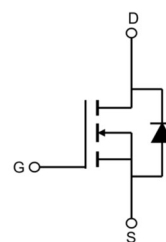
- Synchronous Rectification in DC/DC and AC/DC Converters
- Isolated DC/DC Converters in Telecom and Industrial

Product Summary

V_{DS}	68	V
$R_{DS(on),Typ} @ V_{GS}=10V$	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
		$T_C = 100^\circ\text{C}$	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
		$T_C = 100^\circ\text{C}$	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 $T_J = 25^\circ\text{C}$, unless otherwise noted						
Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	68	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 68V, V_{GS} = 0V, T_J = 25^\circ\text{C}$	--	--	1	μA
		$V_{DS} = 68V, V_{GS} = 0V, T_J = 100^\circ\text{C}$	--	--	25	
Gate-Source Leakage	I_{GSS}	$V_{GS} = \pm 20V$	--	--	± 100	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	--	4	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 30A$	--	7.7	9.5	m Ω
Forward Transconductance	g_{fs}	$V_{DS} = 10V, I_D = 30A$	17.1	--	--	S
Dynamic						
Input Capacitance	C_{iss}	$V_{GS} = 0V,$ $V_{DS} = 34V,$ $f = 1.0\text{MHz}$	--	3360	--	μF
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	$t_{d(on)}$	$V_{DD} = 34V, I_D = 50A,$ $R_G = 2.5\Omega$	--	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	$T_C = 25^\circ\text{C}$	--	--	80	A
Pulsed Diode Forward Current	I_{SM}		--	--	320	
Body Diode Voltage	V_{SD}	$T_J = 25^\circ\text{C}, I_{SD} = 30A, V_{GS} = 0V$	--	--	1.2	V
Reverse Recovery Time	t_{rr}	$I_F = 30A,$ $di_F/dt = 100A/\mu s$	--	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

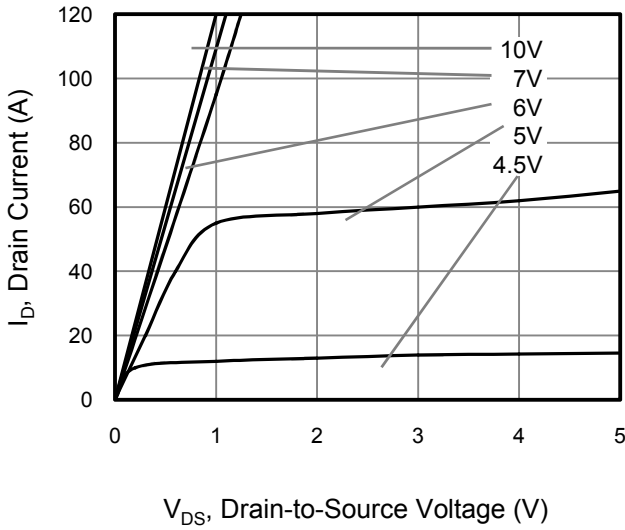


Figure 2. Transfer Characteristics

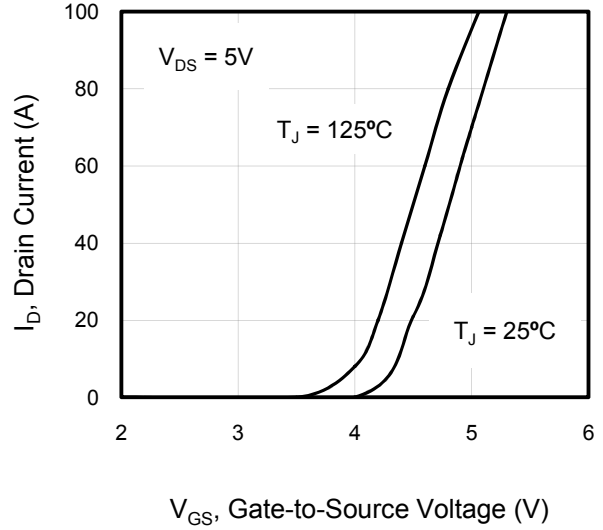


Figure 3. On-Resistance vs. Drain Current

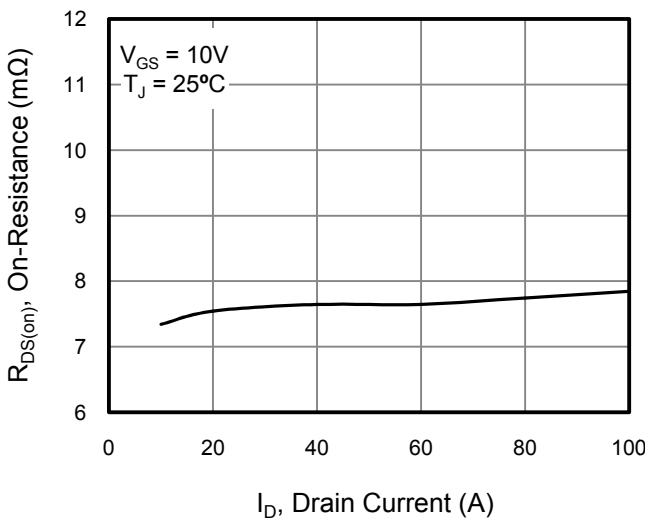


Figure 4. Capacitance

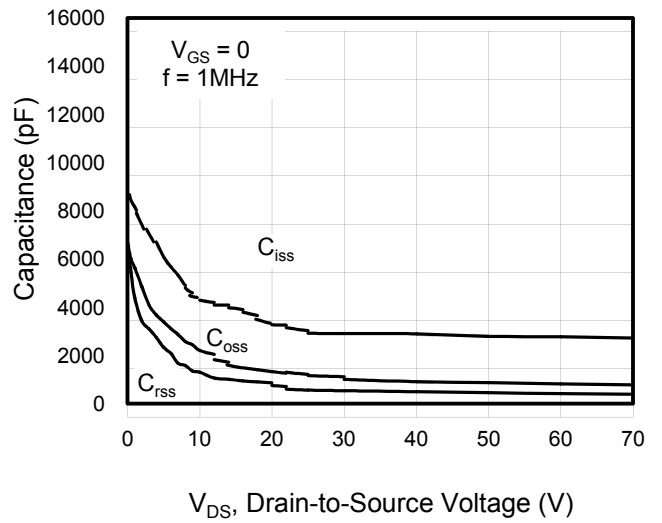


Figure 5. Gate Charge

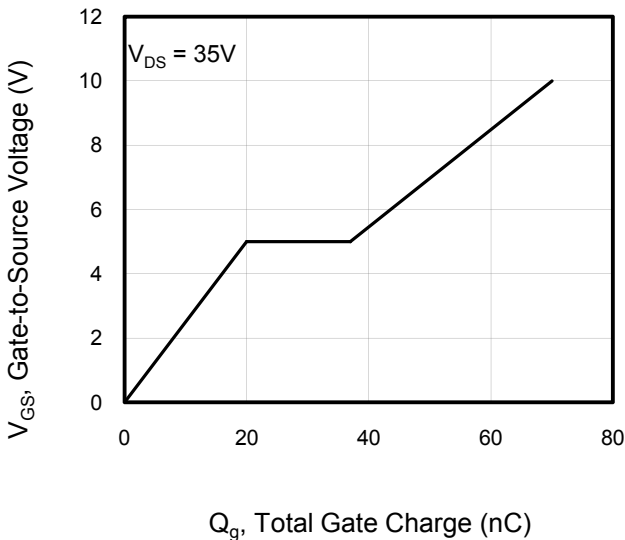
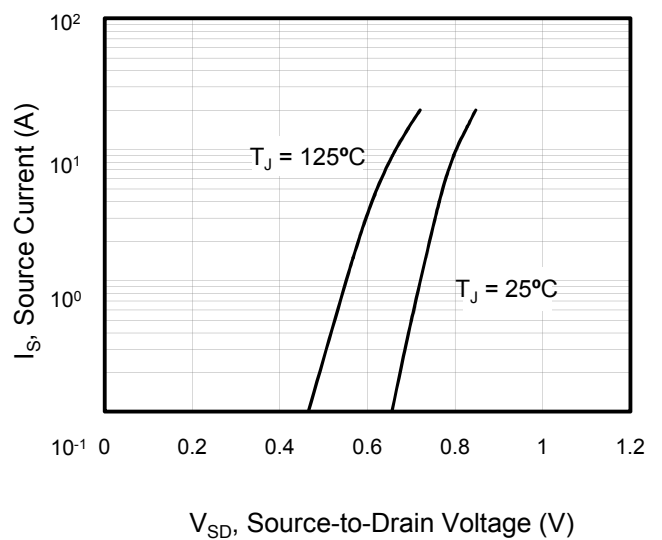


Figure 6. Body Diode Forward Voltage





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

Figure 7. On-Resistance vs. Temperature

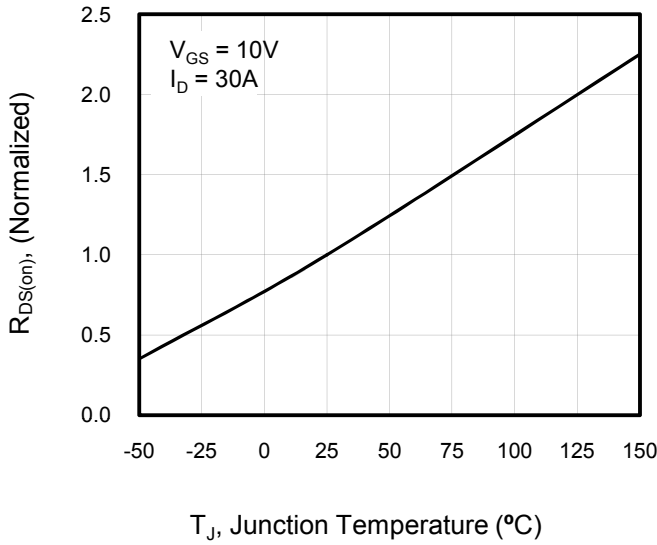


Figure 8. Threshold Voltage vs. Temperature

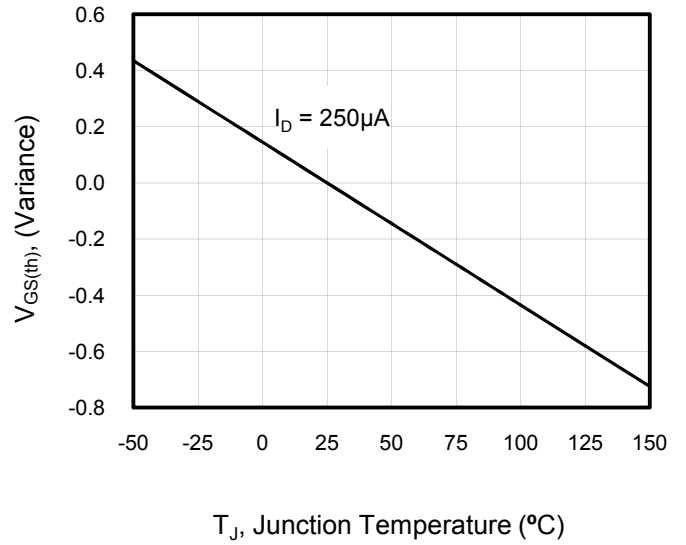


Figure 9. Transient Thermal Impedance

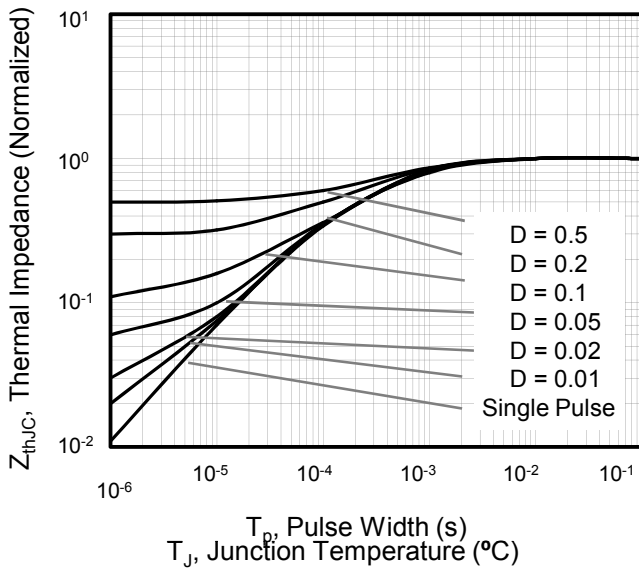
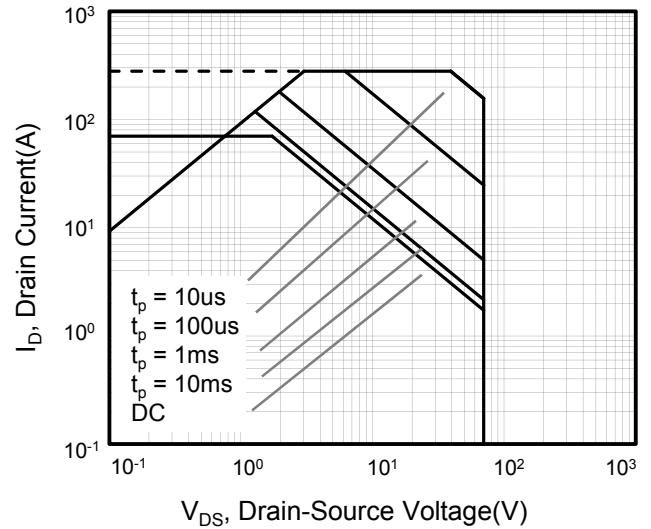


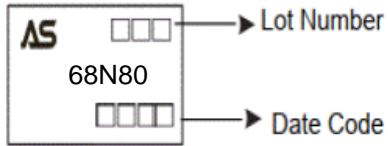
Figure 10. Safe Operation Area



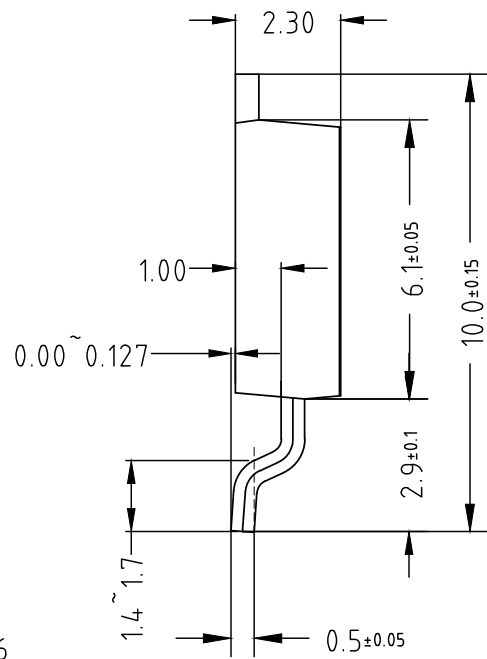
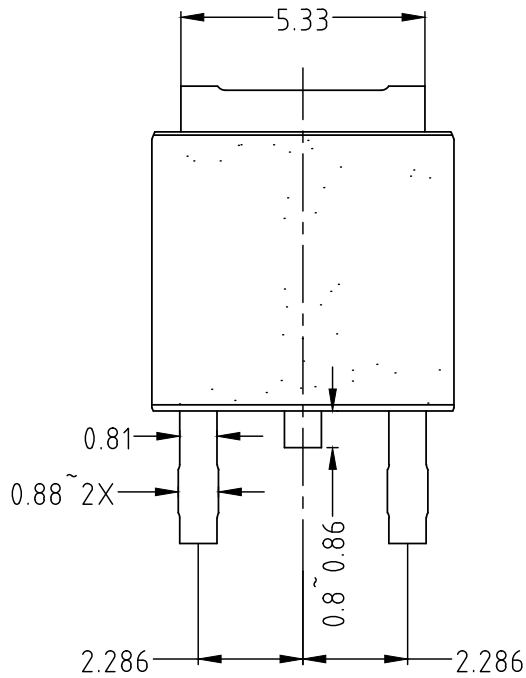
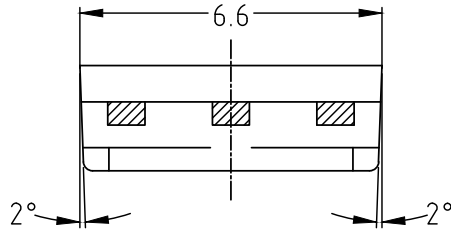


Ordering and Marking Information

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

PACKAGE	MARKING
TO-252	 <p>The diagram shows a rectangular marking area on a TO-252 package. It contains the letters 'AS' in the top left, the part number '68N80' in the center, and two sets of three empty boxes. An arrow points from the top set of boxes to the text 'Lot Number', and another arrow points from the bottom set of boxes to the text 'Date Code'.</p>

TO-252



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