

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	25mΩ@10V	18A
	32mΩ@4.5V	

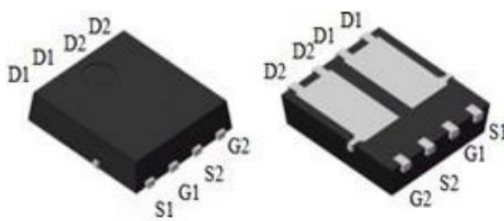
Feature

- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high EAS
- Suffix “-Q1” for AEC-Q101

Application

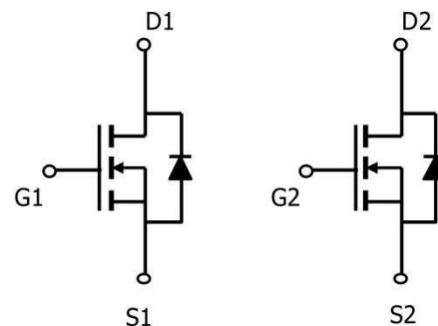
- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

Package



DFN5X6-8L

Circuit diagram



Marking



Absolute maximum ratings (T_c=25°C 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	18	A
Continuous Drain Current(T _c =100°C)	I _D (100°C)	12.7	A
Pulsed Drain Current	I _{DM}	60	A
Power Dissipation	P _D	45	W
Thermal Resistance,Junction-to-Case ¹⁾	R _{θJC}	3.3	°C/W
Single pulse avalanche energy ⁴⁾	E _{AS}	72	mJ
Junction Temperature	T _J	175	°C
Storage Temperature	T _{STG}	-55 ~ +175	°C

Electrical characteristics (T_c=25°C 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	1.6	2.5	V
Drain-source on-resistance ²⁾	R _{DS(on)}	V _{GS} =10V, I _D =10A		22	25	mΩ
		V _{GS} =4.5V, I _D =10A		27	32	
Dynamic characteristics ³⁾						
Input Capacitance	C _{iss}	V _{DS} =30V, V _{GS} =0V, f =1MHz		973		pF
Output Capacitance	C _{oss}			61.2		
Reverse Transfer Capacitance	C _{rss}			58.8		
Total Gate Charge	Q _g	V _{DS} =30V, V _{GS} =10V, I _D =10A		25		nC
Gate-Source Charge	Q _{gs}			4.5		
Gate-Drain Charge	Q _{gd}			6.5		
Turn-on delay time	t _{d(on)}	V _{DD} =30V, V _{GS} =10V, R _L =6.7Ω, R _G =3Ω		5		nS
Turn-on rise time	t _r			2.6		
Turn-off delay time	t _{d(off)}			16.1		
Turn-off fall time	t _f			2.3		
Source-Drain Diode characteristics						
Diode Forward Current ¹⁾	I _S				18	A
Diode Forward voltage ²⁾	V _{SD}	V _{GS} =0V, I _S =10A			1.2	V
Reverse Recovery Time	t _{rr}	T _J = 25°C, I _F = 10A di/dt = 100A/μs ²⁾		29		nS
Reverse Recovery Charge	Q _{rr}			49		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 : T_J=25°C ,V_{DD}=20V,V_G=10V,L=0.5mH,R_G=25Ω.

Typical Characteristics

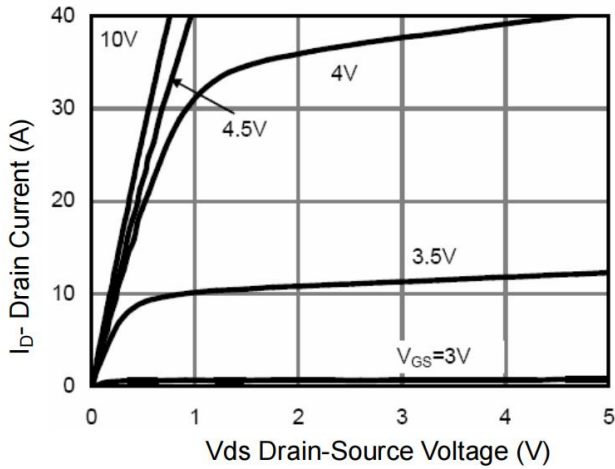


Figure 1 Output Characteristics

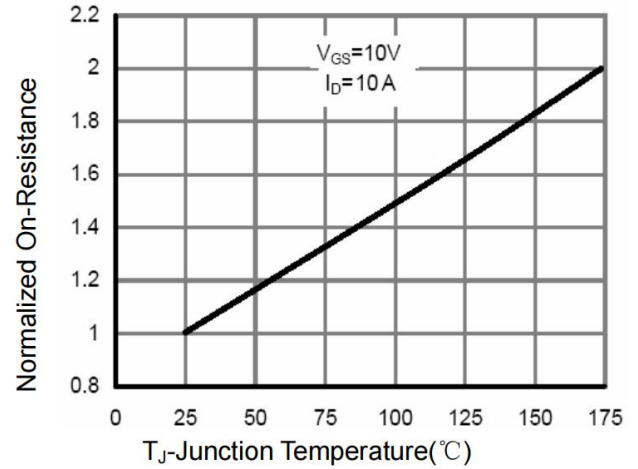


Figure 2 Rdson-Junction Temperature

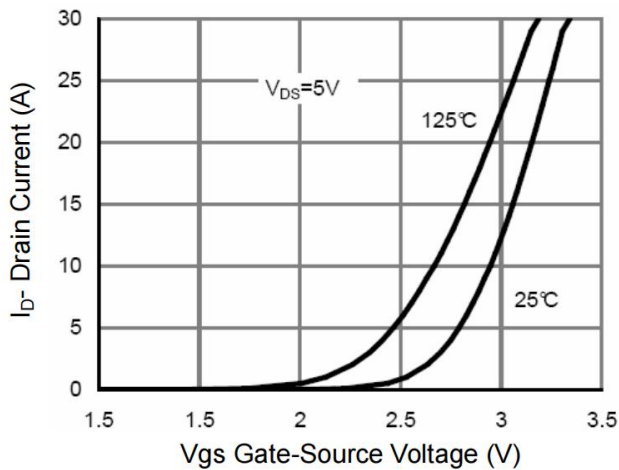


Figure 3 Transfer Characteristics

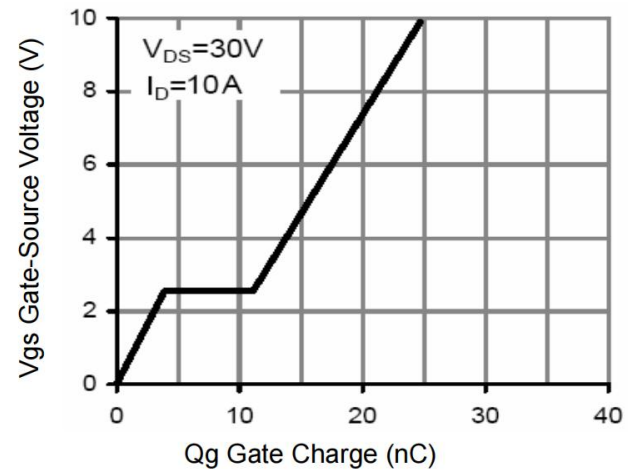


Figure 4 Gate Charge

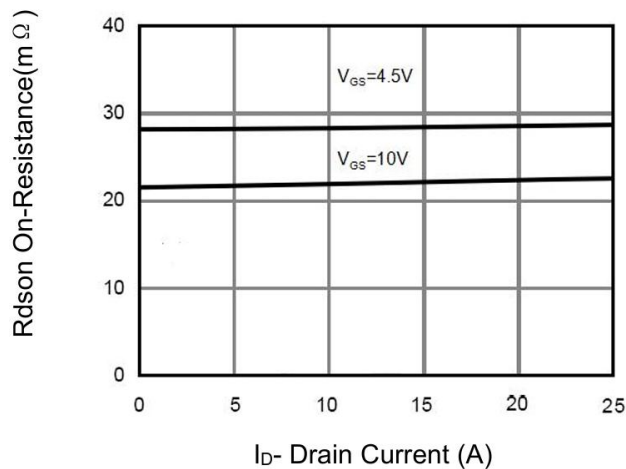


Figure 5 Rdson- Drain Current

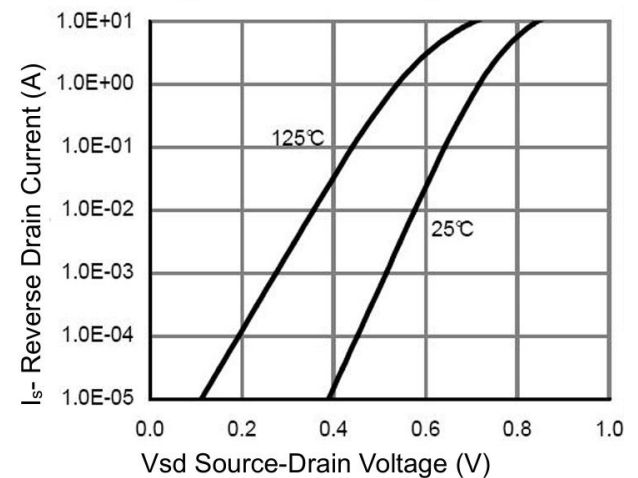


Figure 6 Source- Drain Diode Forward

Typical Characteristics

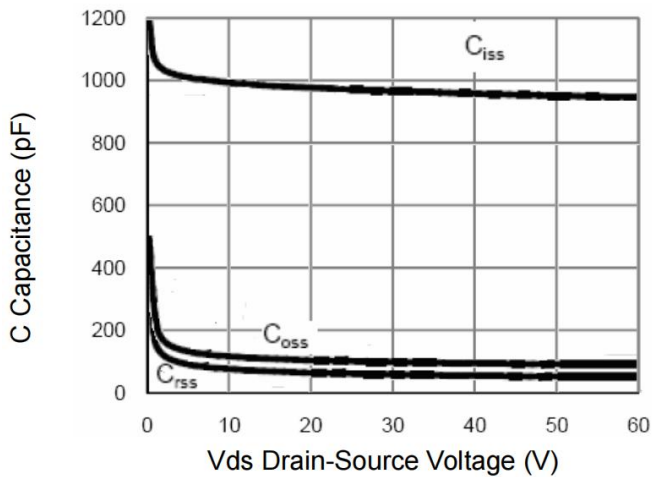


Figure 7 Capacitance vs Vds

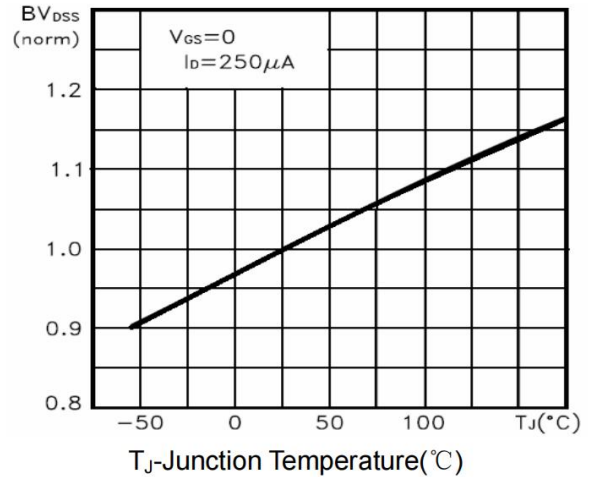


Figure 8 BV_{DSS} vs Junction Temperature

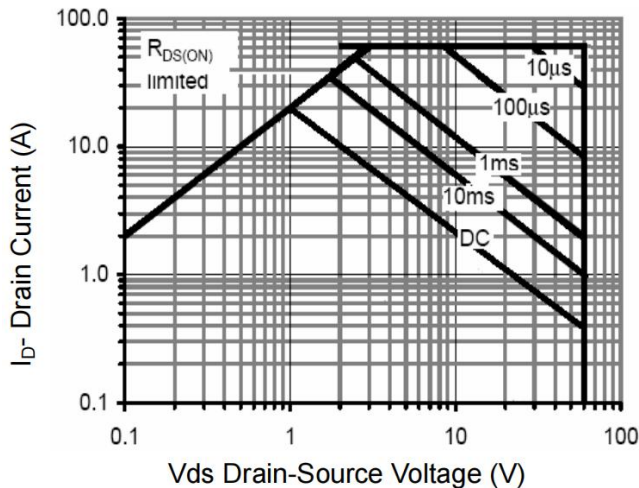


Figure 9 Safe Operation Area

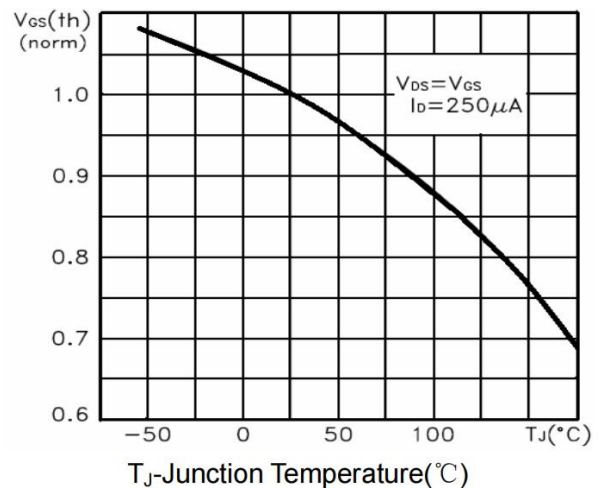


Figure 10 $V_{GS(th)}$ vs Junction Temperature

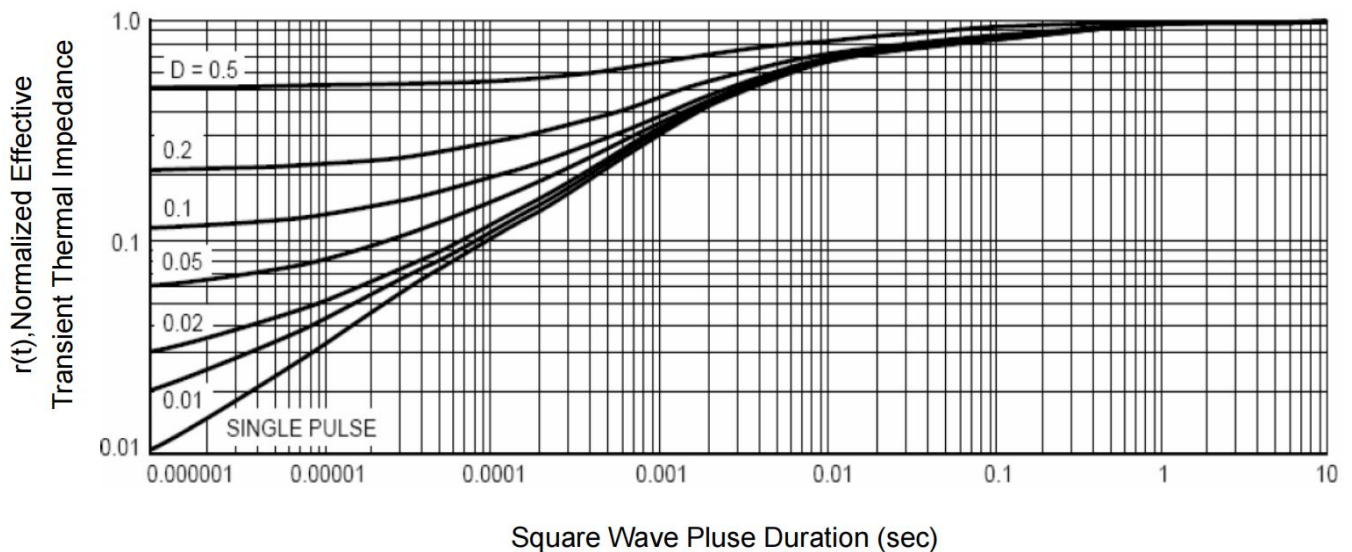
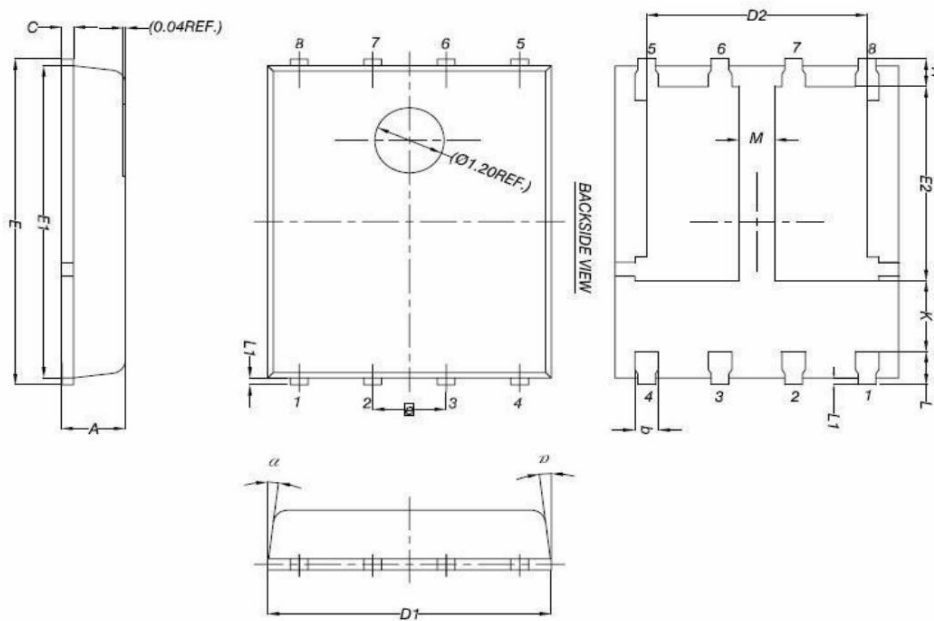


Figure 11 Normalized Maximum Transient Thermal Impedance

DFN5X6-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
b	0.330	0.510	0.013	0.020
C	0.200	0.300	0.008	0.012
D1	4.800	5.000	0.189	0.197
D2	3.610	3.960	0.142	0.156
E	5.900	6.100	0.232	0.240
E1	5.700	5.900	0.224	0.232
E2	3.370	3.780	0.133	0.149
e	1.270 BSC.		0.050 BSC.	
H	0.410	0.610	0.016	0.024
K	1.100	-	0.043	-
L	0.510	0.710	0.020	0.028
L1	0.060	0.200	0.002	0.008
M	0.500	-	0.020	-
a	0°	12°	0°	12°