ADR260N60ES-Q1

N-Channel Super Junction Power MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
600V	260mΩ@10V	14A

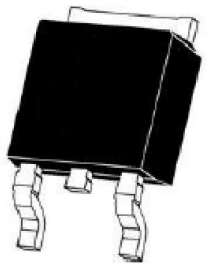
Feature

- Optimized body diode reverse recovery performance
- Low on-resistance and low conduction losses
- Ultra Low Gate Charge cause lower driving requirements
- ESD protected
- Suffix "-Q1" for AEC-Q101

Application

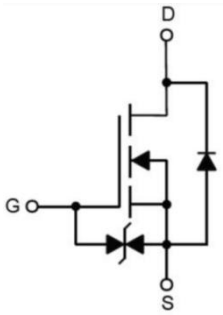
- Power factor correction（PFC）
- Switched mode power supplies(SMPS)
- Uninterruptible Power Supply（UPS）
- LLC Half-bridge

Package



TO-252AB

Circuit diagram



Marking

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	600	V
Gate-Source Voltage,AC (f>1 Hz)	V_{GS}	±30	V
Gate-Source Voltage,DC	V_{GS}	±20	V
Continuous Drain Current	I_D	14	A
Continuous Drain Current(T_C =100℃)	I_D(100℃)	9.8	A
Pulsed Drain Current[1)]	I_{DM}	42	A
Power Dissipation	P_D	128	W
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	1.17	℃/W
Single pulse avalanche current[2)]	I_{AS}	2.5	A
Junction Temperature	T_J	175	℃
Storage Temperature Range	T_{STG}	-55 ~ +175	℃

Electrical characteristics (T_A=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	600			V
Zero gate voltage drain current(T_C =25℃)	I_{DSS}	V_{DS} =600V,V_{GS} = 0V			10	μA
Zero gate voltage drain current(T_C =125℃)	I_{DSS}	V_{DS} =600V,V_{GS} = 0V			300	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±200	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	3.5	4.2	5.0	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =7A		230	260	mΩ
Dynamic characteristics[3)]						
Input Capacitance	C_{iss}	V_{DS} =50V,V_{GS} =0V, f =1MHz		946		pF
Output Capacitance	C_{oss}			50		
Reverse Transfer Capacitance	C_{rss}			1.6		
Total Gate Charge	Q_g	V_{DS} =400V,V_{GS} =10V, I_D=7A		19		nC
Gate-Source Charge	Q_{gs}			9.8		
Gate-Drain Charge	Q_{gd}			3.1		
Gate Plateau Voltage	V_{gp}			6.8		V
Gate Resistance	R_g	f =1MHz,D-S short		17.3		Ω
Turn-on delay time	$t_{d(on)}$	V_{DD}=380V,V_{GS}=10V, I_D =7A,R_G=4Ω		18		nS
Turn-on rise time	t_r			13		
Turn-off delay time	$t_{d(off)}$			52		
Turn-off fall time	t_f			10		
Source-Drain Diode characteristics						
Diode Forward voltage	V_{SD}	V_{GS}=0V, I_{SD}=14A, T_j=25℃			1.2	V
Diode Forward Current	I_{SD}	T_C =25℃			14	A
Pulsed-Source-drain current	I_{SDM}				42	A
Reverse Recovery Time	t_{rr}	T_j= 25°C, I_F = 7A di/dt = 100A/μs		85		nS
Reverse Recovery Charge	Q_{rr}			0.29		uC
Peak reverse recovery current	I_{rrm}			7		A

Notes:

1) Repetitive Rating: Pulse width limited by maximum junction temperature.

2) Tj=25℃,VDD=50V,VG=10V, RG=25Ω.

3) Guaranteed by design, not subject to production.

Typical Characteristics

Figure1. Safe operating area

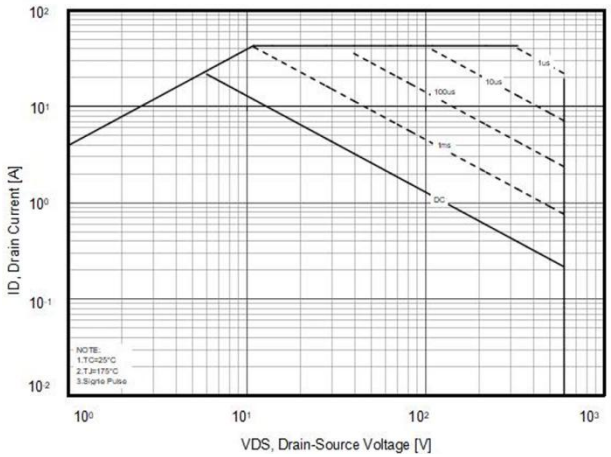


Figure2. Source-Drain Diode Forward Voltage

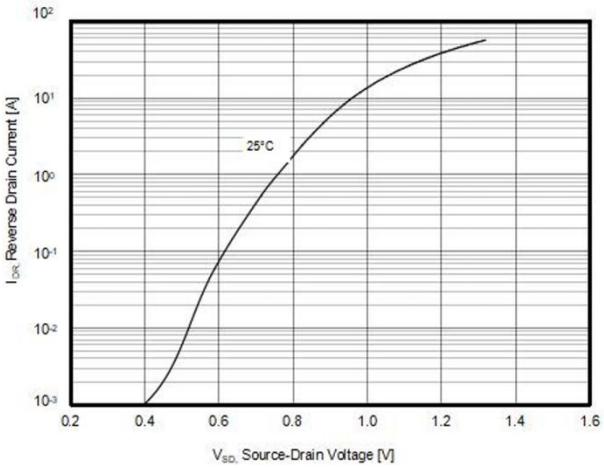


Figure3. Transfer characteristics

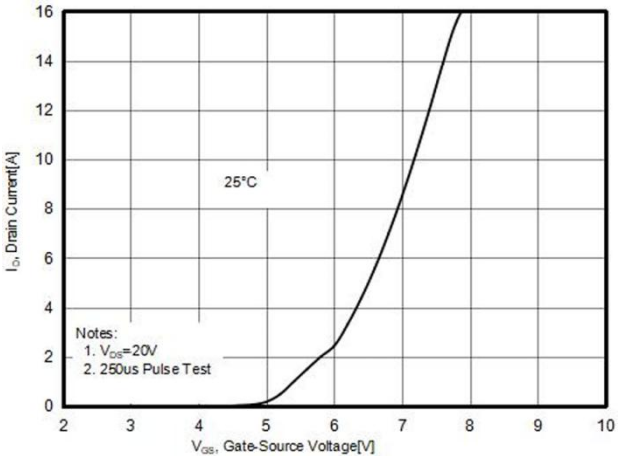


Figure4. Output characteristics

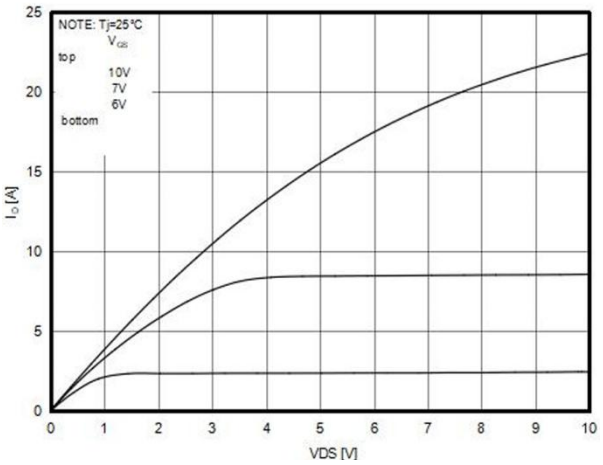


Figure5. Static drain-source on resistance

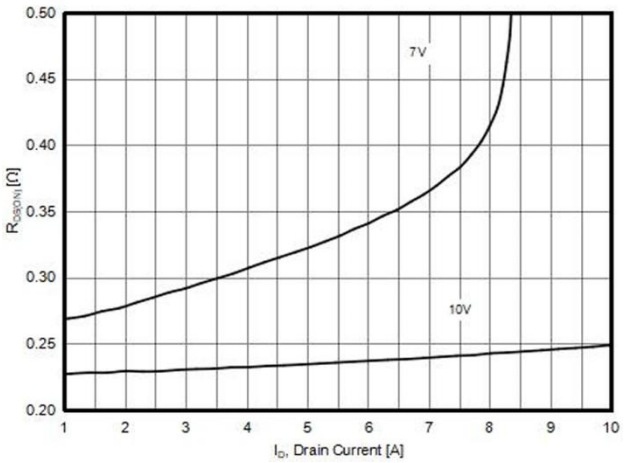
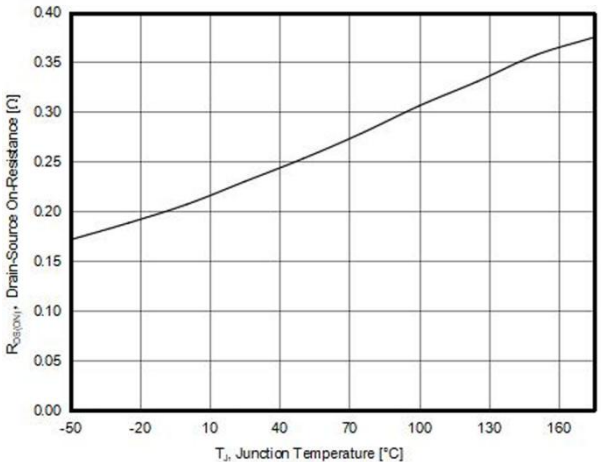


Figure6. $R_{DS(ON)}$ vs Junction Temperature



Typical Characteristics

Figure7. BV_{DSS} vs Junction Temperature

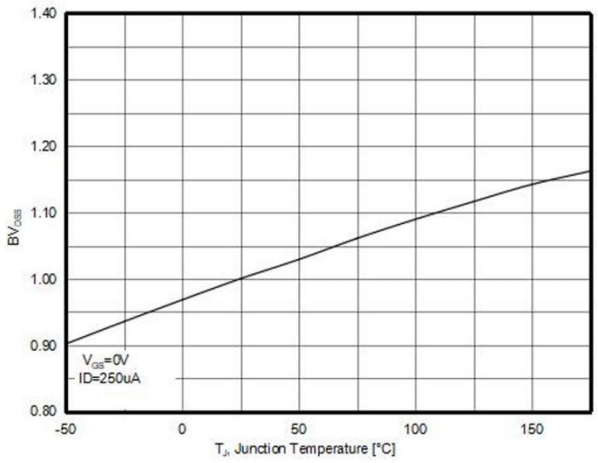


Figure8. Maximum I_D vs Junction Temperature

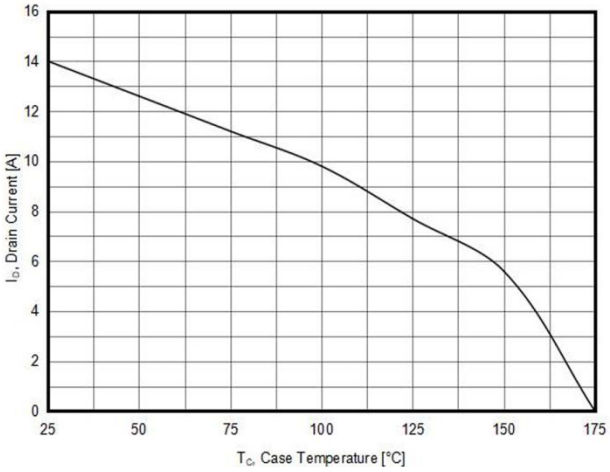


Figure9. Gate charge waveforms

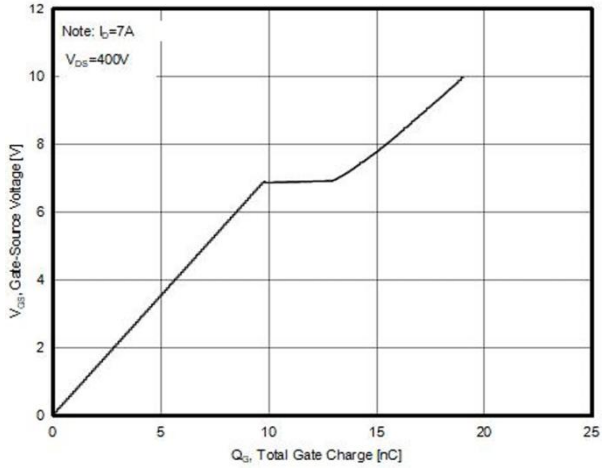
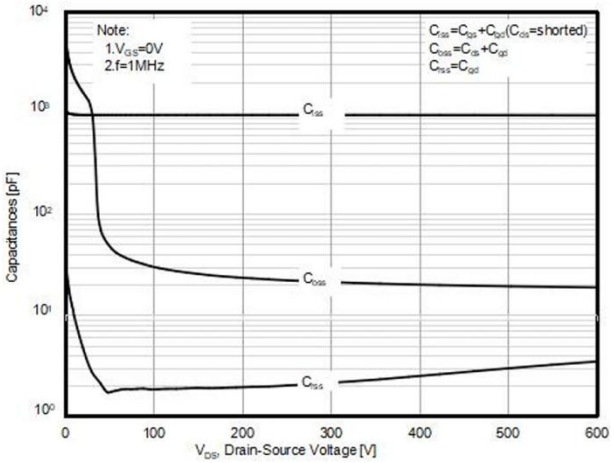
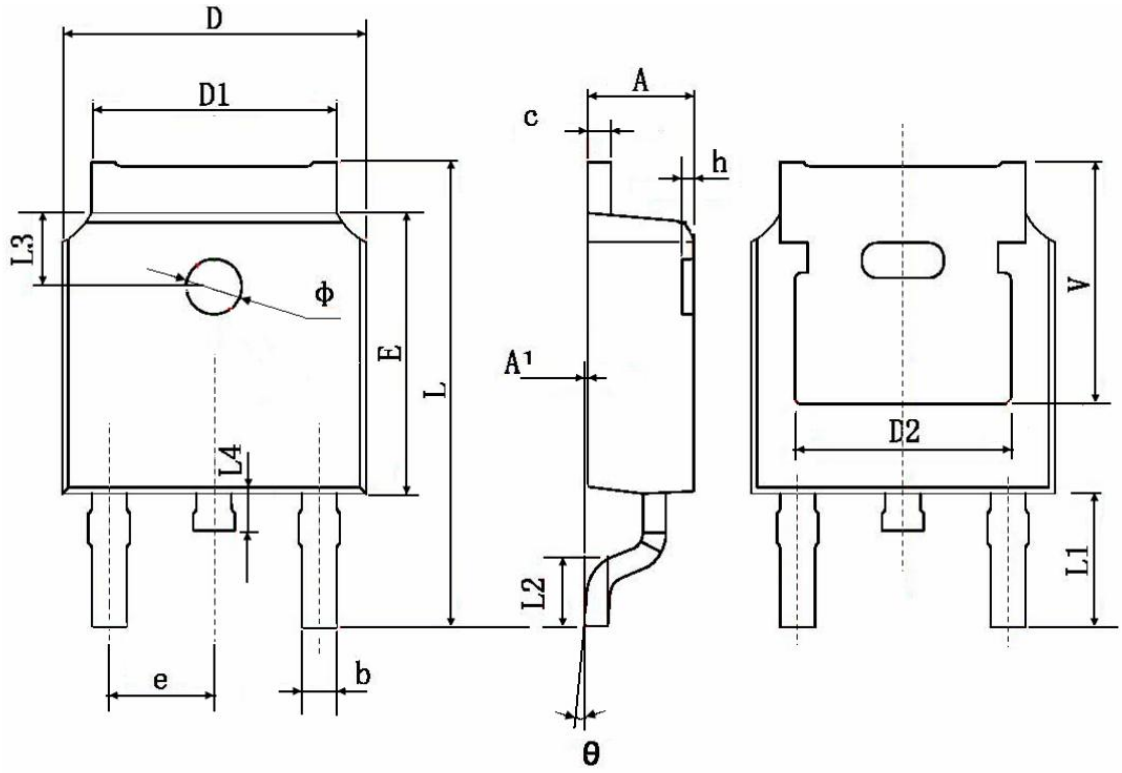


Figure10. Capacitance



TO-252AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	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	2.186	2.390	0.086	0.094
L	9.800	10.500	0.386	0.413
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.800	0.055	0.070
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012