AD80N06KS-Q1

N-Channel Enhancement Mode Power MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	8.5mΩ@10V	80A

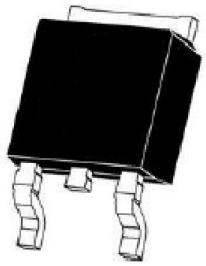
Feature

- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation
- Suffix "-Q1" for AEC-Q101

Application

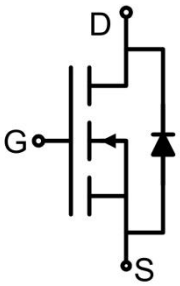
- Load Switching
- PWM

Package



TO-252AB

Circuit diagram



Marking

AD80N06KS-Q1

N-Channel Enhancement Mode Power MOSFET

Absolute maximum ratings (Tc=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	80	A
Continuous Drain Current(T_C =100 ℃)	I_D (100 ℃)	56.5	A
Pulsed Drain Current	I_{DM}	320	A
Power Dissipation	P_D	110	W
Thermal Resistance,Junction-to-Ambient	$R_{\theta JA}$	60	℃/W
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	1.36	℃/W
Single pulse avalanche energy	E_{AS}	390	mJ
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_c=25 ℃, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	60			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =60V,V_{GS} = 0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	2.0	2.8	4.0	V
Drain-source on-resistance[1)]	$R_{DS(on)}$	V_{GS} =10V, I_D =20A		7	8.5	mΩ
Dynamic characteristics[2)]						
Input Capacitance	C_{iss}	V_{DS} =30V,V_{GS} =0V,f =1MHz		4000		pF
Output Capacitance	C_{oss}			290		
Reverse Transfer Capacitance	C_{rss}			210		
Total Gate Charge	Q_g	V_{DS} =30V,V_{GS} =10V,ID =20A		90		nC
Gate-Source Charge	Q_{gs}			9		
Gate-Drain Charge	Q_{gd}			18		
Turn-on delay time	$t_{d(on)}$	V_{DD}=30V,V_{GS}=10V, R_L=1Ω,R_{GEN}=3Ω		8.5		nS
Turn-on rise time	t_r			7		
Turn-off delay time	$t_{d(off)}$			40		
Turn-off fall time	t_f			15		
Source-Drain Diode characteristics						
Diode Forward Current[1)]	I_S				80	A
Diode Forward voltage	V_{DS}	V_{GS} =0V, I_S=20A			1.2	V
Reverse Recovery Time	t_{rr}	TJ = 25°C, IF =20A di/dt = 500A/μs [1)]		32		nS
Reverse Recovery Charge	Q_{rr}			45		nC

Notes:

1) Pulse Test: Pulse Width < 300μs, Duty Cycle ≤2%.

2) Guaranteed by design, not subject to production testing.

Typical Characteristics

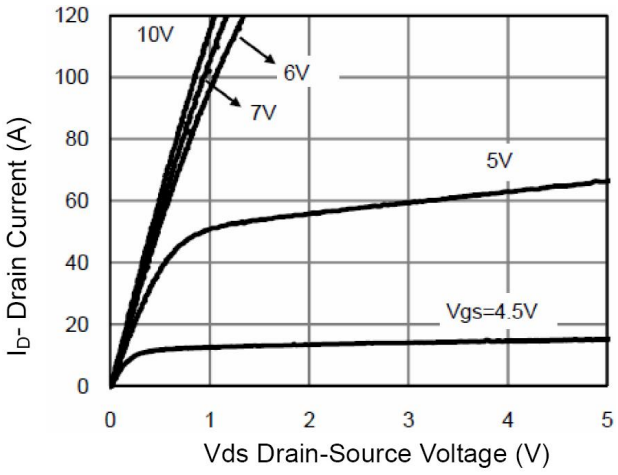


Figure 1 Output Characteristics

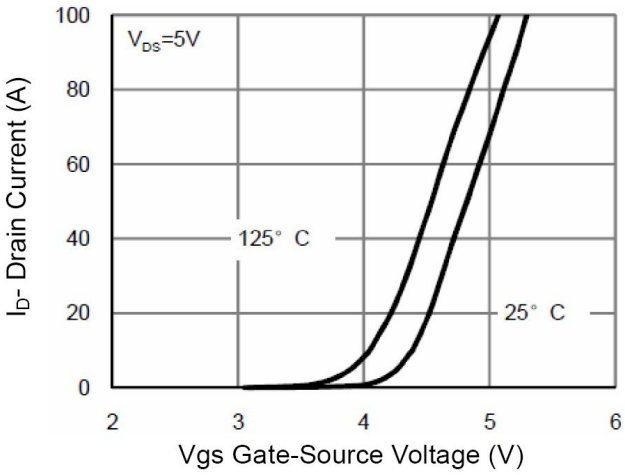


Figure 2 Transfer Characteristics

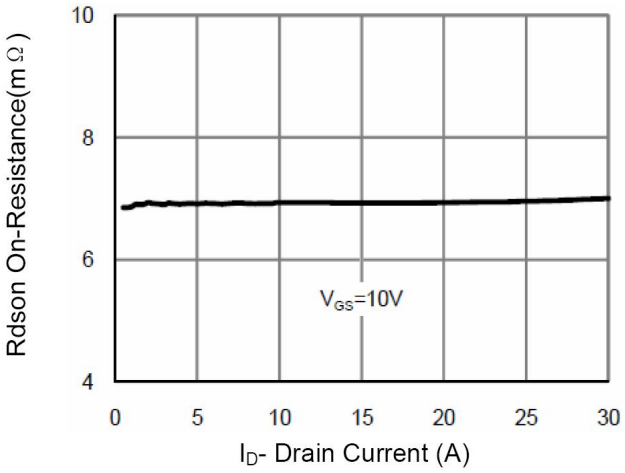


Figure 3 Rdson- Drain Current

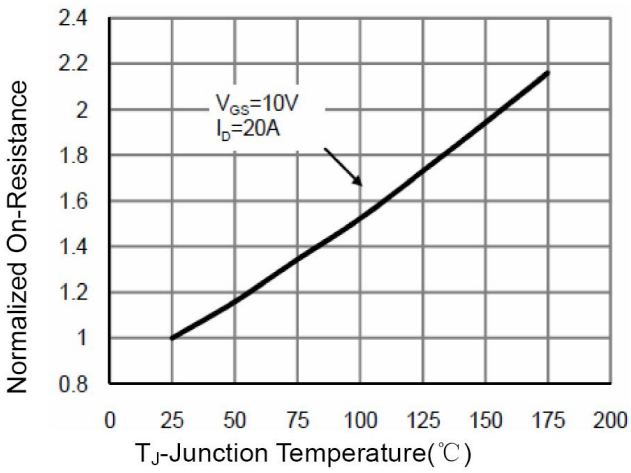


Figure 4 Rdson-JunctionTemperature

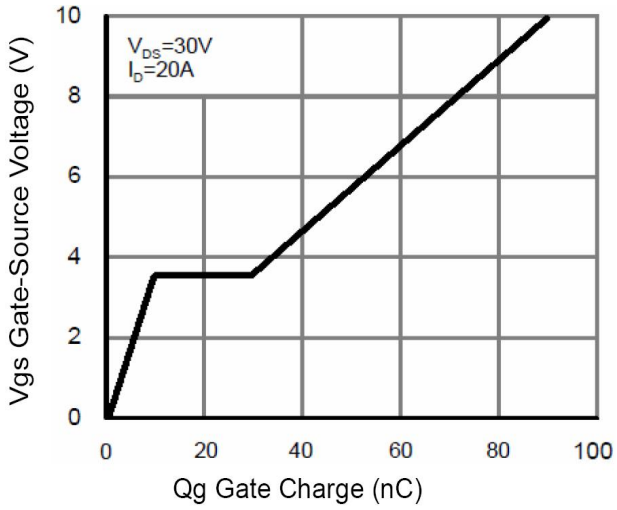


Figure 5 Gate Charge

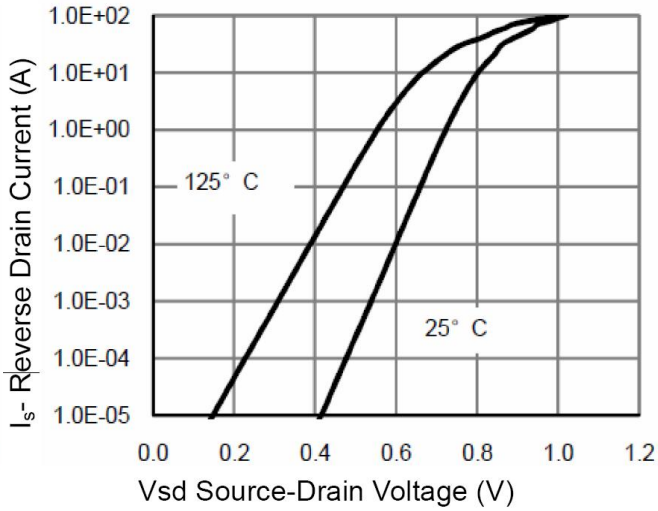


Figure 6 Source- Drain Diode Forward

Typical Characteristics

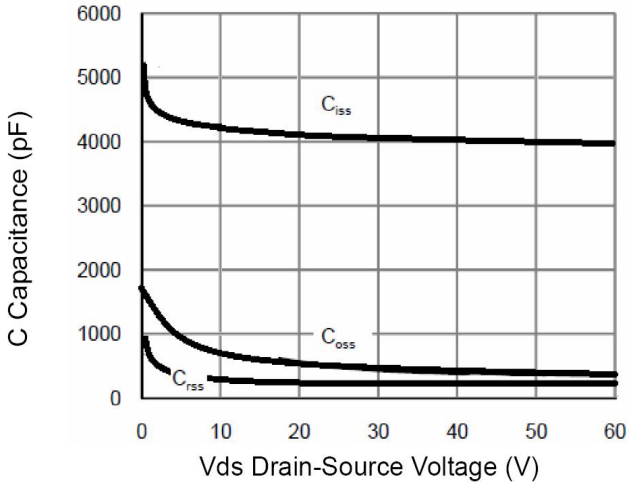


Figure 7 Capacitance vs Vds

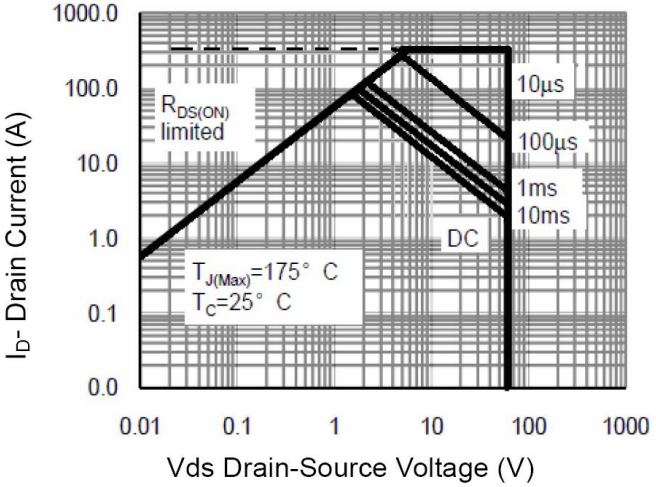


Figure 8 Safe Operation Area

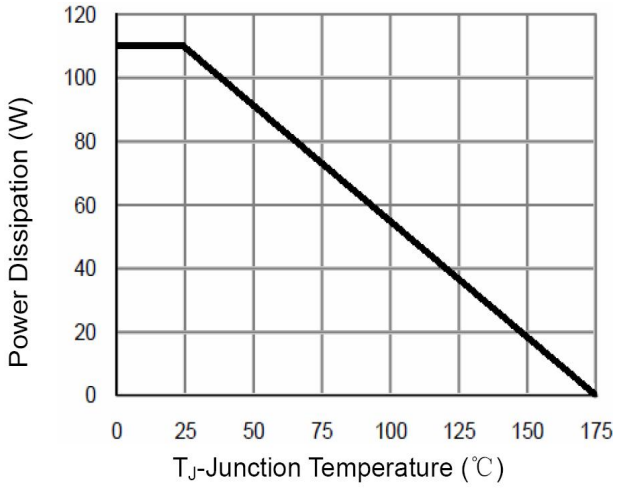


Figure 9 Power De-rating

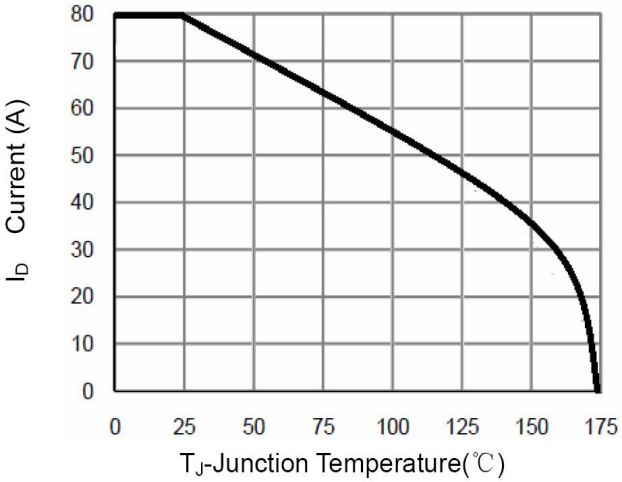


Figure 10ID Current- Junction Temperature

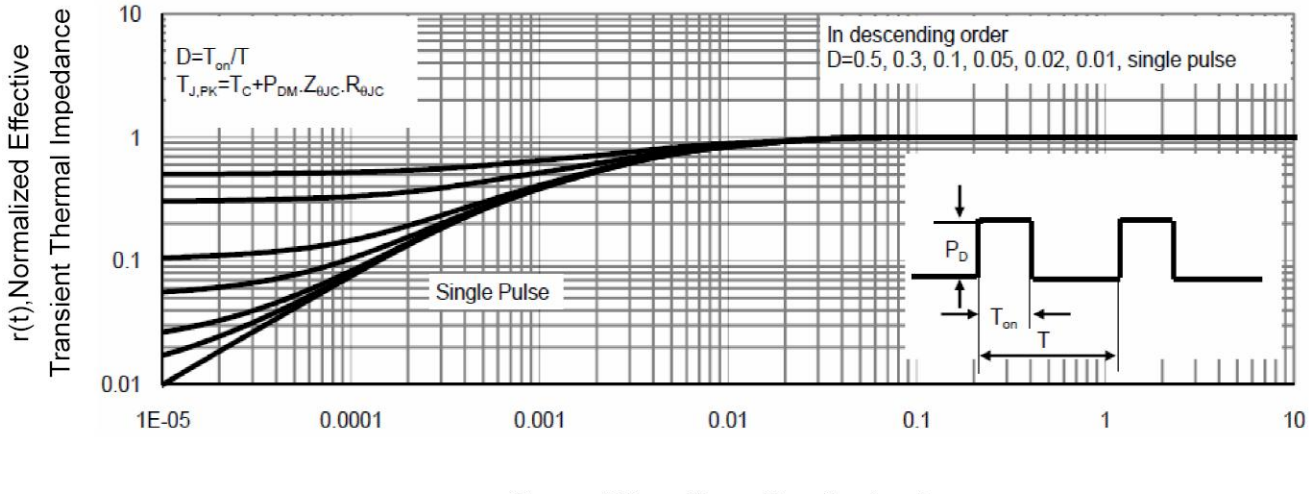
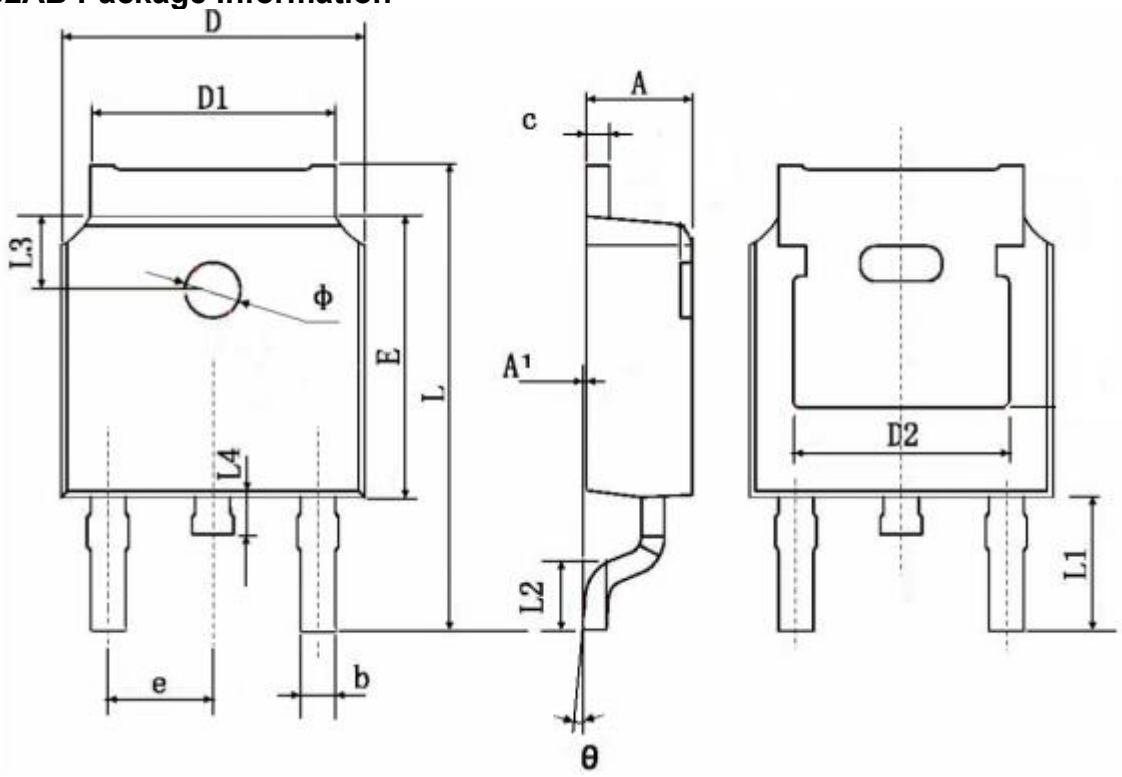


Figure 11 Normalized Maximum Transient Thermal Impedance

TO-252AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.086	0.094
A1	0.000	0.130	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.500	0.201	0.217
D2	4.830 REF		0.190 REF	
E	6.000	6.200	0.236	0.244
e	2.190	2.390	0.086	0.094
L	9.800	10.500	0.386	0.413
L1	2.900 BSC		0.114 BSC	
L2	1.400	1.800	0.055	0.070
L3	1.600 REF		0.063 REF	
L4	0.600	1.000	0.023	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°