



Features

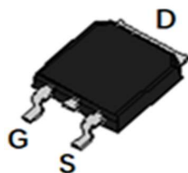
- Trench Power Technology
- Low $R_{DS(ON)}$
- Low Gate Charge
- Optimized for Fast-switching Applications

Applications

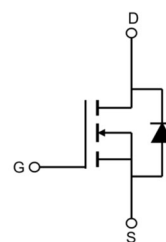
- Synchronous Rectification in DC/DC and AC/DC Converters
- Isolated DC/DC Converters in Telecom and Industrial

Product Summary

V_{DS}	68	V
$R_{DS(on), Typ} @ V_{GS}=10\text{ V}$	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 ($V_{GS} = 0\text{V}$)	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. $I_{AS} = 42.5A, L=0.3mH, V_{DD} = 50V, R_G = 25\Omega, \text{Starting } T_J = 25^\circ\text{C}$
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

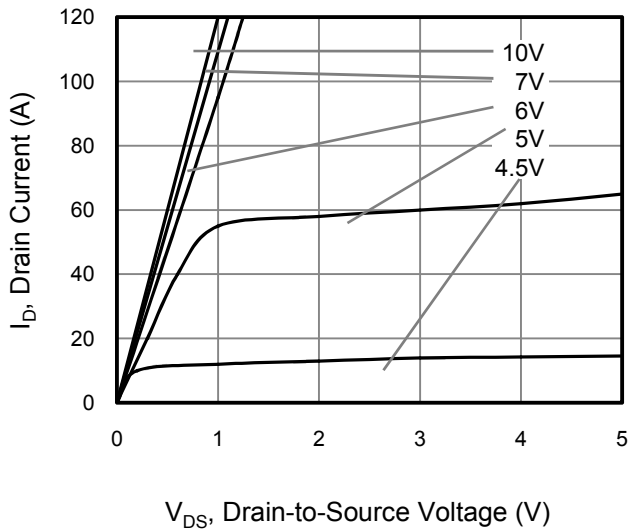


Figure 2. Transfer Characteristics

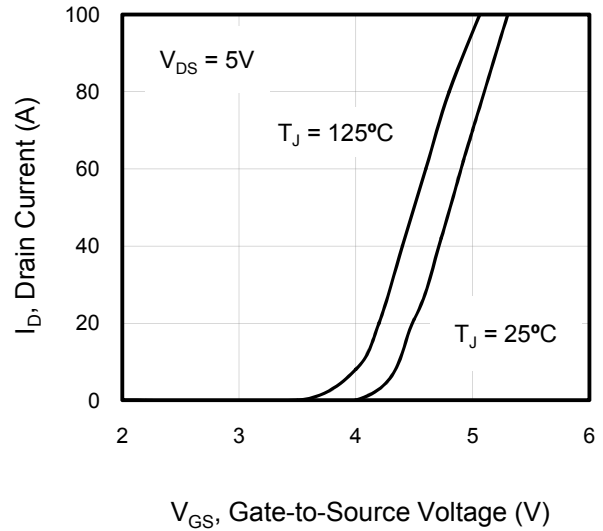


Figure 3. On-Resistance vs. Drain Current

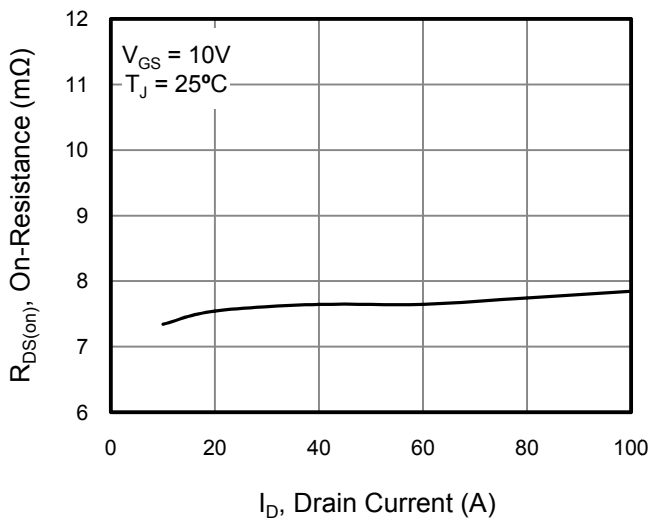


Figure 4. Capacitance

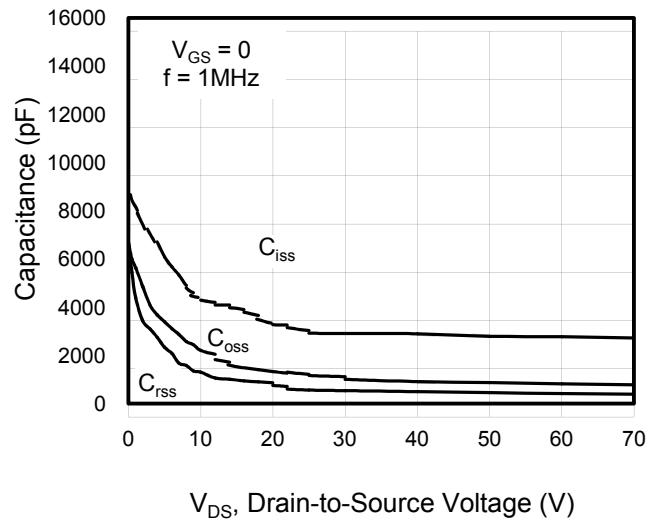


Figure 5. Gate Charge

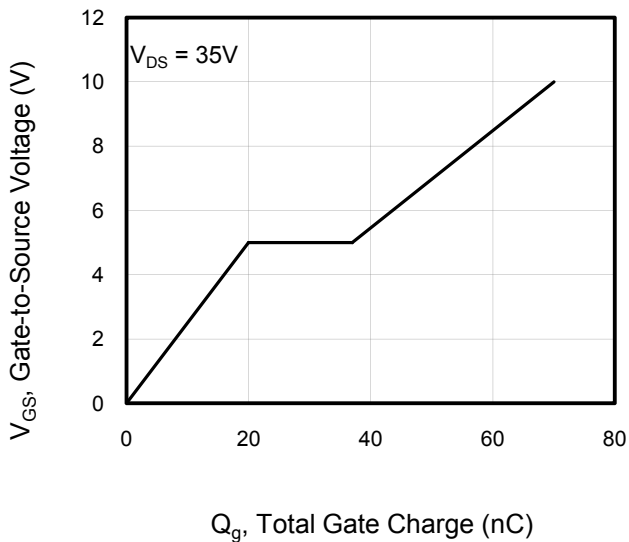
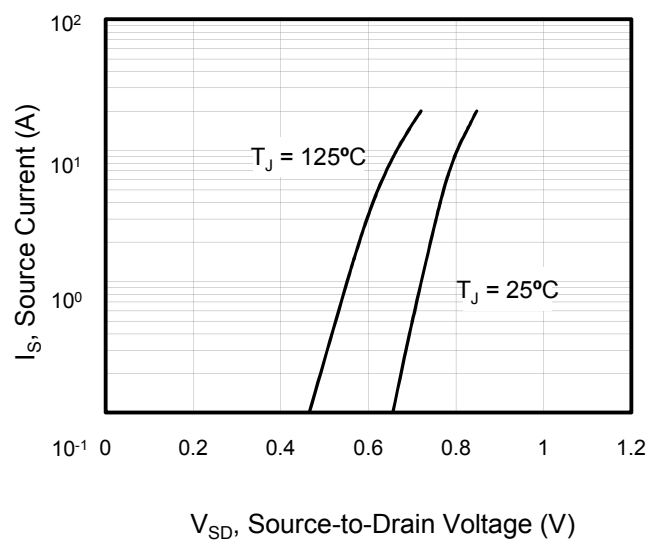
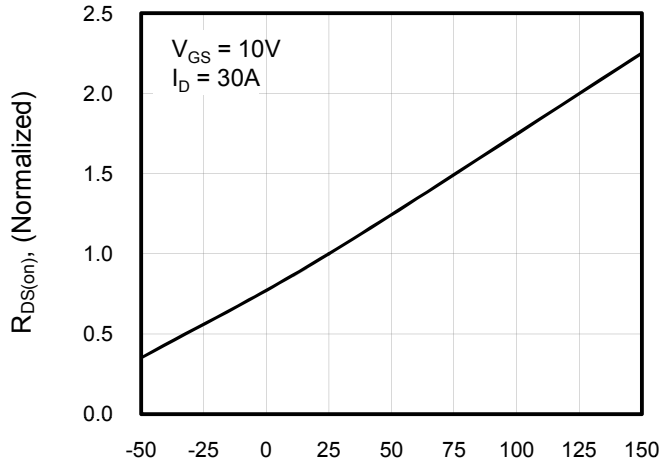


Figure 6. Body Diode Forward Voltage



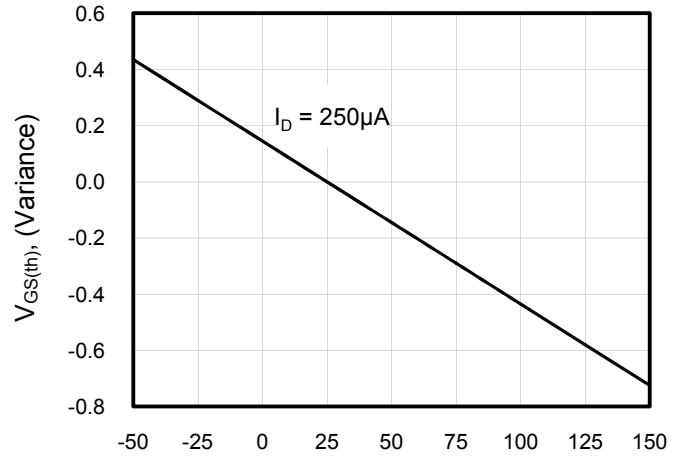
Typical Characteristics $T_J = 25^\circ\text{C}$, unless otherwise noted

Figure 7. On-Resistance vs. Temperature



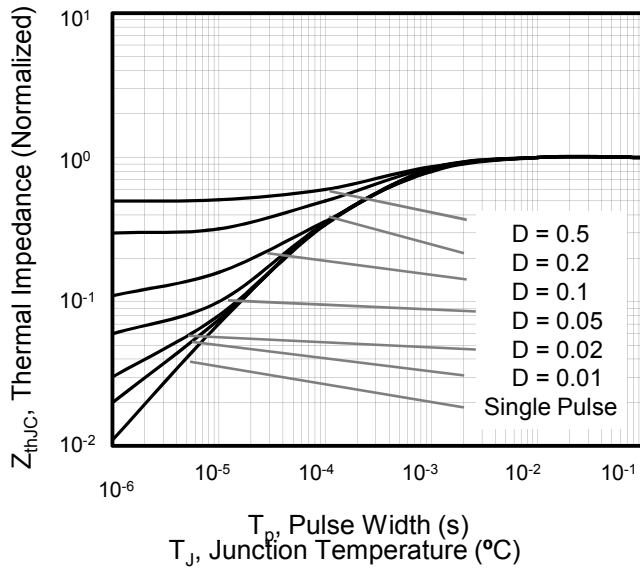
T_J , Junction Temperature ($^\circ\text{C}$)

Figure 8. Threshold Voltage vs. Temperature



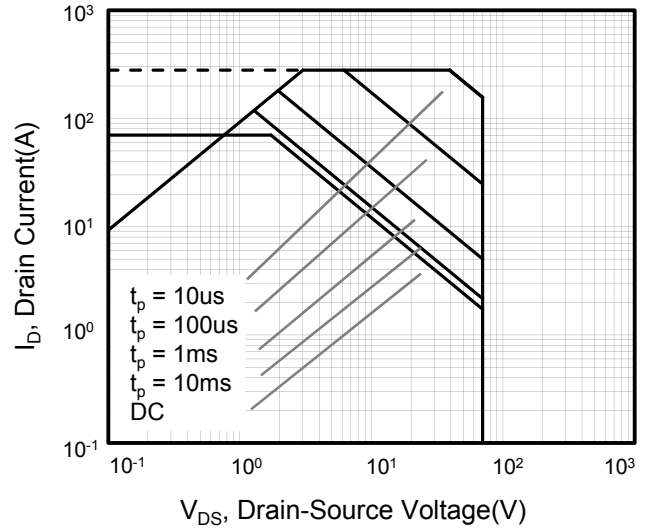
T_J , Junction Temperature ($^\circ\text{C}$)

Figure 9. Transient Thermal Impedance



T_p , Pulse Width (s)
 T_J , Junction Temperature ($^\circ\text{C}$)

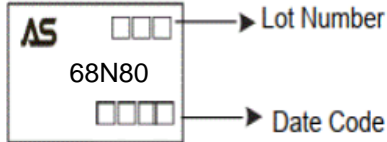
Figure 10. Safe Operation Area



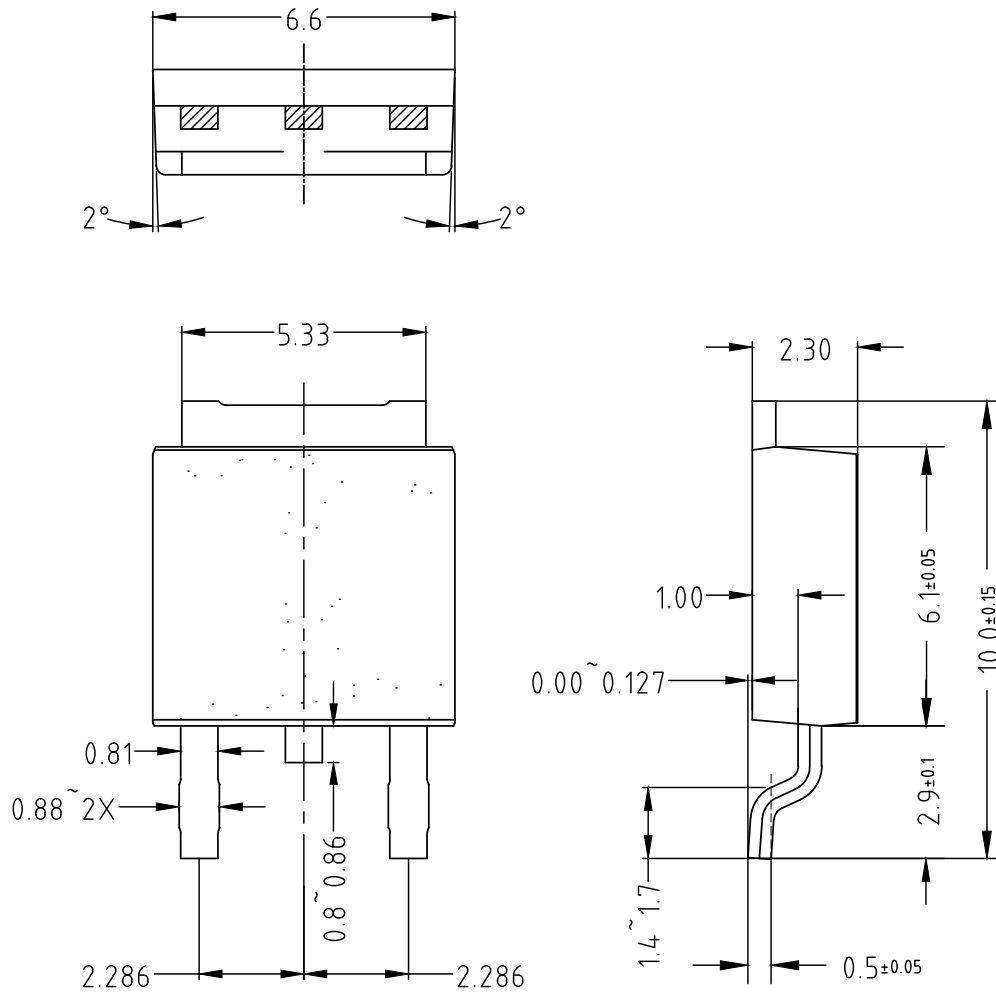
V_{DS} , Drain-Source Voltage (V)

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 following elements from top to bottom: the 'AS' logo, a three-digit lot number represented by three squares (□□□), the part number '68N80', and another three-digit date code represented by three squares (□□□). Arrows point from the lot number and date code boxes to their respective labels 'Lot Number' and 'Date Code'.</p>

TO-252





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