AS30ND06S-Q1

N-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	14mΩ@10V	30A
	17.5mΩ@4.5V	

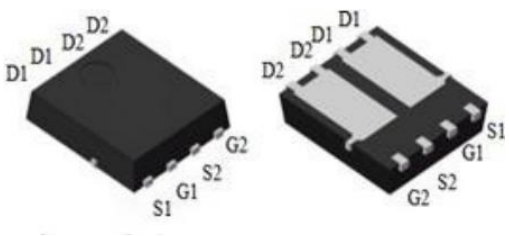
Feature

- Excellent gate charge x RDS(on) product(FOM)
- Very low on-resistance RDS(on)
- 150 °C operating temperature
- Pb-free lead plating
- Suffix “-Q1” for AEC-Q101

Application

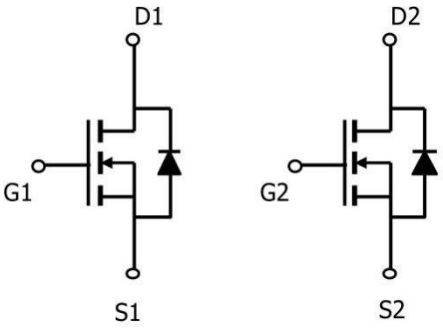
- DC/DC Converter
- Ideal for high-frequency switching and synchronous rectification

Package



DFN5X6-8L

Circuit diagram



Marking

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Absolute maximum ratings (T_C=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	30	A
Continuous Drain Current(T_C =100℃)	I_D(100℃)	23.2	A
Pulsed Drain Current	I_{DM}	120	A
Power Dissipation	P_D	40	W
Thermal Resistance,Junction-to-Case[1]	$R_{\theta JC}$	3.13	℃/W
Single pulse avalanche energy[4]	E_{AS}	135	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[2]	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.2	1.7	2.2	V
Drain-source on-resistance[2]	$R_{DS(on)}$	V_{GS} =10V, I_D =15A		12	14	mΩ
		V_{GS} =4.5V, I_D =15A		15	17.5	
Dynamic characteristics[3]						
Input Capacitance	C_{iss}	V_{DS} =30V, V_{GS} =0V, f =1MHz		1010		pF
Output Capacitance	C_{oss}			183.2		
Reverse Transfer Capacitance	C_{rss}			9.9		
Total Gate Charge	Q_g	V_{DS} =30V, V_{GS} =10V, I_D =15A		21.8		nC
Gate-Source Charge	Q_{gs}			4.6		
Gate-Drain Charge	Q_{gd}			3.5		
Turn-on delay time	$t_{d(on)}$	V_{DD}=30V, V_{GS}=10V, I_D=15A, R_G=1.6Ω		11		nS
Turn-on rise time	t_r			17		
Turn-off delay time	$t_{d(off)}$			18		
Turn-off fall time	t_f			4		
Source-Drain Diode characteristics						
Diode Forward Current[1]	I_S				30	A
Diode Forward voltage[2]	V_{SD}	V_{GS} =0V, I_S=15A			1.2	V
Reverse Recovery Time	t_{rr}	T_J = 25°C, I_F = I_S di/dt = 100A/μs		30		nS
Reverse Recovery Charge	Q_{rr}			36		nC

Notes:

1) Surface Mounted on FR4 Board, t ≤ 10 sec.
2) Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
3) Guaranteed by design, not subject to production.
4) EAS condition : Tj=25 ,V ℃ DD=30V,VG=10V,L=0.5mH,Rg=25Ω.

Typical Characteristics

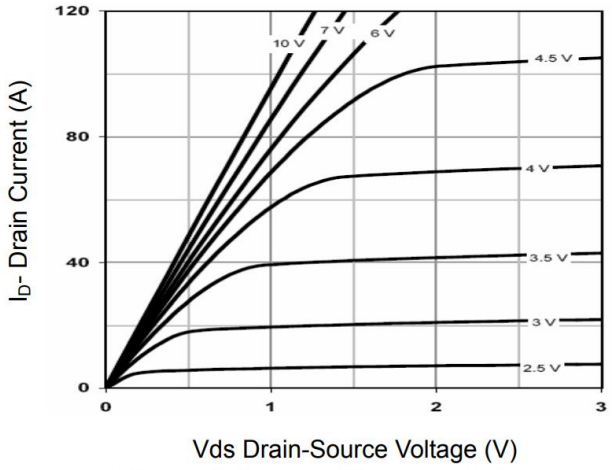


Figure 1 Output Characteristics

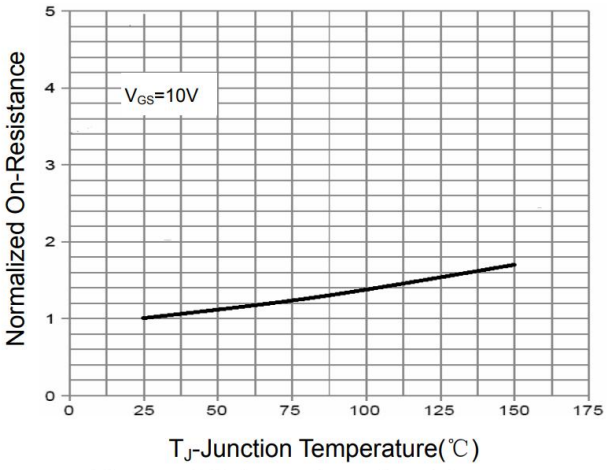


Figure 2 Rdson-Junction Temperature

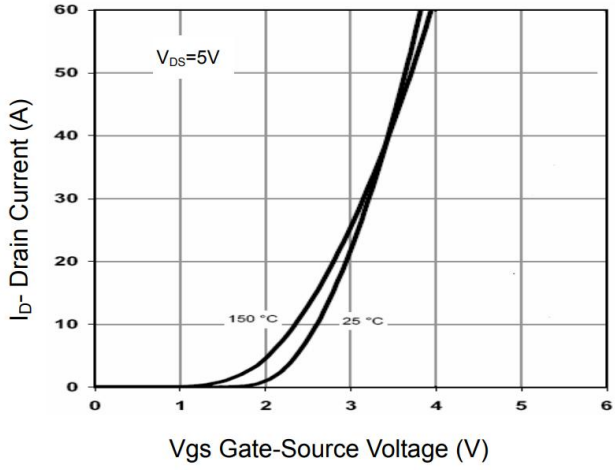


Figure 3 Transfer Characteristics

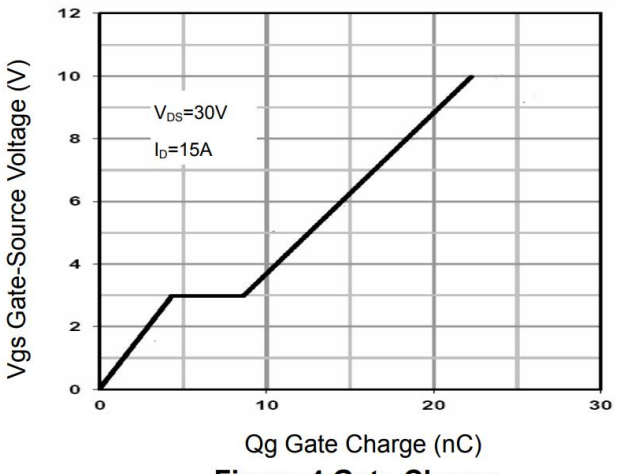


Figure 4 Gate Charge

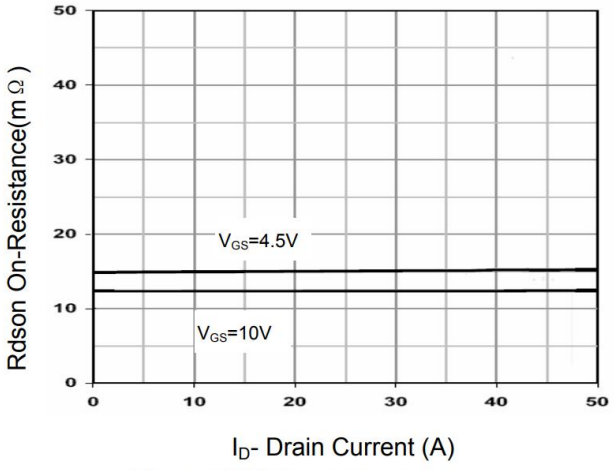


Figure 5 Rdson- Drain Current

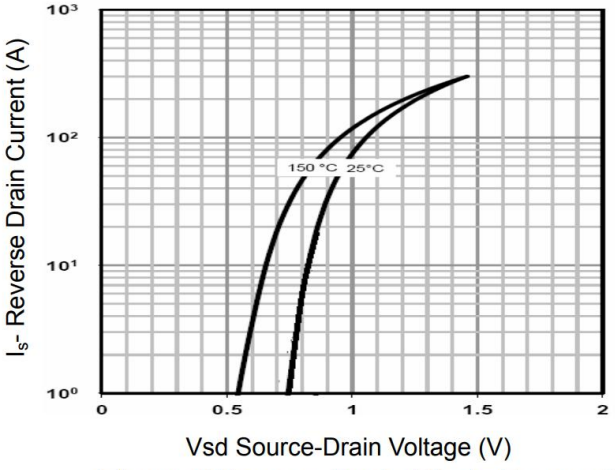


Figure 6 Source- Drain Diode Forward

Typical Characteristics

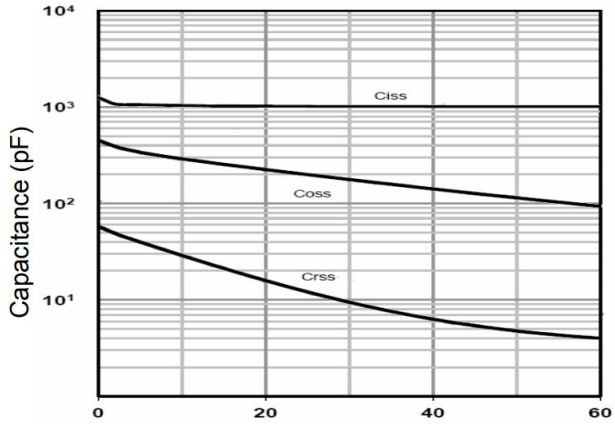


Figure 7 Capacitance vs Vds

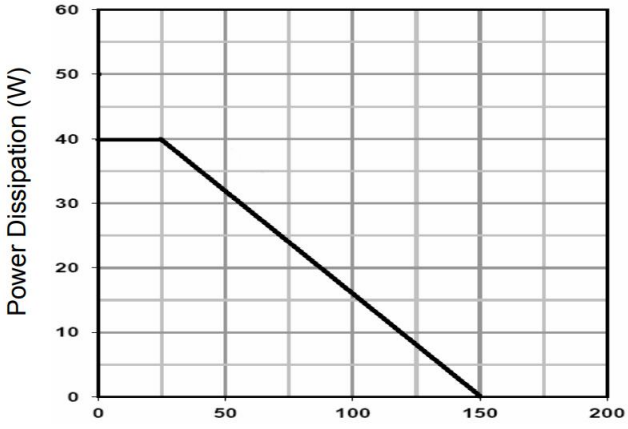


Figure 8 Power De-rating

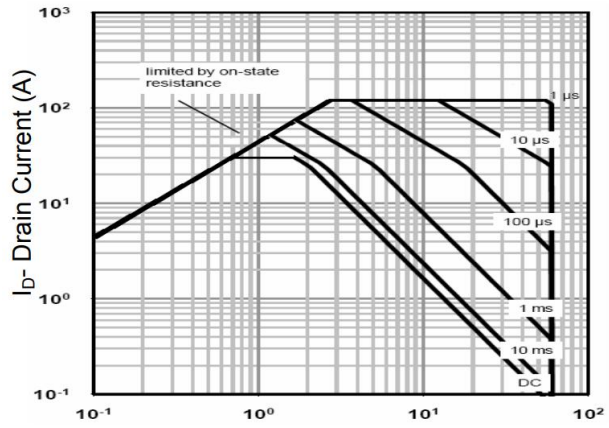


Figure 9 Safe Operation Area

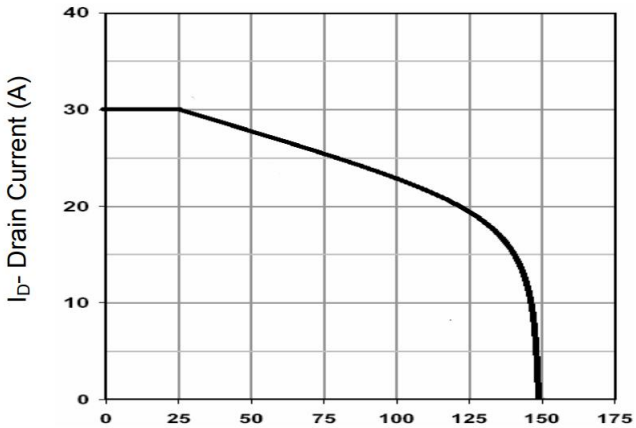


Figure 10 Current De-rating

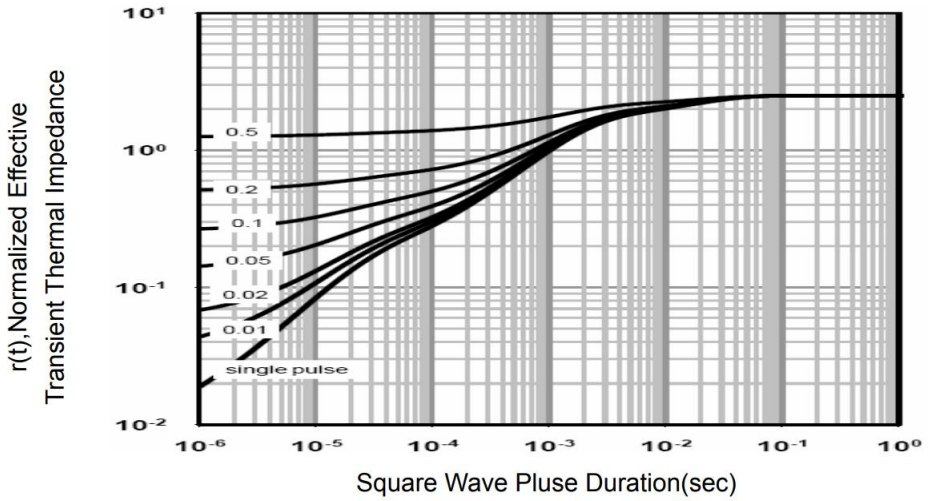
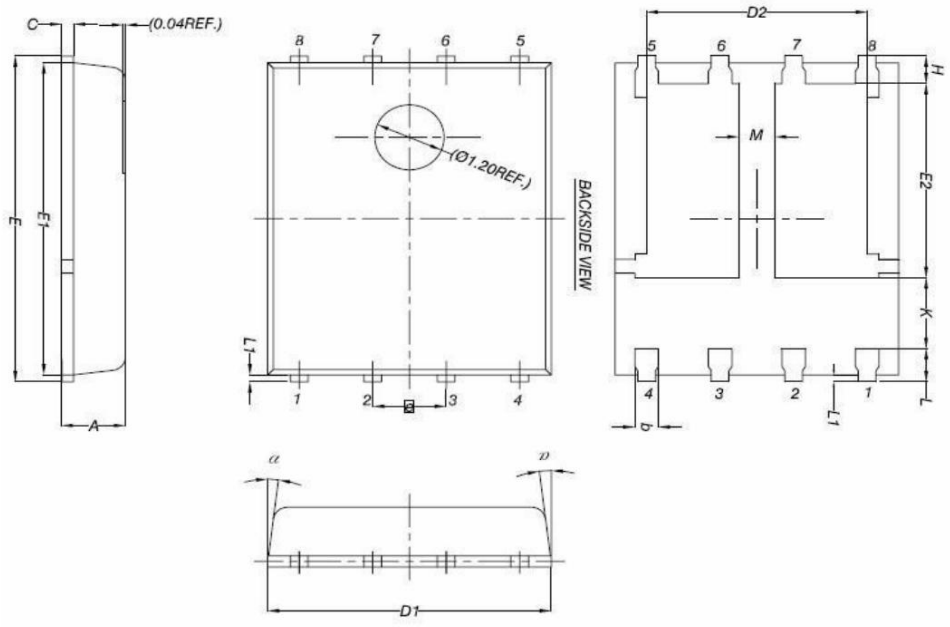


Figure 11 Normalized Maximum Transient Thermal Impedance

DFN5X6-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.10	0.035	0.043
b	0.33	0.51	0.013	0.020
C	0.20	0.30	0.008	0.012
D1	4.80	5.00	0.189	0.197
D2	3.61	3.96	0.142	0.156
E	5.90	6.10	0.232	0.240
E1	5.70	5.90	0.224	0.232
E2	3.37	3.78	0.133	0.149
e	1.27BSC.		1.27BSC.	
H	0.41	0.61	0.016	0.024
K	1.10	-	0.043	-
L	0.51	0.71	0.020	0.028
L1	0.06	0.20	0.002	0.008
M	0.50	-	0.020	-
a	0°	12°	0°	12°